

RF Coaxial connectors

General catalogue

Edition 2026







Advanced connectivity solutions tailored for the evolving needs of critical industries

We provide customers worldwide with exceptional products and services designed to meet their electrical and optical connectivity needs.

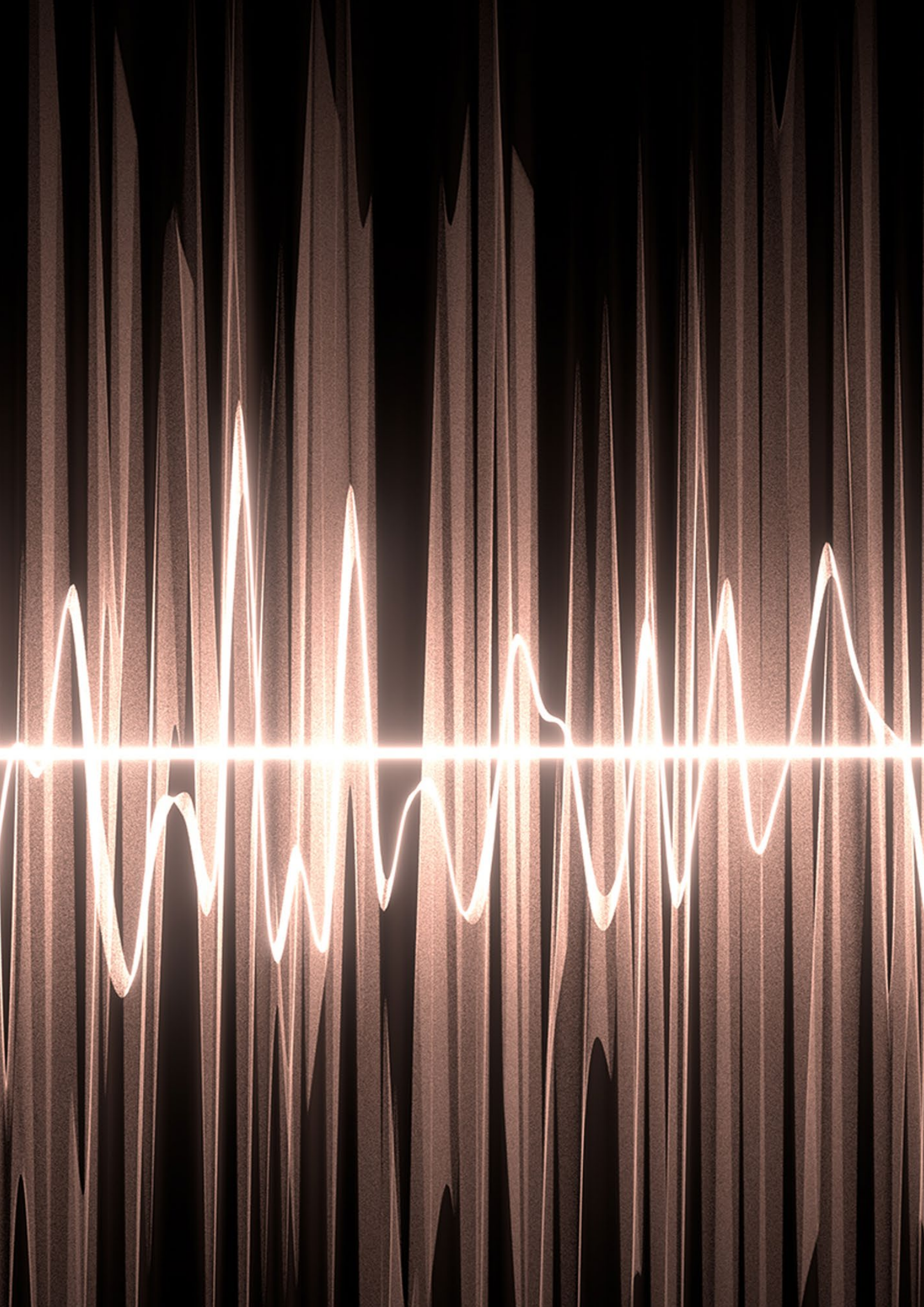
RF products

At HUBER+SUHNER, we provide advanced solutions for the transmission of radio frequency (RF) and microwave (MW) signals across a wide range of industries including test & measurement, communication, medical, aerospace, defense, automotive, and railway. Our products range from MHz to THz frequency bands and include test leads, high-density interfaces, assemblies, attenuators, terminators, and electromagnetic pulse (EMP) protectors. Many of them are available in various configurations tailored for specific applications. They are effective in harsh environments, hermetically sealed, and with extended phase stability, along with designs for thermal vacuum and extreme temperatures.

RF coaxial connectors

Offering a broad selection of RF coaxial connectors, HUBER+SUHNER delivers the latest high-frequency interfaces along with well-established industry standards. Our portfolio includes all standard interfaces, as well as proprietary designs that deliver enhanced technical advantages and superior electrical performance. HUBER+SUHNER connectors are exceptional and consistently outperform market standards, ensuring reliability and excellence in every application.

We continuously evolve our product range to meet emerging market trends and customer requirements. With dedicated technical support, simulation services and assistance from our expert application engineering team, we closely partner with our customers across the world, to ensure the success of their interconnectivity solutions.



Content

General information	6	QN	315
Cables	31	XQN	322
Connectors	43	BNC 50 Ω	325
AS12	43	BNC 75 Ω	343
AS16	51	BNC „real“ 75 Ω	355
MBX	59	TNC 50 Ω	361
MFBX	69	TNC 75 Ω	377
MMBX	75	SHV	383
SMP	85	MHV	389
SMPM	95	N 50 Ω	395
SMPM-T	119	N 75 Ω	425
SMP3	131	4.3-10	431
SMP3-T	137	7/16	441
MMCX	141	Quick-Fit plus	459
MCX 50 Ω	155	Quick-Fit	471
MCX 75 Ω	167	Reverse polarity connectors	481
MMPX	171	Precision multicoax lines (MXPM, MXP)	489
SMB	181	MXPM90	490
SMC	191	MXPM70	496
NEX10®	199	MXPM	499
MQ4/MQ5	205	MXP50	501
SSMA	209	MXP40	510
SMA	223	MXP18	515
PC 3.5	255	Adapters	519
SK (2.92 mm standard)	261	Assembly tools	563
PC 1.85	267	Accessories	581
1.0/2.3	271	Mounting holes and PCB layouts	591
QLA 00	277		
BMA	283		
QMA	295		
XQMA	312		

General information

Series not mentioned in this catalogue

For several reasons, only the most popular HUBER+SUHNER connector series and the appropriate connectors are mentioned in this catalogue. Connectors series such as C, UHF, PC 7 etc. belong to the extended product range. The selection within these series however is rather limited. For more information please go to our website www.hubersuhner.com or contact our subsidiary or agent in your country.

Series	Coupling mechanism	Frequency range (GHz)	Interface standard
PC 7 (sexless) mid size precision coaxial connector	screw-on	DC to 18	– IEC 457-2 – IEEE Std. 287
PC 2.4 subminiature precision coaxial connector	screw-on	DC to 50	– IEC 61169-40
C mid size coaxial connector	bayonet	DC to 11	– MIL-STD-348/302
UHF mid size coaxial connector	screw	DC to 0.2	– IEC 60169-12

Services and support

Non standard connectors

Although our standard assortment is broad and miscellaneous, there are customer requirements which need a special solution. Thanks to capabilities and years of experience, HUBER+SUHNER is the ideal partner when customized solutions are demanded.

3D files

For the exchange of CAD models between various CAD systems, HUBER+SUHNER is providing the customers with 3D files in IGS or STEP data format.

Simulations/PCB layouts

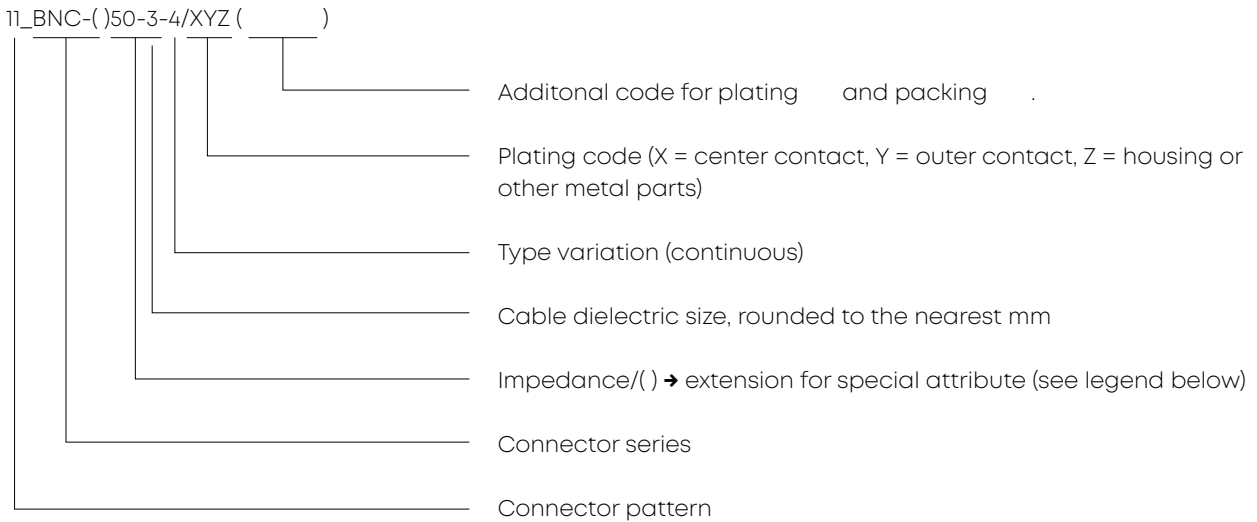
HUBER+SUHNER has the ability and the tools for computer simulation of customer specific printed circuit board layouts.

Engineering notes, glossary, etc.

Since there is a RF connector guide available from HUBER+SUHNER, we deal with connector specific data only in this catalogue. We do not go into details regarding engineering notes or glossary etc. If you want to know more about RF connectors, please order the HUBER+SUHNER RF connector guide, english or german version available or refer to the webpage [hubersuhner.com](http://www.hubersuhner.com).

Definition and type codes

HUBER+SUHNER part number



Examples:

82_MMCX-S50-0-51/111_NH

82_MMCX-S50-0-51/111_NY

S = SMT (surface mount)

N = nickel underplating

H = packing (bulk, 100 pcs.)

Y = variable industrial packing

(quantity depending on size of connector type)

Legend

Plating code (XYZ)

0 = silver

1 = gold or SUCOPRO®

2 = nickel

3 = SUCOPLATE®

4 = chromium

5 = tin plated

9 = stainless steel

Additional code for plating

N = gold plating, nickel underplated

U = gold plating, not nickel underplated

Additional code for packaging

E = single packaging

F = bulk with 50 pieces

G = tape and reel with 750 pieces

H = bulk with 100 pieces

L = tape and reel with 1500 pieces

M = tape and reel

(quantity depending on size of connector)

Y = variable industrial packing

Extension for special attribute: ()

L = left run thread

Q = quick-mate

R = reverse sex

S = surface mount (SMT)

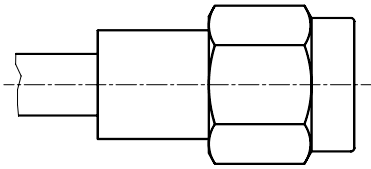
T = reverse sex surface mount (SMT)

U = unusual types (deviation from standard interface)

Z = zinc die casting

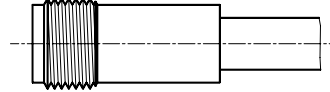
Connector patterns

Definition of plug and jack



Plug

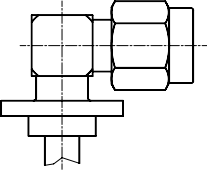

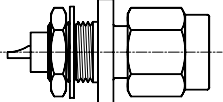
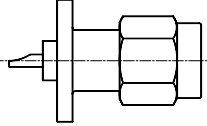
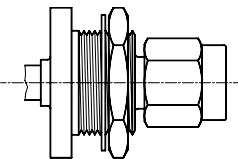
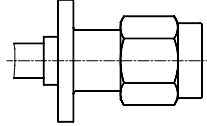
A plug is a connector featuring the active part of the coupling mechanism (for example coupling nut).



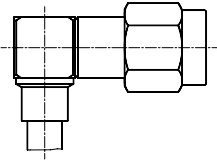
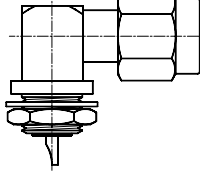
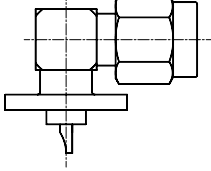
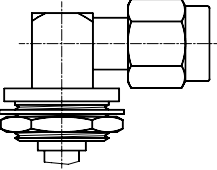
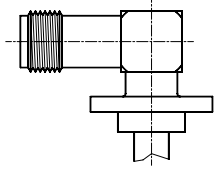
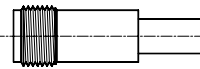
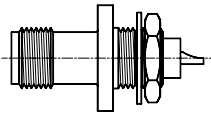
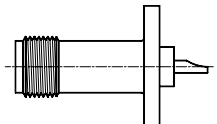
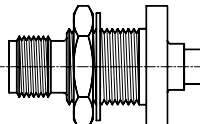
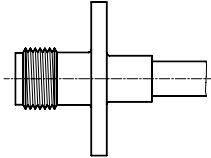
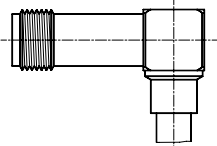
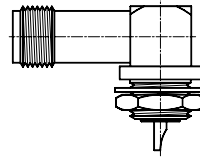
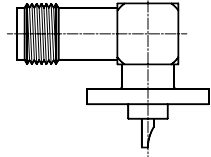
Jack

A jack is a connector featuring the coupling mechanism complementary to the plug.

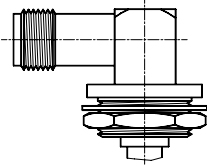
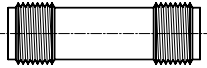
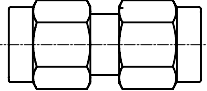
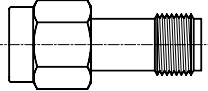
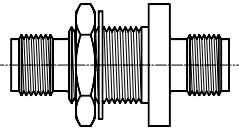
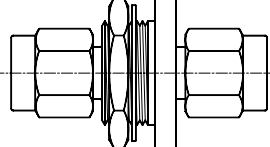
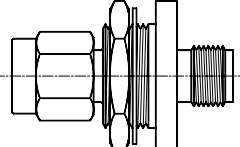
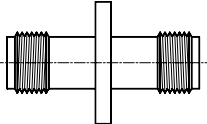
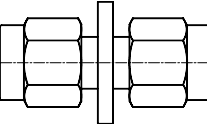
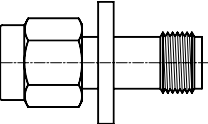
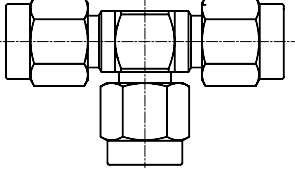
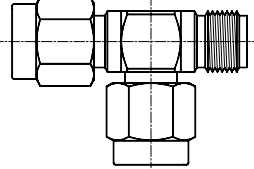
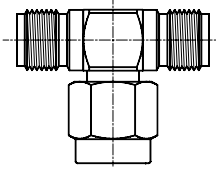
Patterns

10...	Right angle panel cable plug (male), flange mount	11...	Straight cable plug (male)	12...	Straight bulkhead receptacle, plug (male)
					
13...	Straight panel receptacle, plug (male), flange mount	14...	Straight bulkhead cable plug (male)	15...	Straight panel cable plug (male)
					

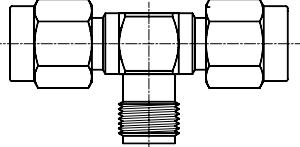
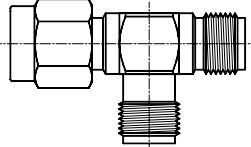
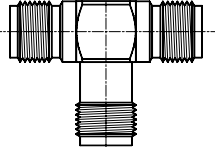
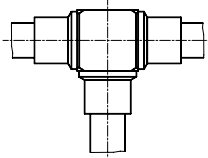
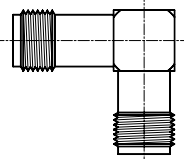
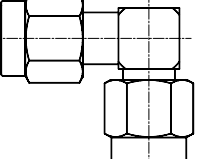
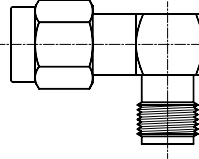
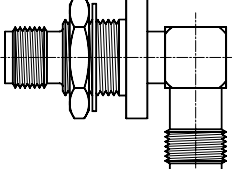
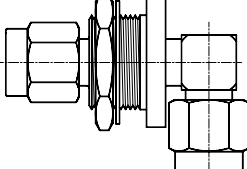
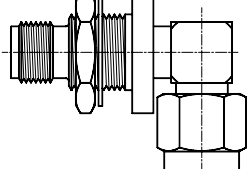
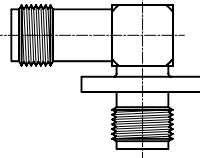
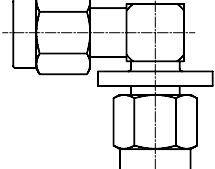
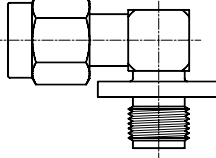
Connector patterns

16...	Right angle cable plug (male)	17...	Right angle bulkhead receptacle, plug (male)	18...	Right angle panel receptacle, plug (male), flange mount
					
19...	Right angle bulkhead cable plug (male)				
					
20...	Right angle panel cable jack (female), flange mount	21...	Straight cable jack (female)	22...	Straight bulkhead receptacle, jack (female)
					
23...	Straight panel receptacle, jack (female), flange mount	24...	Straight panel bulkhead cable jack (female)	25...	Straight panel cable jack (female), flange mount
					
26...	Right angle cable jack (female)	27...	Right angle bulkhead receptacle, jack (female)	28...	Right angle panel receptacle, jack (female), flange mount
					

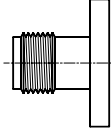
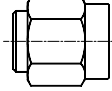
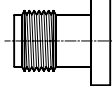
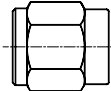

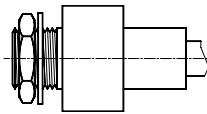
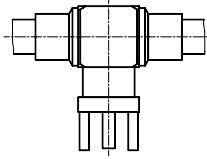
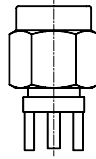
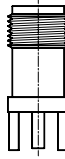
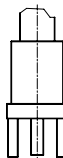
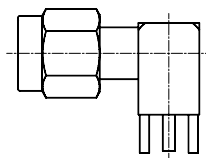
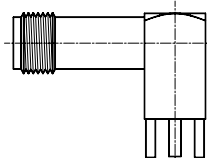
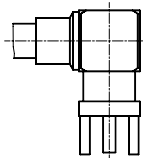
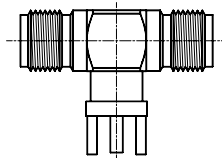
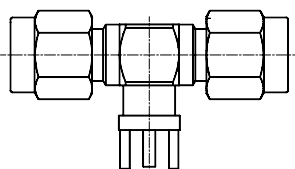
Connector patterns

29...	Right angle bulkhead cable jack (female)				
					
31...	Adapter jack/jack (female/female)	32...	Adapter plug/plug (male/male)	33...	Adapter plug/jack (male/female)
					
34...	Bulkhead adapter jack/jack (female/female)	35...	Bulkhead adapter plug/plug (male/male)	36...	Bulkhead adapter plug/jack (male/female)
					
37...	Panel adapter jack/jack (female/ female), flange mount	38...	Panel adapter plug/plug (male/male), flange mount	39...	Panel adapter plug/jack (male/female), flange mount
					
41...	T-adapter, 3 plugs (male)	42...	T-adapter, 2 plugs (male), 1 jack (female), asymmetric	43...	T-adapter, 2 jacks (female), 1 plug (male)
					

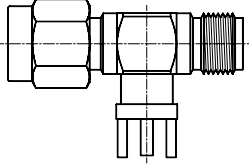
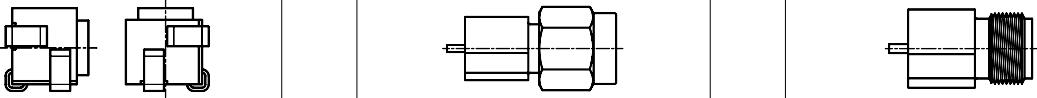
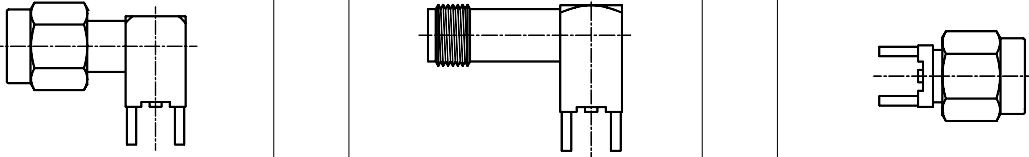
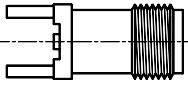
Connector patterns

44...	T-adapter, 2 plugs (male), 1 jack (female)	45...	T-adapter, 1 plug (male), 2 jacks (female), asymmetric	46...	T-adapter, 3 jacks (female)
					
47...	T-cable junction				
					
51...	L-adapter jack/jack (female/female)	52...	L-adapter plug/plug (male/male)	53..	L-adapter plug/jack (male/female)
					
54...	Bulkhead-L-adapter jack/jack (female/female)	55...	Bulkhead-L-adapter plug/ plug (male/male)	56...	Bulkhead-L-adapter plug/jack (male/female)
					
57...	Panel L-adapter jack/jack (female/ female), flange mount	58...	Panel L-adapter plug/plug (male/male), flange mount	59...	Panel L-adapter plug/jack (male/female), flange mount
					

Connector patterns

61...	Protective cap for plug (male)	62...	Protective cap for jack (female)	63...	Shorting jack (female)
					
64...	Shorting plug (male)	65...	Termination	71...	Straight bulkhead cable feed through
					
80...	PCB T-cable junction	81...	Straight PCB plug (male)	82...	Straight PCB jack (female)
					
83...	Straight PCB cable terminator	84...	Right angle PCB plug (male)	85...	Right angle PCB jack (female)
					
86...	Right angle PCB cable terminator	87...	PCB T-adpater jack/jack (female/female)	88...	PCB T-adapter plug/plug (male/male)
					

Connector patterns

89...	PCB T-adapter plug/jack (male/female)				
					
90...	Combi-print-connector	91...	Edge mount PCB plug (male)	92..	Edge mount PCB jack (female)
					
93...	Right angle PCB plug with ground pin in-hole and SMT signal pin (male)	94...	Right angle PCB jack with ground pin in-hole and SMT signal pin (female)	95...	Straight PCB plug with ground pin in-hole and SMT signal pin (male)
					
96...	Straight PCB jack with ground pin in-hole and SMT signal pin (female)				
					

Selecting connector, plating and packaging

How to select the suitable coaxial connector series

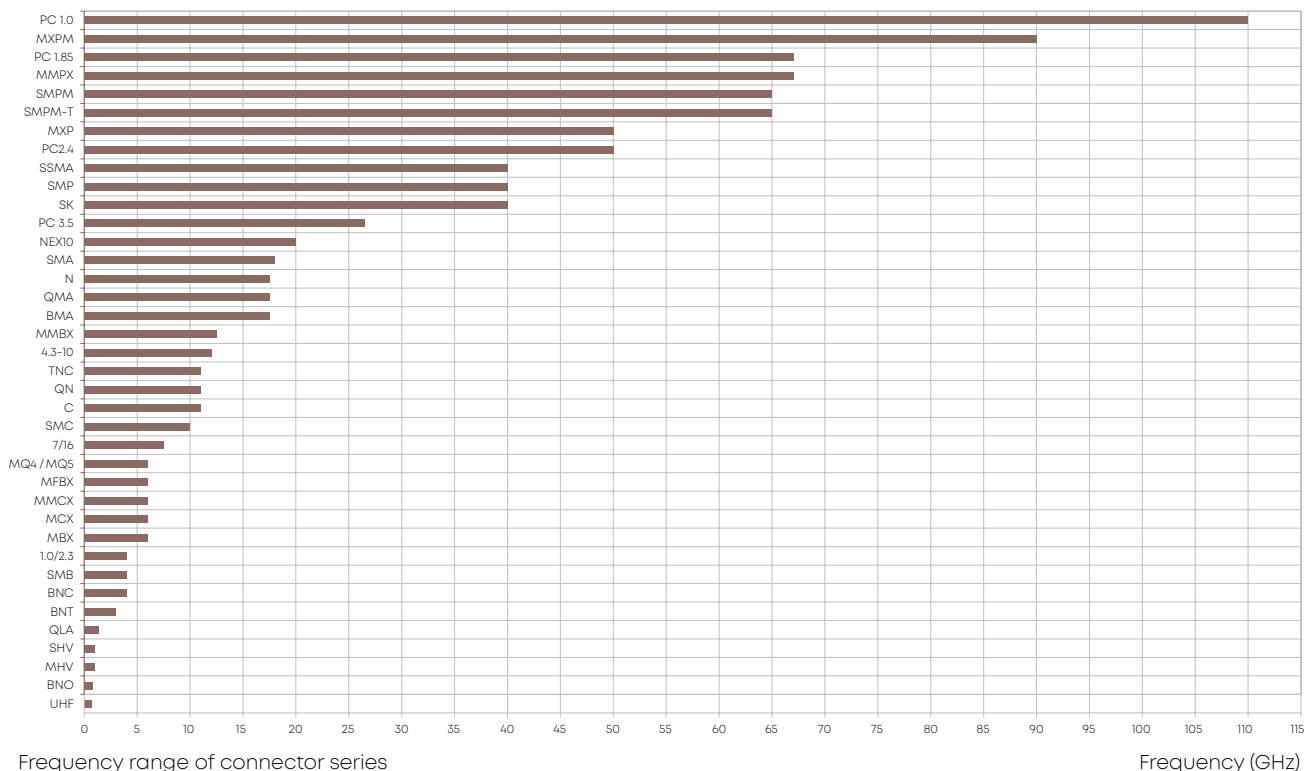
Technical elements

Frequency, cable type, impedance and coupling mechanism are key factors to consider in selecting a coaxial connector series. Depending on the application, other factors such as sealing, temperature, working voltage, IM performance, vibration etc. also have to be taken into account. Connectors must, at a minimum, provide the same level of performance as the cable or the application to which they are attached. This means, before selecting a connector series the cable type or the application has to be known. Its structure, dimensions and frequency range restrain the connector series that can be used.

The table below shows the different cable structures and the suitable connector series.

Cable structure	Suitable connector series
Coaxial cables	BMA, BNC, C, DIN 1.0/2.3, DIN 7/16, MBX, MCX, MMBX, MMCX, MMPX, MQ4/MQ5, MXP, MXPM, N, NEX10, PC 1.85, PC 2.4, PC 3.5, QLA, QMA, QN, SK, SMA, SMB, SMC, SMPM, SMPM-T, SMP, SSMA, TNC, UHF, 4.3-10
High voltage (coaxial cables)	MHV (H4), SHV
Board to board	MBX, MFBX, MMBX

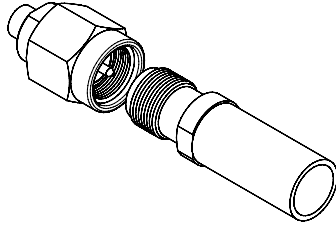
Cut-off frequency as well as coupling mechanism of a connector series limit the frequency range that a connector can operate. The following table shows the frequency range of different connector series within this catalogue.



Coupling mechanisms

Coupling mechanisms make it possible to mate connector pairs and also determine whether or not the mated pair can meet the specified mechanical and electrical characteristics, such as operating frequency. The following four types of mechanisms are commonly used for the series described in this catalogue.

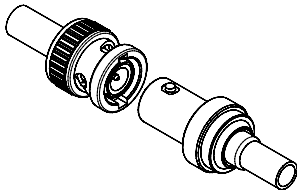
Screwed coupling mechanism



The coupling mechanism consists of a thread and a coupling nut. Special attention must be paid to the maximum torque permitted and the coupling nut captivation.

The screwed connection is used in series like SMC, SSMA, SMA, TNC, N and 7/16 4.3–10 because the mechanism guarantees the most solid, stationary coupling suited for e.g. test and measurement, military and telecoms applications.

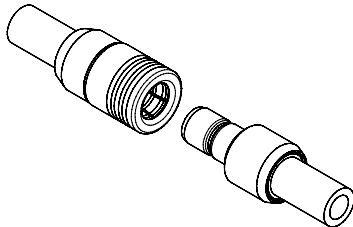
Bayonet coupling mechanism



The bayonet coupling is a twist -snap connection. The coupling mechanism is best known through the BNC.

The bayonet connection often is chosen as coupling when it is important to have a sturdy mechanism and at the same time fast mating. Therefore, the mechanism is reliable for test and measurement applications as well as military systems. Used in the series BNC, SHV and MHV.

Snap-on coupling mechanism



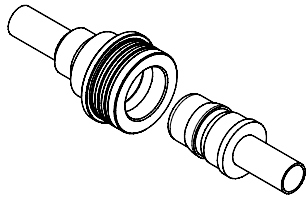
The snap mechanism is commonly used for connectors with small mechanical dimensions and high packing density. Because this type of connection is easy to use, it is often designed into PCB applications.

The main feature of the snap-on mechanism is that the engagement and disengagement action can be completed extremely quickly.

This mechanism is very reliable when used for small connectors such as MMCX, MMPX, MCX and SMB series.

Coupling mechanisms

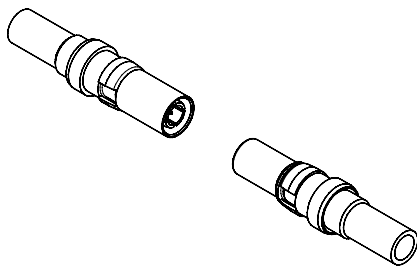
Quick Lock coupling mechanism



A Quick Lock coupling mechanism is basically a snap-on interface with additional self-locking. Demating is performed by retracting the unlock-sleeve of the male connector.

Quick-Lock connectors prevent unintentional loosening of mated pairs and they provide a fast and reliable interconnection. The QMA and QN connector interface feature this time saving locking mechanism.

Slide-on coupling mechanism



The slide mechanism is used extensively where a high packing density and easy handling is needed. A typical application is the interconnection of daughter boards to mother boards.

This mechanism is often used for various DIN-multiport connectors and also with connectors such as BMA, MMBX or DIN 1.0/2.3 which are commonly attached to PCBs.

Coupling mechanism	Connector series
Bayonet	BNC, MHV (H4), SHV
Quick-Lock	QMA, QN, 4.3-10, NEX10, MXPM
Threaded	DIN 4.1/9.5, DIN 7/16, 4.3-10, N, PC 1.85, PC 2.4, PC 3.5, MQ4/MQ5 SK (2.92 mm standard), SSMA, SMA, SMC, TNC, SMPM-T, NEX10
Snap-on	MCX, MMCX, MMPX, QLA, SMB, SMPX, SMP, SMPM
Slide-on	BMA, DIN 1.0/2.3, MBX, MMBX, MXP,

Overview coupling mechanisms

Plating information

HUBER+SUHNER is your plating technology specialist and your competent partner for developing and applying proper coatings for specific uses and conditions. This section explains the metallic plating used for the different HUBER+SUHNER connectors.

Plating is required for different reasons:

- Add conductive material to supply sufficient current carrying capacity (good electrical and thermal conductivity)
- Diminish or eliminate surface oxidation/corrosion and provide protective coating over conductors
- Ensure good contact between conductors
- Achieve a good solder or weld attachment surface
- Obtain a better wear resistance (abrasion resistance and hardness)

Our main platings are

- Gold
- Silver
- SUCOPLATE® (HUBER+SUHNER plating)
- SUCOPRO® (HUBER+SUHNER plating)



Plating information

Gold

Gold is a precious metal available either as soft fine gold or as hard version. It is a good heat and electricity conductor and unaffected by air and most reagents, which makes it a superb material for electrical signal transmission. Gold can be deposited on nickel or copper. It is quite expensive compared to other plating materials.

Application

The primary use of gold in RF applications is for plating. Inner conductors are frequently gold-plated when e.g. good conductivity, excellent oxidation resistance and continuous mating (repeatability) are required (e.g. in defence applications). Even in highly polluted atmospheres, a gold surface will be free of oxide. Gold plating is available according to MIL-DTL-45204 D or can be customer specific.

Gold offers the following main advantages:

- Excellent wettability/solderability
- Excellent protection against corrosion
- Low contact resistance
- Good wear resistance

Colour: gold

Plating information

SUCOPRO® – the gold plating for the future

SUCOPRO is a thin gold plating developed by HUBER+SUHNER, featuring a nickel-phosphorus alloy (10.5 to 15 %) underlayer.

Below 300 °C the NiP is amorphous and non-magnetic. The gold layer – which is not subject to oxidation itself – protects the nickel-phosphorus underlayer against oxidation, thus allowing good wetting while soldering. It provides stable, low contact resistance and improved protection against oxidation and corrosion. As it contains only a thin layer of gold, the solder joints will not become brittle.

The nickel-phosphorus layer provides very good corrosion resistance, highwear resistance and hardness, and a diffusion barrier against gold, copper, tin and zinc. Between 300 °C and 500 °C, it changes its structure to micro-crystalline and its hardness increases, but no brittleness or weak adhesion occurs.

Application

Initially, SUCOPRO was developed for piece parts which demand an excellent solderability and/or wear resistance, that is PCB connectors and adapters. But more and more customers select this plating also for cable connectors, adapters, on bodies and centre contacts. Meanwhile, SUCOPRO is an excellent plating for almost all subminiature connectors.

SUCOPRO plating offers the following main advantages:

- Excellent wear resistance for more than 1000 mating cycles
- Non-magnetic
- Excellent corrosion resistance
- Excellent wettability/solderability
- Very high strength of soldered joints without embrittlement
- Low contact resistance
- Good passive intermodulation properties

Colour: gold



Plating information

SUCOPLATE®

As one of the leading RF connector manufacturers, HUBER+SUHNER has delivered several hundred million coaxial connectors with SUCOPLATE plating to demanding customers worldwide. These components, featuring unique mechanical and electrical properties, are used in a wide range of applications such as off-shore, airframes, space, test+measurement, telecommunications and wireless.

SUCOPLATE is a copper alloy composed of three components: copper, tin and zinc. Being non-magnetic and nonallergic (nickel-free), SUCOPLATE is an attractive alternative to nickel plating. It has a good electrical performance and corrosion resistance. The non-magnetic property in the contact area is also important for obtaining negligible passive intermodulation products (PIM) in communication systems such as base transceiver stations.

SUCOPLATE offers the following important performance highlights:

- Superior electrical conductivity and low contact resistance
- Non-magnetic
- Excellent passive intermodulation properties
- Uniform plating thickness
- High wear resistance
- Low surface friction
- Excellent adhesion and ductility
(no cracking when bending parts)
- Tarnish resistant
- High corrosion resistance
- Nonallergic

Colour: similar to stainless steel

Plating information

Silver

Silver has excellent electrical and thermal conductivity which makes it very suitable for plating. It is cheaper than gold. Having the best conductivity of all metals this metal can carry a high current load with the least loss. Silver is particularly advantageous when a low passive intermodulation product is desired.

Other features of silver are that it is easily shaped, provides very good heat conductivity, good corrosion resistance in air and water and the lowest contact resistance. A disadvantage is that silver tarnishes (sulfide film on the surface) when exposed to ozone, hydrogen sulfide and sulphur. Tarnishing influences the appearance but does not have any impact on the electrical performance.

Application

Silver is the standard plating for connector bodies and center contact of 7/16 connectors. Traditionally, silver plating is well-known as a very good plating for low passive intermodulation components. Thanks to its good solderability, silver is used for soldering ferrules and cable entries.

Silver offers the following main advantages:

- Excellent electrical conductivity
- Good corrosion resistance
- Low contact resistance
- Good solderability
- Excellent passive intermodulation properties

Colour: silver



Packaging information

HUBER+SUHNER attaches great importance to high quality, economic packaging. This section will give you an overview of the types and packaging materials used. All our packagings have to fulfill the following functions:

- Protection of the connectors against mechanical stress, humidity and dust during storage transport and usage
- Identification and information about the product
- Easy handling for production
- Economic and useful recycling after use

All packagings fulfill the specification according to ISO 14000. For further information please contact your local HUBER+SUHNER representative.

Single and bulk packaging

Plastic bags from HUBER+SUHNER are sealed by welding or provided with a mini-grip closure (bulk only) for reclosing after use. They are easy to handle and are marked for recycling with the material recycling symbol according to the recommended international DIN standard. For product identification and retraceability, they are labelled with the type version and the order, batch and assembly instruction numbers.

Material

- LDPE or PP, transparent

Attributes

- Electrostatically conductive,
- Air-tight
- Chemically resistant
- Chlorine free
- Halogen free



Single (sealed by welding)



Bulk (mini-grip)

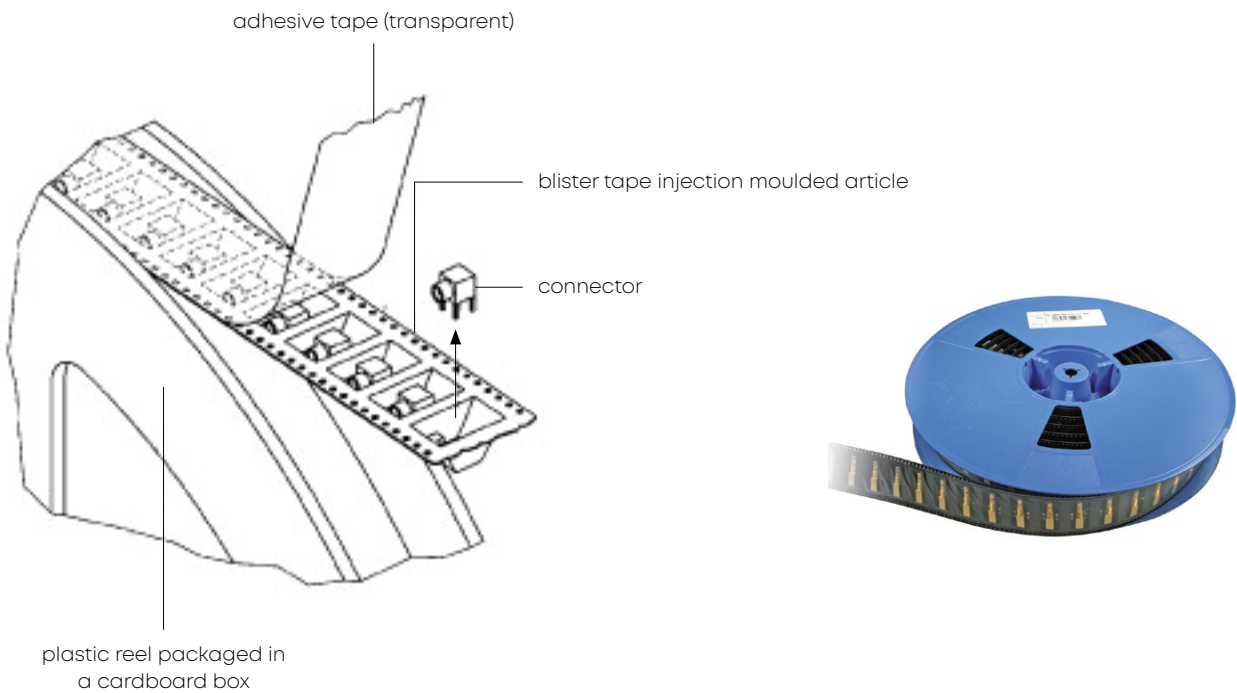
Packaging information

Tape and reel packaging

The main benefit of tape and reel packaging is the possibility of using an automatic PCB assembling process for the connector. This enables to reduce the cost of the whole manufacturing and protects the connectors during transportation and processing. Our tape and reel packaging meets the international standards EIA 481 and DIN IEC 286-3. The fully automated packaging machine provides perfect packaging quality.

Material

- Reel polystyrene (PS) (anti-static)
- Carrier tape polystyrene (PS) or polycarbonate (PC) (anti-static)
- Carrier tape polystyrene (PS) or polyethylene terephthalate (PET) (anti-static)
- Box cardboard







Type of packaging	Bulk	Single	Tape and reel	Notes
Cable connectors	x	x		<ul style="list-style-type: none"> • Standard for high volumes • Standard depending on connector size
Flange connectors	x	x		<ul style="list-style-type: none"> • Standard for high volumes • Standard depending on connector size
PCB connectors	x		x	<ul style="list-style-type: none"> • Small quantities • Standard for high volumes with automatic processing
Adapters		x		<ul style="list-style-type: none"> • Standard • Other packaging on request

Cable entry variants

Cable entries for flexible cables

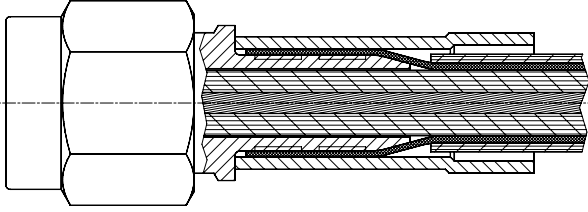
HUBER+SUHNER full crimp

Full crimp connectors with crimped centre and outer contacts allow quick and simple assembly with high reliability. The example below shows the three steps which are necessary to crimp a subminiature SMC connector.

<p>1</p> 	<p>Full crimp connectors are normally supplied in three parts: center contact, body and crimp ferrule.</p>
<p>2</p> 	<p>During crimping, the center contact is accurately positioned in the crimp insert.</p>
<p>3</p> 	<p>The pre-assembled cable is pushed into the body. Due to a snap mechanism between center contact and insulator, center contact is captivated and protected against axial displacement.</p>
<p>4</p> 	<p>The final operation is crimping of the crimp ferrule.</p>

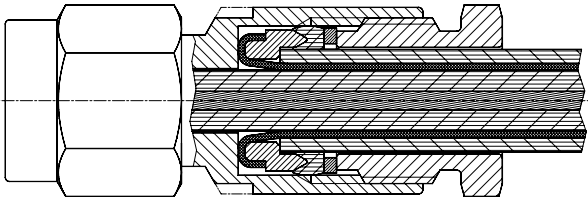
Cable entry variants

Cable entry crimp



The centre contact is soldered and the cable braid is crimped to the connector body. The crimp technique enables an economic assembling of high reliability. Suitable taper sleeves are available; see page 554.

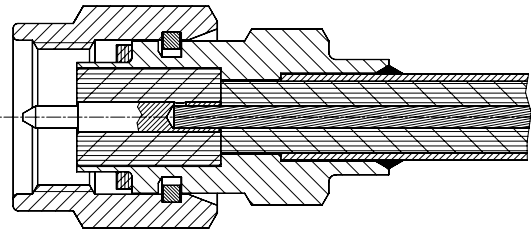
Cable entry clamp



The clamp type cable entry is recommended for weather-exposed applications. The cable jacket is secured by a rubber gasket and the cable screen by an axially tightened press ring.

Cable entries for semi-rigid cables

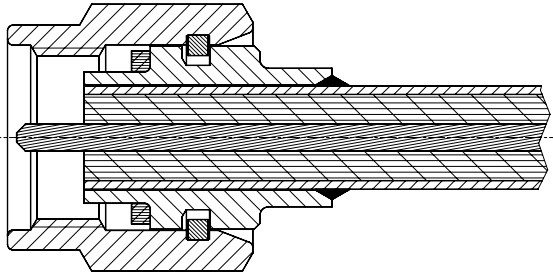
Soldered, with pin and insulator



Centre contact and body of the connector are soldered onto the centre or outer conductor of the cable.

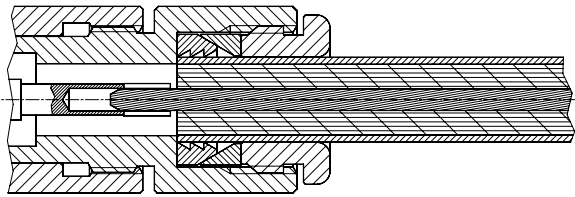
Cable entry variants

Soldered, without pin and insulator (SMA for semi-rigid cable 0.141")



Pin and insulator are formed directly by the cable. The body is soldered to the copper jacket. This design features a very low reflection coefficient, short length, low cost and ease of assembly. Recommended for connections which must not be undone frequently, moisture-sealed.

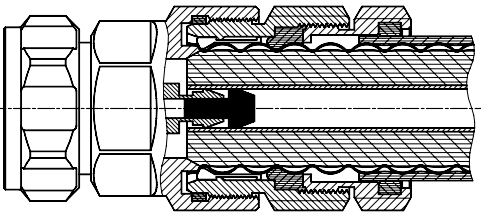
Solderless cable entry, clamp cone



Specially for assembly of large size semi-rigid cables. The copper jacket of the cable is held by a clamp cone.

Cable entry for corrugated copper tube cables

HUBER+SUHNER Quick-Fit (e.g. for 7/8" cable)



Humidity-proof cable entry for RF cables with corrugated copper tube. The cable entries support standard foam dielectric cables 1/2", 7/8", 1_1/4" and 1_5/8" and 1/4", 3/8" and 1/2" highflex Sucofeed as well as the equivalent products of Andrew, RFS, NK cables.



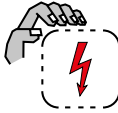



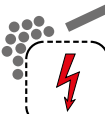
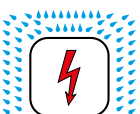
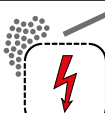





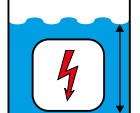
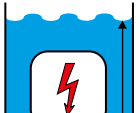
Features

- Low, stable and reproducible PIM (Passive Intermodulation Product)
- Quick and easy assembly
- Competitive pricing
- IP rating (IP68 for Quick-Fit connector types)
- Cable multi-brand compatibility

IP ratings

The IP rating system provides a means of classifying the degree of protection from dust and water afforded by electrical equipment and enclosures.


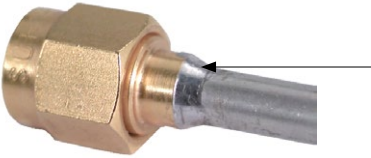
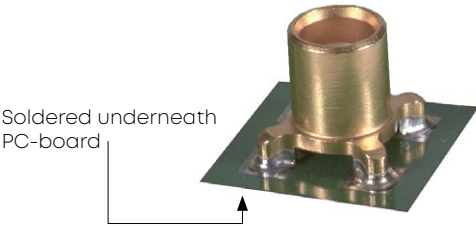
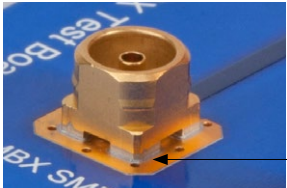
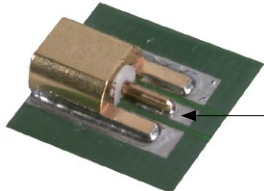
The system is recognised in most countries and is set out in a number of standards, including IEC 60529.

1st digit: protection against solid objects			2nd digit: protection against liquids		
IP x...		Description/test	IP ...y		Description/test
0		No protection	0		No protection
1		Protected against solid objects over 50 mm, e.g. accidental touch by hands	1		Protected against vertically falling drops of water
2		Protected against solid objects over 12.5 mm, e.g. fingers	2		Protected against direct sprays of water up to 15° from the vertical
3		Protected against solid objects over 2.5 mm (tools/wires)	3		Protected against sprays to 60° from the vertical
4		Protected against solid objects over 1 mm (tools/wires/small wires)	4		Protected against water sprayed from all directions – limited ingress permitted
5		Protected against dust – limited ingress (no harmful deposit)	5		Protected against low pressure jets of water from all directions – limited ingress permitted
6		No ingress of dust	6		Protected against strong jets of water, e.g. for use on shipdecks – limited ingress permitted
			7		Protected against the effects of immersion between 15 cm and 1 m
Example IP67:		No ingress of dust and protected against the effects of immersion between 15 cm and 1 m.	8		Protected against long periods of immersion under pressure

Soldering

Soldering is an important technique in the assembly of electronic products. It is the process of joining two metals by the use of a solder alloy, and it is one of the oldest known joining techniques.

Good soldering quality as a prerequisite for reliable joints can be achieved only through a soldering process in which a great many variables both with respect to materials and to techniques have been optimised in a integrated system. The various mass-soldering processes all have their own particular characteristics. They differ in the way in which the solder flux and the solder alloy are applied to the parts to be joined and in the manner by which the heat is supplied. The following information describes the soldering methods. This information should be considered as a recommendation. Depending on the specific application, it is up to the user to select the most suitable method.

Item to be soldered		Usual methods
<p>Centre conductor of coaxial cable</p>		<ul style="list-style-type: none"> • Soldering iron • Resistance heating
<p>Outer conductor of semi-rigid cable</p>		<ul style="list-style-type: none"> • Inductive (RF) • Soldering iron • Resistance heating
<p>Connector for printed circuit board through-hole version</p>	<p>Soldered underneath PC-board</p> 	<ul style="list-style-type: none"> • Wave soldering • Reflow soldering • Soldering iron
<p>Connector for printed circuit board surface-mount version</p>		<ul style="list-style-type: none"> • Reflow soldering • Soldering iron
<p>Connector with solder tab</p>		<ul style="list-style-type: none"> • Soldering iron • Reflow soldering

Soldering

Commonly used solder

Depending on components, soldering temperature etc., the following solders are used:

SnPb	63/37	183 °C lead solder
SnPb	60/40	188 °C lead solder
SnPbAg	62/36/2	179 °C lead solder
SnAgCu	96.5/3.0/0.5	217 °C leadfree solder
SnAg	96.5/3.5	221 °C leadfree solder

The higher melting temperature during leadfree soldering is critical for the cable stripping dimensions during assembly. The expansion of the cable dielectric will be larger.

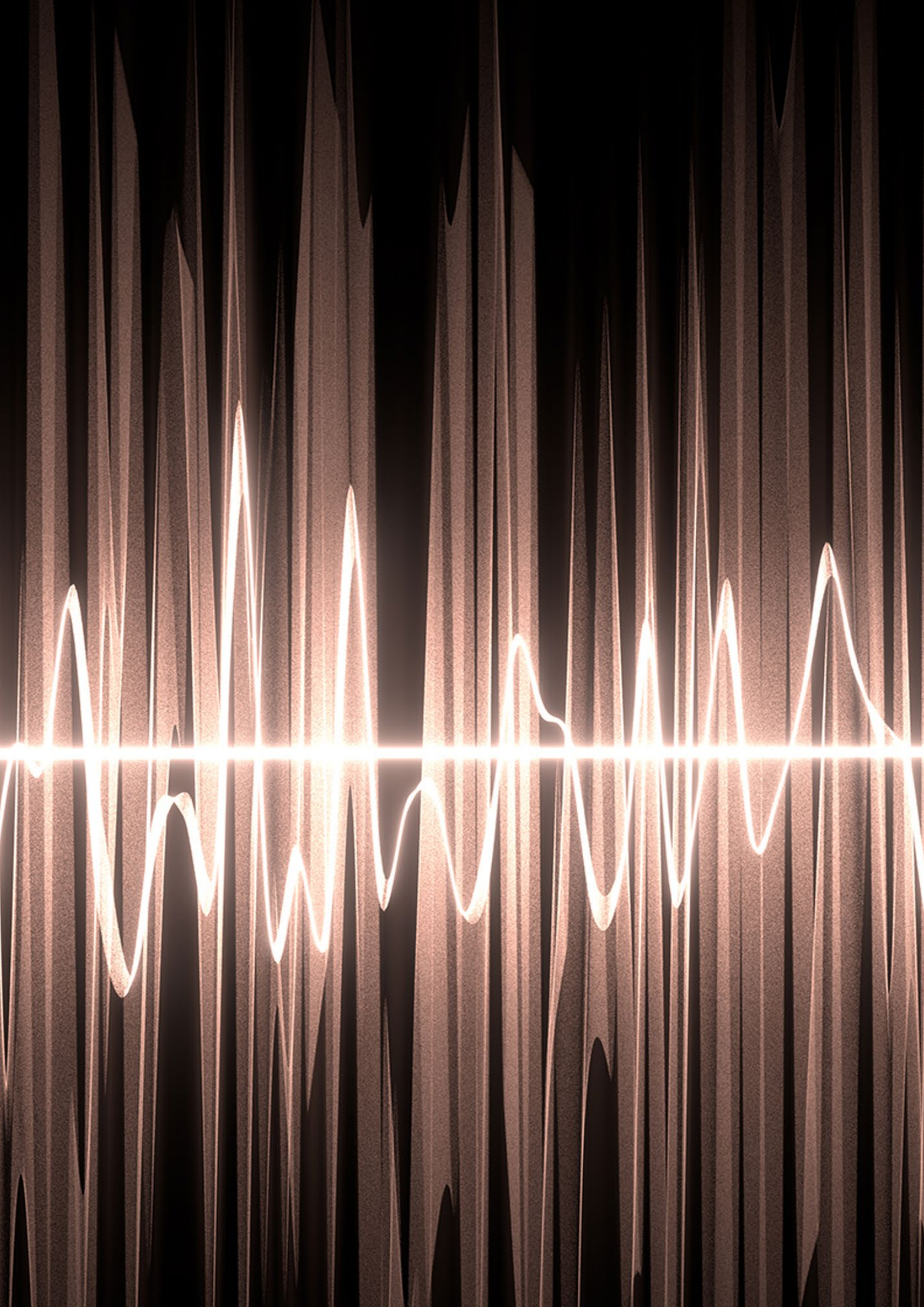
How do you judge the quality of a solder joint?

A good (reliable) solder joint will, during the lifetime of the equipment in which the joint is situated, perform its mechanical and electrical functions without failures. Visual aspects of good soldered joints are:

1. Good wetting
2. Correct amount of solder
3. Sound and smooth surface

All soldered joints on a printed board should give a uniform impression regardless of their location on the printed board. Solder should flow evenly over the surfaces to be soldered and run out thinly towards the edges of the joint. The contact angle should be well under 30° if the surfaces are sufficiently large. Good wetting of both the component and the solder land with the correct amount of solder is so important that this is the major criterion in the assessment of soldered joints. The solder should wet the entire periphery of the termination to be soldered, and from the edge of the solder land the thickness of the solder coat should increase uniformly up to the termination. Leadfree solder joints have a different appearance from their tinlead counter parts.

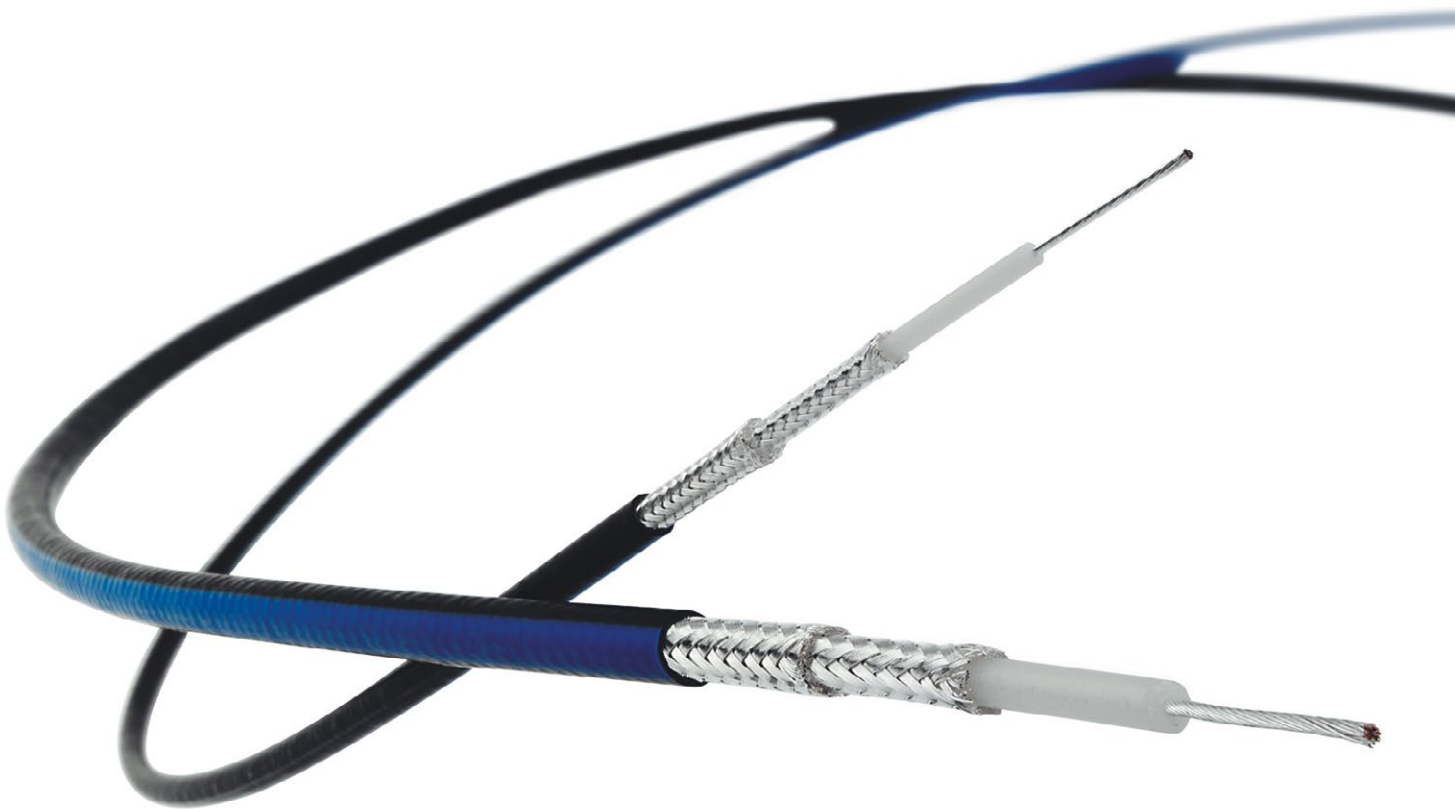
- Grainy and less bright
- Larger wetting angle



Suitable cables

The HUBER+SUHNER coaxial connector portfolio covers a wide range of different cable types, such as flexible cables, semi-rigid cables, corrugated copper tube cables, etc.

Please find hereafter the dimensions and the material of all cables (cable groups) mentioned within this paper.



Flexible RF cables

Foam line 50 Ω

Screen type	Cable group	Item	Cable type	Centre conductor		Insulation	
				Material	Ø mm	Material	Ø mm
Double screen	S9	22512310	S_02162_B	Cu	0.80	SPE	2.10
Double screen	X27	84151727	SPUMA_195	Cu	2.83	SPE	2.83
		85021562	SPUMA_195-FR-01	Cu	2.83	SPE	2.83
Double screen	X9	84026748	SX_04172_B-60	CuAg	1.40	SPE	3.83
Double screen	X28	84151737	SPUMA_240	Cu	1.42	SPE	3.81
		85021563	SPUMA_240-FR-01	Cu	1.42	SPE	3.81
Double screen	X34	85089188	SPUMA_240-RS-FR	Cu	1.42	SPE	3.81
Double screen	S16	84034611	S_04262_D-09	CuAg	1.40	SPE	3.78
Double screen	S24	84061578	S_06162_D-03	Cu	2.05	SPE	5.60
Double screen	U30	84102703	SPUMA-400	AlCu	2.74	SPE	7.24
		84132035	SPUMA-400-FR-01	AlCu	2.74	SPE	7.24
Double screen	X32	85089191	SPUMA-400-RS-FR	Cu	2.74	SPE	7.24
Multiple screen	S32	22511767	S_07262_BD	CuAg	2.85	SPE	7.35
Double screen	X31	85021564	SPUMA_500-FR-01	AlCu	3.57	SPE	9.43
Double screen	S39	23002145	S_10162_B-11	AlCu	3.78	SPE	9.75
		22512320	S_10172_B-11	AlCu	3.78	SPE	9.75
Double screen	X29	84151738	SPUMA_600	AlCu	4.44	SPE	11.56
		85240547	SPUMA_600-RS-FR				

Foam line 75 Ω

Screen type	Cable group	Item	Cable type	Centre conductor		Insulation	
				Material	Ø mm	Material	Ø mm
Double screen	X33	85022187	SPUMA_400-FR-75	Cu	1.65	SPE	7.24

List of abbreviations

AL-PES	polyester aluminium	LDPE	low-density polyethylene
Cu	plain copper wire	LSFH	low smoke free halogene
CuAg	silvered copper wire	PE	polyethylene
CuAl	aluminium wire, copper plated	PEX	polyethylene, cross linked
CuSn	copper wire, tin plated	PFA	perfluoroalcoxy
StCu	copper plated steel wire	PTFE	polytetrafluorethylene
StCuAg	silvered copper plated steel wire	PVC	polyvinylchloride
FEP	fluorethylenpropylene	RADOX®	polyolefin, flame retardent
HDPE	high-density polyethylene	SPE	foam polyethylene
HL	semiconducting layer	SPEX	foam polyethylene, cross linked

Screen		Jacket		Cable retention force *		Operating frequency range	Notes
Material	Ø mm	Material	Ø mm	N		GHz	
AL-PES(foil) CuSn(braid)	2.15 – 2.65	LSFH	3.15	56		6	
AL-PES(foil) CuSn(braid)	2.95 – 3.53	PE	4.95	129		8	
AL-PES(foil) CuSn(braid)	2.95 – 3.53	LSFH	4.95	129		8	
AL-PES(foil) CuSn(braid)	4.2 – 4.6	RADOX®	5.5	128		6	
AL-PES(foil) CuSn(braid)	3.96 – 4.52	PE	6.15	184		6	
AL-PES(foil) CuSn(braid)	3.96 – 4.52	LSFH	6.15	184		6	
AL-PES(foil) CuSn(braid)	3.96 – 4.52	TPU	6.17	184		6	
CuAg/CuAg	4.2 – 4.7	LSFH	5.70	228		6	
Cu/Cu	6.1 – 6.75	LSFH	7.90	441		6	
AL-PES(foil) CuSn(braid)	7.40 – 8.15	PE	10.25	305		8	
AL-PES(foil) CuSn(braid)	7.40 – 8.15	LSFH	10.25	305		8	
AL-PES(foil) CuSn(braid)	7.40 – 8.15	TPU	10.25	305		6	
CuAg/Cu/CuSn	8.00 – 8.10 – 9.00	LSFH	10.80	661		3	*
AL-PES(foil) CuSn(braid)	9.55 – 10.36	LSFH	12.78	317		8	
Cu(foil)/Cu(braid)	9.85 – 10.70	LSFH	12.90	317		7.5	
Cu(foil)/Cu(braid)	9.85 – 10.70	PE	12.90	317		7.5	
AL-PES(foil) CuSn(braid)	11.56 – 12.55	PE	14.99	317		6	

Screen		Jacket		Cable retention force *		Operating frequency range	Notes
Material	Ø mm	Material	Ø mm	N		GHz	
AL-PES(foil) CuSn(braid)	7.40 – 8.15	LSFH	10.25	305		3	

* Value considers maximum load of the cables without irreversible variations of specifications.

Flexible RF cables (continuing)

Performance line 50 Ω

Screen type	Cable group	Item	Cable type	Centre conductor		Insulation	
				Material	Ø mm	Material	Ø mm
Single screen	U0	22511192	K_01152-07	CuAg	0.19	PFA	0.52
Single screen	U1	22510043	RG_178_B/U	StCuAg	0.30	PTFE	0.83
		23010656	Enviroflex_178	StCuAg	0.30	SPEX	0.82
		22510049	RG_196_A/U	StCuAg	0.30	PTFE	0.83
Single screen	U2	22510079	RG_316_/U	StCuAg	0.54	PTFE	1.54
		23009565	Enviroflex_316	StCuAg	0.54	SPEX	1.54
		22510046	RG_188_A/U	StCuAg	0.54	PTFE	1.55
Double screen	U4	22510218	K_02252_D*	StCuAg	0.54	PTFE	1.54
		22512281	Enviroflex_316_D	StCuAg	0.54	SPEX	1.54
Single screen	U7	22510078	RG_303_/U	StCuAg	0.95	PTFE	2.95
Double screen	U11	22510080	RG_400_/U	CuAg	1.00	PTFE	2.95
		22512280	Enviroflex_400	CuAg	1.00	SPEX	3.03
Double screen	U9	22510037	RG_142_B/U	StCuAg	0.95	PTFE	2.95
		22512168	Enviroflex_142	CuAg	0.95	SPEX	2.95
Double screen	U33	22511430	RG_393_/U	CuAg	2.37	PFA	7.25
		22512282	Enviroflex_393	CuAg	2.46	SPEX	7.30

Performance line 75 Ω

Screen type	Cable group	Item	Cable type	Centre conductor		Insulation	
				Material	Ø mm	Material	Ø mm
Single screen	U5	22510044	RG_179_B/U	StCuAg	0.30	PTFE	1.55
		23019104	Enviroflex_179	StCuAg	0.30	SPEX	1.55
		22510045	RG_187_A/U	StCuAg	0.30	PTFE	1.55
Double screen	R8	22511469	K_02253_D-02	StCuAg	0.30	PTFE	1.55

List of abbreviations

AL-PES	polyester aluminium	LDPE	low-density polyethylene
Cu	plain copper wire	LSFH	low smoke free halogene
CuAg	silvered copper wire	PE	polyethylene
CuAl	aluminium wire, copper plated	PEX	polyethylene, cross linked
CuSn	copper wire, tin plated	PFA	perfluoroalcoxy
StCu	copper plated steel wire	PTFE	polytetrafluorethylene
StCuAg	silvered copper plated steel wire	PVC	polyvinylchloride
FEP	fluorethylenpropylene	RADOX®	polyolefin, flame retardent
HDPE	high-density polyethylene	SPE	foam polyethylene
HL	semiconducting layer	SPEX	foam polyethylene, cross linked

Screen		Jacket		Cable retention force *		Operating frequency range	Notes
Material	Ø mm	Material	Ø mm	N		GHz	
CuAg	0.90	PFA	1.25	14		1	
CuAg	1.33	FEP	1.80	33		3	
CuAg	1.35	RADOX®	1.84	33		3	
CuAg	1.33	PFA	1.83	33		1	
CuAg	2.00	FEP	2.50	54		3	
CuAg	2.05	RADOX®	2.52	54			
CuAg	2.00	PFA	2.60	54			
CuAg/CuAg	2.0 – 2.5	FEP	3.00	109		6	* equivalent cable: RD 316
CuAg/CuAg	2.0 – 2.5	RADOX®	3.16	109			
CuAg	3.60	FEP	4.3	135		1	
CuAg/CuAg	3.60 – 4.20	FEP	4.95	258		6	
CuAg/CuAg	3.60 – 4.15	RADOX®	5.10	258			
CuAg/CuAg	3.60 – 4.25	FEP	4.95	258		6	
CuAg/CuAg	3.54 – 4.20	RADOX®	5.00	258			
CuAg/CuAg	8.0 – 8.75	FEP	19.90	478		6	
CuAg/CuAg	8.0 – 8.75	RADOX®	10.05	478			

Screen		Jacket		Cable retention force *		Operating frequency range	Notes
Material	Ø mm	Material	Ø mm	N		GHz	
CuAg	2.00	FEP	2.54	54		3	
CuAg	2.13	RADOX®	2.54	54		3	
CuAg	2.00	PFA	2.65	54		1	
CuAg/CuAg	2.00 – 2.50	FEP	3.00	130		2	

* Value considers maximum load of the cables without irreversible variations of specifications.

1) Double screened with helically wrapped foil

Flexible RF cables (continuing)

Standard line 50 Ω

Screen type	Cable group	Item	Cable type	Centre conductor		Insulation	
				Material	Ø mm	Material	Ø mm
Single screen	U1	22511913	G_01132-06	Cu	0.3	PE	1.00
Single screen	U2	22510040	RG_174_/U	CuSt	0.48	PE	1.48
		22510110	G_02232-09	Cu	0.49	PE	1.50
Double screen	U4	22510112	G_02232_D	Cu	0.49	PE	1.50
		22511671	GX_02272_D-02	CuSn	0.48	PEX	1.50
Single screen	U7	22510015	RG_58_C/U	CuSn	0.90	PE	2.95
		85023726	RADOX_RF_58	CuSn	0.90	PEX	2.95
Double screen	U9	22510072	RG_223_U	CuAg	0.88	PE	2.95
		85087022	ENVIROFLEX_B223	CuAg	0.88	PEX	2.95
		22511592	GX_03272_D-06				
Single screen	U29	22510052	RG_213_/U	Cu	2.25	PE	7.25
Double screen	U42	85023730	RADOX_RF_213	Cu	2.25	PEX	7.25
Double screen	U32	22510057	RG_214_/U	CuAg	2.25	PE	7.28
		22512156	RG_214_HIFLEX	CuAg	2.25	PE	7.30
Double screen	U43	85023731	RADOX_RF_214	CuAg	2.25	PEX	7.28
Double screen	U38	22510064	RG_217_/U	Cu	2.70	PE	9.40

Standard line 75 Ω

Screen type	Cable group	Item	Cable type	Centre conductor		Insulation	
				Material	Ø mm	Material	Ø mm
Single screen	U5	22510114	G_02233-01	StCu	0.24	PE	1.50
Single screen	U6	22511581	GX_03173-01	StCu	0.42	PE	2.45
Single screen	U12	22510135	G_03233	Cu	0.48	PE	2.95
Double screen	U14	22510954	G_03213_D	Cu	0.49	PE	2.95
Single screen	U16	22510368	RG_59_B/U	StCu	0.58	PE	3.64
		85023729	RADOX_RF_59	CuSn	0.66	PEX	3.83
Double screen	U18	22610079	G_04133_D	Cu	0.58	PE	3.64
Single screen	U34	22510004	RG_11_A/U	CuSn	1.20	PE	7.25
		22510641	GX_07273	Cu			
Double screen	U36	22510365	G_07273_D	CuSn	1.20	PE	7.25

List of abbreviations

AL-PES	polyester aluminium	LDPE	low-density polyethylene
Cu	plain copper wire	LSFH	low smoke free halogene
CuAg	silvered copper wire	PE	polyethylene
CuAl	aluminium wire, copper plated	PEX	polyethylene, cross linked
CuSn	copper wire, tin plated	PFA	perfluoroalcoxy
StCu	copper plated steel wire	PTFE	polytetrafluorethylene
StCuAg	silvered copper plated steel wire	PVC	polyvinylchloride
FEP	fluorethylenpropylene	RADOX®	polyolefin, flame retardent
HDPE	high-density polyethylene	SPE	foam polyethylene
HL	semiconducting layer	SPEX	foam polyethylene, cross linked

Screen		Jacket		Cable retention force *		Operating frequency range	Notes
Material	Ø mm	Material	Ø mm	N		GHz	
CuSn	1.4	PVC	1.80	28		3	
CuSn	2.00	PVC	2.55	44		1	
Cu	2.00	PVC	2.55	59			
Cu/Cu	2.0 – 2.5	PVC	3.10	120		6	
CuSn/CuSn	2.0 – 2.5	RADOX®	3.20	120			
CuSn	3.60	PVC	4.95	129		1	
CuSn	3.60	RADOX®	5.10	129		3	
CuAg/CuAg	3.60 – 4.20	PVC	5.40	258		6	
CuAg/CuAg	3.60 – 4.20	RADOX®	5.40	258			
Cu	8.10	PVC	10.3	423		1	
CuAg	8.09	RADOX®	10.6	423		2	
CuAg/CuAg	8.0 – 8.7	PVC	10.8	478		6	
CuAg/CuAg	8.0 – 8.7	PVC	10.8	478			
CuAg/CuAg	8.0 – 8.6	RADOX®	11.1	354		6	
Cu/Cu	10.3 – 11.200	PVC	13.85	952		6	

Screen		Jacket		Cable retention force *		Operating frequency range	Notes
Material	Ø mm	Material	Ø mm	N		GHz	
Cu	2.0	PVC	2.80	59		1	
CuSn	2.90	RADOX®	3.70	120		1	
Cu	3.60	PVC	5.00	129		1	
CuSn/CuSn	3.60 – 4.20	PUR	5.35	299		2	
Cu	4.50	PVC	6.10	171		!	
CuSn	4.42	RADOX®	6.24	170			
Cu/Cu	4.40 – 5.00	PVC	6.70	399		2	
Cu	8.15/0.321	PVC	10.30	423		1	
Cu	8.0 – 8.70	PE	10.80	757		5	

* Value considers maximum load of the cables without irreversible variations of specifications.

Flexible RF cables (continuing)

Specialites: Low noise

Screen type	Cable group	Item	Cable type	Ω	Centre conductor		Insulation	
					Material	\varnothing mm	Material	\varnothing mm
Single screen	U3	22510085 22510086 22510088 22510732	G_01130_HT G_01130_HT-01 G_01130_HT-03 G_01130_HT-12	50	Cu	0.40	LDPE/HL	1.4 - 1.9
Single screen	U13	22510119 22510120 22511891	G_03130_HT G_03130_HT-01 G_03160_HG	75	Cu	0.50	LDPE/HL	3.0 - 3.4
Single screen	U18	22511337	G_04233_HT-01	75	StCu	0.58	LDPE/HL	3.64 - 4.20
Triaxial cable	X5	22510116	G_02330_HT	50	Cu	0.50	LDPE/HL	1.50 1.90
Triaxial cable	U99	22511840	G_01330_HT-23	50	Cu	0.45	LDPE/HL	1.40 1.90
Triaxial cable	U99	22511103	G_03330_HT-11	50	Cu	0.5	LDPE/HL	3.00 3.40

Specialites: Various cables

Screen type	Cable group	Item	Cable type	Ω	Centre conductor		Insulation	
					Material	\varnothing mm	Material	\varnothing mm
Symmetric screened cable	V1	22510031	RG_108_A/U	78	CuSn	2 x 0.96	PE	2.0 - 4.0
Triaxial cable	W1	22510117	G_02332	50	Cu	0.48	PE	1.50
Triaxial cable	W1	84016512	G_02312-03	50	Cu	0.49	PE	1.50
Triaxial cable	W1	23023565	G_02332-01	50	Cu	0.49	PE	1.50
Triaxial cable	W2	22510149	G_03332	50	Cu	0.93	PE	2.95
Triaxial cable	W2	22510379	G_03333	75	Cu	0.48	PE	2.95
Triaxial cable	W2	22511961	G_03362-01	50	Cu	0.9	PE	2.95

List of abbreviations

AL-PES	polyester aluminium	LDPE	low-density polyethylene
Cu	plain copper wire	LSFH	low smoke free halogene
CuAg	silvered copper wire	PE	polyethylene
CuAl	aluminium wire, copper plated	PEX	polyethylene, cross linked
CuSn	copper wire, tin plated	PFA	perfluoroalcoxy
StCu	copper plated steel wire	PTFE	polytetrafluorethylene
StCuAg	silvered copper plated steel wire	PVC	polyvinylchloride
FEP	fluorethylenepropylene	RADOX®	polyolefin, flame retardent
HDPE	high-density polyethylene	SPE	foam polyethylene
HL	semiconducting layer	SPEX	foam polyethylene, cross linked

Screen		Jacket		Cable retention force *	Operating frequency range	Notes
Material	Ø mm	Material	Ø mm	N	GHz	
Cu	2.40	PVC	3.15	54.4	1	
Cu	4.00	PVC	5.00	128.7	1	
Cu	5.00	PVC	6.10	141	1	
Cu Cu	2.40 3.85	PVC PVC	5.30	199	1	*Triax
Cu Cu	2.30 3.30	PVC PVC	4.30		1	
Cu Cu	4.00 5.75	PVC PVC	6.90		1	

Screen		Jacket		Cable retention force *	Operating frequency range	Notes
Material	Ø mm	Material	Ø mm	N	GHz	
CuSn	4.70	PVC	6.00	110.4	1	
Cu Cu	2.00 3.05	PVC PVC	2.80 4.25	130.6	1	
Cu Cu	2.00 3.05	PVC PVC	2.55 4.25		2	
Cu Cu	2.00 3.05	PVC PUR	2.55 4.25		2	
Cu Cu	3.60 5.75	PVC PVC	5.00 7.35	294.3	1	
Cu Cu	3.60 5.75	PVC PVC	5.00 7.35	294.3	1	
Cu Cu	3.60 5.60	PVC PVC	4.95 7.2		2	

* Value considers maximum load of the cables without irreversible variations of specifications.

Microwave cables and corrugated RF cables

Semi-rigid (SR), hand-formable (Sucoform) and flexible (Multiflex) microwave cables

Cable group	Item	Cable type	Ω	Centre conductor		Insulation	
				Material	\varnothing mm/inches	Material	\varnothing mm/inches
Y19	22820400	SR_34_M17	50	StCuAg	0.20/0.008	PTFE	0.66/0.026
Y15	22820504	SR_47_TP_M17	50	StCuAg	0.29/0.011	PTFE	0.94/0.037
Y2	23033515	SUCOFORM_47_CU	50	CuAg	0.31/0.012	PTFE	0.94/0.037
Y18	85006318	MULTIFLEX_53-02	50	CuAg	0.31/0.012	PTFE	0.99/0.039
Y3	22820173	SR_86_M17	50	StCuAg	0.51/0.020	PTFE	1.68/0.066
Y4	22820164	SR_86_75_TP	75	StCuAg	0.29/0.011	PTFE	1.73/0.068
Y10	22820073	SR_118_TP	50	CuAg	0.81/0.032	PTFE	2.31/0.091
Y5	22820043	SR_141_TP_M17	50	StCuAg	0.92/0.036	PTFE	2.98/0.117
Y6	22810034	SR_141_75_TP	75	StCuAg	0.51/0.020	PTFE	2.98/0.117
Y7	22820705	SR_250_TP_M17	50	CuAg	1.63/0.064	PTFE	5.31/0.209
Y16	22511613	SUCOFORM_86	50	StCuAg	0.53/0.021	PTFE	1.65/0.065
Y11	22511965	MULTIFLEX_86	50	CuAg	0.47/0.018	PTFE	1.48/0.058
Y12	22511925	SUCOFORM_141	50	StCuAg	0.94/0.037	PTFE	2.95/0.116
Y17	22511964	MULTIFLEX_141	50	CuAg	0.92/0.037	PTFE	2.93/0.115
Y14	84007938	SUCOFORM_250-01	50	CuAg	1.67/0.065	PTFE	5.24/0.209

Foam dielectric corrugated copper tube cables (SUCOFEED)

Screen type	Item	Cable group	Cable type	Ω	Centre conductor		Insulation	
					Material	\varnothing mm/inches	Material	\varnothing mm/inches
Corrugated copper tube cable	84020854	M5	SUCOFEED_1/4_HF	50	AlCu	1.90/0.074	SPE	4.40/0.173
	84020856	M7	SUCOFEED_3/8_HF	50	AlCu	2.80/0.110	SPE	6.90/0.272
	84099336	M9	SUCOFEED_1/2_HF	50	AlCu	3.60/0.142	SPE	8.70/0.343
	84099352	M12	SUCOFEED_1/2	50	AlCu	4.80/0.189	SPE	11.90/0.469
	84020852	M23	SUCOFEED_7/8	50	Cu	9.00/0.354	SPE	22.00/0.866
	84020851	M25	SUCOFEED_7/8_LA	50	Cu	9.50/0.374	SPE	22.70/0.894
	84020861	M32	SUCOFEED_1_1/4	50	Cu	13.00/0.511	SPE	32.00/1.259
	84020864	M42	SUCOFEED_1_5/8	50	Cu	17.30/0.681	SPE	42.00/1.654

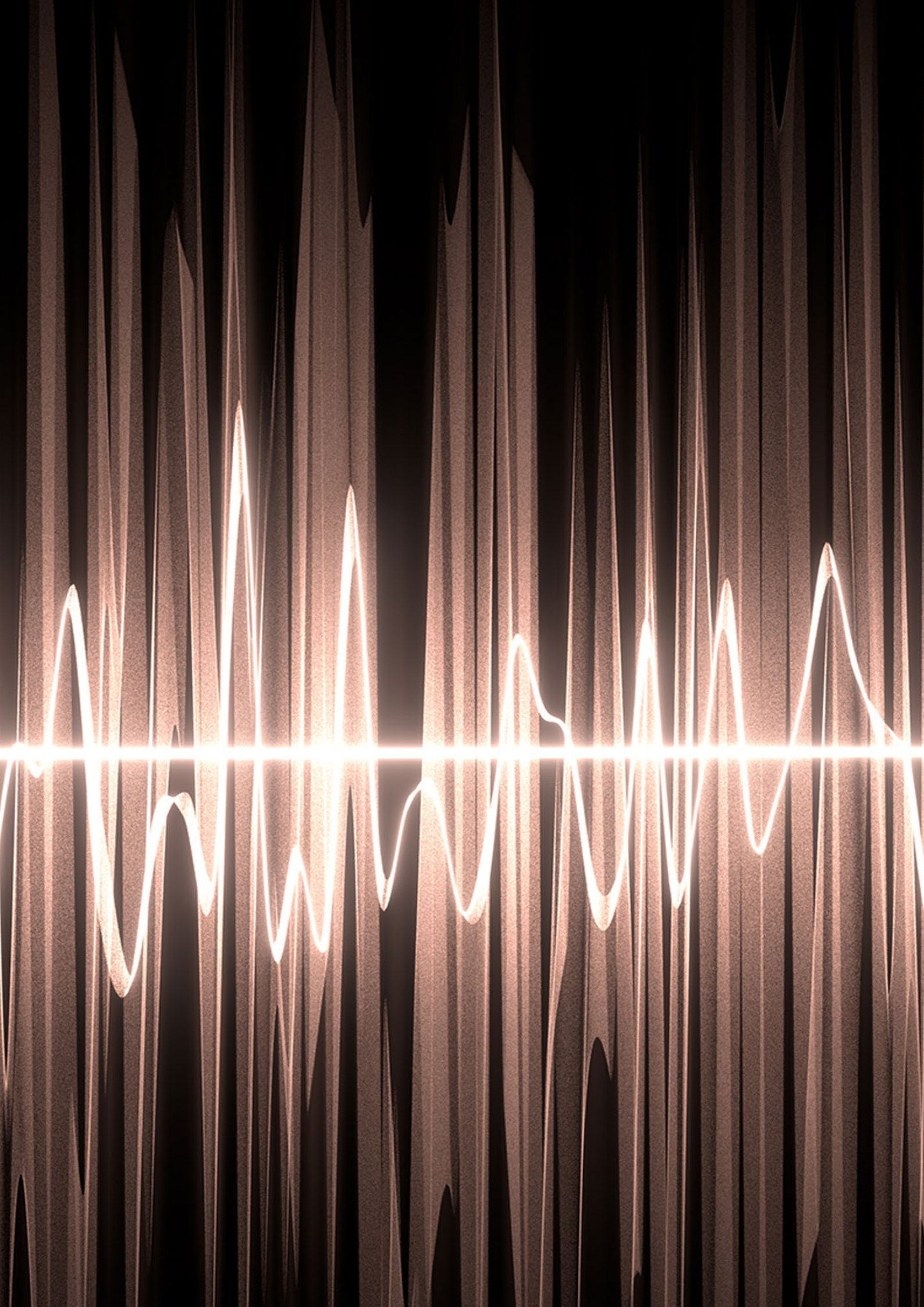
List of abbreviations

AL-PES	polyester aluminium	LDPE	low-density polyethylene
Cu	plain copper wire	LSFH	low smoke free halogene
CuAg	silvered copper wire	PE	polyethylene
CuAl	aluminium wire, copper plated	PEX	polyethylene, cross linked
CuSn	copper wire, tin plated	PFA	perfluoroalcoxy
StCu	copper plated steel wire	PTFE	polytetrafluorethylene
StCuAg	silvered copper plated steel wire	PVC	polyvinylchloride
FEP	fluorethylenepropylene	RADOX®	polyolefin, flame retardent
HDPE	high-density polyethylene	SPE	foam polyethylene
HL	semiconducting layer	SPEX	foam polyethylene, cross linked

Screen		Jacket		Cable retention force *	Notes
Material	Ø mm/inches	Material	Ø mm/inches	N	
Cu	0.86/0.034			23.9	
CuSn	1.19/0.047			41.8	
CuSn	1.19/0.047			26.1	
CuAg	1.5/0.059	FEP	1.74/0.069		available as assembly only
Cu	2.10/0.086			158.5	
CuSn	2.10/0.086			139.5	
CuSn	2.95/0.116			246.0	
CuSn	3.58/0.141			309.1	
CuSn	3.58/0.141			309.1	
CuSn	6.30/0.250			952.4	
CuSn	2.20/0.086			100.0	
CuSn	2.11/0.083	FEP	2.650/0.104	160.0	
CuSn	3.58/0.141			100.0	
CuAg	3.53/0.139	FEP	4.140/0.163	160.0	
CuSn	6.35/0.248			100.0	

Screen		Jacket		Cable retention force *	Notes
Material	Ø mm/inches	Material	Ø mm/inches	N	
Cu	6.40/0.252	LDPE	7.70/0.303	100.0	
Cu	9.50/0.374	LDPE	10.80/0.425	150.0	
Cu	12.10/0.476	LDPE	13.40/0.528	200.0	
Cu	13.70/0.539	LDPE	16.00/0.630	200.0	
Cu	24.70/0.972	LDPE	27.75/1.093	700.0	
Cu	25.40/1.000	LDPE	27.90/1.098	700.0	
Cu	35.70/1.406	HDPE	39.50/1.550	> 700.0	
Cu	46.20/1.890	HDPE	50.00/1.968	> 700.0	

* Value considers maximum load of the cables without irreversible variations of specifications.



AS12

AS12 according to MIL-C-39029/102 and /103

Description

HUBER+SUHNER size 12 contacts are RF contacts designed for installation in MIL-DTL-38999 and similar circular/sub-D connectors. The AS12 contacts are fully compatible with MIL-C-39029/102 and /103 designs but have been internally redesigned to provide exceptional RF performance from DC to 12.4 GHz.

Compatibility

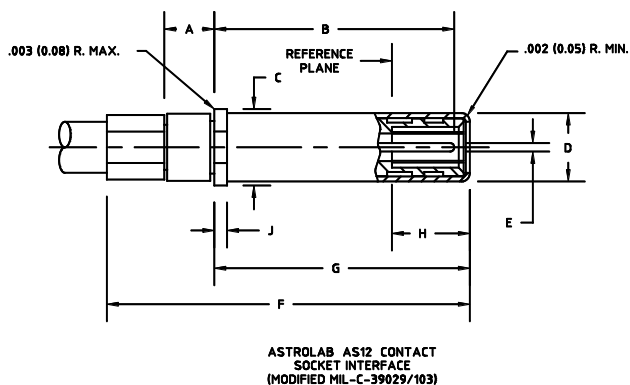
50 Ω AS12 size 12 contacts are intermateable to MIL-C-39029/102 and /103 contacts without restrictions.

Content

Description AS12 acc. to MIL-C-39029/102 and /103	43
Compatibility	43
Interface dimensions in mm/inches	43
Description AS12 acc. to MIL-C-29029/73 BIN-396, -397 and -555 and MIL-C-39029/74	44
Compatibility	44
Interface dimensions in mm/inches	44
Technical data	45
Cable connectors	47
Adapters	49

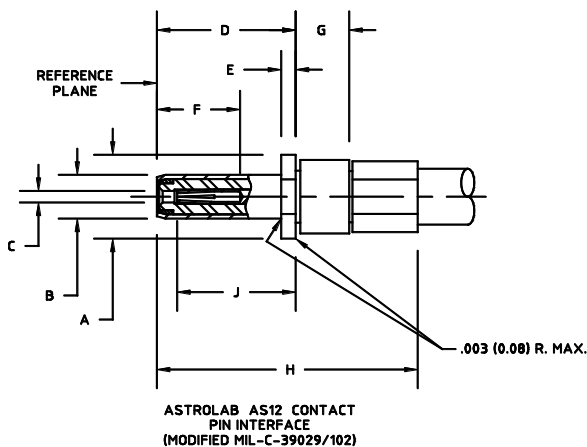
Interface dimensions (mm/inches)

Socket



	Socket		Pin	
	min.	max.	min.	max.
A	1.70/0.067	–	4.55/0.179	4.62/0.182
B	15.31/0.603	15.57/0.613	2.36/0.093	2.41/0.095
C	4.55/0.179	4.62/0.182	0.64/0.025	0.68/0.027
D	4.01/0.158	4.06/0.160	7.49/0.295	7.62/0.300
E	0.495/0.0195	0.521/0.0205	0.74/0.029	0.84/0.033
F	–	22.76/0.896	4.11/0.162	–
G	15.74/0.620	15.89/0.626	1.70/0.067	–
H	4.22/0.166	–	–	14.48/0.570
J	0.74/0.029	0.84/0.033	6.30/0.248	–

Pin



Interface dimensions conformable to the following standards:

USA: MIL-C-39029
Size 12 contact interface per MIL-C-39029/102 and /103

AS12

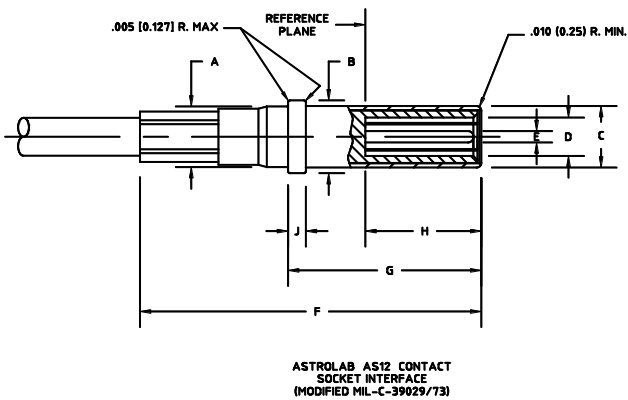
AS12 according to MIL-C-29029/73 BIN-396, -397 and -555 and MIL-C-39029/74

Compatibility

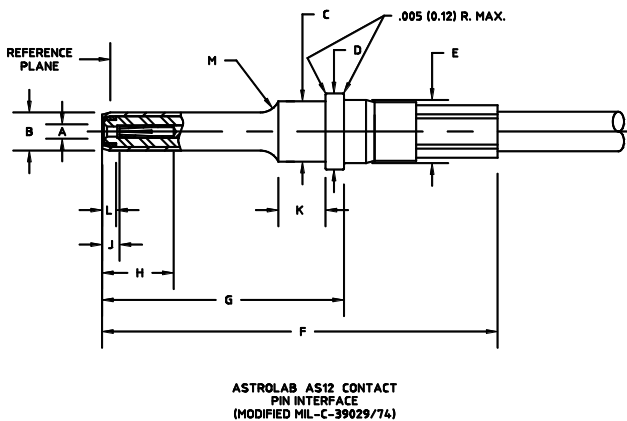
50 Ω AS12 size 12 contacts are intermateable to MIL-C-39029/102 and /103 contacts without restrictions.

Interface dimensions, inches (mm)

Socket



Pin



	Socket		Pin	
	min.	max.	min.	max.
A	3.94/0.155	4.01/0.158	0.89/0.035	–
B	4.75/0.187	4.85/0.190	2.36/0.093	2.41/0.095
C	4.01/0.158	4.09/0.161	3.76/0.148	3.84/0.151
D	2.46/0.097	2.54/0.100	4.75/0.187	4.83/0.190
E	0.71/0.028	0.749/0.295	3.94/0.155	4.01/0.158
F	see table 1	–	26.11/1.028	
G	see table 1	15.39/0.606	15.57/0.613	
H	7.62/0.300	–	7.62/0.300	–
J	1.12/0.044	1.22/0.048	0.76/0.030	1.27/0.050
K	–	–	2.92/0.115	3.05/0.120
L	–	–	–	0.76/0.030
M	–	–	1.14/0.045	1.40/0.055

Table 1

BIN Code	F	G
396, 397, 398	23.24/0.915 23.03/0.907	12.70/0.500 12.50/0.492
555	28.70/1.13 28.44/1.12	17.91/0.715 17.90/0.705

Interface dimensions conformable to the following standards:

USA: MIL-C-39029
Size 12 contact interface per MIL-C-39029/73 BIN codes 396, 397, 398 and 555, and MIL-C-39029/74

AS12 – technical data

Electrical data	Requirements
Electrical data	50 Ω
Impedance	MIL-C-39029/73 and /74: DC to 12.4 GHz MIL-C-39029/102 and /103: DC to 2 GHz
Frequency range	center conductor 6.0 milliohms max. outer conductor 2.0 milliohms max.
Contact resistance	500 Vrms at sea level
DWV	5 000 megaohms min.
Insulation resistance	125 Vrms at 70 000 ft
Corona levels	325 Vrms at 5 MHz
RF high potential	80 dB max. at 2 GHz 60 dB max. at 2 to 12.4 GHz
RF leakage	< 2 Mu
Magnetic permeability	MIL-C-39029/73 and /74: 1.35:1 to 12.4 GHz
VSWR	MIL-C-39029/102 and /103: 1.25:1 to 2 GHz
Insertion loss	0.09 + 0.08 \sqrt{f} in GHz

Mechanical data	Requirements
Durability	500 cycles min.
Force to engage	AS12 pin: 20 oz (5.560 N) max. AS12 socket: 36 oz (10.008 N) max.
Force to disengage	AS12 pin: 0.4 oz (0.111 N) min. AS12 socket: 2.5 oz (0.695 N) min.

Environmental data	Requirements
Temperature range	-55 to +125 °C
Thermal shock	MIL-STD-202, method 107, condition B
Moisture resistance	MIL-STD-202, method 106
Corrosion	MIL-STD-202, method 101, condition B
Sine vibration	MIL-STD-202, method 204, condition D
Random vibration	MIL-STD-202, method 214, condition K-I, 46.3 g
Shock	MIL-STD-202, method 213, condition I

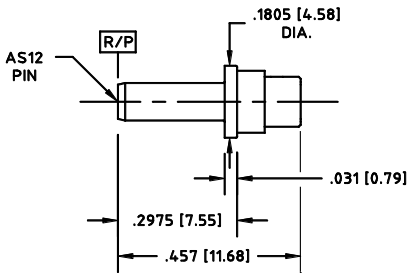
AS12 – technical data

Material data		
Cable connectors	Material	Plating
Body	brass per ASTM B-16 or beryllium copper per ASTM B-196	gold plate per ASTM B-488, code C, type II over nickel plate per SAE-AMS-QQ-N-290, type 1
Contact	beryllium copper per ASTM B-196	gold plate per ASTM B-488, code C, type II over nickel plate per SAE-AMS-QQ-N-290, type 1
Dielectric	PTFE per ASTM D-1710, type I, grade 1	–
Ferrule	brass per ASTM B-135	gold plate per ASTM B-488, code C, type II over nickel plate per SAE-AMS-QQ-N-290, type 1
Adapters	Material	Plating
Body	brass per ASTM B-16	gold plate per ASTM B-488, code C, type II over nickel plate per SAE-AMS-QQ-N-290, type 1
	#303 SS per ASTM A- 582	passivated per SAE-AMS-2700
Nut	#303 SS per ASTM A- 582	passivated per SAE-AMS-2700
Contact	beryllium copper per ASTM B-196	gold plate per ASTM B-488, code C, type II over nickel plate per SAE-AMS-QQ-N-290, type 1
Dielectric	PTFE per ASTM D-1710, type I, grade 1 and Noryl® PPO modified polyphenylene oxide resin	–
Retaining ring	beryllium copper per ASTM B-197	–
Gasket	silicone rubber per SAE-AMS-3304	–

Performance listed is typical. Individual part configuration may vary. Contact HUBER+SUHNER for more information and specifications by part number. Customer specific factors pertaining to recommended mounting patterns including transmission line topology, substrate thickness and material, board-stackup, operating frequency, etc. must be submitted to HUBER+SUHNER for analysis prior to release of final performance levels and mounting configurations.

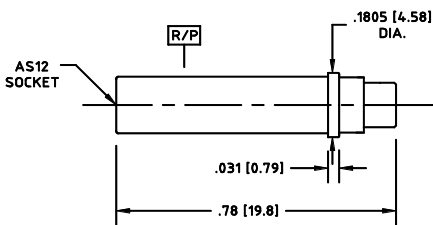
AS12 – cable connectors

AS12 pin contact (MIL-C-39029/102)



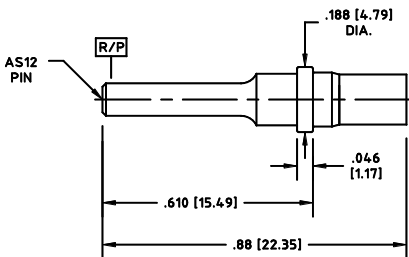
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging
29930-2	85176526	Y3, Y16, Y11 (0.086 in. (2.18 mm))	single

AS12 socket contact (MIL-C-39029/103)



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging
29931-2	80368775	Y3, Y16, Y11 (0.086 in. (2.18 mm))	single

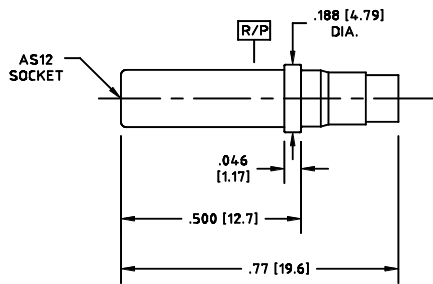
AS12 pin contact (MIL-C-39029/74)



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging
29933-2	85116427	Y3, Y16, Y11 (0.086 in. (2.18 mm))	single

AS12 – cable connectors

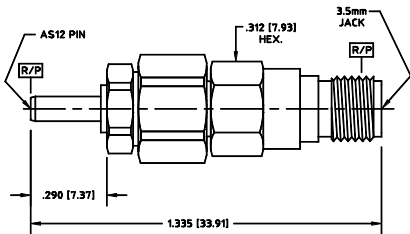
AS12 socket contact (MIL-C-39029/73)



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging
29934-2	85116469	Y3, Y16, Y11 (0.086 in. (2.18 mm))	single

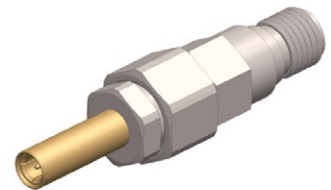
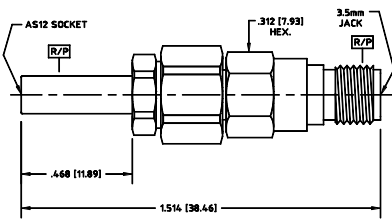
AS12 – adapters

AS12 pin contact (MIL-C-39029/102) – 3.5 mm jack



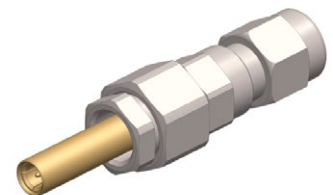
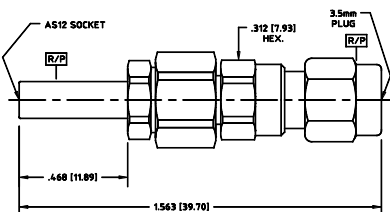
HUBER+SUHNER type	Item no.	Packaging
29932-1	80320105	single

AS12 socket contact (MIL-C-39029/103) – 3.5 mm jack



HUBER+SUHNER type	Item no.	Packaging
29932-2	80320106	single

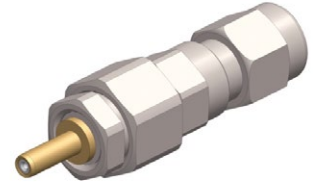
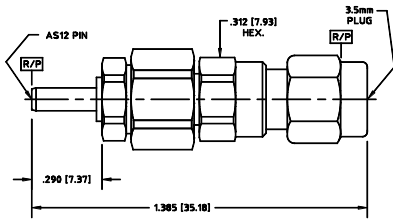
AS12 socket contact (MIL-C-39029/103) – 3.5 mm plug



HUBER+SUHNER type	Item no.	Packaging
29932-3	80360204	single

AS12 – adapters

AS12 pin contact (MIL-C-39029/102) – 3.5 mm plug



HUBER+SUHNER type	Item no.	Packaging
29932-4	80360205	single

AS16

Description

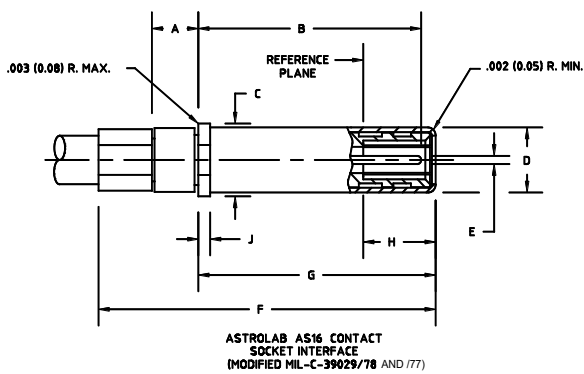
HUBER+SUHNER size 16 contacts are RF contacts designed for installation in MIL-DTL-38999 and similar circular/sub-D connectors. The AS16 contacts are fully compatible with MIL-C-39029/102 and /103 designs but have been internally redesigned to provide exceptional RF performance from DC to 2 GHz. The AS16 contact is a smaller diameter RF blind mate solution than the AS12 interface.

Compatibility

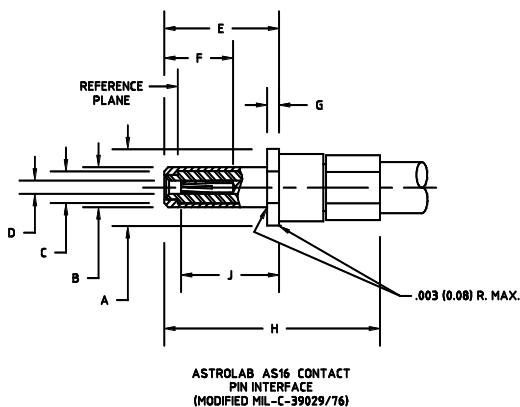
50 Ω AS16 size 16 contacts are intermateable to MIL-C-39029/76, /77 and /78 contacts without restrictions.

Interface dimensions (mm/inches)

Socket



Pin



Content

Description	51
Compatibility	51
Interface dimensions in mm/inches	51
Technical data	52
PCB mount connectors	54
Adapters	55

	Socket		Pin	
	min.	max.	min.	max.
A	1.60/0.063	–	3.23/0.127	3.30/0.130
B	see table 1	1.562/0.0615	1.613/0.0635	
C	3.23/0.127	3.30/0.130	0.97/0.038	1.04/0.041
D	–	2.87/0.113	0.46/0.018	0.56/0.022
E	0.368/0.0145	0.394/0.0155	7.49/0.295	7.62/0.300
F	see table 1	4.22/0.166	–	
G	see table 1	0.74/0.029	0.84/0.033	
H	4.22/0.166	–	–	14.48/0.570
J	0.74/0.029	0.84/0.033	6.65/0.262	–

Table 1

	Socket			
	MIL-C-39029/78		MIL-C-39029/77	
	min.	max.	min.	max.
B	6.71/0.264	6.95/0.274	15.27/0.601	15.52/0.611
F	–	14.22/0.560	–	22.76/0.896
G	7.09/0.279	7.34/0.289	15.75/0.620	15.90/0.626

Interface dimensions conformable to the following standards:

USA: MIL-C-39029/76, /77, /78

AS16 – technical data

Electrical data	Requirements
Impedance	50 Ω
Frequency range	DC to 2 GHz
Contact resistance	center conductor 6.0 milliohms max. outer conductor 2.0 milliohms max.
DWV	375 Vrms at sea level
Insulation resistance	5000 megohms min.
Corona levels	90 Vrms at 70 000 ft
RF high potential	190 Vrms at 5 MHz
RF leakage	80 dB max. at 2 GHz
Magnetic permeability	< 2 μ
VSWR	1.2:1 to 2 GHz
Insertion loss	0.09 + 0.08 \sqrt{f} in GHz

Mechanical data	Requirements
Durability	500 cycles min.
Force to engage	AS16 pin: 14 oz (3.892 N) max. AS16 socket: 36 oz (10.008 N) max.
Force to disengage	AS16 pin: 0.4 oz (0.111 N) min. AS16 socket: 1.5 oz (0.417 N) min.

Environmental data	Requirements
Temperature range	-55 to +125 °C
Thermal shock	MIL-STD-202, method 107, condition B
Moisture resistance	MIL-STD-202, method 106
Corrosion	MIL-STD-202, method 101, condition B
Sine vibration	MIL-STD-202, method 204, condition D
Random vibration	MIL-STD-202, method 214, condition K-I, 46.3 g
Shock	MIL-STD-202, method 213, condition I

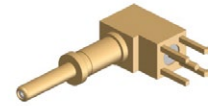
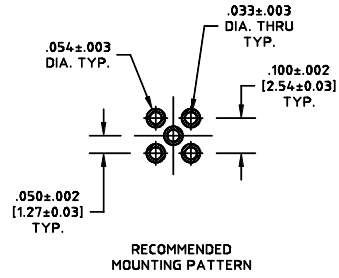
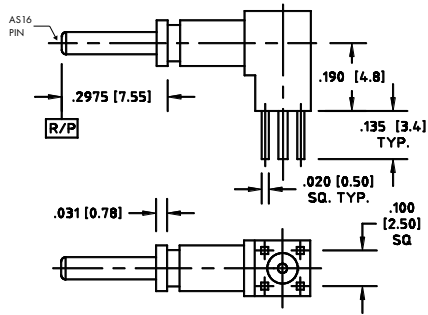
AS16 – technical data

Material data		
Cable and PCB connectors	Material	Plating
Body and contact	beryllium copper per ASTM B-196	gold plate per ASTM B-488, code C, type II over nickel plate per SAE-AMS-QQ-N-290, type 1
Dielectric	PTFE per ASTM D-1710, type I, grade 1	–
Ferrule	brass per ASTM B-135	gold plate per ASTM B-488, code C, type II over nickel plate per SAE-AMS-QQ-N-290, type 1
Adapters	Material	Plating
Body	#303 SS per ASTM A- 582	gold plate per ASTM B-488, code C, type II over nickel plate per SAE-AMS-QQ-N-290, type 1 or passivated per SAE-AMS-2700
Sheath	#303 SS per ASTM A- 582	passivated per SAE-AMS-2700
Contact	beryllium copper per ASTM B-196	gold plate per ASTM B-488, code C, type II over nickel plate per SAE-AMS-QQ-N-290, type 1
Dielectric	PTFE per ASTM D-1710, type I, grade 1	–

Performance listed is typical. Individual part configuration may vary. Contact HUBER+SUHNER for more information and specifications by part number. Customer specific factors pertaining to recommended mounting patterns including transmission line topology, substrate thickness and material, board-stackup, operating frequency, etc. must be submitted to HUBER+SUHNER for analysis prior to release of final performance levels and mounting configurations.

AS16 – PCB mount connectors

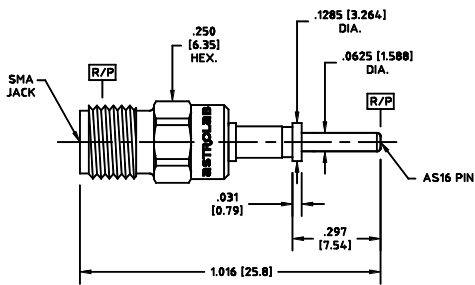
AS16 pin contact (MIL-C-39029/76)



HUBER+SUHNER type	Item no.	Packaging
29556A-BM1	80318446	single

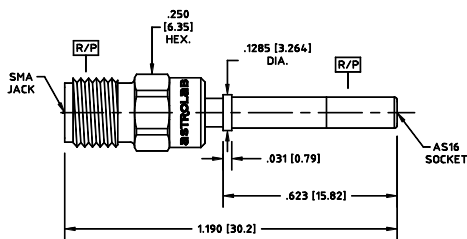
AS16 – adapters

AS16 pin contact (MIL-C-39029/76) – SMA jack

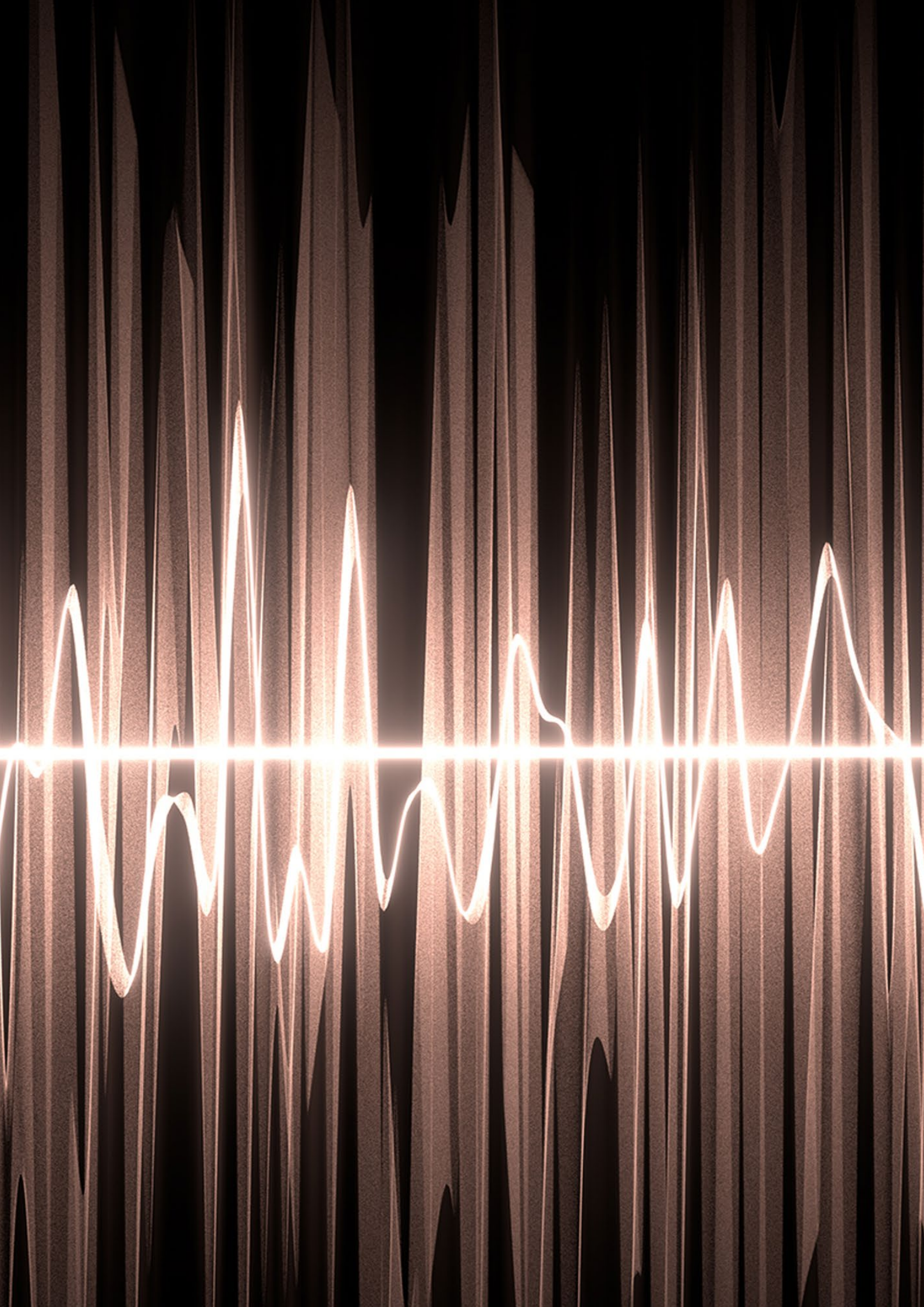


HUBER+SUHNER type	Item no.	Packaging
29557-4	80318451	single

AS16 socket contact (MIL-C-39029/77) – SMA jack



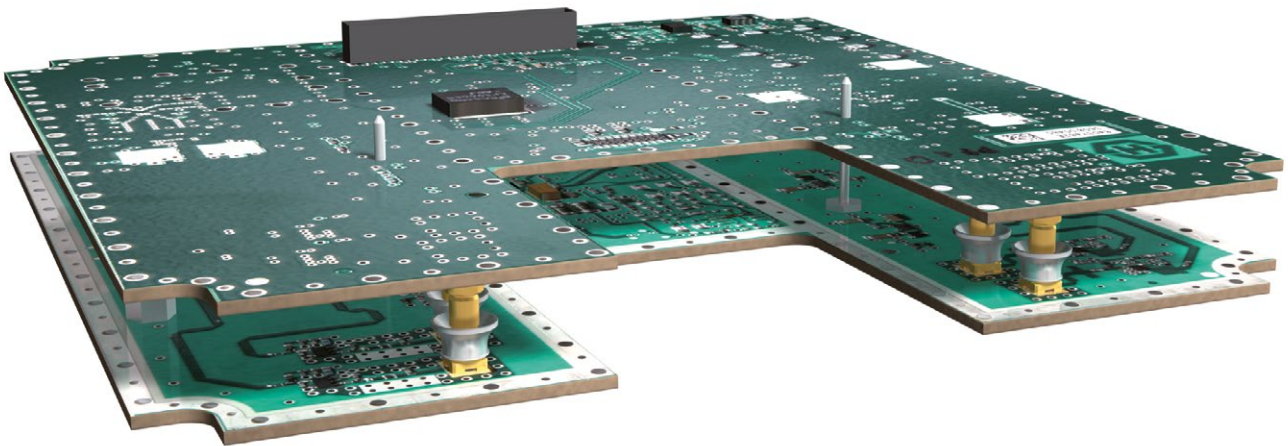
HUBER+SUHNER type	Item no.	Packaging
29557-5	80318453	single



Board-to-board

Content

Series MBX	59
Series MFBX	69
Series MMBX	75



Benefits

Lower total cost of ownership (TCO)

Total Cost of Ownership (TCO) is reduced thanks to the infinite number of design options made possible by the high tolerance compensation between boards (**axial float ± 1.2 mm**) that hold excellent electrical values.

Excellent Radio Frequency (RF) performance

Achieve maximum performance and **excellent return loss (RL)** rates at higher frequencies. The high power handling (**260W**) allows to transmit high power in compact modules.

Save space

Small **board-to-board solutions (6.7mm)** save space, which enable smaller radio designs with less weight.

Easy to use and reliable connection

Save time during the assembly process with our **blind mateable** feature, which ensures a safe, **reliable and secure connection** between connectors without needing to see the physical connection made.

Automated assembly process

Many of our parts are produced from our **automated assembly** plant using innovative production technologies like robotic assembly, stamp-bending and injection molding that allow for **high-quality** product produced in high quantities in very little time.

Customisable:

The board-to-board solutions can be tailored to meet your specific needs.

One product family covering all board-to-board applications

MBX



- Very high axial float – best in class
- High output power
- Excellent return loss values
- Blind mateable

MBX 2nd generation



- Very high axial float – best in class
- Excellent return loss values
- Blind mateable

MFBX



- High axial float
- Very good shielding
- Blind mateable
- High volume production processes
- Price/Performance optimized

MFBX Evo



- High axial float
- Excellent return loss values
- Very good shielding
- Blind mateable
- High volume production process
- Cost optimized

MMBX



- Smallest board-to-board distance
- Very high frequencies
- Very good return loss values
- Blind mateable

Characteristics	MBX and MBX ^{2nd}	MFBX and MFBX Evo	MMBX
Frequency	DC to 6 GHz	DC to 6 GHz	DC to 12.4 GHz
Axial float (misalignment)	± 1.2 mm	± 0.8 mm	± 0.3 mm
Radial float (misalignment)	± 0.6 mm (at 13 mm board-to-board distance) ± 1.0 mm (≥ 18 mm board-to-board distance)	± 0.8 mm	± 0.4 mm (at 6.7 mm board-to-board distance)
Min. board-to-board distance	13 mm ± 1.2 mm	MFBX: 13 mm ± 0.8 mm MFBX Evo: 23.4mm ± 0.8 mm	6.7 mm ± 0.3 mm
Power at room temperature, at 2.4 GHz ⁽¹⁾	typical 260W (MBX) typical 240W (MBX 2 nd)	typical 200W (machined adapter) typical 150W (stamp and bending adapter)	typical 200 W
Key features	• Very high float • High RF power	• High float • Cost optimized	• Small b-t-b distances • High frequencies
Use for Applications with	Very high axial misalignment and high performance (return loss, power)	Very high quantities and high axial misalignment	small board-to-board distance and high frequencies (RF performance)

Note (1): Admissible power varies depending on the specific application, cooling device, boundary conditions and environment.

Series MBX – miniature board connectors

Description

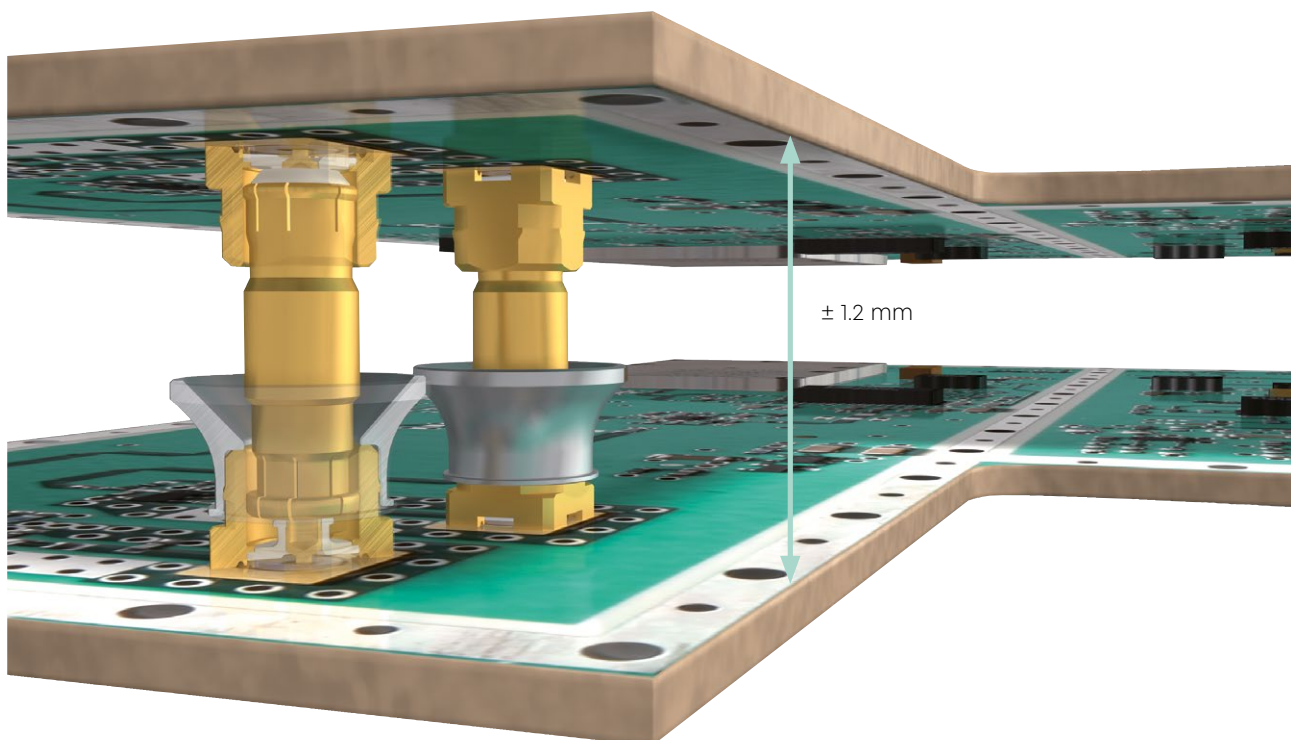
HUBER+SUHNER MBX and MBX 2nd generation connectors are especially developed for board-to-board and board-to-module RF interconnections. The mechanical design is outstanding, allowing the MBX to cope with mechanical misalignment in radial and axial directions and still hold an excellent electrical performance.

MBX fulfils higher requirements with best in class axial misalignment of ± 1.2 mm. MBX is the answer to higher integration and miniaturisation. It is the perfect solution for multiple connections from board-to-board/board-to-module and complex stack-ups in radio module applications.

Content

Description	59
Design guideline	60
Technical data	61
PCB connectors	63
Adapters within series	65
Cable connectors	65
Receptacles with solder end	67
Assembly and disassembly tool	67

Characteristics	MBX and MBX ^{2nd}
Frequency	DC to 6 GHz
Axial float (misalignment)	± 1.2 mm
Radial float (misalignment)	± 0.6 mm (at 13 mm board-to-board distance) ± 1.0 mm (≥ 18 mm board-to-board distance)
Min. board-to-board distance	13 mm
Min. panel-to-board distance	< 13 mm depending on connector
Min. panel-to-panel distance	< 13 mm depending on connector
Power at room temperature, at 2.4 GHz ⁽¹⁾	typical 260 W (MBX) typical 240 W (MBX ^{2nd})



Note (1): Admissible power varies depending on the specific application, cooling device, boundary conditions and environment.

Series MBX – design guideline

Working range (axial and radial)

In mated condition, the two PCB connector have to be aligned within the dimension given for the axial and radial working range.

The axial working range is ± 1.2 mm, the radial working range is ± 1.0 mm.

In contradiction to the MMBX interface, the tilt of the adapter is limited with MBX. The great advantage of this feature is that there is a constant connecting range/radial working range for all adapter lengths and thus the same funnel (pull-in range) can be used.

Connecting range

The two PCB connector have to be aligned within the dimension given for connecting range. The connecting range is ± 1.0 mm and is equivalent to the max. allowed misalignment between two PCB boards when mating.

In order to guarantee a blind mateable connection, the tilted adapter will be guided by the funnel of the opposite connector.

Recommendation

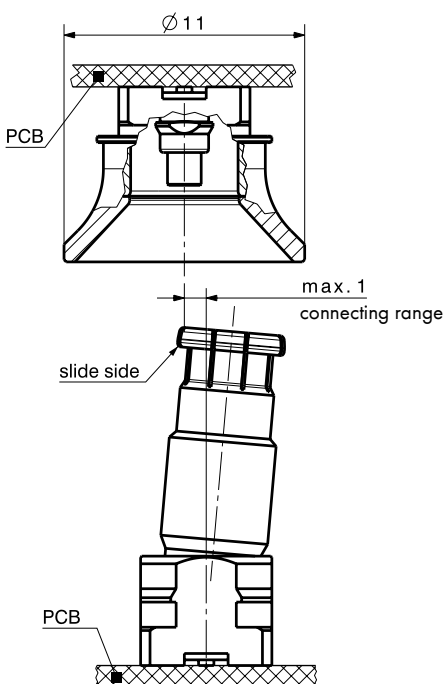
HUBER+SUHNER recommends using guiding pins to align the boards within the connecting range and working range. Distance holders to maintain the axial misalignment within working range are also of benefit.

HUBER+SUHNER provides outline drawings for every application with the relevant mechanical dimensions that need to be considered when designing-in MBX. 3D STEP files are available on www.hubersuhner.com.

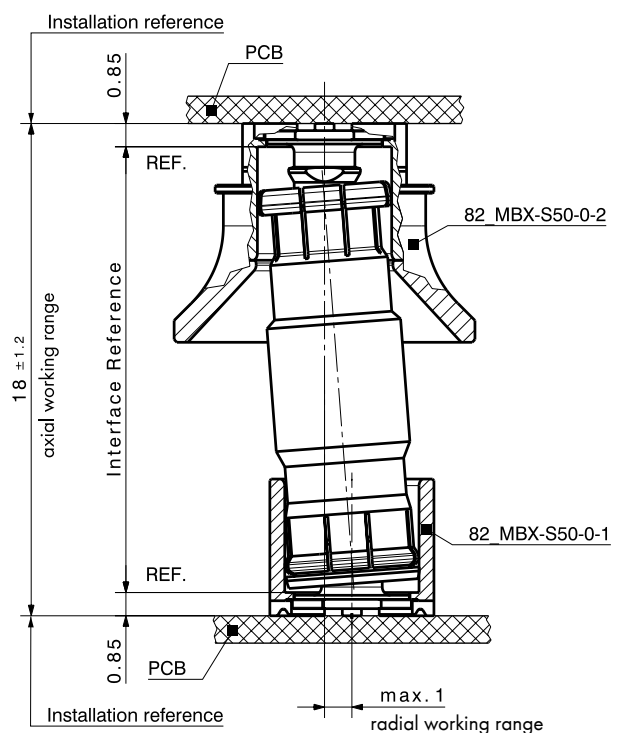
MBX 2nd generation

An alternative, cost effective and reliable solution are the 2nd generation MBX connectors. By keeping best in class mechanical characteristics like working and connecting range these connectors are designed to meet today's requirements within the communication industry. Standard MBX and 2nd generation MBX are intermateable.

Connecting range



Working range



Series MBX – technical data

MBX PCB connectors – board-to-board/adapters within series

Electrical data	MBX	MBX 2 nd		
Impedance	50 Ω			
Frequency range	DC to 6 GHz			
Dielectric withstanding voltage (at sea level)	1 kV rms, 50 Hz			
Working voltage (at sea level)	≤ 330 V rms, 50 Hz			
Insulation resistance	≥ 1 GΩ			
Contact resistance · Centre contact · Outer contact	≤ 5 mΩ ≤ 2.5 mΩ	≤ 5 mΩ ≤ 5 mΩ		
Return loss/VSWR	typical values for a board-to-board connection (measured on a board)			
	axial misalignment	DC to 2.5 GHz	2.5 to 4 GHz	4 to 6 GHz
	± 1.2 mm	22 dB/1.17	19 dB/1.25	15 dB/1.43
	± 0.8 mm	23 dB/1.15	20 dB/1.22	16 dB/1.38
	± 0.4 mm	26 dB/1.11	21 dB/1.20	18 dB/1.29
RF-leakage (interface only)	≥ 70 dB (DC to 6 GHz)			
Power (room temperature)	typical 260 W at 2.4 GHz		typical 240 W at 2.4 GHz	

Mechanical data	MBX	MBX 2 nd		
Engagement force (slide-side)	≤ 15 N/3.4 lbs			
Disengagement force (slide-side)	≤ 15 N/3.4 lbs			
Durability (matings)	100	50		
Axial float (misalignment)	± 1.2 mm			
Radial float (misalignment)	depending on the adapter ± 0.6 mm (at 13 mm board-to-board distance) ± 1.0 mm (≥ 18 mm board-to-board distance)			

Environmental data	MBX	MBX 2 nd		
Temperature range	-55 to +155 °C/-67 to +311 °F			
Climatic category	55/155/10			
Thermal shock	MIL-STD-202, method 107 G, condition B1			
Moisture resistance	MIL-STD-202, method 106 F			
Vibration	MIL-STD-202, method 204 D, condition A			
Mechanical shock	MIL-STD-202, method 213 B, condition B			
Corrosion	MIL-STD-202, method 101, condition B			-

Processing data	MBX	MBX 2 nd		
Adherent to the print · Shearing · Pulling (vertical to PCB)	≥ 150 N/33.7 lbs ≥ 150 N/33.7 lbs			

Material data		
Connector parts	Material	Plating
Centre contact	brass/bronze/copper-beryllium alloy	SUCOPRO® gold plating
Outer contact	brass/bronze	SUCOPRO® gold plating/SUCOPLATE®
Body	brass	SUCOPRO® gold plating/SUCOPLATE®
Insulators	LCP/PTFE/PFA	
Funnel	brass/PA	SUCOPLATE® /-

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Series MBX – technical data

MBX cable connectors

Electrical data	Requirements
Impedance	50 Ω
Frequency range	DC to 6 GHz
Dielectric withstanding voltage (at sea level)	750 V rms, 50 Hz
Working voltage (at sea level)	250 V rms, 50 Hz
Insulation resistance	$\geq 1 \text{ G}\Omega$
Contact resistance Centre contact Outer contact	$\leq 5 \text{ m}\Omega$ $\leq 2.5 \text{ m}\Omega$
Return loss/VSWR (typical values)	$\geq 30 \text{ dB}/1.07$ (DC to 2.5 GHz) $\geq 25 \text{ dB}/1.12$ (2.5 – 6 GHz)

Mechanical data	Requirements
Engagement force	max. 30 N/max. 6.7 lbs
Disengagement force	8 to 30 N/1.8 to 6.7 lbs
Durability (matings)	100

Environmental data	Test conditions
Temperature range	-55 to $+155^\circ\text{C}/-67$ to $+311^\circ\text{F}$
Climatic category	55/155/10
Thermal shock	MIL-STD-202, method 107 G, condition A1
Moisture resistance	MIL-STD-202, method 106 F
Corrosion	MIL-STD-202, method 101, condition B
Vibration	MIL-STD-202, method 204 D, condition A
Mechanical shock	MIL-STD-202, method 213 B, condition B

Material data		
Connector parts	Material	Plating
Centre contact	brass/bronze/copper-beryllium alloy	SUCOPRO® gold plating
Outer contact	bronze/copper-beryllium alloy	SUCOPRO® gold plating
Body	brass	SUCOPRO® gold plating/SUCOPLATE®
Crimp ferrules	copper	gold/SUCOPLATE®
Insulators	LCP/PTFE/PFA	

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Series MBX – PCB connectors

Straight PCB jacks (female)

Surface mount type SMT

- MBX

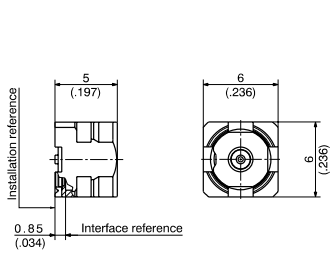


Fig. 1

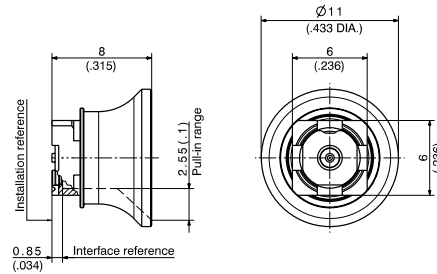


Fig. 2



HUBER+SUHNER type	Item no.	Packaging	Soldering pad	Fig.
82_MBX-S50-0-1/111_NE 82_MBX-S50-0-1/111_NH 82_MBX-S50-0-1/111_NM	84104680 84094199 84094200	single bulk 100 pcs. tape and reel	ML 173	1
82_MBX-S50-0-2/113_NE 82_MBX-S50-0-2/113_NH 82_MBX-S50-0-2/113_NM	84104681 84094287 84094288	single bulk 100 pcs. tape and reel		2

Surface mount type SMT

- MBX 2nd generation

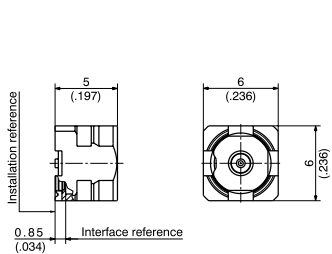


Fig. 1

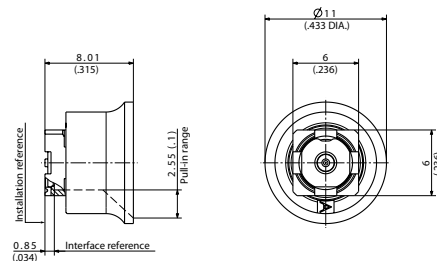


Fig. 2



HUBER+SUHNER type	Item no.	Packaging	Soldering pad	Fig.
82_MBX-S50-0-23/111_NE 82_MBX-S50-0-23/111_NH 82_MBX-S50-0-23/111_NM	85018772 85018773 85015265	single bulk 100 pcs. tape and reel	ML 173	1
82_MBX-S50-0-24/111_NE 82_MBX-S50-0-24/111_NH 82_MBX-S50-0-24/111_NM	85018775 85018776 85018774	single bulk 100 pcs. tape and reel		2

Series MBX – PCB connectors

Straight PCB jacks (female)

Through hole type THT

- MBX

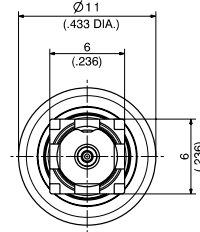
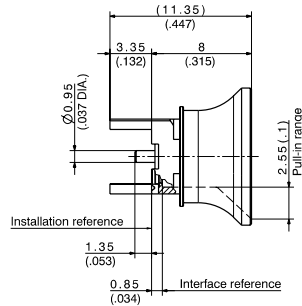
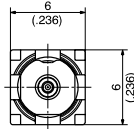
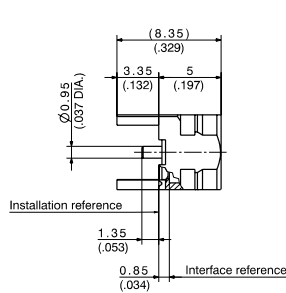


Fig. 1

Fig. 2

HUBER+SUHNER type	Item no.	Packaging	Soldering pad	Fig.
82_MBX-50-0-3/111_NE	84104683	single bulk 100 pcs. tape and reel	ML 174	1
82_MBX-50-0-3/111_NH	84094366			
82_MBX-50-0-3/111_NM	84094369			
82_MBX-50-0-4/113_NE	84104684	single bulk 100 pcs. tape and reel		2
82_MBX-50-0-4/113_NH	84094405			
82_MBX-50-0-4/113_NM	84094406			

Through hole type THT

- MBX 2nd generation

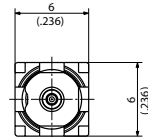
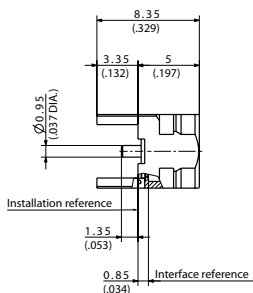


Fig. 1

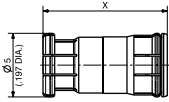
HUBER+SUHNER type	Item no.	Packaging	Soldering pad	Fig.
82_MBX-50-0-28/111_NE	85018976	single bulk 100 pcs. tape and reel	ML 174	1
82_MBX-50-0-28/111_NH	85018972			
82_MBX-50-0-28/111_NM	85018970			

Series MBX – adapters within series

Straight adapters

Plug to plug (male)

- MBX



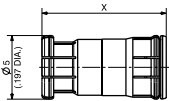
Black insulator: slide-side
White insulator: snap-side

HUBER+SUHNER type	Item no.	Packaging	Board-to-board distance	Adapter length X
32_MBX-50-0-1/111_NE 32_MBX-50-0-1/111_NH	84104690 84142599	single bulk 100 pcs.	13 mm/0.512 in.	9.7 mm/0.382 in.
32_MBX-50-0-2/111_NE 32_MBX-50-0-2/111_NH	84104691 84094285	single bulk 100 pcs.	18 mm/0.709 in.	14.7 mm/0.579 in.
32_MBX-50-0-3/111_NE 32_MBX-50-0-3/111_NH	84104692 84094387	single bulk 100 pcs.	28 mm/1.102 in.	24.6 mm/0.969 in.

Adapters with other lengths available upon request.

Plug to plug (male)

- MBX 2nd generation



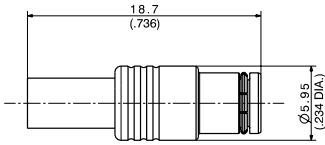
Black insulator: slide-side
White insulator: snap-side

HUBER+SUHNER type	Item no.	Packaging	Board-to-board distance	Adapter length X
32_MBX-50-0-1/133_NE 32_MBX-50-0-1/133_NH	85001197 85001201	single bulk 100 pcs.	13 mm/0.512 in.	9.7 mm/0.382 in..
32_MBX-50-0-2/133_NE	85001211	single	18 mm/0.709 in.	14.7 mm/0.579 in.

Adapters with other lengths available upon request.

Series MBX – cable connectors

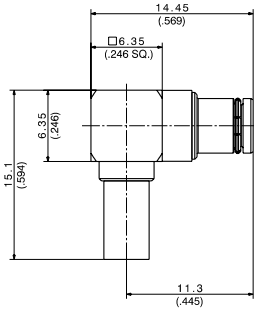
Straight cable plugs (male)



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
11_MBX-50-2-1/113_NE	84104694	U4 (ENVIROFLEX_316_D)	single	0000333519
11_MBX-50-2-1/113_NH	84093696		bulk 100 pcs.	

Right angle cable plugs (male)

Through hole type THT



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
16_MBX-50-2-1/113_NE	84104696	U4 (ENVIROFLEX_316_D)	single	0000326568

Series MBX – receptacles with solder end

Receptacles, jack (female)

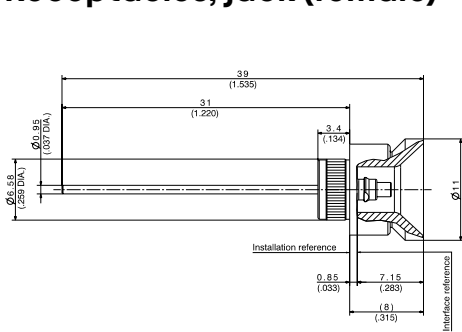


Fig. 1

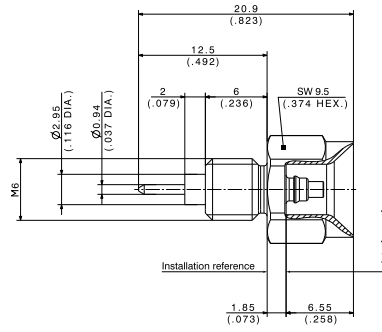


Fig. 2



HUBER+SUHNER type	Item no.	Packaging	Assembly instruction	Fig.
22_MBX-50-0-1/113_NY	84097667	industrial 100 pcs.	pressed-in	1
22_MBX-50-0-40/133_NY	85106185	Industrial 225 pcs.	screwed-in	2

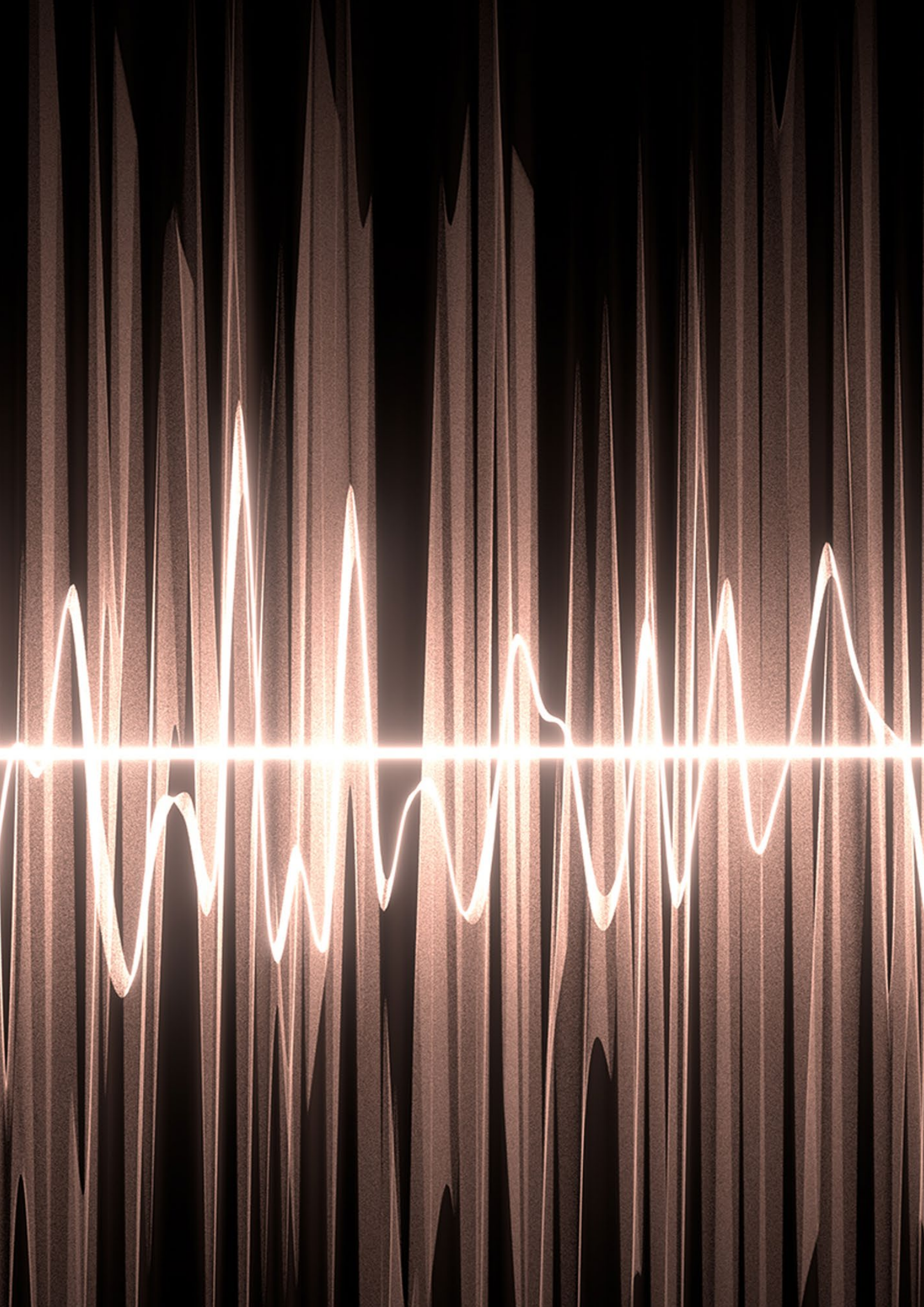
Series MBX – assembly and disassembly tool

To assemble
use this side



To disassemble
use this side

HUBER+SUHNER type	Item no.	Packaging	Operating instruction
74_Z-0-0-488	84101887	single	-



Series MFBX – medium float board connectors

Description

HUBER+SUHNER connectors are especially developed for board-to-board and board-to-module RF interconnections. The mechanical design is outstanding, allowing the MFBX to cope with mechanical misalignment in radial and axial directions and still hold an excellent electrical performance.

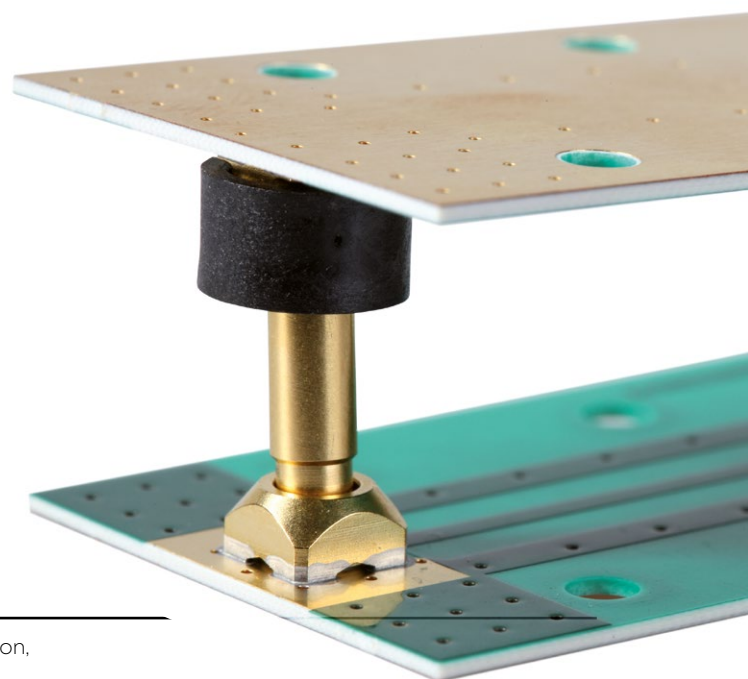
MFBX is a high float board-to-board connector series which allow besides very good board-to-board shielding values very small board-to-board distances.

MFBX Evo sets a new benchmark in cost effective and high performance board-to-board solutions. The modular design can achieve economies of scale in high quantity production. The Blind mateable feature saves time and ensures a secure connection between interfaces. The high tolerance compensation between boards creates multiple design options that can reduce Total Cost of Ownership (TCO).

Content

Description	69
Design guideline	70
Technical data	71
PCB connectors	72
Adapters within series	73
Receptacle with solder end	73
Series MFBX Evo	74

Characteristics	Requirements
Frequency	DC to 6 GHz
Axial float (misalignment)	± 0.8 mm
Radial float (misalignment)	± 0.8 mm
Min. board-to-board distance	MFBX: 13 mm ± 0.8 mm MFBX Evo: 23.4mm ± 0.8 mm
Power at room temperature, at 2.4 GHz ⁽¹⁾	typical 200W (machined adapter) typical 150W (stamp and bending adapter)



Note (1): Admissible power varies depending on the specific application, cooling device, boundary conditions and environment.

Series MFBX – design guideline

Working range (axial and radial)

In mated condition, the two PCB connector have to be aligned within the dimension given for the axial and radial working range.

The axial working range is ± 0.8 mm, the radial working range is ± 0.8 mm and allows a sufficient electrical and mechanical connection.

Connecting range

The two PCB connector have to be aligned within the dimension given for connecting range. The connecting range is ± 0.8 mm and is equivalent to the max. allowed misalignment between two PCB boards when mating.

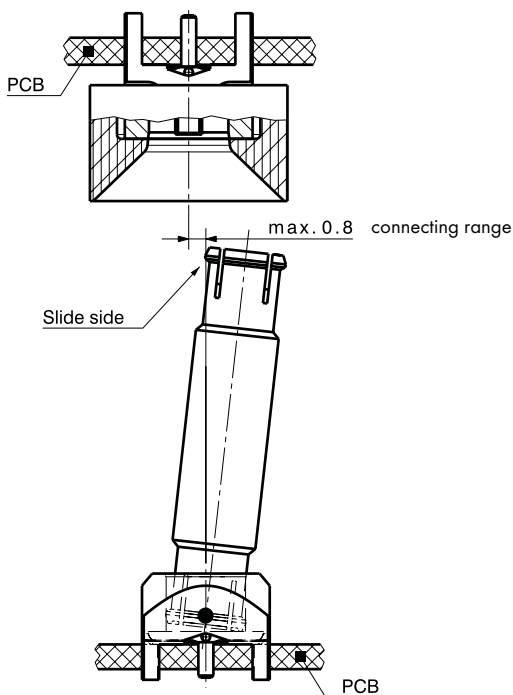
Blind mateability is given when keeping the misalignment of two boards within specified connecting range. Blind mateability depends on the funnel size, the barrel length and the angle of the barrel. The HUBER+SUHNER specified connecting range includes all these variables and guarantees therefore blind mateability.

Recommendation

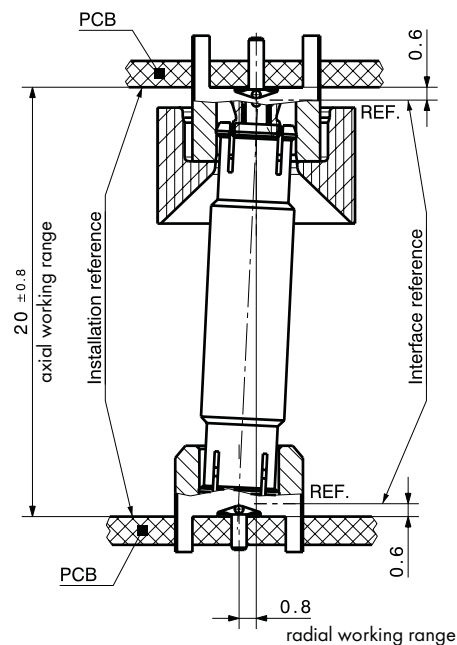
HUBER+SUHNER recommends using guiding pins to align the boards within the connecting range and working range. Distance holders to maintain the axial misalignment within working range are also of benefit.

HUBER+SUHNER provides outline drawings for every application with the relevant mechanical dimensions that need to be considered when designing-in MFBX. 3D STEP files are available on www.hubersuhner.com.

Connecting range



Working range



Series MFBX – technical data

MFBX PCB connectors – board-to-board/adapters within series

Electrical data		Requirements					
		MFBX			MFBX Evo		
Impedance		50 Ω					
Frequency range		DC ... 6 GHz					
Dielectric withstanding voltage (at sea level)		1 kV rms, 50 Hz					
Working voltage (at sea level)		≤ 330 V rms, 50 Hz					
Insulation resistance		≥ 1 GΩ					
Contact resistance		≤ 5 mΩ					
· Centre contact		≤ 5 mΩ					
· Outer contact		≤ 5 mΩ					
Return loss/VSWR*		typical values for a connection (measured on a PCB) board-to-board			typical values for a connection (measured on a PCB) board-to-board		
	axial misalignment	DC ... 3.5 GHz	3.5 ... 5 GHz		axial misalignment	DC ... 3.5 GHz	3.5 ... 5 GHz
		± 0.8mm	20 dB / 1.22	18 dB / 1.29	± 0.8mm	22 dB / 1.17	20 dB / 1.22
					board-to-filter		
					axial misalignment	DC ... 3.5 GHz	DC ... 6 GHz
				± 0.8mm	24 dB / 1.13	20 dB / 1.22	
RF-leakage (interface only)		≥60dB (DC to 3.5GHz)					
Power (room temperature)		typical 200 W at 2.4 GHz with machined adapter typical 150 W at 2.4 GHz with stamp and bending adapter					
Mechanical data		Requirements					
Engagement force (slide-side)		≤ 15 N / 3.4 lbs					
Disengagement force (slide-side)		≤ 15 N / 3.4 lbs					
Durability (matings)		50					
Minimum board-to-board distance		13 mm			23.4 mm		
Axial float (misalignment)		± 0.8 mm					
Radial float (misalignment)		± 0.8 mm					
Environmental data		Test conditions					
Temperature range		-55°C ... +125°C / -67 ... + 257° F					
High Temperature Endurance		IEC 61169-1 §9.4.5					
Rapid Change of Temperature		IEC 60068-2-14, Test Na					
Damp Heat Steady State		IEC 60068-2-78, Test Ca					
Vibration		IEC 60068-2-64, Test Fc					
Mechanical shock		IEC 60068-2-27, Test Ea					
Processing data		Requirements					
Adherent to the print		≥ 150 N / 33.7 lbs.					
· shearing		≥ 150 N / 33.7 lbs.					
· pulling (vertical to PCB)		≥ 150 N / 33.7 lbs.					
Material data							
Connector parts		Material			Plating		
Centre contact		brass / bronze / copper-beryllium			SUCOPRO® gold plating / Silver		
Outer contact		brass / bronze			SUCOPRO® gold plating / SUCOPLATE®		
Body		brass			SUCOPRO® gold plating / SUCOPLATE® / tin		
Insulators		LCP / PTFE / PEI					
Funnel		PA					

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Series MFBX – PCB connectors

Straight PCB jacks (female)

Surface mount type SMT

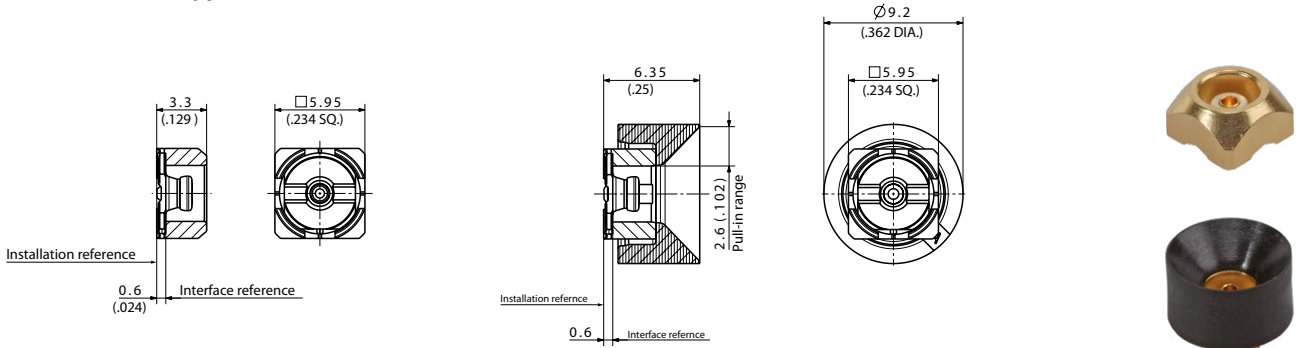


Fig. 1

Fig. 2

HUBER+SUHNER type	Item no.	Packaging	Soldering pad	Fig.
82_MFBX-S50-0-8/111_NE 82_MFBX-S50-0-8/111_NM	85025296 85025295	single tape and reel	ML 173	1
82_MFBX-S50-0-6/111_NE 82_MFBX-S50-0-6/111_NM	85025293 85025282	single tape and reel		2

Through hole type THT

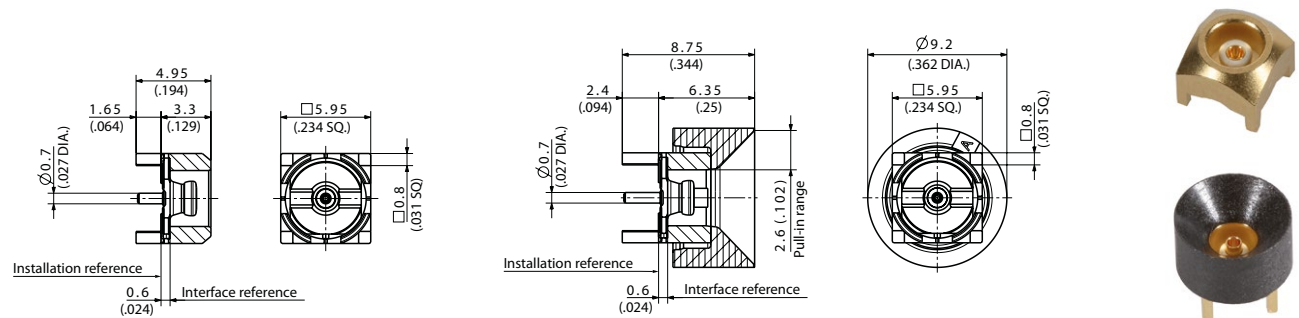


Fig. 1

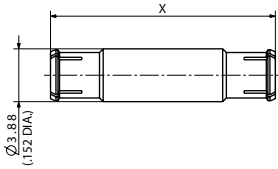
Fig. 2

HUBER+SUHNER type	Item no.	Packaging	Soldering pad	Fig.
82_MFBX-50-0-3/111_NE	85025488	single	ML 182	1
82_MFBX-50-0-4/111_NE	85025490	single		2

Series MFBX – adapters within series

Straight adapters (machining)

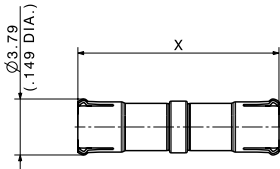
Plug to plug (male)



HUBER+SUHNER type	Item no.	Packaging	Board-to-board distance	Adapter length X
32_MFBX-50-0-1/111_NE	85025361	single	18.9 mm/0.74 in.	16.52 mm/0.65 in.

Straight adapters (stamp and bending)

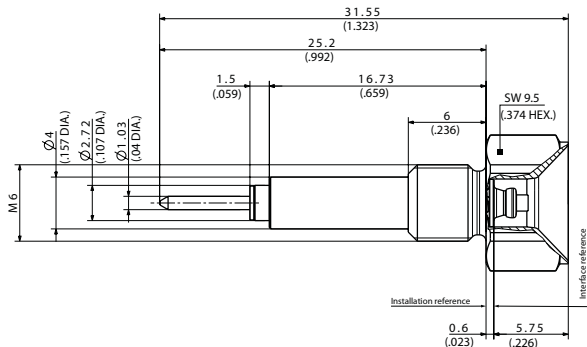
Plug to plug (male)



HUBER+SUHNER type	Item no.	Packaging	Board-to-board distance	Adapter length X
32_MFBX-50-0-3/111_NH-2	85096448	bulk 100 pcs	16 mm/0.63 in.	13.62 mm/0.54 in.
32_MFBX-50-0-4/111_NH-2	85096450	bulk 100 pcs	22.3 mm/0.88 in.	19.92 mm/0.78 in.

Series MFBX – receptacle with solder end

Receptacle, jack (female)



HUBER+SUHNER type	Item no.	Packaging	Assembly instruction
22_MFBX-50-0-3/133_NY	85013940	industrial 100 pcs	screwed-in

Series MFBX Evo – PCB connectors

Straight PCB jacks (female)

Surface mount type SMT

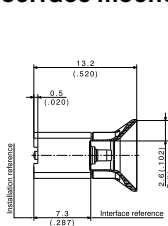


Fig. 1

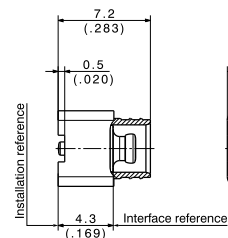


Fig. 2

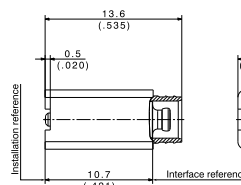


Fig. 3

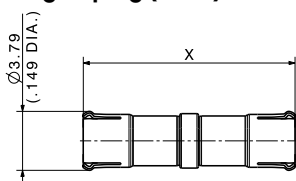


HUBER+SUHNER type	Item no.	Packaging	Soldering pad	Fig.
82_MFBX-S50-0-30/115_NM-1	85208640	tape and reel	ML 184	1
82_MFBX-S50-0-31/115_NM-1	85208652	tape and reel	ML 184	2
82_MFBX-S50-0-32/115_NM-1	85208654	tape and reel	ML 184	3

Series MFBX Evo – adapters within series

Straight adapters (stamp and bending)

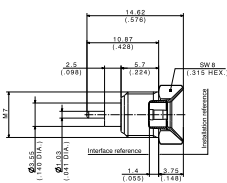
Plug to plug (male)



HUBER+SUHNER type	Item no.	Packaging	Board-to-board distance	Adapter length X
32_MFBX-50-0-11/033_-H	85208722	bulk 100 pcs	23.4mm / 0.92 in.	13.62 mm / 0.54 in
32_MFBX-50-0-12/033_-H	85208733	bulk 100 pcs	29.72mm / 1.17 in.	19.94 mm / 0.78 in

Series MFBX Evo – receptacle with solder end

Receptacle, jack (female)



HUBER+SUHNER type	Item no.	Packaging	Assembly instruction
22_MFBX-50-0-21/113_NY-1	85208720	industrial 700 pcs	screwed-in

Series MMBX – micro miniature board connectors

Description

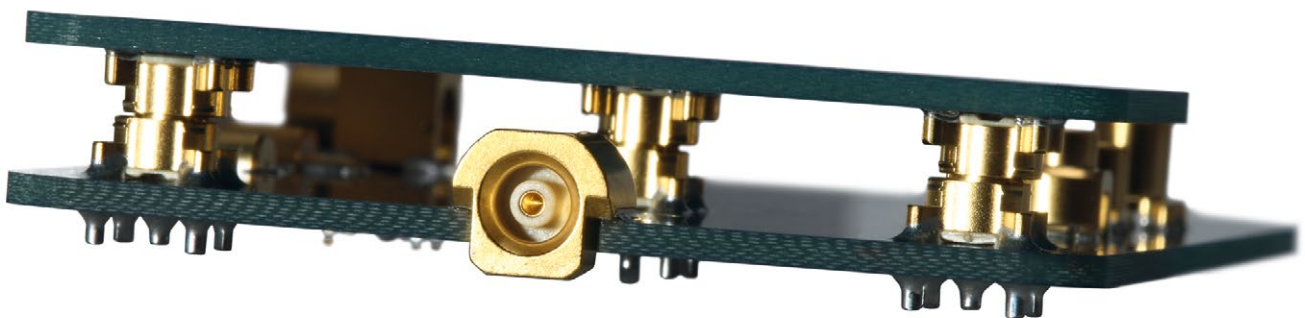
HUBER+SUHNER MMBX connectors are especially developed for board-to-board and board-to-module RF interconnections. Along with MBX and MFBX the board-to-board portfolio of HUBER+SUHNER provides highest flexibility for today's and future radio module applications.

MMBX connectors offer an operation frequency up to 12.4 GHz. The series contains of a wide range of board and cable connectors with a minimum board-to-board distance of only 6.7 mm.

Content

Description	75
Design guideline	76
Technical data	77
PCB connectors	79
Adapters within series	82
Cable connectors	83
Receptacles with solder end	83
Assembly and disassembly tools	84

Characteristics	Requirements
Frequency	DC to 12.4 GHz
Axial float (misalignment)	± 0.3 mm
Radial float (misalignment)	depending on the adapter ± 0.4 mm (at 6.7 mm board-to-board distance)
Minimum board-to-board distance	6.7 mm
Minimum panel-to-board distance	4.63 mm
Minimum panel-to-panel distance	2.56 mm
Power at room temperature, at 2.4 GHz (1)	typical 200 W



Note (1): Admissible power varies depending on the specific application, cooling device, boundary conditions and environment.

Series MMBX – design guideline

Working range (axial and radial)

In mated condition, the two PCB connector have to be aligned within the dimension given for the axial and radial working range.

The axial working range is ± 0.3 mm, the radial working range at a board-to-board distance of 8 mm is ± 0.4 mm. The radial working range depends on the length of the adapter: the longer the adapter, the higher the radial working range.

Connecting range

The two PCB connector have to be aligned within the dimension given for connecting range when mating. In order to guarantee a blind mateable connection, the tilted adapter will be guided by the funnel of the opposite connector. The connecting range depends on the length of the adapter and the pull-in range (size of the funnel).

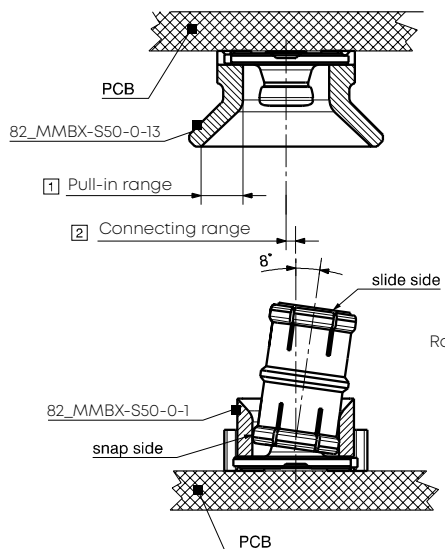
The connecting range in the example below is ± 0.8 mm for a pull-in range of 1.8 mm (see table below). If the funnel (pull-in range) is smaller than 0.95 mm, a blind mateable assembly process is not possible anymore. The radial working range (mated condition) can be different from the connecting range (mating process). The smaller value has to be considered for the design of the board-to-board connection (blind mateability).

Recommendation

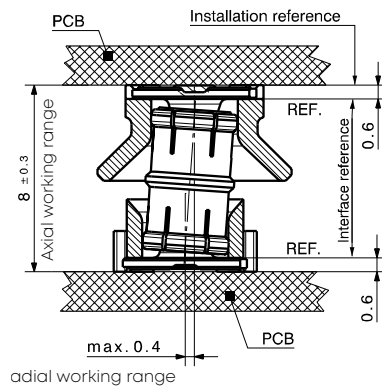
HUBER+SUHNER recommends using guiding pins to align the boards within the connecting range and working range. Distance holders to maintain the axial misalignment within working range are also of benefit.

HUBER+SUHNER provides outline drawings for every application with the relevant mechanical dimensions that need to be considered when designing-in MMBX. 3D STEP files are available on www.hubersuhner.com.

Connecting range



Working range



Pull-in range on PCB connector [1]	Connecting range [2]	PCB connector with mentioned pull-in range (for example)
1.8	max. 0.8	82 MMBX-S50-0-13
0.95	max. 0.15	82 MMBX-S50-0-3
0.65	not possible	82 MMBX-S50-0-1

Series MMBX – technical data

MMBX PCB connectors – board-to-board/adapters within series

Electrical data	Requirements		
Impedance	50 Ω		
Frequency range	DC to 12.4 GHz		
Dielectric withstanding voltage (at sea level)	1 kV rms, 50 Hz		
Working voltage (at sea level)	\leq 330 V rms, 50 Hz		
Insulation resistance	\geq 1 G Ω		
Contact resistance · Centre contact · Outer contact	\leq 5 m Ω \leq 1 m Ω		
Return loss/VSWR	typical values for a board-to-board connection		
	board-to-board distance	DC to 2.5 GHz	2.5 to 6 GHz
	6.7 mm 11.65 mm 20.0 mm	26 dB/1.11 26 dB/1.11 26 dB/1.11	25 dB/1.12 19 dB/1.25 19 dB/1.25
RF-leakage (interface only)	\geq 70 dB (DC to 6 GHz) \geq 60 dB (6 to 12.4 GHz)		
Power	typical 200W at 2.4 GHz at room temperature		

Mechanical data	Requirements		
Engagement force (slide-side)	\leq 15 N/3.4 lbs		
Disengagement force (slide-side)	\leq 15 N/3.4 lbs		
Durability (matings)	100		
Axial float (misalignment)	\pm 0.3 mm		
Radial float (misalignment)	depending on the adapter length \pm 0.4 mm (at 6.7 mm board-to-board distance) \pm 0.8 mm (at 11.65 mm board-to-board distance)		

Environmental data	Test conditions		
Temperature range	-55 to +155 °C/-67 to +311 °F		
Climatic category	55/155/21		
Thermal shock	MIL-STD-202, method 107 G, condition B1		
Moisture resistance	MIL-STD-202, method 106 F		
Corrosion	MIL-STD-202, method 101, condition B		
Vibration	MIL-STD-202, method 204 D, condition A		

Processing data	Requirements		
Adherent to the print · Shearing · Pulling (vertical to PCB)	\geq 150 N/33.7 lbs \geq 150 N/33.7 lbs		

Material data		
Connector parts	Material	Plating
Centre contact	brass/bronze/copper-beryllium alloy	SUCOPRO® gold plating
Outer contact	brass/bronze	SUCOPRO® gold plating
Body	brass	SUCOPRO® gold plating
Insulators	LCP/PTFE/PFA	

Series MMBX – technical data

MMBX cable connectors

Electrical data	Requirements
Impedance	50 Ω
Frequency range	DC to 12.4 GHz
Dielectric withstanding voltage (at sea level)	750 V rms, 50 Hz
Working voltage (at sea level)	250 V rms, 50 Hz
Insulation resistance	$\geq 1 \text{ G}\Omega$
Contact resistance · Centre contact · Outer contact	$\leq 5 \text{ m}\Omega$ $\leq 1 \text{ m}\Omega$
Return loss/VSWR (typical values)	$\geq 30 \text{ dB}/1.07$ (DC to 2.5 GHz) $\geq 25 \text{ dB}/1.12$ (2.5 to 6 GHz)

Mechanical data	Requirements
Engagement force	max. 30 N/max. 6.7 lbs
Disengagement force	8 to 30 N/1.8 to 6.7 lbs
Durability (matings)	100

Environmental data	Test conditions
Temperature range	-55 to +155 °C/-67 to +311 °F
Climatic category	55/155/10
Thermal shock	MIL-STD-202, method 107 G, condition B1
Moisture resistance	MIL-STD-202, method 106 F
Corrosion	MIL-STD-202, method 101, condition B
Vibration	MIL-STD-202, method 204 D, condition A

Material data		
Connector parts	Material	Plating
Centre contact	copper-beryllium alloy	SUCOPRO® gold plating
Outer contact	bronze/copper-beryllium alloy	SUCOPRO® gold plating
Body	brass	SUCOPRO® gold plating/SUCOPLATE®
Crimp ferrules	E-copper	SUCOPRO® gold plating/gold/ SUCOPLATE®
Insulators	PTFE/PFA	

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Series MMBX – PCB connectors

Straight PCB jacks (female)

- Surface mount type SMT

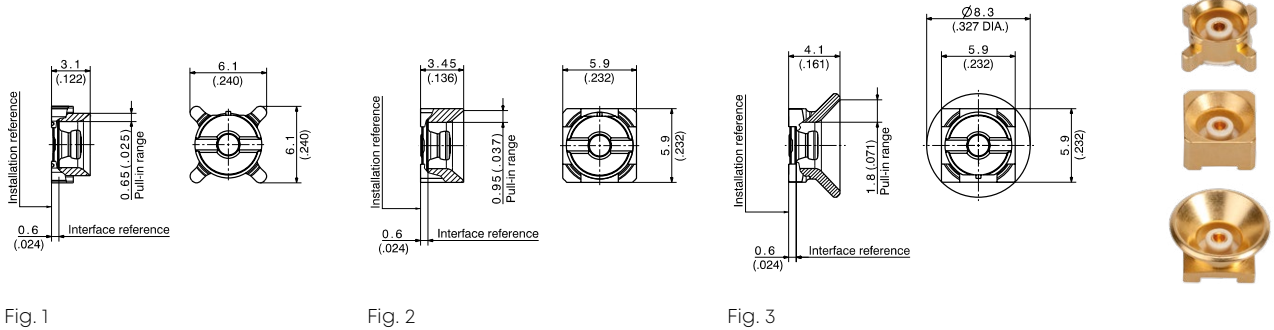


Fig. 1

Fig. 2

Fig. 3

HUBER+SUHNER type	Item no.	Packaging	Soldering pad	Notes	Fig.
82_MMBX-S50-0-1/111_NE 82_MMBX-S50-0-1/111_NH 82_MMBX-S50-0-1/111_NM	23001785 23001784 23001783	single bulk 100 pcs. tape and reel	ML 122	pull-in range 0.65 mm/0.0256 in.	1
82_MMBX-S50-0-3/111_NE 82_MMBX-S50-0-3/111_NH 82_MMBX-S50-0-3/111_NM	23015527 23011273 23031931	single bulk 100 pcs. tape and reel		pull-in range 0.95 mm/0.0374 in.	2
82_MMBX-S50-0-13/111_NE 82_MMBX-S50-0-13/111_NH 82_MMBX-S50-0-13/111_NM	84032435 23036608 23041511	single bulk 100 pcs. tape and reel		pull-in range 1.80 mm/0.0709 in.	3

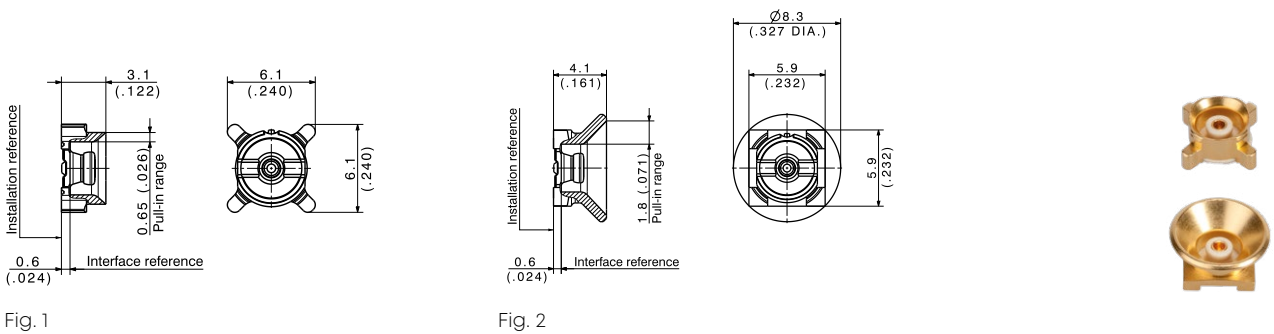


Fig. 1

Fig. 2

HUBER+SUHNER type	Item no.	Packaging	Soldering pad	Notes	Fig.
82_MMBX-S50-0-15/111_NE 1)	84120607	single	ML 185	pull-in range 0.65 / 0.0256 in.	1
82_MMBX-S50-0-15/111_NH 1)	84002089	bulk 100 pcs.	ML 185	pull-in range 0.65 / 0.0256 in.	1
82_MMBX-S50-0-15/111_NM 1)	84018367	tape and reel	ML 185	pull-in range 0.65 / 0.0256 in.	1
82_MMBX-S50-0-20/111_NE 1)	84120616	single	ML 185	pull-in range 1.80 / 0.0709 in.	2
82_MMBX-S50-0-20/111_NM 1)	84047799	tape and reel	ML 185	pull-in range 1.80 / 0.0709 in.	2

1) Return loss (RL) optimized connector

Series MMBX – PCB connectors

Straight PCB jacks (female)

- Through hole type THT

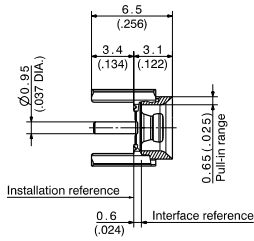


Fig. 1

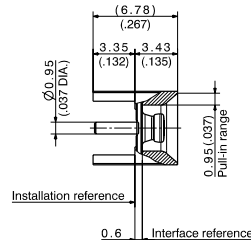


Fig. 2

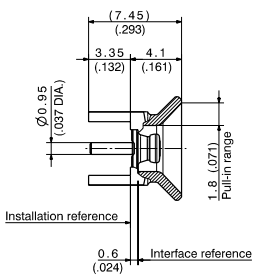
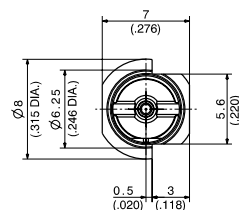
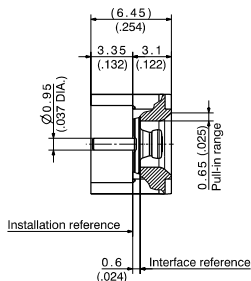


Fig. 3

HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes	Fig.
82_MMBX-50-0-2/111_NE	23001788	single	ML 15	pull-in range 0.65 mm/0.0256 in.	1
82_MMBX-50-0-2/111_NH	23001787	bulk 100 pcs.			
82_MMBX-50-0-2/111_NM	23001786	tape and reel			
82_MMBX-50-0-4/111_NH	23013667	bulk 100 pcs.		pull-in range 0.95 mm/0.00374 in.	2
82_MMBX-50-0-14/111_NE	84032421	single		pull-in range 1.80 mm/0.0709 in.	3
82_MMBX-50-0-14/111_NH	23038051	bulk 100 pcs.			

Straight PCB jacks (female), edge mount



HUBER+SUHNER type	Item no.	Packaging	Mounting hole
92_MMBX-S50-0-12/111_NE	84019159	single	ML 147
92_MMBX-S50-0-12/111_NM	23038620	tape and reel	

Series MMBX – PCB connectors

Straight PCB plugs (male)

- Surface mount type SMT

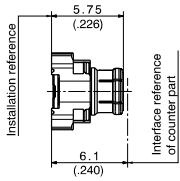


Fig. 1

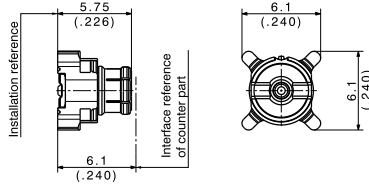


Fig. 2



HUBER+SUHNER type	Item no.	Packaging	Soldering pad	Fig.
81_MMBX-S50-0-1/111_NE	23001782	single bulk 100 pcs. tape and reel	ML 122	1
81_MMBX-S50-0-1/111_NH	23001781			
81_MMBX-S50-0-1/111_NM	23001780			
81_MMBX-S50-0-18/111_NE 1)	84122199	single tape and reel	ML 185	2
81_MMBX-S50-0-18/111_NM 1)	84075488			

- Through hole type THT

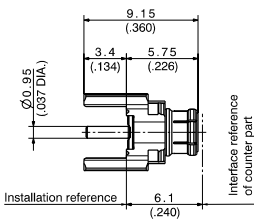


Fig. 1

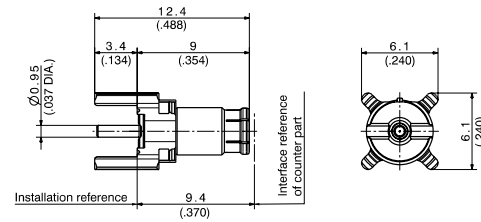


Fig. 2



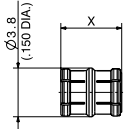
HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Fig.
81_MMBX-50-0-2/111_NE	23001779	single bulk 100 pcs. tape and reel	ML 15	1
81_MMBX-50-0-2/111_NH	23001778			
81_MMBX-50-0-2/111_NM	23001776			
81_MMBX-50-0-11/111_NM	23028072	tape and reel		2

1) Return loss (RL) optimized connector

Series MMBX – adapters within series

Straight adapters

- Plug to plug (male)



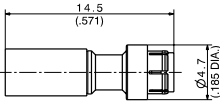
HUBER+SUHNER type	Item no.	Packaging	Board-to-board distance	Adapter length X	Min. pull-in range
32_MMBX-50-0-1/111_NE 32_MMBX-50-0-1/111_NY	23001749 84028418	single industrial 200 pcs.	6.7 mm/0.264 in.	4.8 mm/0.189 in.	0.65 mm/0.026 in. ¹⁾
32_MMBX-50-0-12/111_NH	84004734	bulk 100 pcs.	8.0 mm/0.315 in.	6.0 mm/0.236 in.	0.95 mm/0.037 in.
32_MMBX-50-0-4/111_NE 32_MMBX-50-0-4/111_NY	23010564 23038658	single industrial 300 pcs.	10.0 mm/0.394 in.	8.0 mm/0.315 in.	1.80 mm/0.071 in.
32_MMBX-50-0-13/111_NE	84031096	single	12.0 mm/0.472 in.	10.0 mm/0.417 in.	1.80 mm/0.071 in.
32_MMBX-50-0-5/111_NE 32_MMBX-50-0-5/111_NY	84026915 23011920	single industrial 200 pcs.	14.0 mm/0.551 in.	12.0 mm/0.472 in.	1.80 mm/0.071 in.
32_MMBX-50-0-10/111_NY	23034946	industrial 200 pcs.	15.0 mm/0.591 in.	13.0 mm/0.512 in.	1.80 mm/0.071 in.

Adapters with other lengths available upon request.

¹⁾ Only suitable pull-in-range.

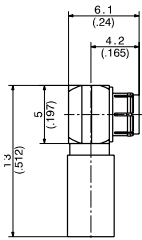
Series MMBX – cable connectors

Straight cable plugs (male)



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
11_MMBX-50-2-2/111_NE	23001744	U4 (ENVIROFLEX_316_D)	single	27351	1/A

Right angle cable plugs (male)



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
16_MMBX-50-2-2/111_NE	23001746	U4 (ENVIROFLEX_316_D)	single	27352	A
16_MMBX-50-2-2/111_NH	84028931		bulk 100 pcs.		

Series MMBX – receptacles with solder end

Receptacle, jack (female)

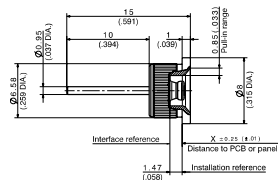
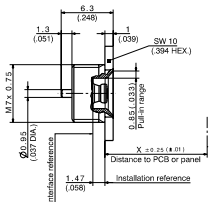


Fig. 1

Fig. 2

HUBER+SUHNER type	Item no.	Packaging	Assembly instruction	Fig.
22_MMBX-50-0-1/111_NE	23008312	single	screwed-in	1
22_MMBX-50-0-2/111_NY	84005177	industrial 100 pcs.	pressed-in	2

Series MMBX – assembly and disassembly tools



Fig. 1



Fig. 2

HUBER+SUHNER type	Item no.	Packaging	Operating instruction	Fig.
74_Z-0-0-437	23023494	single	0000189947	1
74_Z-0-0-557	84032418		0000246815	2

SMP

Description

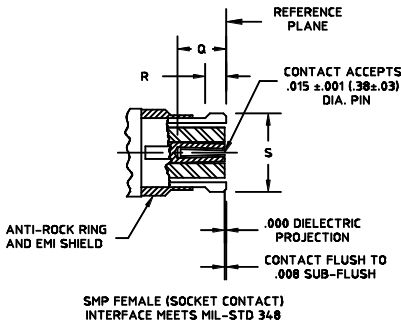
HUBER+SUHNER SMP connectors provide a robust plug-in solution for applications up to 40 GHz. HUBER+SUHNER SMP connectors have been MIL-SPEC qualified for defence and space flight hardware. The design of the interface and material treating provides true compatibility as well as guaranteed mechanical performance over the mating life of the connector with all MIL-STD-348 SMP connectors in the market.

Content

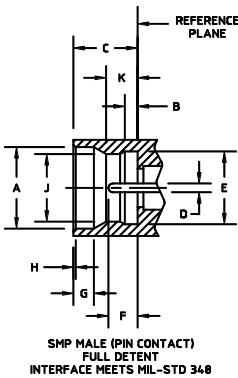
Description	85
Compatibility	85
Interface dimensions in mm/inches	85
Technical data	86
Cable connectors	88
Panel mount connectors	89
Hermetic shrouds	90
PCB mount connectors	90
Adapters	92

Interface dimensions (mm/inches)

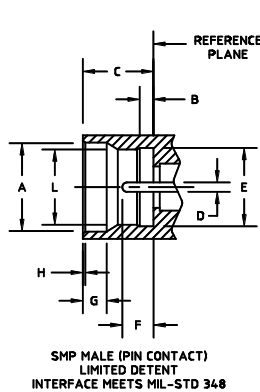
SMP female



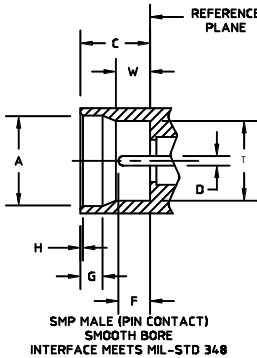
SMP male, full detent



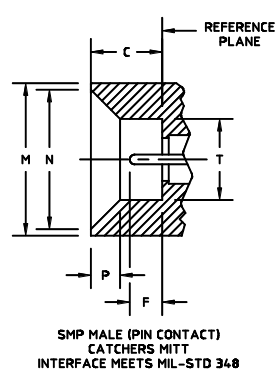
SMP male, limited detent



SMP male, smooth bore



SMP male, catchers mitt



Compatibility

50 Ω SMP connectors are intermateable without restrictions.

	min.	max.
A	3.53/0.139	3.68/0.145
B	0.521/0.0205	0.597/0.0235
C	2.74/0.108	2.84/0.112
D	0.36/0.014	0.41/0.016
E	3.15/0.124	3.20/0.126
F	1.14/0.045	1.40/0.055
G	0.084/0.033	0.94/0.037
H	0.08/0.003	0.20/0.008
J	2.90/0.114	3.00/0.118
K	1.30/0.051	1.45/0.057
L	3.00/0.118	3.10/0.122
M	5.84/0.230	6.10/0.240
N	5.33/0.210	5.59/0.220
P	1.09/0.043	1.19/0.047
Q	1.77/0.070	–
R	0.63/0.025	0.88/0.035 (cabled connector)
	0.45/0.018	0.63/0.025 (uncabled connector)
S	–	3.43/0.135
T	3.12/0.123	3.22/0.127
W	1.49/0.059	1.65/0.065

Interface dimensions conformable to the following standards:

USA: MIL-PRF-31031
SMP interface MIL-STD-348

SMP – technical data

Electrical data	Requirements
Impedance	50 Ω
Frequency range	DC to 40 GHz
Contact resistance	center conductor 6.0 milliohms max. outer conductor 2.0 milliohms max.
DWV	500 Vrms at sea level
Insulation resistance	5000 megaohms min.
Corona levels	190 Vrms at 70 000 ft
RF high potential	325 Vrms at 5 MHz
RF leakage	80 dB max. at 3 GHz 65 dB max. at 3 to 26.5 GHz
Magnetic permeability	< 2 μ
VSWR	Connector specific
Insertion loss	0.06 \sqrt{f} in GHz (non-hermetic connectors) 0.12 \sqrt{f} in GHz (hermetic connectors)

Mechanical data	Requirements
Center contact retention	1.5 lbs (6.672 N) min. (captivated designs)
Durability	100 cycles min. into a full detent shroud 500 cycles min. into a limited detent shroud 1000 cycles min. into a smooth bore shroud
Force to engage	SMP full detent – 15 lbs (66.723 N) max. SMP limited detent – 10 lbs (44.482 N) max. SMP smooth bore – 2 lbs (8.896 N) max.
Force to disengage	SMP full detent – 5 lbs (22.241 N) min. SMP limited detent – 2 lbs (8.896 N) min. SMP smooth bore – 0.5 lbs (2.224 N) min.
Radial misalignment	standard – \pm 0.25 mm/0.010 in. min. float mount – \pm 0.76 mm /0.030 in. min.
Axial misalignment	standard – 0.25 mm/0.010 in. min. float mount – 1.27 mm/0.050 in. min.

Environmental data	Requirements
Temperature range	-65 to +165 $^{\circ}$ C
Thermal shock	MIL-STD-202, method 107, condition B
Moisture resistance	MIL-STD-202, method 106
Corrosion	MIL-STD-202, method 101, condition B
Sine vibration	MIL-STD-202, method 204, 28 g peak
Random vibration	MIL-STD-202, method 214, condition K-I, 46.3 g
Shock	MIL-STD-202, method 213, 12 000 g peak

SMP – technical data

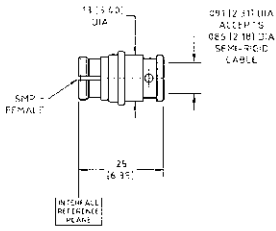
Material data		
Cable and shroud connectors	Material	Plating
Body	beryllium copper per ASTM B-196 or brass per QQ-B-626	SUCOPRO gold plate
	#303 SS per ASTM A-582	passivated per SAE-AMS-2700
Contact	beryllium copper per ASTM B-196	SUCOPRO gold plate
Dielectric	PTFE per ASTM D-1710, type I, grade 1 or Torlon™ * per ASTM D-5204 or polyether ether ketone per MIL-P-46189, type I or polyetherimide (PEI) per ASTM D-5202	–
Ferrule	brass per ASTM B-135 for cable connector only	SUCOPRO gold plate
Hermetic shroud connectors	Material	Plating
Body and contact	iron nickel alloy IAW ASTM F-15 and F-1466 UNS K94610 per ASTM F-15, class 1, only for pin on glass seal contacts	gold plate per ASTM B-488, code A, type III over nickel plate per SAE-AMS-QQ-N-290, type 1
Dielectric	Corning 7070 glass or equivalent	–
Adapters	Material	Plating
Body and nut	beryllium copper per ASTM B-196 or #303 SS per ASTM A-582	gold plate per ASTM B-488, code C, type II over nickel plate per SAE-AMS-QQ-N-290, class 1
Contact	beryllium copper per ASTM B-196	gold plate per ASTM B-488, code C, type II over nickel plate per SAE-AMS-QQ-N-290, type 1
Dielectric	polytetrafluoroethylene (PTFE) per ASTM D-1710, or ASTM D-4894, type I, grade 1, or polyether ether ketone electrical grade per MIL-P-46189, type I or polyetherimide (PEI) per ASTM D-5202	–

* Note: Torlon™ is not used for space applications.

Performance listed is typical. Individual part configuration may vary. Contact HUBER+SUHNER for more information and specifications by part number. Customer specific factors pertaining to recommended mounting patterns including transmission line topology, substrate thickness and material, board-stackup, operating frequency, etc. must be submitted to HUBER+SUHNER for analysis prior to release of final performance levels and mounting configurations.

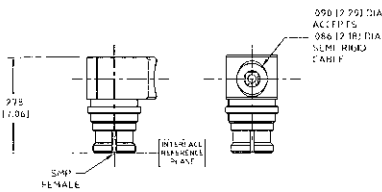
SMP – cable connectors

Straight cable jacks (female)



HUBER+SUHNER type	Item no.	Cable group (example)	Typ. return loss	Packaging
21_SMP-50-2-1/111_NE	80377838	Y3, Y16, Y11 (2.18 mm/0.086 in)	DC – 20 GHz: 29 dB 20 – 30 GHz: 27 dB 30 – 40 GHz: 20 dB	single

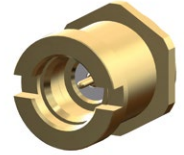
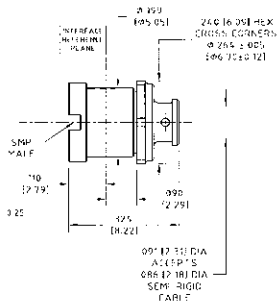
Right angle cable jack (female)



HUBER+SUHNER type	Item no.	Cable group (example)	Typ. return loss	Packaging
26_SMP-50-2-2/111_NE	80377839	Y3, Y16, Y11 (2.18 mm/0.086 in)	DC – 20 GHz: 25 dB 20 – 26.5 GHz: 20 dB 26.5 – 30 GHz: 15 dB 26.5 – 40 GHz: 10 dB	single

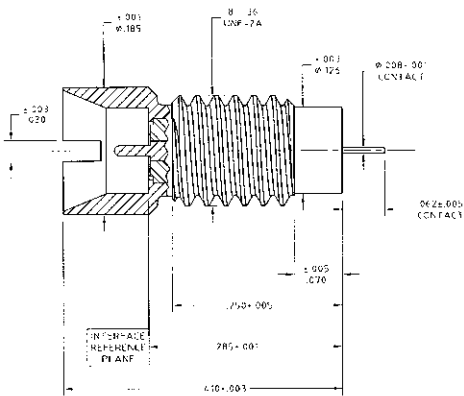
SMP – panel mount connectors

Straight bulkhead cable plugs (male)



HUBER+SUHNER type	Item no.	Cable group (example)	Typ. return loss	Detent	Packaging
14_SMP-50-2-S2/111_NE	80377975	Y3, Y16, Y11 (2.18 mm/0.086 in)	DC – 20 GHz: 29 dB 20 – 30 GHz: 27 dB 30 – 40 GHz: 20 dB	smooth bore	single
14_SMP-50-2-L2/111_NE	80377974	Y3, Y16, Y11 (2.18 mm/0.086 in)	DC – 20 GHz: 29 dB 20 – 30 GHz: 27 dB 30 – 40 GHz: 20 dB	limited detent	single

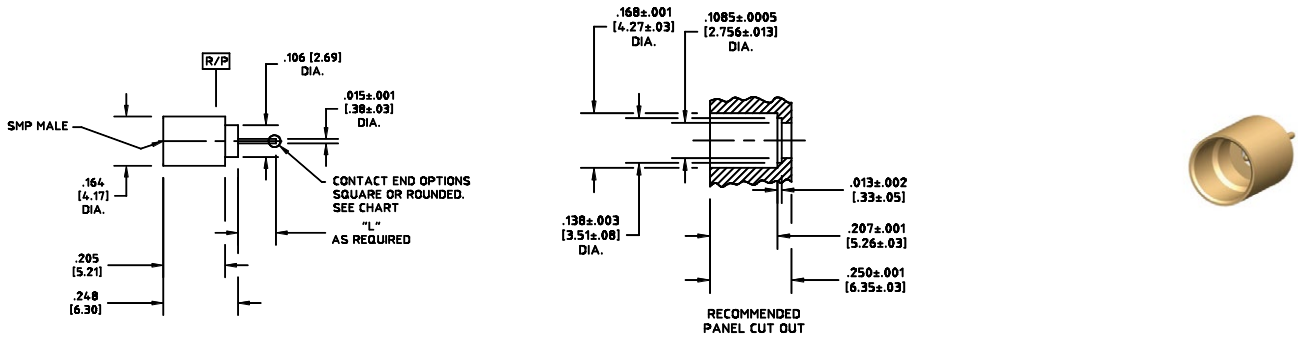
Straight panel mount receptacle (male)



HUBER+SUHNER type	Item no.	Operating frequency	Detent	Pin length	Packaging
12_SMP-50-0-S1/119_NE	80378538	DC – 40 GHz	catchers mitt	0.062"/1.57 mm additional length on request	single

SMP – hermetic shrouds

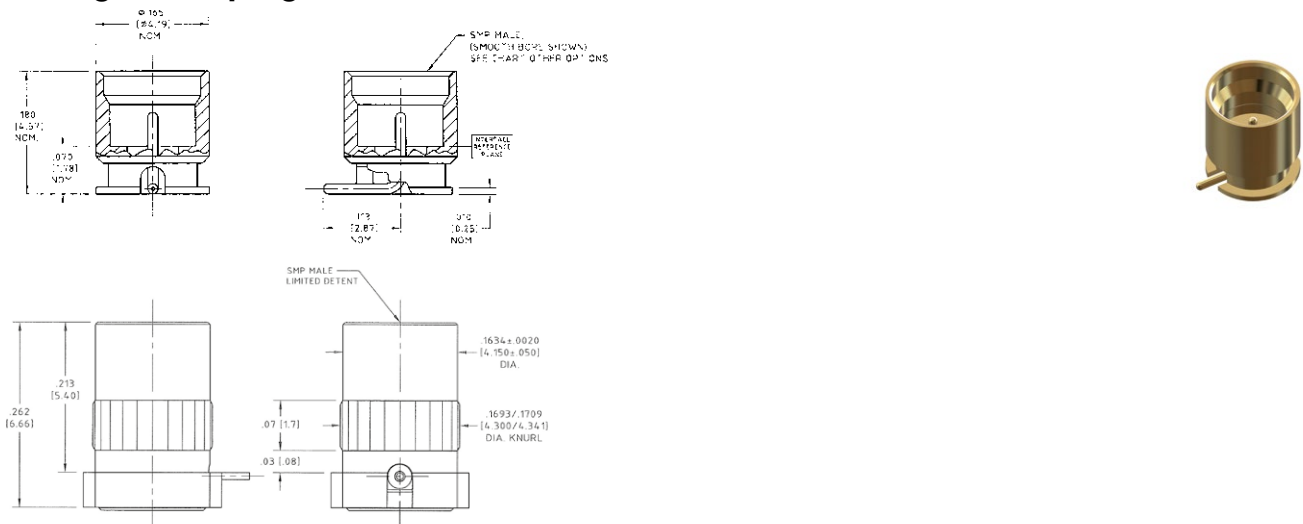
Hermetically sealed, plugs (male)



HUBER+SUHNER type	Item no.	"L"	End option
		mm/in	
29474H-IS	80367958	1.25/0.050 additional length on request	square

SMP – PCB mount connectors

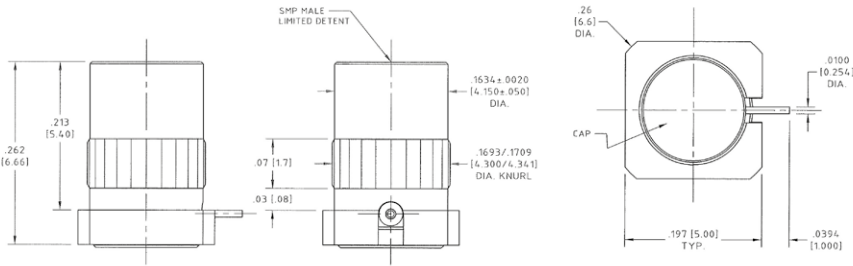
Straight PCB plugs (male)



HUBER+SUHNER type	Item no.	Detent	Operating frequency	Return loss	Packaging
81_SMP-S50-0-L1/111_NE	80377946	limited detent	DC – 40GHz	depends on PCB stack-up, contact HUBER+SUHNER	single
81_SMP-S50-0-S1/111_NE	80377947	smooth bore	DC – 40GHz	depends on PCB stack-up, contact HUBER+SUHNER	single

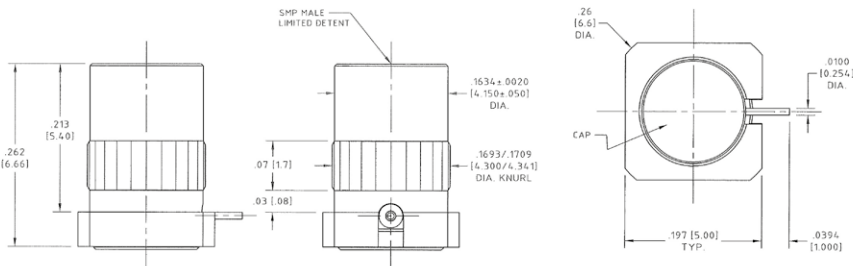
SMP – PCB mount connectors

Straight PCB plugs (male)



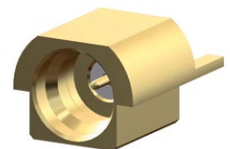
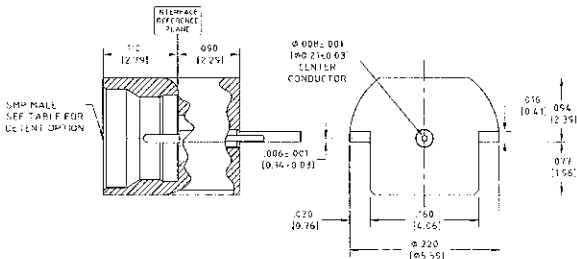
HUBER+SUHNER type	Item no.	Detent
29474RM-3-002	80370509	Limited

Straight PCB plugs (male) / reverse mount



HUBER+SUHNER type	Item no.	Detent
29474RM-3-003	80370707	limited

Edge mount PCB plugs (male)



HUBER+SUHNER type	Item no.	Detent	Operating frequency	Return loss	Packaging
91_SMP-50-0-L1/111_NE	80377833	limited detent	DC – 40GHz	depends on PCB stack-up, contact HUBER+SUHNER	single
91_SMP-50-0-S1/111_NE	80377835	smooth bore	DC – 40GHz	depends on PCB stack-up, contact HUBER+SUHNER	single

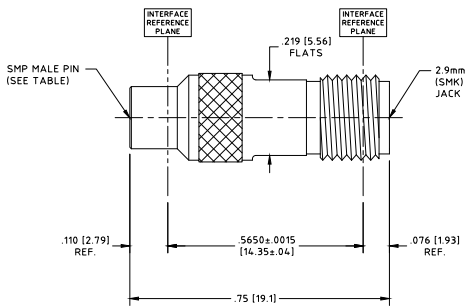
Cable groups see page 32

Assembly tools see page 563

Mounting holes/PCB layouts see page 591

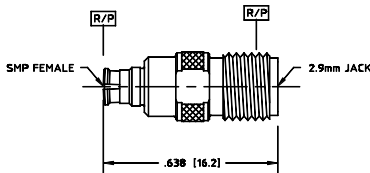
SMP – adapters

Adapter SMP jack - 2.9 mm jack (male/female)



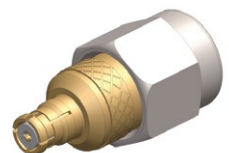
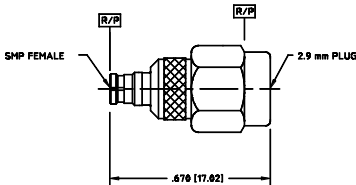
HUBER+SUHNER type	Item no.	Packaging
29487-2	80318038	single

Adapter SMP jack – 2.9 mm jack (female/female)



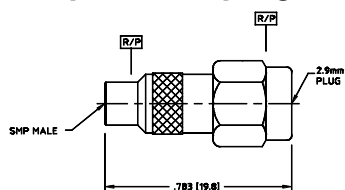
HUBER+SUHNER type	Item no.	Packaging
29487-3	80318039	single

Adapter SMP jack – 2.9 mm plug (female/male)



HUBER+SUHNER type	Item no.	Packaging
29487-4	80363059	single

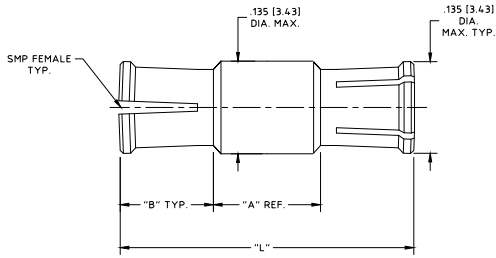
Adapter SMP plug – 2.9 mm plug (male/male)



HUBER+SUHNER type	Item no.	Packaging	Detent
29487-1	80318037	single	full

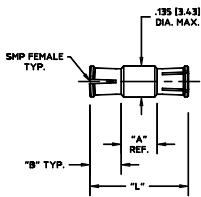
SMP – adapters

Adapter/Bullet (female/female)



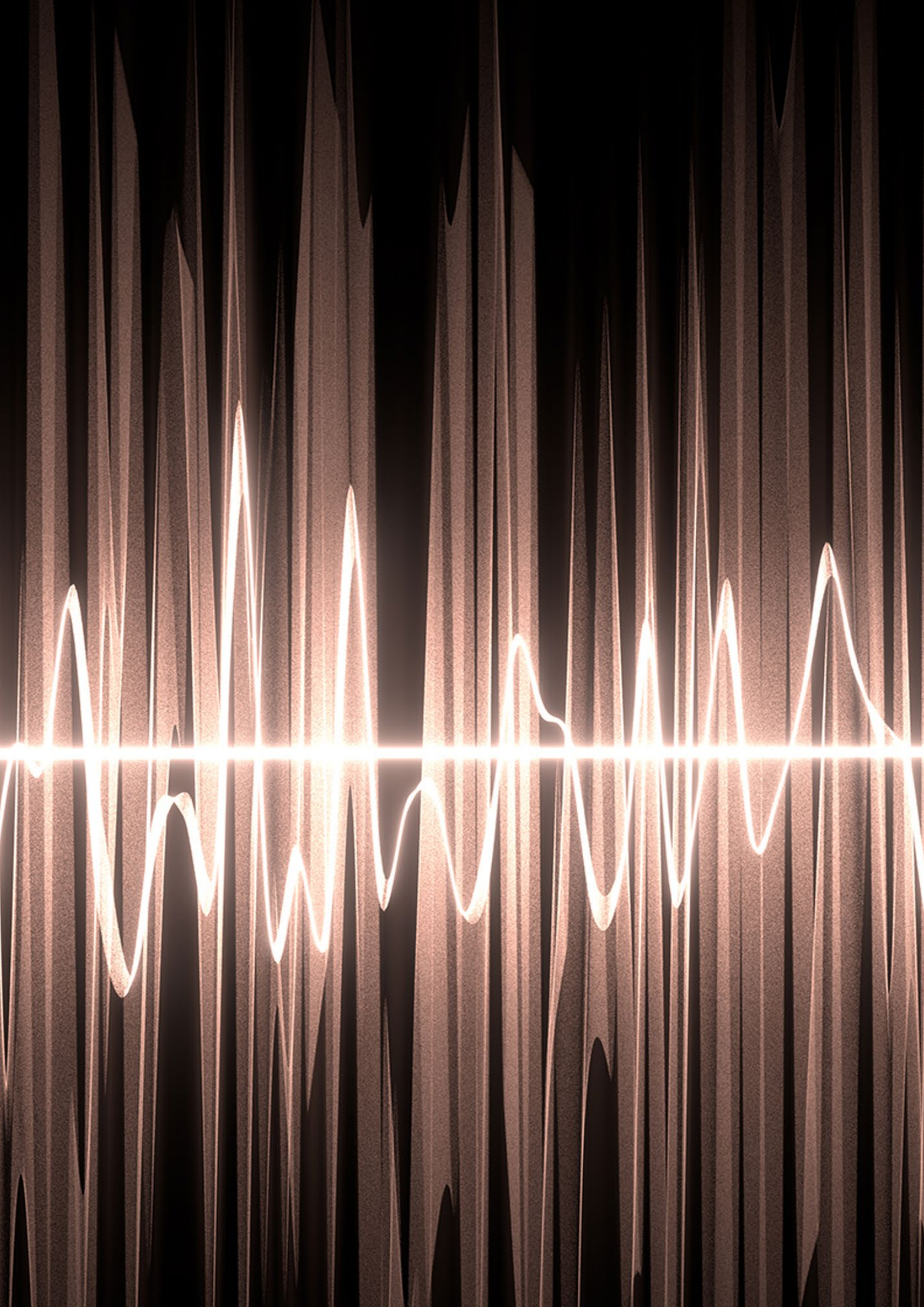
HUBER+SUHNER type	Item no.	Packaging	"A"	Adapter length X	"B"
29473-A2F1	80317920	Single	1.91mm/0.075"	8.76mm/0.345"	3.43mm/0.135"
29473-A2F7	80395837	Single	7.29mm/0.287"	14.15mm/0.557"	3.43mm/0.135"
29473-A2F8	80395850	Single	5.74mm/0.226"	12.60mm/0.496"	3.43mm/0.135"
29473-A2F9	80395851	Single	12.45mm/0.490"	19.30mm/0.760"	3.43mm/0.135"

Adapter/bullet jack/jack (female/female)



HUBER+SUHNER type	Item no.	Packaging	"A"	Adapter length X	"B"
31_SMP-50-0-5/111_NE	80377837	single	1.91 mm/0.075"	8.76 mm/0.345"	3.43 mm/0.135"
31_SMP-50-0-6/111_NE	80377836	single	12.45 mm/0.190"	19.30 mm/0.760"	3.43 mm/0.135"

Adapter length available from 8.76 mm/0.345" up to 19.20 mm/0.760" up on request.



SMPM

Description

SMPM is a commonly used standard interface for high-density applications and for frequencies up to 65 GHz in several markets and applications. HUBER+SUHNER provides SMPM connectors at the known highest quality standards.

The HUBER+SUHNER SMPM solution is provided in two distinct product variants that are tailored to specific performance and compliance needs, ensuring the right solution for all RF applications.

1. SMPM best performance-to-price ratio:

These SMPM connectors deliver top performance using cost-optimised material and plating. It is ideally suited for applications in Test & Measurement, Aerospace & Defense, and Industrial sectors.

For more details, refer to page 99.

2. SMPM MIL-Spec qualified:

These SMPM connectors are built to meet strict MIL-specific requirements, utilising materials and plating that is compliant with military standards. They are specifically designed for Aerospace and Defense applications.

For more details, refer to page 108.

Content

Description	95
Compatibility	95
Interface dimensions in mm/inches	95
Comparison / Characteristics	96
Features and benefits	97
Applications	98
Board-to-board application:	
information and guidelines	98
Working range (axial and radial)	98
Connecting range	98
Technical data	99
Cable connectors	101
receptacles with solder end	104
PCB connectors	105
adaptor within series	107
Technical data	108
Hermetic shrouds	110
PCB mount connectors	111
Edge mount connectors	112
Adapters	114
PSM mount connector	115
Launchers	116

Compatibility

50 Ω SMPM connectors are intermateable without restrictions. Both SMPM variants can be combined in any way.

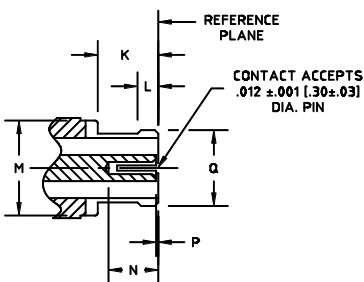
Interface dimensions (mm/inches)

Interface dimensions conformable to the following standards:

USA: MIL-PRF-31031
SMPM interface MIL-STD-348

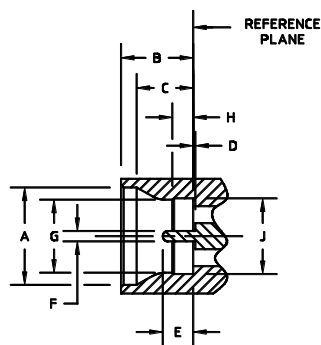
	min.	max.		min.	max.
A	2.82/0.111	2.92/0.115	J	2.18/0.086	2.24/0.088
B	2.08/0.082	2.13/0.084	K	1.73/0.068	–
C	1.57/0.062	1.83/0.072	L	–	0.58/0.023
D	0.00/0.000	–	M	–	2.79/0.110
E	0.76/0.030	1.14/0.045	N	1.27/0.050	–
F	0.28/0.011	0.33/0.013	P	0.00/0.000	0.20/0.008
G	2.11/0.083	2.16/0.085	Q	–	2.41/0.095
H	0.53/0.021	0.58/0.023			

SMPM female (socket contact)



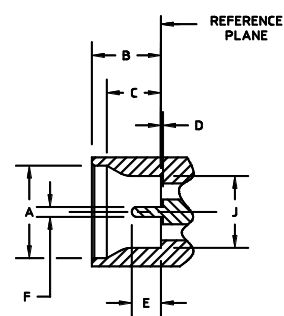
SMPM FEMALE (SOCKET CONTACT)
INTERFACE MEETS MIL-STD-348

SMPM male (pin contact), full detent



SMPM MALE (PIN CONTACT)
FULL DETENT
INTERFACE MEETS MIL-STD-348

SMPM male (pin contact), smooth bore



SMPM MALE (PIN CONTACT)
SMOOTH BORE
INTERFACE MEETS MIL-STD-348

SMPM

Comparison / Characteristics

Characteristic		SMPM best performance-to-price ratio		SMPM MIL-Spec qualified	
Interface		MIL-STD-348			
Frequency		DC-65 GHz			
Axial float		±0.1 mm			
Temperature		-65 °C to +165 °C			
Material / Plating		Material	Plating	Material	Plating
PCB connector	Center contact:	brass/bronze/copper-beryllium alloy	SUCOPRO	beryllium copper per ASTM B-196	gold plate per ASTM B-488, code C, type II over nickel plate per SAE-AMS-QQ-N-290, type 1
	Outer contact / body:	brass	SUCOPRO	beryllium copper per ASTM B-196	gold plate per ASTM B-488, code C, type II over nickel plate per SAE-AMS-QQ-N-290, type 1
	dielectric	PTFE/PFA/PEEK		PTFE per ASTM D-1710, type I, grade 1 or Torlon™ per ASTM D-5204 or polyether ether ketone per MIL-P_46189, type I or polyetherimide (PEI) per ASTM D-5202	
Adapters	Center contact:	copper-beryllium alloy	SUCOPRO	beryllium copper per ASTM B-196	gold plate per ASTM B-488, code C, type II over nickel plate per SAE-AMS-QQ-N-290, type 1
	Outer contact / body:	copper-beryllium alloy	SUCOPRO	beryllium copper per ASTM B-196 or #303 SS per ASTM A-582	gold plate per ASTM B-488, code C, type II over nickel plate per SAE-AMS-QQ-N-290, type 1
	dielectric	PTFE/PFA/PEEK		PTFE per ASTM D-1710, type I, grade 1 or polyether ether ketone per MIL-P_46189, type I or polyetherimide (PEI) per ASTM D-5202	

SMPM

Features and benefits

Features	Benefits
Excellent RF performance over the entire frequency range up to 65 GHz	High signal integrity across the entire frequency range. One solution for different applications.
Comprehensive assortment for board-to-cable and board-to-board application	HUBER+SUHER as a one-stop shop for RF connector solutions and RF assembly solutions
Snap-on coupling mechanism with different mating versions (full detent, smooth bore) available	SMPM can be mated quickly and easily without the need of tools. SMPM connectors are suitable for a variety of configurations and wide range of applications.
For board-to-cable and board-to-board applications	SMPM connectors are versatile, with designs available for both board-to-board and cable-to-board configurations, enhancing the applicability across different applications.
Small dimensions (size)	SMPM connectors are designed with a compact form factor , making them suitable for applications where space is limited
Axial and radial float	SMPM connections with bullets are designed to accommodate both axial and radial misalignment , ensuring reliable RF performance.
Customizable	HUBER+SUHER SMPM connectors can be tailored to meet customers' specific needs
Cable assemblies with high performance up to 65 GHz	Complete RF connection from one hand

SMPM

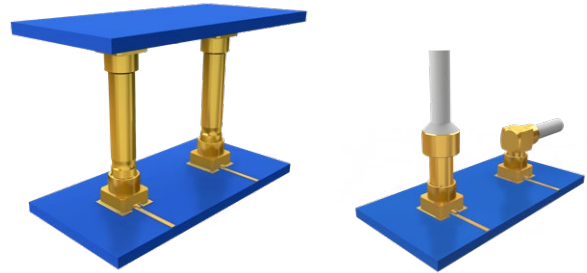
Applications

SMPM connectors are mainly used for board-to-cable as well as board-to-board applications:

Board-to-board application: information and guidelines

The axial and radial working range define the parameters for board-to-board connections when mated.

The connecting range pertains to the alignment during the mating process.



Board-to-board

board-to-cable

Working range (axial and radial):

In mated condition, the two PCB connector have to be aligned within the dimension given for the axial and radial working range.

The axial working range is ± 0.1 mm.

The radial working range depends on the length of the adaptor: a longer adaptor provides a greater radial working range. The adapter can tilt up to 3° .

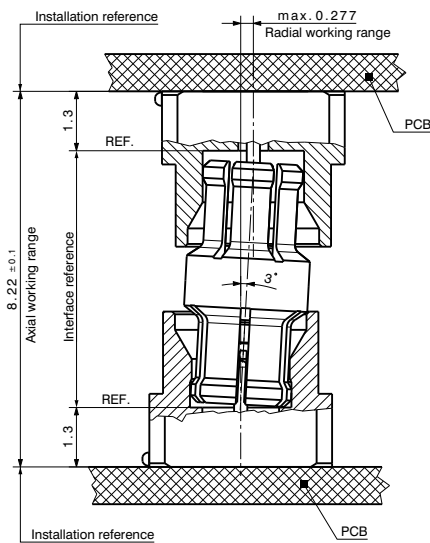
At a board-to-board distance of 8.22 mm, the radial working range is approximately 0.28 mm.

At a board-to-board distance of 18.32 mm, the radial working range increases to about 0.81 mm.

The example below consists of the adapter 31_SMPM-50-0-3 and the PCB connector (full detent) 81_SMPM-S50-0-F6 and the PCB connector (smooth bore) 81_SMPM-S50-0-S5.

Usually, a board-to-board connection consists of a full detent and a smooth bore PCB connector.

This ensures that the adapter stays in the full detent PCB connector when the connection is disengaged.



Connecting range

It is important to note that, for SMPM connectors with standard funnels, a blind mateable assembly is not feasible. The adapter must be aligned with the counter connector prior to mating in order to avoid crashing or damage.

Recommendations

HUBER+SUHNER recommends the use of guiding pins to align the boards within the connecting and working ranges. Distance holders can also help maintain axial alignment within working range.

HUBER+SUHNER provides outline drawings for every application with the relevant mechanical dimensions that need to be considered when designing-in SMPM. 3D STEP files are available at www.hubersuhner.com.

SMPPM – technical data

SMPPM best performance-to-price ratio

Electrical data	Requirements
Impedance	50 Ω
Frequency range	DC to 65 GHz
Contact resistance Center contact Outer contact	$\leq 6 \text{ m}\Omega$ $\leq 2 \text{ m}\Omega$
Working voltage (at sea level)	335 Vrms
Insulation resistance	$\geq 5000 \text{ M}\Omega$
RF leakage	80 dB max. at 3 GHz 65 dB max. at 3 to 26.5 GHz
Return loss (RL) / VSWR Typical values	26 dB / 1.11 DC to 26.5 GHz 17 dB / 1.33 26.5 GHz to 50 GHz 14 dB / 1.50 50GHz to 65 GHz

Mechanical data	Requirements
Force to engage	full detent: 20 N (4.5 lbs) typical smooth bore: 11 N (2.5 lbs) typical
Force to disengage	full detent: 29 N (6.5 lbs) typical smooth bore: 6.7 N (1.5 lbs) typical
Durability [mating]	Full detent ≥ 100 Smooth bore ≥ 500
Axial float (misalignment)	$\pm 0.1 \text{ mm}$ / ($\pm 0.004 \text{ inch}$)
Radial float (misalignment)	3° (tilt angle of the adapter) $\pm 0.27 \text{ mm}$ (at 8.2mm board-to-board distance) $\pm 0.80 \text{ mm}$ (at 18.3mm board-to-board distance)
Minimum board-to-board distance	8.22 mm / (0.324 inch)

Environmental data	Requirements
Temperature range	-65 to +165 °C / -85 to +329 °F
Thermal shock	MIL-STD-202, method 107, condition B
Moisture resistance	MIL-STD-202, method 106
Corrosion	MIL-STD-202, method 101, condition B
Vibration	MIL-STD-202, method 204, condition D
Shock	MIL-STD-202G, method 213, test condition A

SMPM – technical data

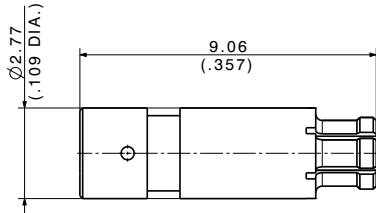
Material data		
Connectors	Material	Plating
Center contacts	Brass, copper-beryllium alloy	SUCOPRO® gold plating
Outer contact	Brass, copper-beryllium alloy	SUCOPRO® gold plating
Body	Brass, copper-beryllium alloy	SUCOPRO® gold plating
Dielectric	PTFE/PFA/PEEK	–
Adapters / bullets	Material	Plating
Center contacts	Brass, copper-beryllium alloy	SUCOPRO® gold plating
Outer contact	Brass, copper-beryllium alloy	SUCOPRO® gold plating
Dielectric	PTFE/PFA/PEEK	–

Performance listed is typical. Individual part configuration may vary. Contact HUBER+SUHNER for more information and specifications by part number. Customer specific factors pertaining to recommended mounting patterns including transmission line topology, substrate thickness and material, board-stackup, operating frequency, etc. must be submitted to HUBER+SUHNER for analysis prior to release of final performance levels and mounting configurations.

SMPM – Cable connectors

Straight cable jacks (female)

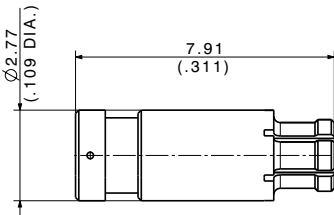
- Cable entry soldered
- Center contact plugged



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
21_SMPM-50-1-1/111_NE	85224724	Y8 (SR_47_LA_TP-01)	single	DOC-0001271129
21_SMPM-50-1-1/111_NH	85274825	Y2 (SUCOFORM_47_CU) Y15 (SR_47_CU_TP)	bulk 100 pcs	

Straight cable jacks (female)

- Cable entry soldered
- Center contact plugged



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
21_SMPM-50-1-3/111_NE	85263978	Y18 (MULTIFLEX_53-02)	single	DOC-0001361156
21_SMPM-50-1-3/111_NH	85274831		bulk 100 pcs	

Straight cable jacks (female)

- Cable entry soldered
- Center contact plugged

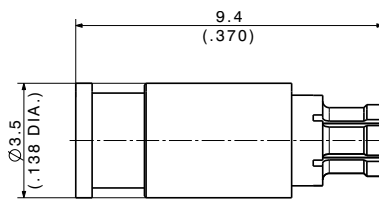
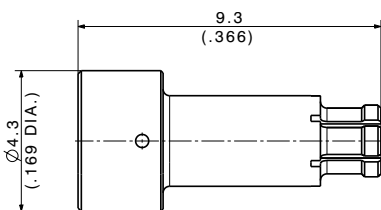


Fig. 1

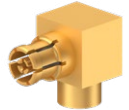
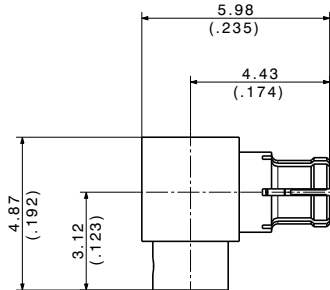
Fig. 2

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Fig.
21_SMPM-50-2-1/111_NE	85224864	Y11 (MULTIFLEX_86_HE, MULTIFLEX_86)	single	DOC-0001271428	Fig. 1
21_SMPM-50-2-1/111_NH	85274828		bulk 100 pcs		
21_SMPM-50-2-2/111_NE	85257665	Y3 (SR_86_CU_TP_M17), Y16 (Sucoform_86)	single	DOC-0001349795	Fig. 2
21_SMPM-50-2-2/111_NH	85274830		bulk 100 pcs		

SMPM – Cable connectors

Right angle cable jacks (female)

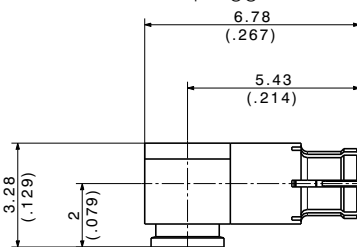
- Cable entry soldered
- Center contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
26_SMPM-50-1-2/111_NE	85263148	Y2 (SUCOFORM_47_CU)	single	DOC-0001365290
26_SMPM-50-1-2/111_NH	85275858	Y15 (SR_47_CU_TP) Y8 (SR_47_LA_TP-01)	bulk 100 pcs	

Right angle cable jacks (female)

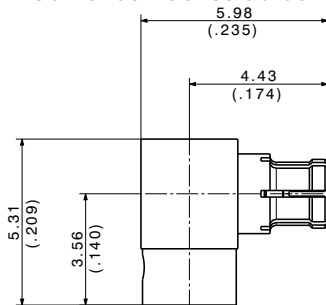
- Cable entry soldered
- Center contact plugged



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
26_SMPM-50-1-1/111_NE	85239299	Y18 (MULTIFLEX_53-02)	single	DOC-0001321158
26_SMPM-50-1-1/111_NH	85275870		bulk 100 pcs	

Right angle cable jacks (female)

- Cable entry soldered
- Center contact soldered

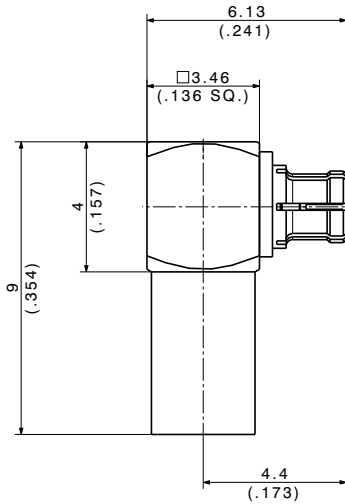


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
26_SMPM-50-2-2/111_NE	85242600	Y3 (SR_86_CU_TP_M17), Y16 (Sucoform_86), Y11 (Multiflex_86_HE, Mul- tiflex_86)	single	DOC-0001286556
26_SMPM-50-2-2/111_NH	85274832		bulk 100 pcs	

SMPM – Cable connectors

Right angle cable jacks (female)

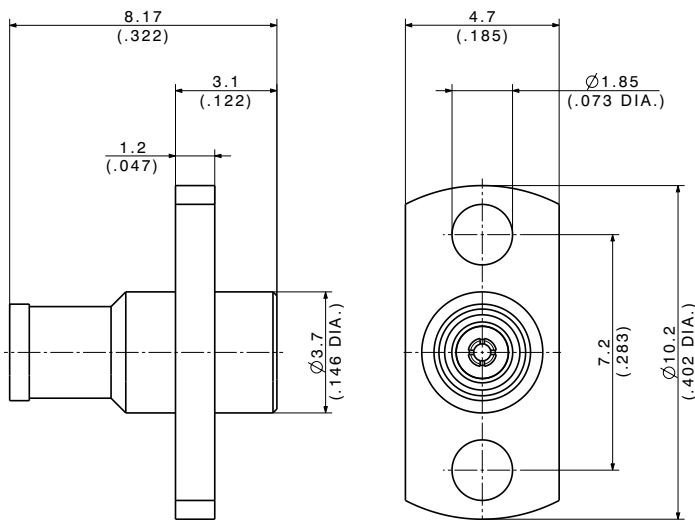
- Cable entry crimp
- Center contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
26_SMPM-50-1-3/111_NE	85256786	U1 (RG_178_B/U)	single	DOC-0001313340
26_SMPM-50-1-3/111_NH	85274833		bulk 100 pcs	

Straight panel cable plugs (male)

- Cable entry soldered
- Center contact plugged

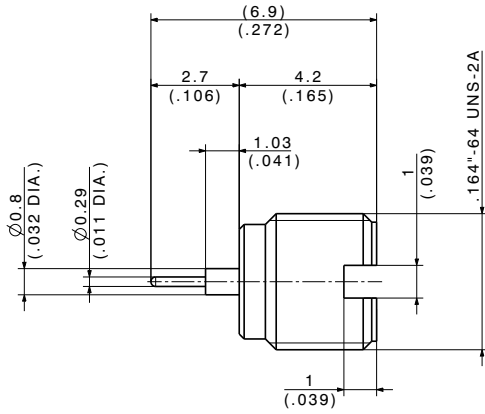


HUBER+SUHNER type	Item no.	Detent	Cable group (example)	Packaging	Assembly instruction
15_SMPM-50-2-F1/111_NE	85257168	full	Y11 (MULTIFLEX_86_HE, MULTIFLEX_86)	single	DOC-0001314801

SMPM – receptacles with solder end

Receptacles, plugs (male)

- Bulkhead mounted

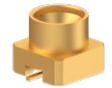
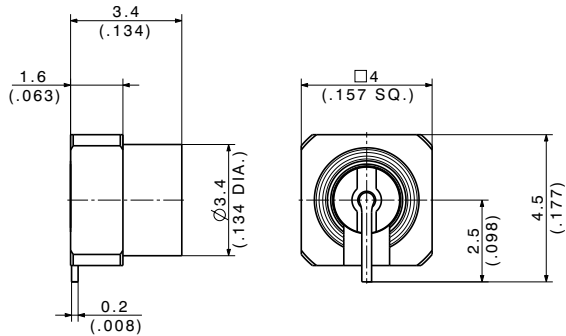


HUBER+SUHNER type	Item no.	Detent	Packaging	Mounting hole
12_SMPM-50-0-S3/111_NE	85224577	smooth	single	ML 188
12_SMPM-50-0-F2/111_NE	85224616	full	single	ML 188

SMPM – PCB connectors

Straight PCB plugs (male)

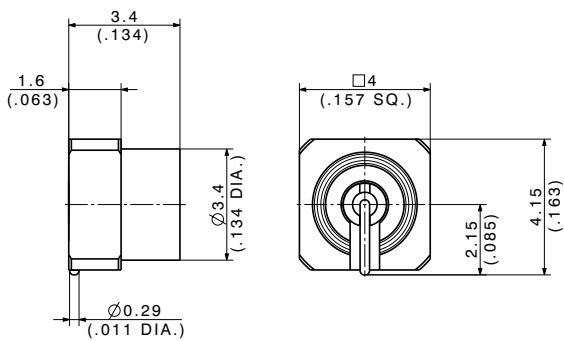
- Surface mount (SMD)
- Right angle center pin, square shape



HUBER+SUHNER type	Item no.	Detent	Packaging	Layout
81_SMPM-S50-0-S4/111_NE 81_SMPM-S50-0-S4/111_NM	85246614 85228891	smooth	single tape and reel	ML 186
81_SMPM-S50-0-F7/111_NE 81_SMPM-S50-0-F7/111_NM	85248367 85248326	full	single tape and reel	ML 186

Straight PCB plugs (male)

- Surface mount (SMD)
- Right angle center pin, round shape

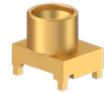
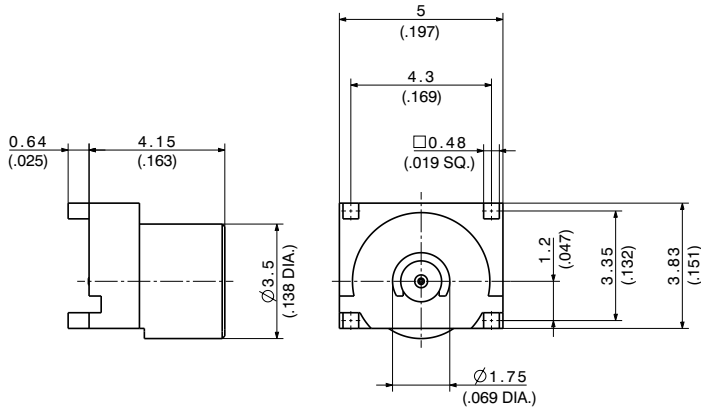


HUBER+SUHNER type	Item no.	Detent	Packaging	Layout
81_SMPM-S50-0-S5/111_NE 81_SMPM-S50-0-S5/111_NM	85246813 85235736	smooth	single tape and reel	ML 186
81_SMPM-S50-0-F6/111_NE 81_SMPM-S50-0-F6/111_NM	85248312 85241129	full	single tape and reel	ML 186

SMPM – PCB connectors

Straight PCB plugs (male)

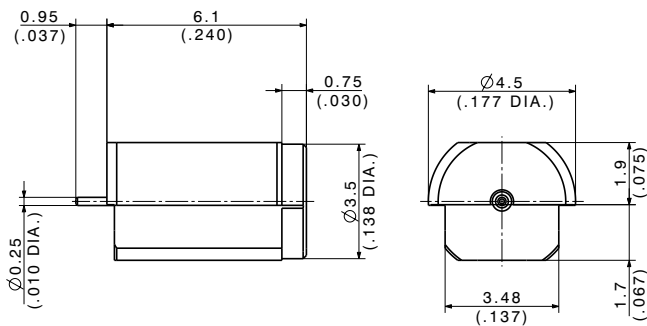
- Through hole outer contact, straight surface mount center pin



HUBER+SUHNER type	Item no.	Detent	Packaging	Layout
95_SMPM-50-0-F2/111_NE	85270010	full	single	DOU-00386059
95_SMPM-50-0-F2/111_NM	85244553		tape and reel	

Straight PCB plugs (male), edge mount

- edge mount

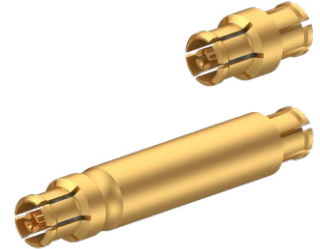
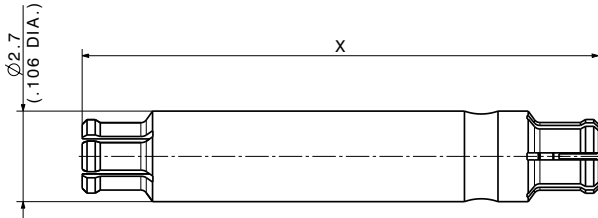


HUBER+SUHNER type	Item no.	Detent	Packaging	Layout
91_SMPM-50-0-S3/111_NE	85275516	smooth	single	DOU-00066439
91_SMPM-50-0-S3/111_NM	85275599		tape and reel	
91_SMPM-50-0-F2/111_NE	85269943	full	single	DOU-00066439
91_SMPM-50-0-F2/111_NM	85246053		tape and reel	

SMPM – adaptor within series

Straight adapters

- jack to jack (female to female)



HUBER+SUHNER type	Item no.	Packaging	Adapter length X	Board-to-board distance	Note
31_SMPM-50-0-3/111_NE	85236929	single	5.3 mm	8.22 mm	With standard PCB connector ref. height 1.3 mm
31_SMPM-50-0-3/111_NH	85275972	bulk 100 pcs			
31_SMPM-50-0-4/111_NE	85237917	single	15.4 mm	18.32 mm	With standard PCB connector ref. height 1.3 mm
31_SMPM-50-0-4/111_NH	85274838	bulk 100 pcs			

Adaptors with other lengths available upon request.

SMPM – technical data

SMPM MIL-Spec qualified

Electrical data	Requirements
Impedance	50 Ω
Frequency range	DC to 65 GHz
Contact resistance	center conductor 6.0 milliohms max. outer conductor 2.0 milliohms max.
DWV	335 Vrms at sea level
Insulation resistance	5000 megohms min.
Corona levels	125 Vrms at 70 000 ft
RF high potential	200 Vrms at 5 MHz
RF leakage	80 dB max. at 3 GHz 65 dB max. at 3 to 26.5 GHz
Magnetic permeability	< 2 μ
VSWR	1.1:1 to 26.5 GHz 1.3:1 to 65 GHz
Insertion loss	0.05 + 0.04 \sqrt{f} in GHz (non-hermetic connectors) 0.12 \sqrt{f} in GHz (hermetic connectors)

Mechanical data	Requirements
Center contact retention	1.5 lbs (6.672 N) min. (captivated designs)
Durability	100 cycles min. into a full detent shroud 1000 cycles min. into a smooth bore shroud
Force to engage	SMPM full detent – 3.5 lbs (15.569 N) typical SMPM smooth bore – 1.5 lbs (6.672 N) typical
Force to disengage	SMPM full detent – 5 lbs (22.241 N) typical SMPM smooth bore – 1.5 lbs (6.672 N) typical

Environmental data	Requirements
Temperature range	-65 to +165 °C
Thermal shock	MIL-STD-202, method 107, condition B
Moisture resistance	MIL-STD-202, method 106
Corrosion	MIL-STD-202, method 101, condition B
Sine vibration	MIL-STD-202, method 204, 28 g peak
Random vibration	MIL-STD-202, method 214, condition K-I, 46.3 g
Shock	MIL-STD-202, method 213, 12 000 g peak

SMPM – technical data

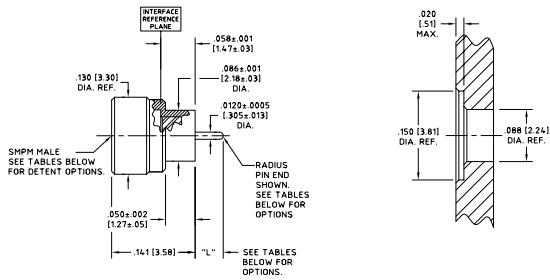
Material data		
Cable and shroud connectors	Material	Plating
Body and contact	beryllium copper per ASTM B-196	gold plate per ASTM B-488, code C, type II over nickel plate per SAE-AMS-QQ-N-290, type 1
Dielectric	PTFE per ASTM D-1710, type I, grade 1 or Torlon™*per ASTM D-5204 or polyether ether ketone per MIL-P_46189, type I or polyetherimide (PEI) per ASTM D-5202	–
Shroud	#303 SS per ASTM A-582	passivated per SAE-AMS-2700
Hermetic shroud connectors	Material	Plating
Body and contact	iron nickel alloy IAW ASTM F-15 and F-1466 UNS K94610 per ASTM F-15, class 1, only for pin on glass seal contacts	gold plate per ASTM B-488, code A, type III over nickel plate per SAE-AMS-QQ-N-290, type 1
Dielectric	Corning 7070 glass or equivalent	–
Adapters	Material	Plating
Body	beryllium copper per ASTM B-196 or #303 SS per ASTM A-582	gold plate per ASTM B-488, code C, type II over nickel plate per SAE-AMS-QQ-N-290, type 1
Contact	beryllium copper per ASTM B-196	gold plate per ASTM B-488, code C, type II over nickel plate per SAE-AMS-QQ-N-290, type 1
Dielectric	PTFE per ASTM D-1710, type I, grade 1 or polyether ether ketone per MIL-P_46189, type I or polyetherimide (PEI) per ASTM D-5202	–

* Note: Torlon™ is not used for space applications.

Performance listed is typical. Individual part configuration may vary. Contact HUBER+SUHNER for more information and specifications by part number. Customer specific factors pertaining to recommended mounting patterns including transmission line topology, substrate thickness and material, board-stackup, operating frequency, etc. must be submitted to HUBER+SUHNER for analysis prior to release of final performance levels and mounting configurations.

SMPM – hermetic shrouds

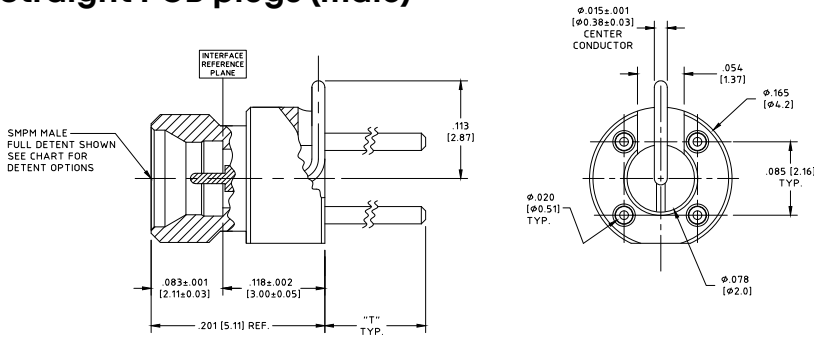
Hermetically sealed, plugs (male)



HUBER+SUHNER type	Item no.	"L"	End option	Detent
		mm/in		
29972H1-2-030S	80376464	0.762/0.030	square	full
29972H1-2-050S	80376465	1.270/0.050	square	full
29972H1-2-060S	80395460	1.524/0.060	square	full
29972H1-2-070S	80395461	1.778/0.070	square	full
29972H1-2-090S	80395462	2.286/0.090	square	full
29972H1-4-030S	80395463	0.762/0.030	square	smooth bore
29972H1-4-050S	80395464	1.270/0.050	square	smooth bore
29972H1-4-060S	80395465	1.524/0.060	square	smooth bore
29972H1-4-070S	80395466	1.778/0.070	square	smooth bore
29972H1-4-090S	80395467	2.286/0.090	square	smooth bore

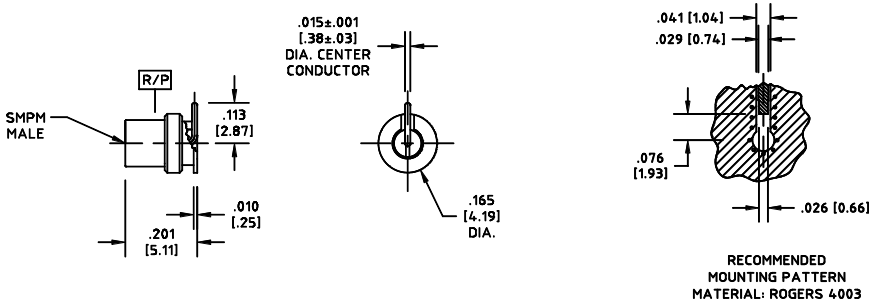
SMPM – PCB mount connectors

Straight PCB plugs (male)



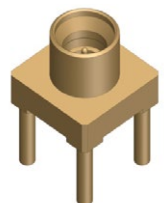
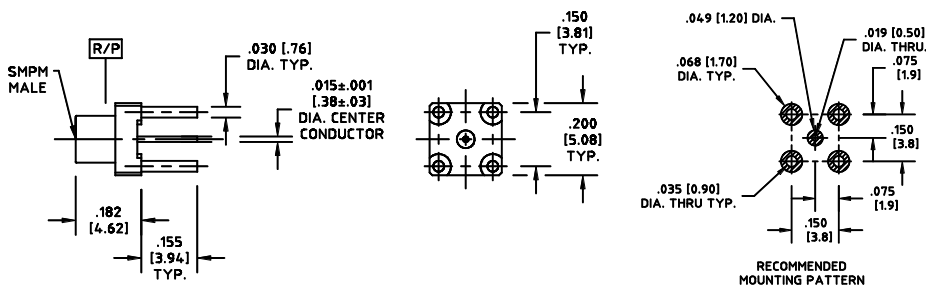
HUBER+SUHNER type	Item no.	Detent	T
29972S1-2-140	80378296	full	3.55mm/0.140"
29972S1-2-165	80391824	full	4.19mm/0.165"
29972S1-4-140	80392973	smooth bore	3.55mm/0.140"

Straight PCB plugs (male)



HUBER+SUHNER type	Item no.	Detent
29972SM-2-001	80367475	full
29972SM-4-001	80367476	smooth bore

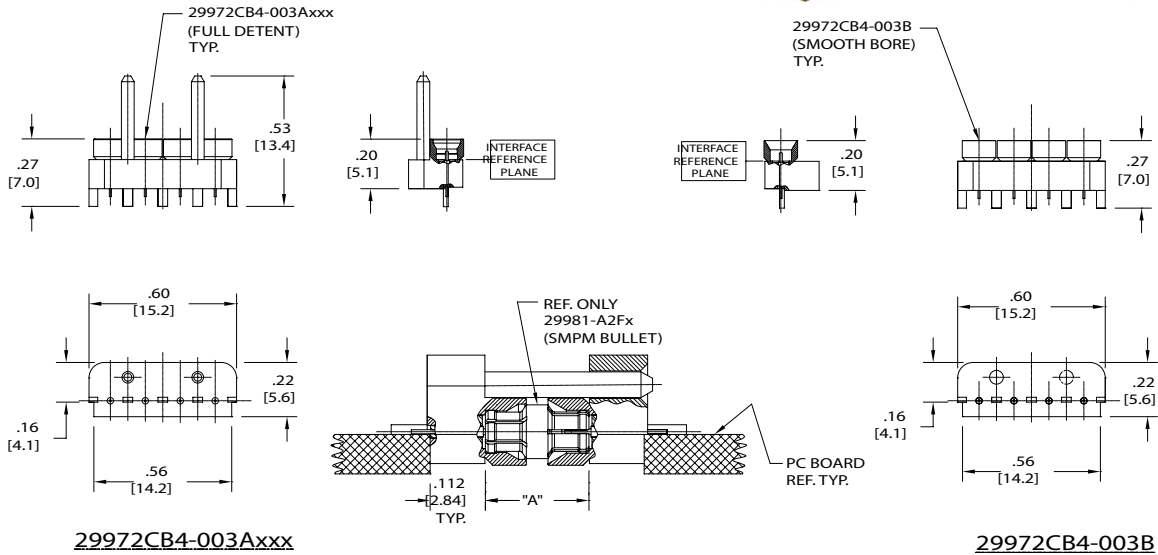
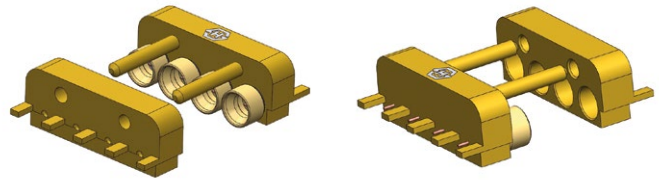
Straight PCB plugs (male)



HUBER+SUHNER type	Item no.	Detent
29972T1-2-155	80395469	full
29972T1-4-155	80395470	smooth bore

SMPM – edge mount connectors

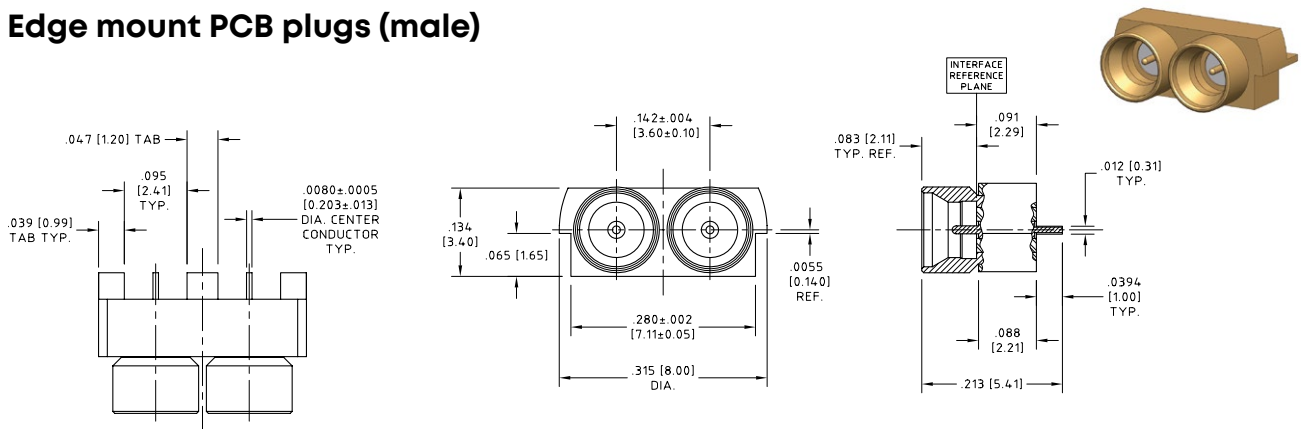
29972CB4-003A/B – edge mount



4 CHANNEL PC BOARD TO PC BOARD CONNECTOR BLOCKS WITH BULLET

HUBER+SUHNER type	Item no.	Detent
29972CB4-003A	80351053	full
29972CB4-003B	80351054	smooth bore

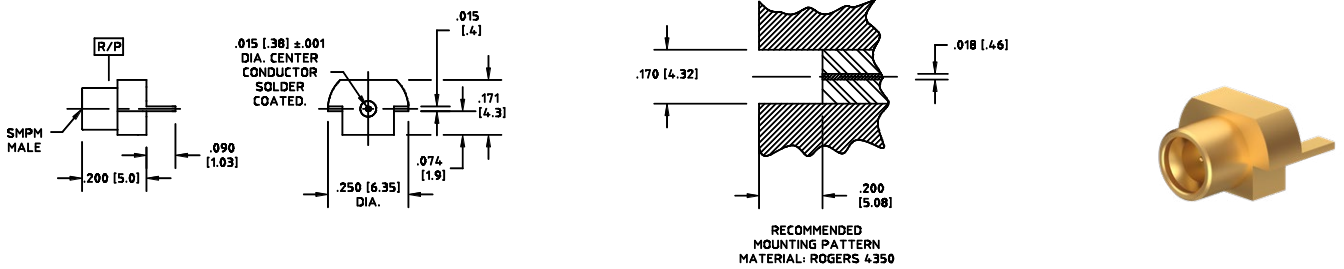
Edge mount PCB plugs (male)



HUBER+SUHNER type	Item no.	Detent
29972CB2-2-002	85218765	full
29972CB2-4-002	80376773	smooth bore

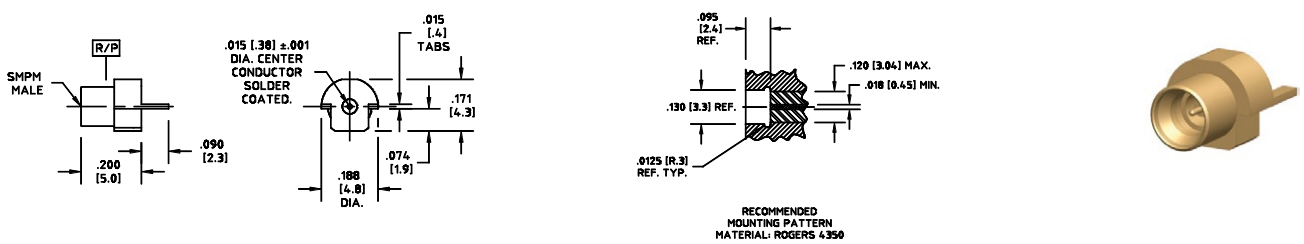
SMPM – edge mount connectors

Edge mount PCB plugs (male)



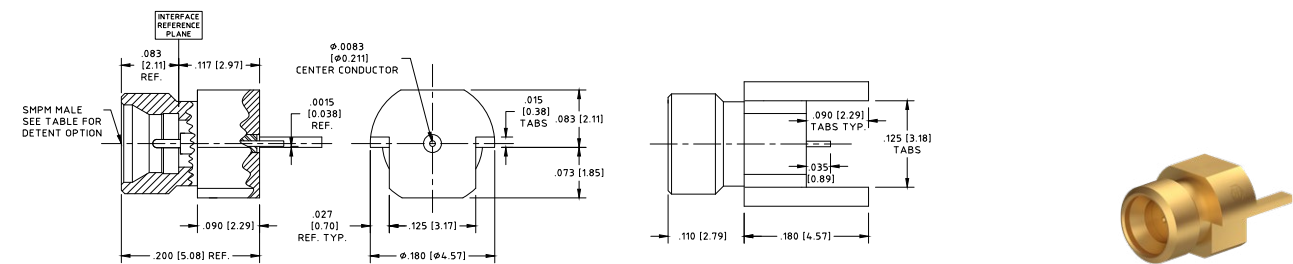
HUBER+SUHNER type	Item no.	Detent
29972BM-2-002	80395750	full
29972BM-4-002	80362691	smooth bore

Edge mount PCB plugs (male)



HUBER+SUHNER type	Item no.	Detent
29972BM-2-004	80395472	full
29972BM-4-004	80395473	smooth bore

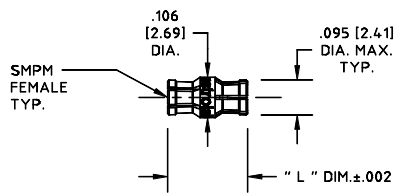
Edge mount PCB plugs (male)



HUBER+SUHNER type	Item no.	Detent
29972BM-2-006	80391558	Full
29972BM-4-006	85202088	Smooth bore

SMPM – adapter

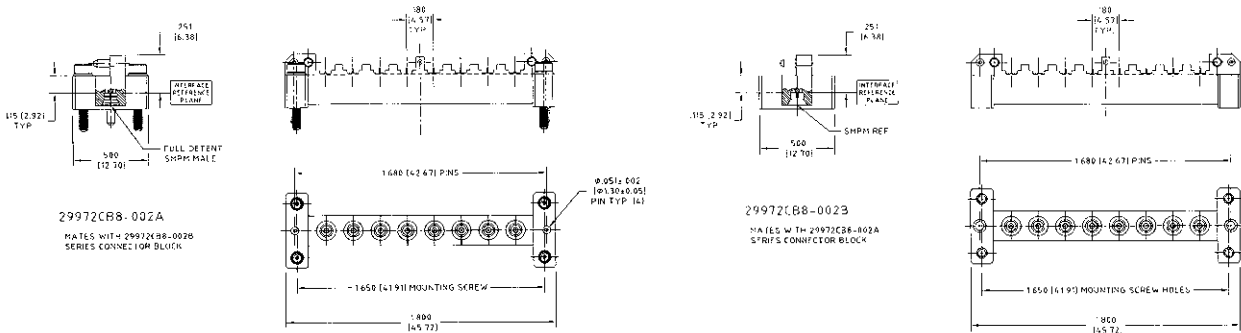
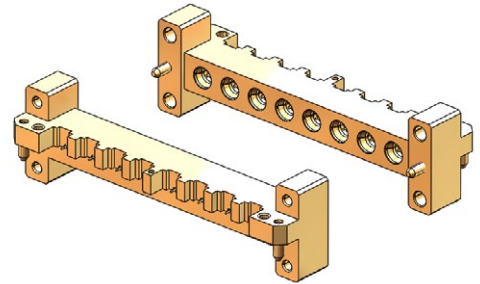
Adapter jack/jack (female/female)



HUBER+SUHNER type	Packaging	Adapter length L	
		mm	in
29981-A2F1	individual	5.33	0.210
29981-A2F2	individual	12.7	0.500
29981-A2F3	individual	6.45	0.254
29981-A2F5	individual	8.483	0.334
29981-A2F6	individual	15.367	0.605
29981-A2F8	individual	11.303	0.445
29981-A2F11	individual	5.359	0.211

SMPM – PSM mount connectors

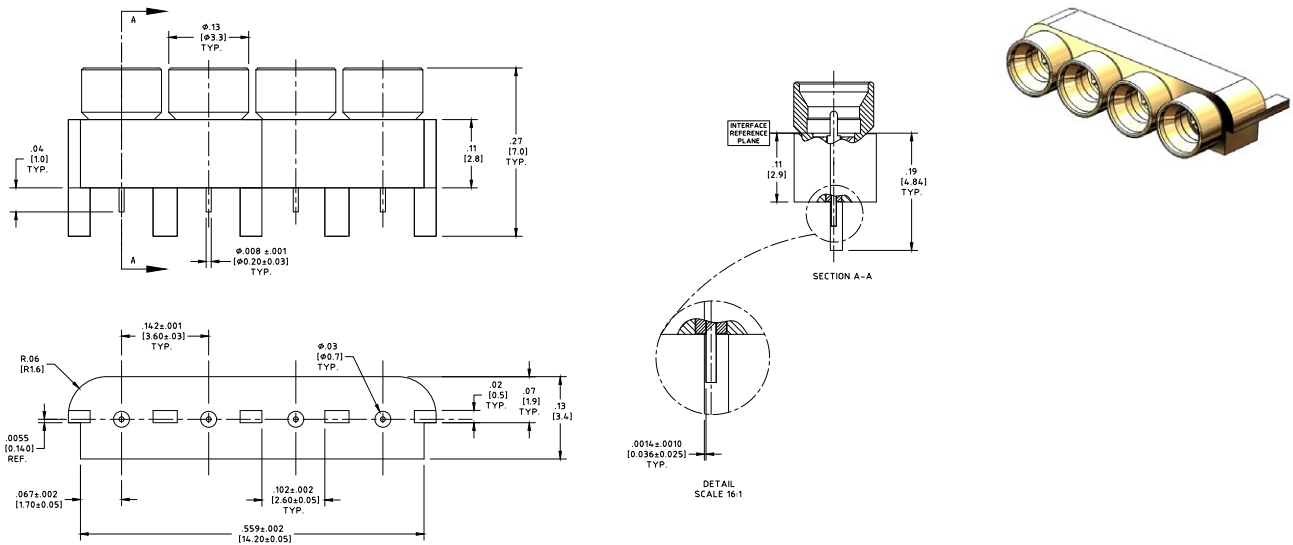
29972CB8-002A/B – edge mount



HUBER+SUHNER type	Detent
29972CB8-002A	full
29972CB8-002B	smooth bore

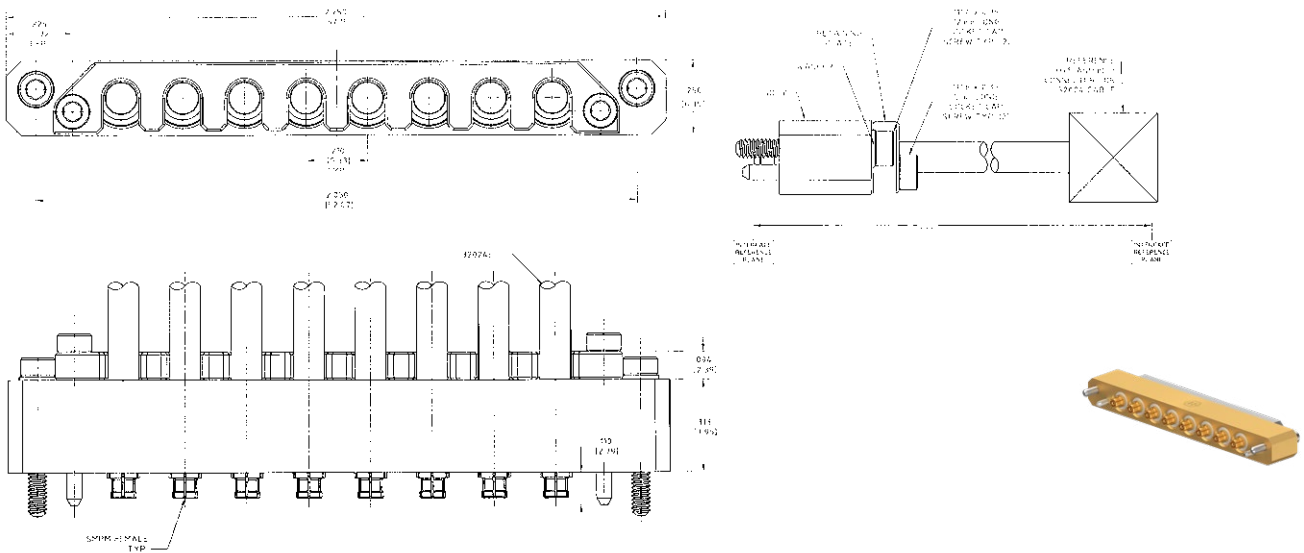
SMPM – launchers

Connector block, 4x1 male connector housing



HUBER+SUHNER type	Item no.	Detent
29972CB4-004	80392618	full

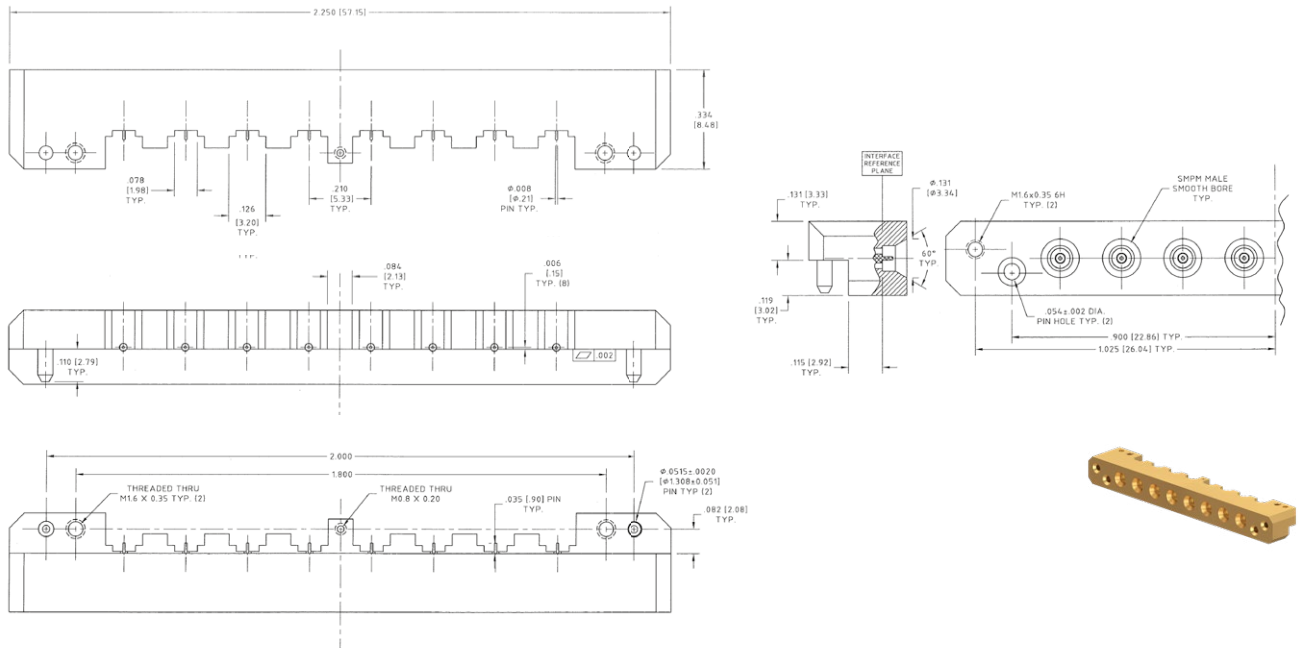
Connector block, 8x1 female connector housing



HUBER+SUHNER type	Item no.	Detent
29972CB8-003B-002	80396935	2.9mm SMK Plug
29972CB8-003B-003	85127379	2.9mm SMK Jack

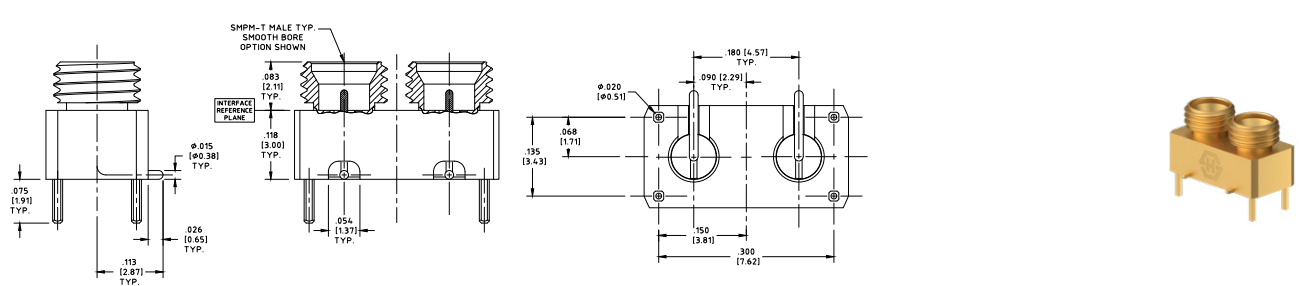
SMPM – launchers

Connector block, 8×1 male connector housing

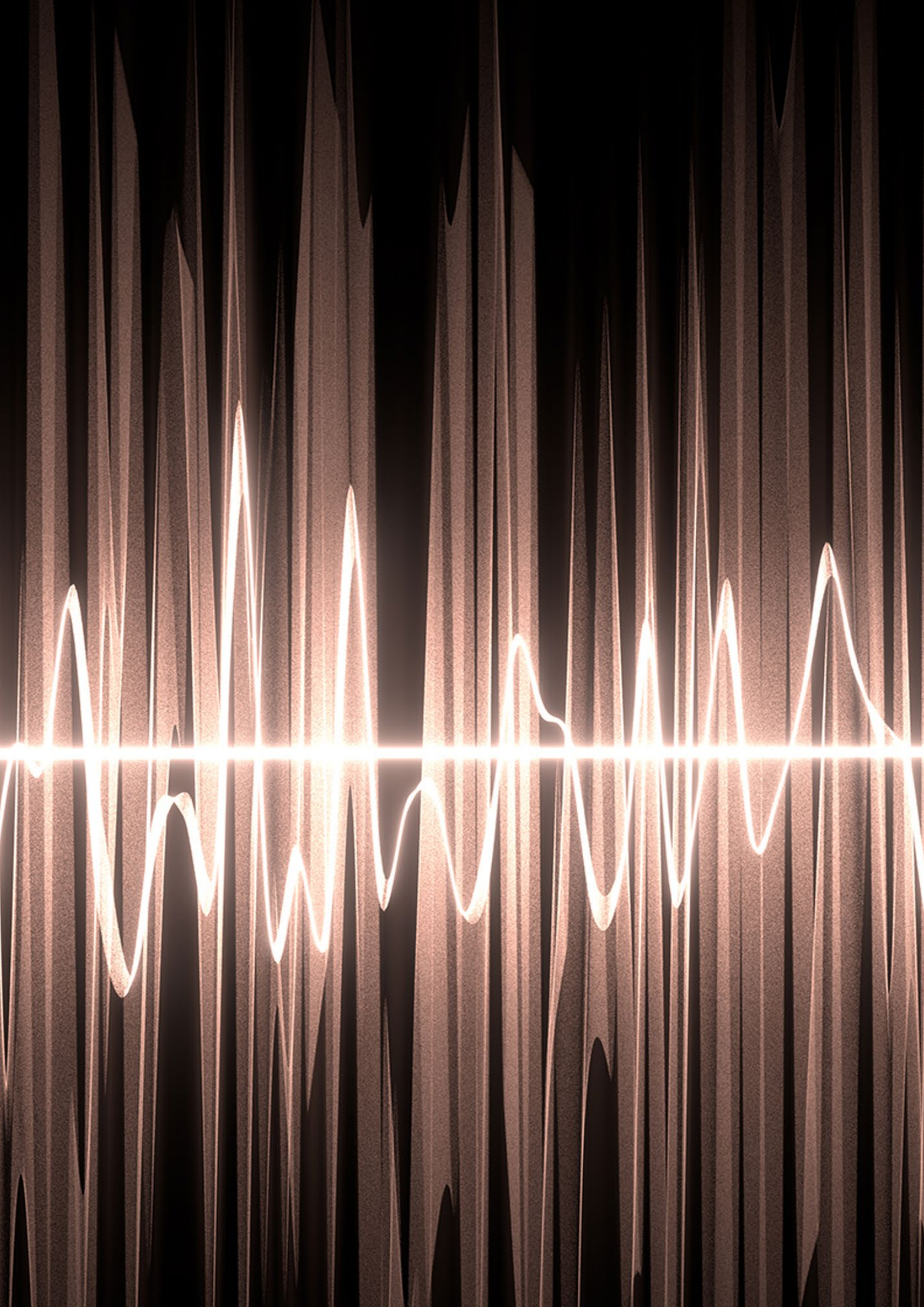


HUBER+SUHNER type	Item no.	Detent
29972CBB-003A	80396343	smooth bore

Connector block, 2×1 male connector housing



HUBER+SUHNER type	Item no.	Detent
29976CB2-2-002	85125056	full



Series SMPM-T

Description

The SMPM-T is the smallest threaded open source connector on the market. Its unique and innovative combination of a MIL-STD-348 SMPM female interface connector together with a retractable threaded nut provides an integrated solution offering unprecedented electrical and mechanical performance. The SMPM-T handles high density requirements with a connector centerline-to-centerline spacing of just 5 mm (0.20 in) while offering unmatched electrical stability at frequencies up to 65 GHz in even the harshest operating environments.

The SMPM-T connector is available along with HUBER+SUHNER's industry driving microbend «bend-to-the-end» technology that is already qualified for any aerospace application. The SMPM-T connector complies with the hi-rel material restrictions of NASA while still offering full compliance with RoHS and REACH legislation in the commercial market.

Content

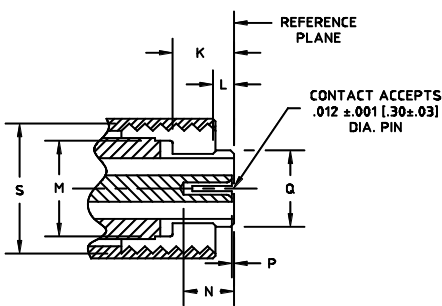
Description	119
Compatibility	119
Interface dimensions in mm/inches	119
Technical data	120
Cable connectors	122
Hermetic shrouds	122
Panel mount connectors	123
PCB mount connectors	125
Edge mount connectors	127
Adapters	129

Compatibility

50 Ω SMPM-T connectors are intermateable without restrictions.

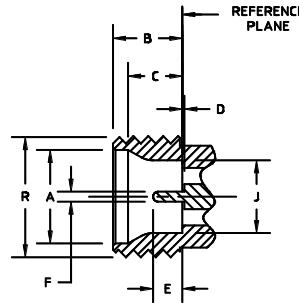
Interface dimensions (mm/inches)

SMPM-T female (socket contact)



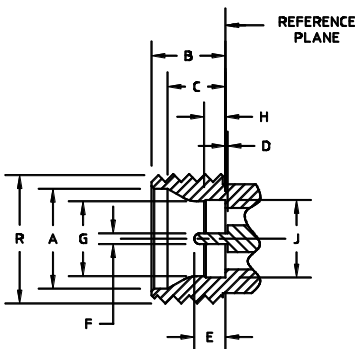
SMPM-T FEMALE (SOCKET CONTACT)
INTERFACE MEETS MIL-STD-348

SMPM-T male (pin contact), smooth bore



SMPM-T MALE (PIN CONTACT)
SMOOTH BORE
INTERFACE MEETS MIL-STD-348

SMPM-T male (pin contact), full detent



SMPM-T MALE (PIN CONTACT)
FULL DETENT
INTERFACE MEETS MIL-STD-348

	min.	max.		min.	max.
A	2.82 / 0.111	2.92 / 0.115	K	1.73 / 0.068	–
B	2.08 / 0.082	2.13 / 0.084	L	–	0.58 / 0.023
C	1.57 / 0.062	1.83 / 0.072	M	–	2.79 / 0.110
D	0.00 / 0.000	–	N	1.27 / 0.050	–
E	0.76 / 0.030	1.14 / 0.045	P	0.00 / 0.000	0.20 / 0.008
F	0.28 / 0.011	0.33 / 0.013	Q	–	2.41 / 0.095
G	2.11 / 0.083	2.16 / 0.085	R	–	3.66 / 0.145
H	0.53 / 0.021	0.58 / 0.023	S	3.30 / 0.130	–
J	2.18 / 0.086	2.24 / 0.088			

Interface dimensions conformable to the standards:

USA: MIL-PRF-31031
SMPM interface MIL-STD-348

SMPM-T – technical data

Electrical data	Requirements
Impedance	50 Ω
Frequency range	DC to 65 GHz
Contact resistance	center conductor 6.0 milliohms max. outer conductor 2.0 milliohms max.
DWV	335 Vrms at sea level
Insulation resistance	5000 megaohms min.
Corona levels	125 Vrms at 70 000 ft
RF high potential	200 Vrms at 5 MHz
RF leakage	-80 dB max. at 3 GHz -65 dB max. at 3 to 26.5 GHz
Magnetic permeability	< 2 μ
VSWR	1.1:1 to 26.5 GHz 1.3:1 to 65 GHz
Insertion loss	0.05 + 0.04 \sqrt{f} in GHz (non-hermetic connectors) 0.12 \sqrt{f} in GHz (hermetic connectors)

Mechanical data	Requirements
Center contact retention	1.5 lbs (0.68 kg) min. (captivated designs)
Durability	100 cycles min. into a full detent shroud 1000 cycles min. into a smooth bore shroud
Force to engage	SMPM full detent – 3.5 lbs (1.59 kg) typical SMPM smooth bore – 1.5 lbs (0.68 kg) typical
Force to disengage	SMPM full detent – 5 lbs (2.27 kg) typical SMPM smooth bore – 1.5 lbs (0.68 kg) typical
Mating torque	22 \pm 2 in-oz (0.016 \pm 0.001 m-kg)

Environmental data	Requirements
Temperature range	-65 to +165 $^{\circ}$ C
Thermal shock	MIL-STD-202, method 107, condition B
Moisture resistance	MIL-STD-202, method 106
Corrosion	MIL-STD-202, method 101, condition B
Sine vibration	MIL-STD-202, method 204, 28g peak
Random vibration	MIL-STD-202, method 214, condition K-1, 46.3 grms
Shock	MIL-STD-202, method 213, 12 000 g peak

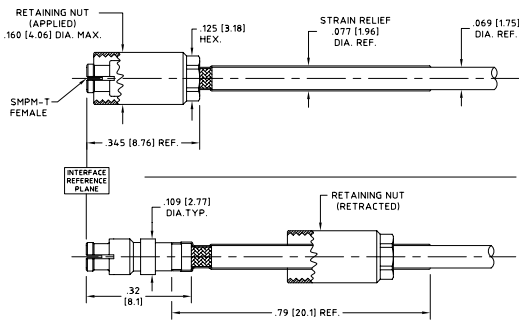
SMPM-T – technical data

Material data		
Cable and shroud connectors	Material	Plating
Body and contact	beryllium copper per ASTM B-196	gold plate per ASTM B-488, code C, type II over nickel plate per SAE-AMS-QQ-N-290, type II, class 1
Dielectric	PTFE per ASTM D-1710, type I, grade 1, polyamide-imide per ASTM D-5204 or polytherimide (PEI) per ASTM D-5205 or PEEK per MIL-P-46183, type I	–
Hermetic shroud connectors	Material	Plating
Body and contact	nickel-cobalt ferrous alloy per ASTM F-15, class 1	gold plate per ASTM B-488, code A, type III over nickel plate per SAE-AMS-QQ-N-290, type II, class 1
Dielectric	Corning 7070 glass or equivalent	–
Adapters	Material	Plating
Body and nut	#303 SS per ASTM A-582	gold plate per ASTM B-488, code C, type II over nickel plate per SAE-AMS-QQ-N-290, type II, class 1
Contact	beryllium copper per ASTM B-196	gold plate per ASTM B-488, code C, type II over nickel plate per SAE-AMS-QQ-N-290, type II, class 1
Dielectric	PTFE per ASTM D-1710, type I, grade 1 and polytherimide (PEI) per ASTM D-5205	–

Performance listed is typical. Individual part configuration may vary. Contact HUBER+SUHNER for more information and specifications by part number. Customer specific factors pertaining to recommended mounting patterns including transmission line topology, substrate thickness and material, board-stackup, operating frequency, etc. must be submitted to HUBER+SUHNER for analysis prior to release of final performance levels and mounting configurations.

SMPM-T – cable connectors

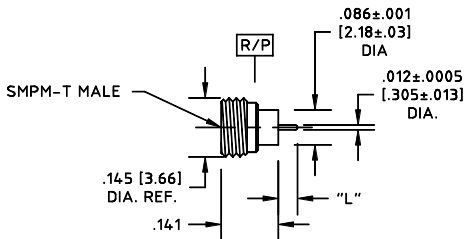
Straight cable jacks (female)



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Cable dia. mm/in
29971T-MF53	80376818	Y3, Y16, Y11 (2.18 mm/0.086 in)	single	1.96/0.077

SMPM-T – hermetic shrouds

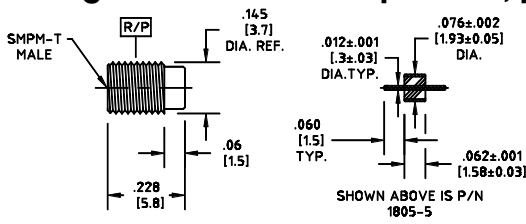
Hermetically sealed, plugs (male)



HUBER+SUHNER type	Item no.	Contact length "L"	Detent	End option
mm/in				
29976H1-2-060S	80362701	1.52/0.06	full	square
29976H1-2-090S	80362703	2.28/0.09	full	square
29976H1-4-060S	80362705	1.52/0.06	smooth bore	square
29976H1-4-090S	80362707	2.28/0.09	smooth bore	square

SMPM-T – panel mount connectors

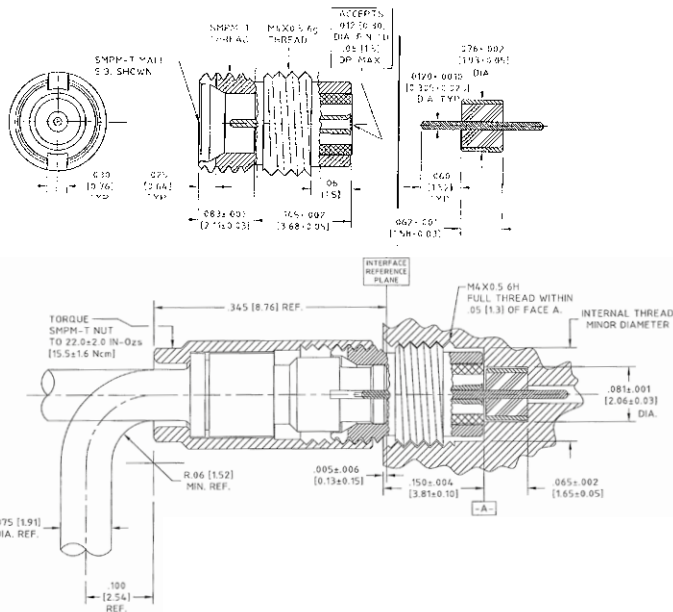
Straight bulkhead receptacles, plug (male)



Bead as shown on picture sold separately.

HUBER+SUHNER type	Item no.	Detent
29976TSP-2-005	80370422	full
29976TSP-4-005	80374421	smooth bore

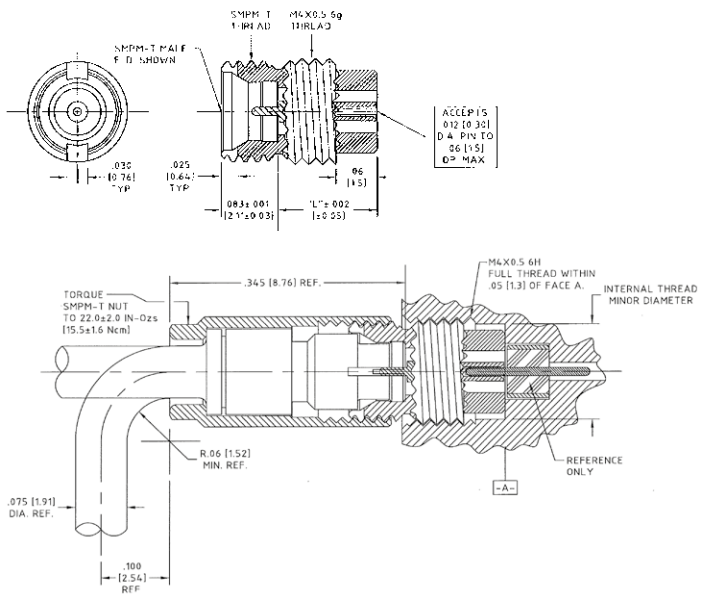
Straight bulkhead receptacles, plug (male)



HUBER+SUHNER type	Item no.	Detent
29976TSP-4-007	80393844	Full

SMPM-T – panel mount connectors

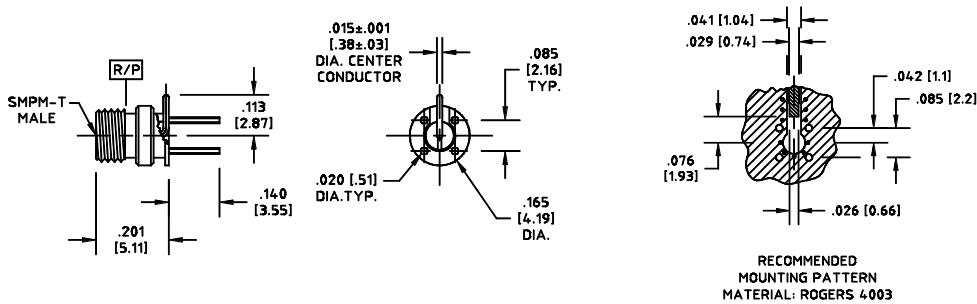
Straight bulkhead receptacles, plug (male)



HUBER+SUHNER type	Item no.	Detent
29976TSP-4-009	85126507	Smooth bore

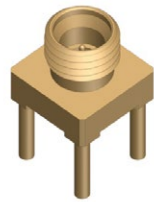
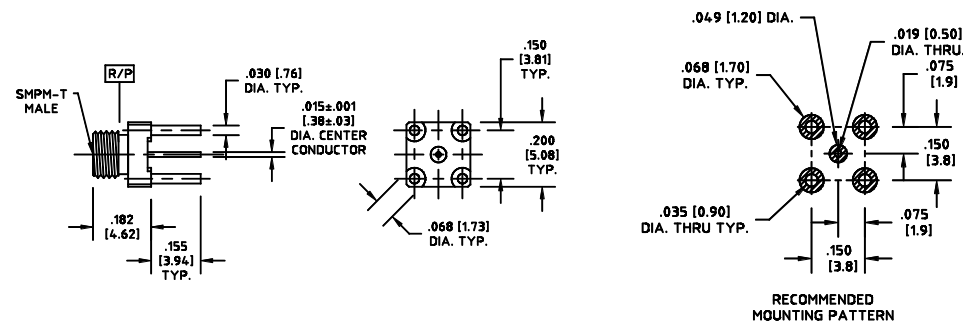
SMPM-T – PCB mount connectors

Straight PCB plugs (male)



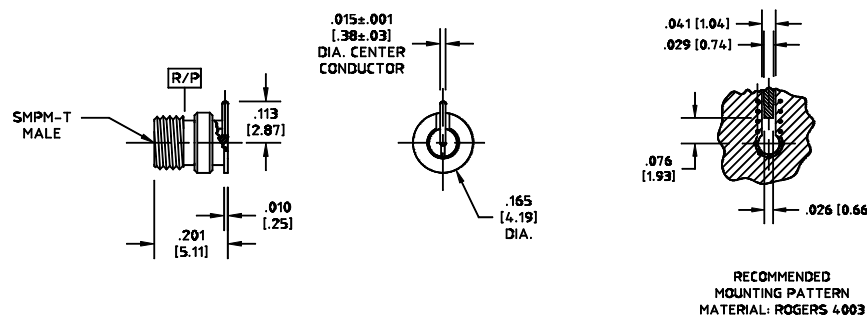
HUBER+SUHNER type	Item no.	Detent
29976S1-2-140	80362694	full
29976S1-4-140	80362695	smooth bore

Straight PCB plugs (male)



HUBER+SUHNER type	Item no.	Detent
29976T1-2-155	80366706	full
29976T1-4-155	80370524	smooth bore

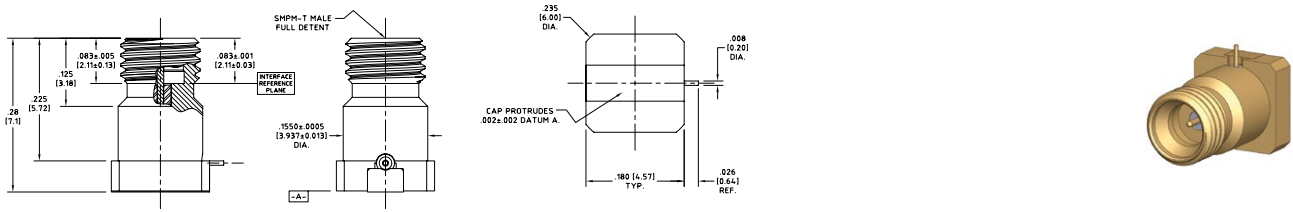
Straight PCB plugs (male)



HUBER+SUHNER type	Item no.	Detent
29976SM-2-001	80362696	full
29976SM-4-001	80362697	smooth bore

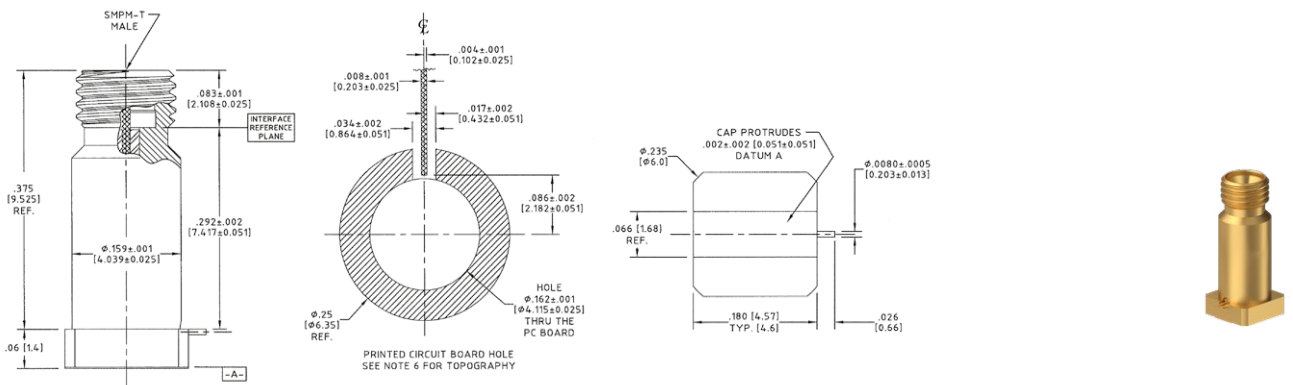
SMPM-T – PCB mount connectors

Straight PCB plugs (male)/reverse mount



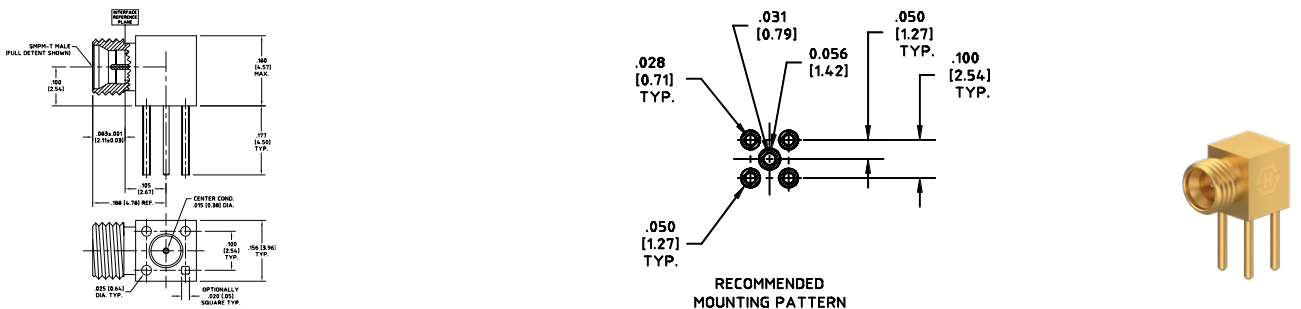
HUBER+SUHNER type	Item no.	Detent
29976TRM-2-001	80374144	full
29976TRM-4-001	80395475	smooth bore

Straight PCB plugs (male)/reverse mount



HUBER+SUHNER type	Item no.	Detent
29976TRM-2-004	85157216	Smooth bore

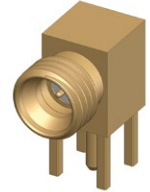
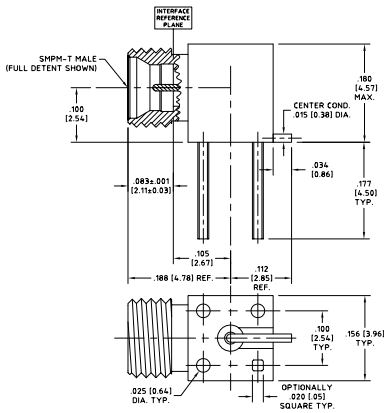
Right angle PCB plugs (male)



HUBER+SUHNER type	Item no.	Detent
29976RA-2-001	80374263	full
29976RA-4-001	80374264	smooth bore

SMPM-T – PCB mount connectors

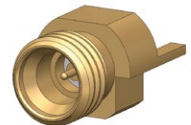
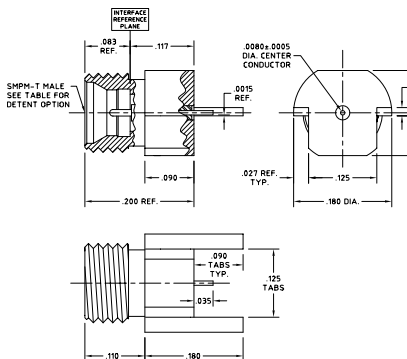
Right angle PCB plugs (male)



HUBER+SUHNER type	Item no.	Detent
29976RA-2-003	80376679	full
29976RA-4-003	80376680	smooth bore

SMPM-T – edge mount connectors

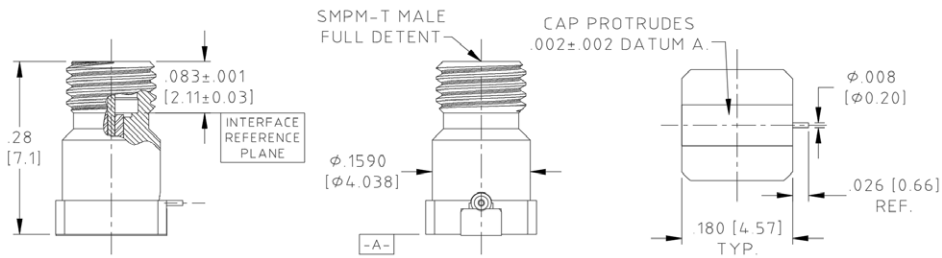
Edge mount PCB plugs (male)



HUBER+SUHNER type	Item no.	Detent
29976BM-2-006	80367075	full
29976BM-4-006	80367222	smooth bore

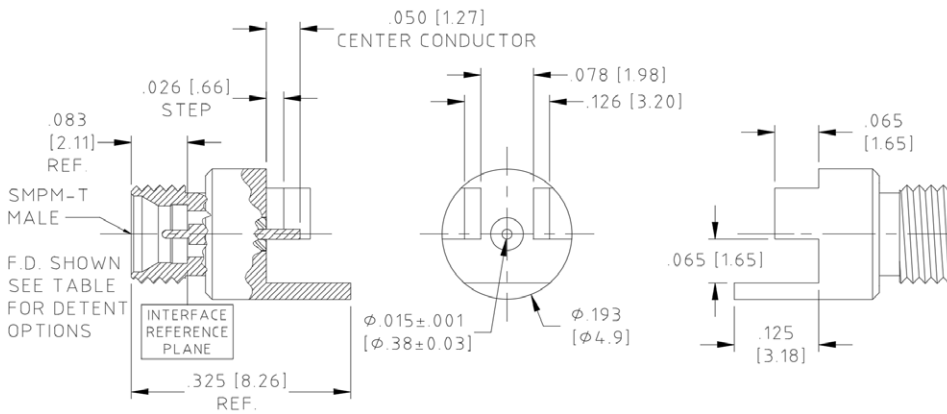
SMPM-T – edge mount connectors

Edge mount PCB plugs (male)



HUBER+SUHNER type	Item no.	Detent
29976TRM-2-002	85154395	full

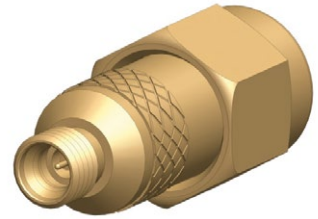
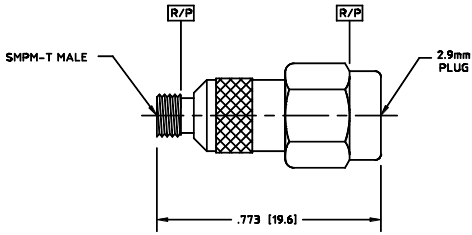
Edge mount PCB plugs (male)



HUBER+SUHNER type	Item no.	Detent
29976BM-2-001	80320230	Full
29976BM-4-001	80320231	Smooth bore

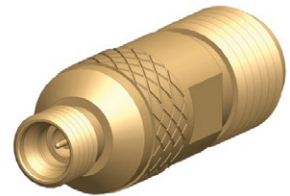
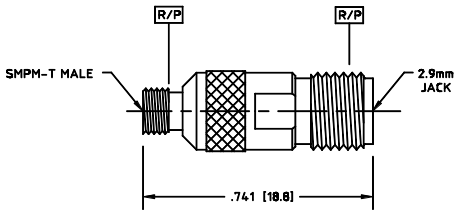
SMPM-T – adapters

Adapter SMPM-T plug – SK (2.92 mm standard) plug (male/male)

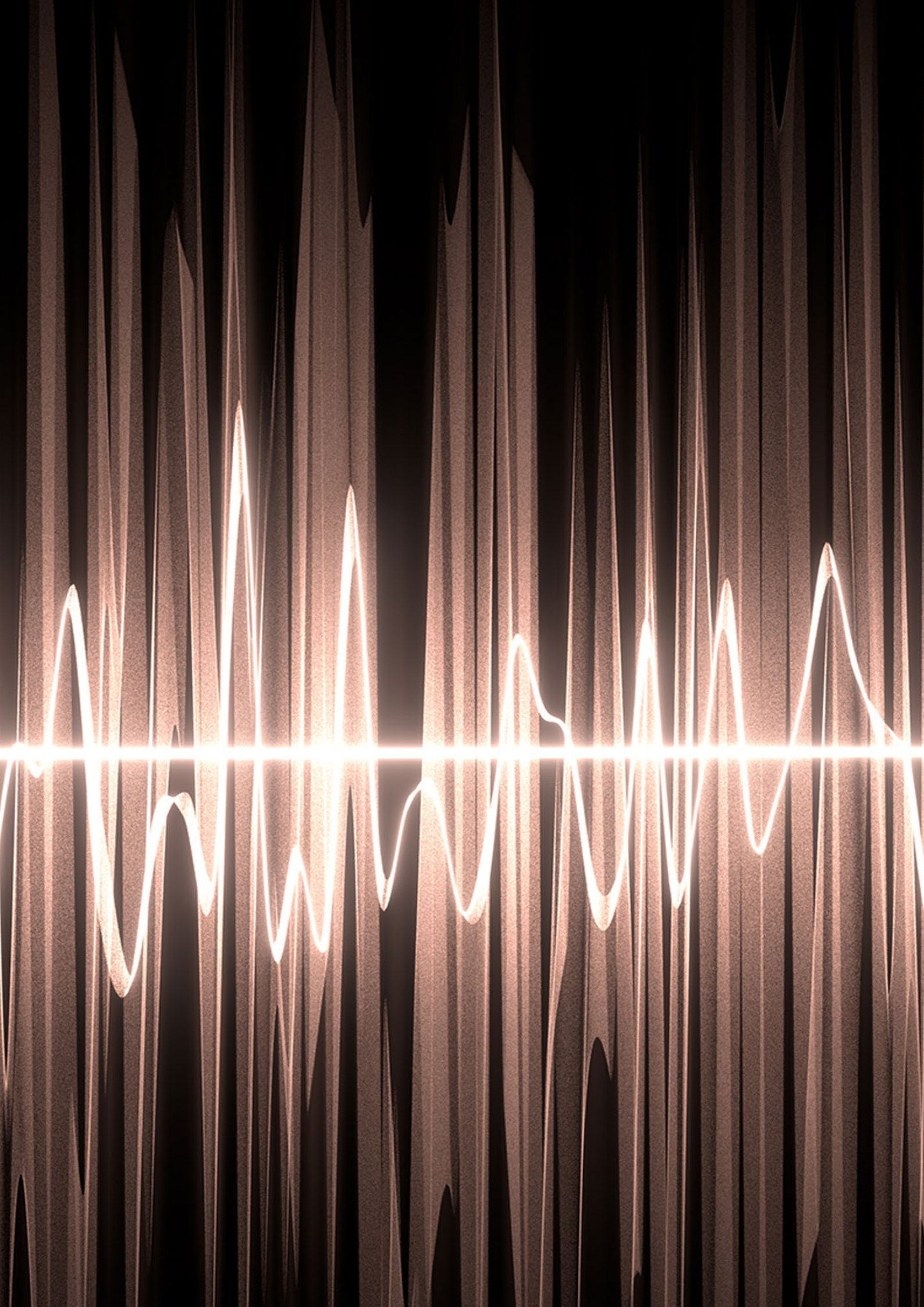


HUBER+SUHNER type	Item no.	Packaging	Detent
29429-1T2	80317870	single	full

Adapter SMPM-T plug – SK (2.92 mm standard) jack (male/female)



HUBER+SUHNER type	Item no.	Packaging	Detent
29429-4T2	80362561	single	full



SMP3

Description

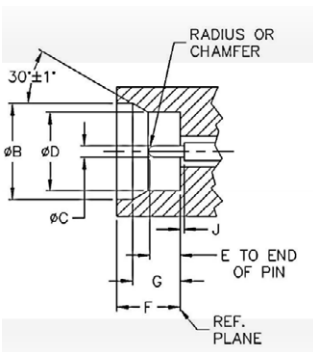
HUBER+SUHNER SMP3 connectors are 45% smaller than the existing SMP connectors and 30% smaller than the existing SMPM connector, making it ideal for dense packaging in multiport applications and high density stacked PCBs. HDI PCBs (High Density Interconnected Printed Circuit Boards) are used to meet market demand for complex designs in smaller form factors in most market segments, such as wireless, military, space, medical, semiconductors, testing, and more.

Compatibility

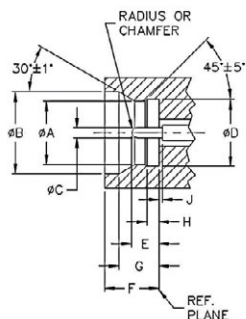
50 Ω SMP3 connectors are intermateable without restrictions.

Interface dimensions (mm/inches)

SMP3 male, Smooth Bore



SMP3 male, Full Detent



Content

Description	131
Compatibility	131
Interface dimensions in mm/inches	131
Technical data	132
Edge mount connectors	134
Surface mount connectors	135

Interface dimensions conformable to the standards:

USA: MIL-PRF-31031

SMP3 – technical data

Electrical data	Requirements
Impedance	50 Ω
Frequency range	DC to 100 GHz
Contact Resistance	center conductor 6.0 milliohms max. outer conductor 2.0 milliohms max.
DWV	250 Vrms at sealevel
Insulation Resistance	3500 Mohms
Corona Levels	100 VRMS at 70,000 ft
RF high potential	150 VRMS at 5 MHz
RF leakage	-80dB (typical mated pair)
VSWR	1.20:1 to 26.5 GHz, 1.35:1 to 40 GHz, 1.50 to 65 GHz, 1.70 to 100 GHz
Insertion loss	0.05 + 0.05 \sqrt{f} in GHz

Mechanical data	Requirements
Axial Misalignment	.010" max
Radial Misalignment	+/- .010"
Mating Cycles	Full Detent (FD) – 100 minimum; Smooth Bore (SB) – 500 minimum
Typical Mating Engagement Forces	Full Detent (FD), 11 N or 2.47 lbs. Smooth Bore (SB), 5.3 N or 1.19 lbs.
Typical Mating Disengagement Forces	Full Detent (FD), 20 N or 4.5 lbs. Smooth Bore (SB), 4.45 N or 1.0 lbs.

Environmental data	Requirements
Temperature Range	-55°C to 165°C
Thermal Shock	MIL-STD-202, Method 107, Test Condition B
Moisture Resistance	MIL-STD-202, method 106
Corrosion	MIL-STD-202, Method 101, Condition B
Vibration	MIL-STD-202, Method 204, Condition D
Shock	MIL-STD-202, Method 213, Condition I

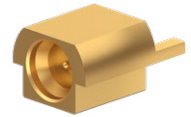
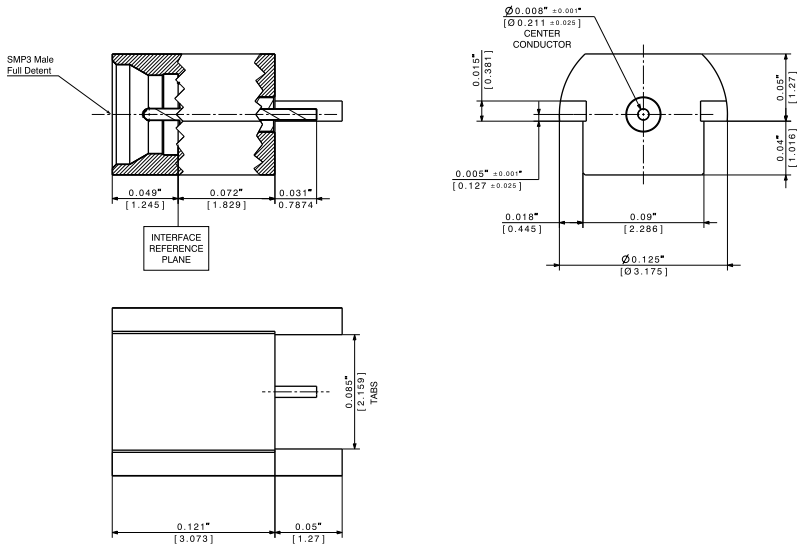
SMP3 – technical data

Material data		
Cable Connectors	Material	Plating
Body	Beryllium copper per ASTM-B-196	Gold plate per ASTM B-488, code C, Type II over Nickel plate: SAE-AMS-QQ-N-290 Class 1
Dielectric	PTFE per ASTM D-1710	-
Contact	Beryllium copper per ASTM-B-196	Gold plate per ASTM B-488, code C, Type II over Nickel plate: SAE-AMS-QQ-N-290 Class 1
Adapters	Material	Plating
Body & Contact	Beryllium copper per ASTM-B-196	Gold plate per ASTM B-488, code C, Type II over Nickel plate: SAE-AMS-QQ-N-290 Class 1
Dielectric	PTFE per ASTM D-1710	-

Performance listed is typical. Individual part configuration may vary. Contact HUBER+SUHNER for more information and specifications by part number. Customer specific factors pertaining to recommended mounting patterns including transmission line topology, substrate thickness and material, board-stackup, operating frequency, etc. must be submitted to HUBER+SUHNER for analysis prior to release of final performance levels and mounting configurations.

SMP3 – edge mount connectors

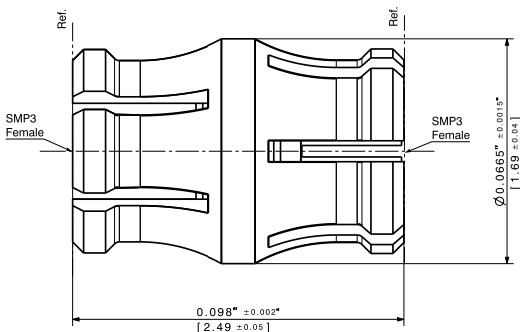
SMP3 Edge mount PCB plugs (male)



HUBER+SUHNER type	Item no.	Detent
91_SMP3-50-0-FD1	85190825	full
91_SMP3-50-0-SB1	85190826	Smooth bore

SMP3 – edge mount connectors

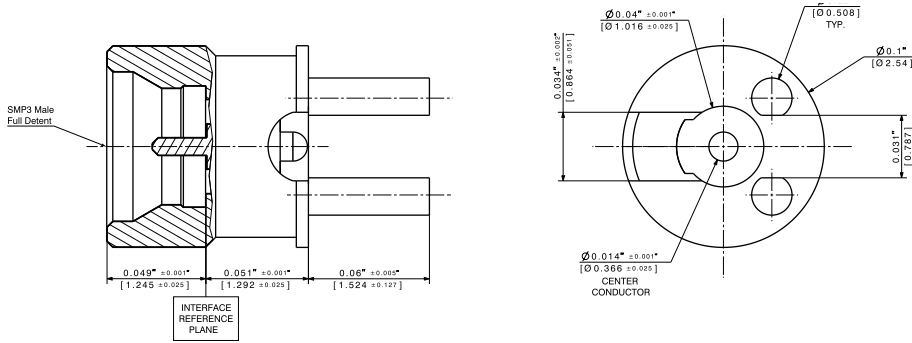
Adaptor/Bullet (female/female)



HUBER+SUHNER type	Item no.	Packaging	Adapter Length L
			mm/in
31_SMP3-50-0-1	85164677	Single	2.49/0.98

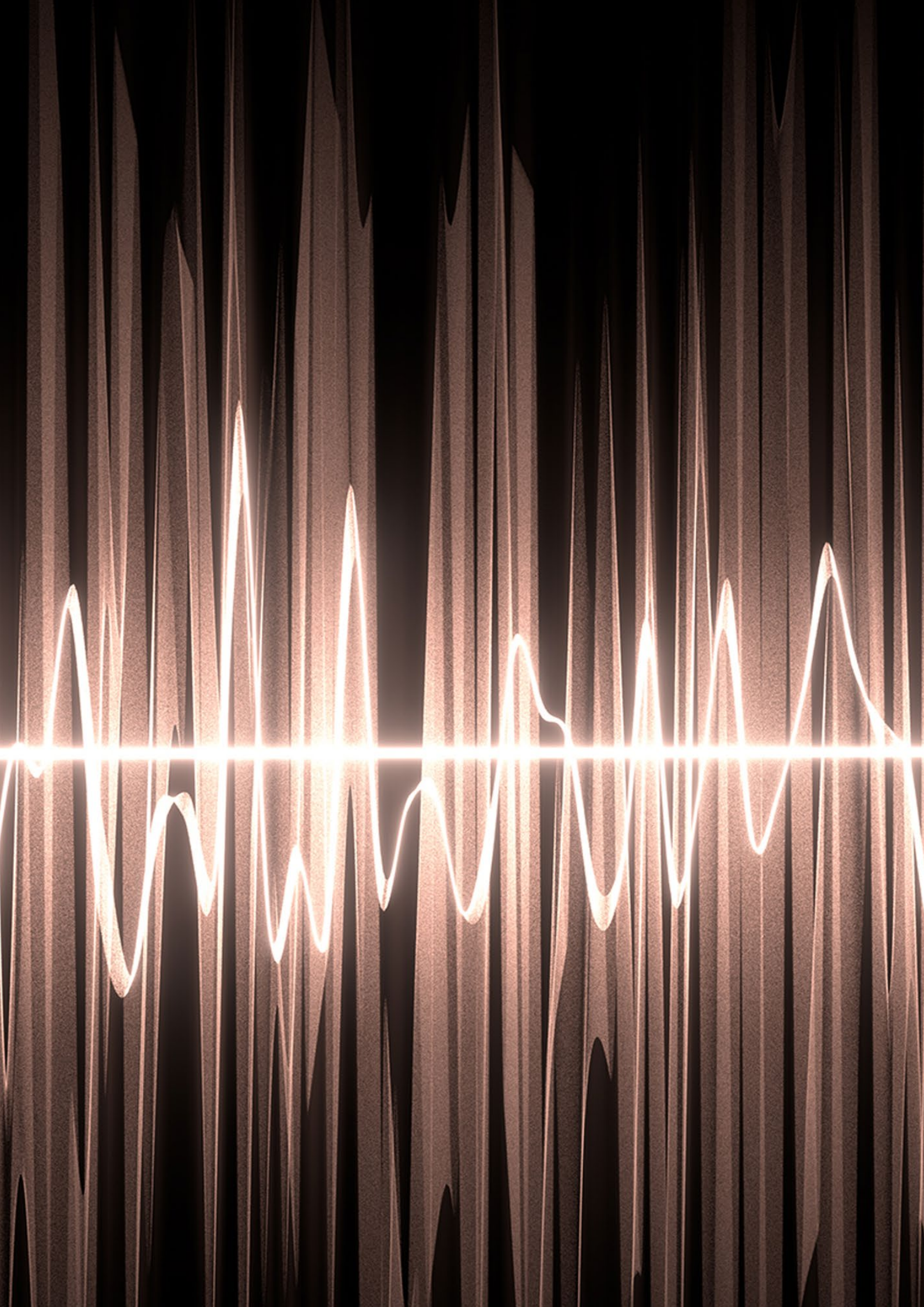
SMP3 – surface mount connectors

SMP3 Surface Mount (male)



HUBER+SUHNER type	Item no.	Detent
81_SMP3-S50-0-FD2	85199271	Full
81_SMP3-S50-0-SB2	85199288	Smooth bore

Connectors



SMP3-T

Description

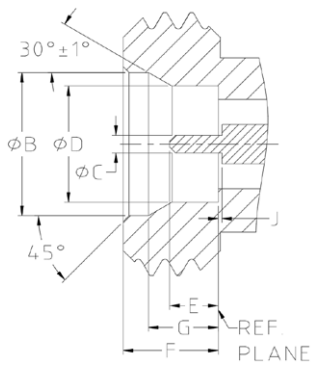
HUBER+SUHNER threaded SMP3-T connector enhances the durability of the standard SMP3 plug-in design, enabling it to withstand vibration and shock levels comparable to those of a traditional threaded connector. With the threaded nut providing mechanical retention, the SMP3-T connector is available exclusively in a smooth bore version to ensure maximum mating cycles.

Compatibility

50 Ω SMP3-T connectors are intermateable without restrictions.

Interface dimensions (mm/inches)

SMP3-T male, Smooth Bore



Content

Description	137
Compatibility	137
Interface dimensions in mm/inches	137
Technical data	138
Cable connectors	140

Interface dimensions conformable to the standards:

USA: MIL-PRF-31031

SMP3-T – technical data

Electrical data	Requirements
Impedance	50 Ω
Frequency range	DC to 100 GHz
Contact Resistance	center conductor 6.0 milliohms max.
outer conductor 2.0 milliohms max.	
DWV	250 Vrms at seallevel
Insulation Resistance	3500 Mohms
Corona Levels	100 VRMS at 70,000 ft
RF high potential	150 VRMS at 5 MHz
RF leakage	-80dB (typical mated pair)
VSWR	1.20:1 to 26.5 GHz, 1.35:1 to 40 GHz, 1.50 to 65 GHz, 1.70 to 100 GHz
Insertion loss	0.05 + 0.05 \sqrt{f} in GHz

Mechanical data	Requirements
Axial Misalignment	.010" max
Radial Misalignment	+/- .010"
Mating Cycles	Full Detent (FD) – 100 minimum; Smooth Bore (SB) – 500 minimum
Typical Mating Engagement Forces	Full Detent (FD), 11 N or 2.47 lbs. Smooth Bore (SB), 5.3 N or 1.19 lbs.
Typical Mating Disengagement Forces	Full Detent (FD), 20 N or 4.5 lbs. Smooth Bore (SB), 4.45 N or 1.0 lbs.

Environmental data	Requirements
Temperature Range	-55°C to 165°C
Thermal Shock	MIL-STD-202, Method 107, Test Condition B
Moisture Resistance	MIL-STD-202, method 106
Corrosion	MIL-STD-202, Method 101, Condition B
Vibration	MIL-STD-202, Method 204, Condition D
Shock	MIL-STD-202, Method 213, Condition I

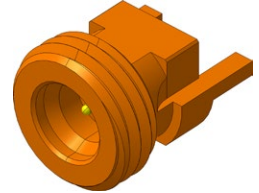
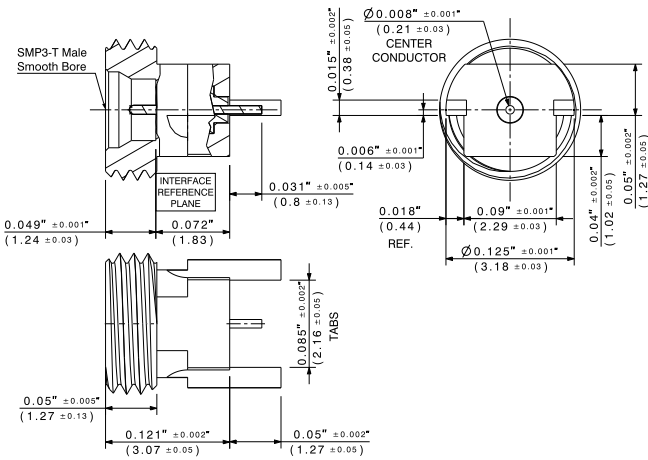
SMP3-T – technical data

Material data		
Cable Connectors	Material	Plating
Body and nut	Beryllium copper per ASTM-B-196	Gold plate per ASTM B-488, code C, Type II over Nickel plate: SAE-AMS-QQ-N-290 Class 1
Dielectric	PTFE per ASTM D-1710	-
Contact	Beryllium copper per ASTM-B-196	Gold plate per ASTM B-488, code C, Type II over Nickel plate: SAE-AMS-QQ-N-290 Class 1

Performance listed is typical. Individual part configuration may vary. Contact HUBER+SUHNER for more information and specifications by part number. Customer specific factors pertaining to recommended mounting patterns including transmission line topology, substrate thickness and material, board-stackup, operating frequency, etc. must be submitted to HUBER+SUHNER for analysis prior to release of final performance levels and mounting configurations.

SMP3-T – edge mount connectors

SMP3 Edge mount PCB plugs (male)



HUBER+SUHNER type	Item no.	Detent
91_SMP3T-50-0-S	85204775	Smooth bore

Series MMCX – micro miniature connectors

Description

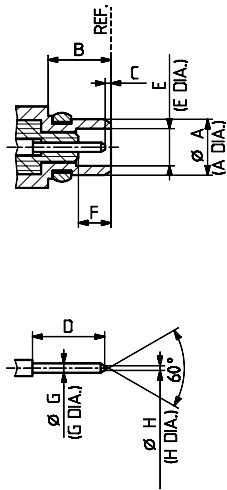
HUBER+SUHNER MMCX connectors are intended for use in applications where the smallest dimensions have to be achieved. These connectors can be used in applications from DC to 6 GHz.

The reliable „snap-on“ coupling mechanism ensures that the electrical parameters are consistently reproduced. Due to its non-slotted outer contact, the MMCX series provides a low RF leakage.

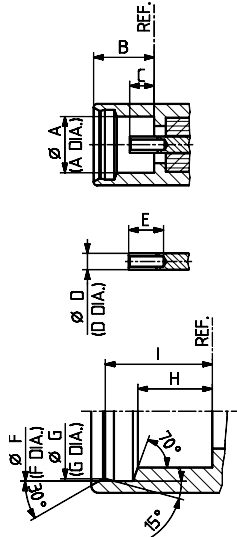
In addition, HUBER+SUHNER SMT MMCX connectors fully meet today's SMT (Surface Mount Technology) requirements with superior design, material selection and packaging. The HUBER+SUHNER SMT connectors are suitable to all reflow-soldered SMT-PCBs where impedance matching or screened signal transmission is necessary.

Interface dimensions (mm/inches)

Plug (male)



Jack (female)



Content

Description	141
Interface dimensions in mm/inches	141
Technical data	142
Cable connectors	144
Receptacles with solder end	149
PCB connectors	150
edge mount connectors – packaging	152
edge mount connectors – application notes	152

	Plug		Jack	
	min.	max.	min.	max.
A	–	2.40/0.094	2.41/0.095	–
B	2.70/0.106	–	–	2.65/0.104
C	0.00/0.000	0.25/0.010	0.90/0.035	1.20/0.047
D	1.23/0.048	–	0.70/0.028 nom.	
E	1.58/0.062	1.62/0.064	1.40/0.055	–
F	1.23/0.048	–	3.00/0.118	3.04/0.120
G*	0.38/0.015	0.42/0.017	2.88/0.113	2.92/0.115
H	–	0.20/0.008	1.57/0.062	1.63/0.064

Jack			
G ¹⁾	2.88/0.113	2.90/0.114	2.92/0.115
I	2.34/0.092	2.30/0.091	2.26/0.089

Interface dimensions conformable to the standards:

International: IEC 61169-52

¹⁾ I is rated to G

Series MMCX – technical data

Electrical data	CECC 22000	Requirements
Impedance		50 Ω
Frequency range		DC to 6 GHz
Dielectric withstanding voltage (at sea level)	4.4.5	500 V rms, 50 Hz
Working voltage (at sea level)		≥ 170 V rms, 50 Hz
Insulation resistance	4.4.4	$\geq 10^3$ M Ω / ≥ 500 M Ω ¹⁾
Contact resistance · Centre contact · Outer contact	4.4.2 4.4.3	≤ 5.0 m Ω / ≥ 10 M Ω ¹⁾ ≤ 2.5 m Ω / ≥ 5 M Ω ¹⁾
VSWR (mated pair) · Up to 4 GHz · 4 up to 6 GHz	4.4.1	(typical values) ≤ 1.15 ≤ 1.40 for cable connectors, see table below
RF leakage (measured at 1 GHz) · Connectors for flexible cables · Connectors for semi-rigid cables	4.4.8	≥ 60 dB ≥ 70 dB

¹⁾ valid for MMCX "cube" connectors only

Typical VSWR	Frequency range			Cable group
	1 GHz	2.5 GHz	6 GHz	
Straight connectors	1.03	1.08	1.12	Y3, Y11
	1.04	1.08	1.12	U1
Right angle connectors	1.03	1.08	1.13	Y3, Y11
	1.07	1.12	1.25	U1

Mechanical data	CECC 22000	Requirements
Engagement force	4.5.4	≤ 15 N/3.4 lbs
Disengagement force	4.5.4	6 to 15 N/1.4 to 3.4 lbs
Contact captivation	4.5.2	≥ 10 N/2.3 lbs
Cable retention force ¹⁾	4.5.5	see pages 32 – 41
Durability (matings)	4.7.1	≥ 500

¹⁾ value considers maximum load of the cables without irreversible variations of specifications

Environmental data	CECC 22000 test conditions	Equivalent MIL test conditions
Temperature range		-55 to +155 °C/-67 to +311 °F
Climatic category	4.6.5 \rightarrow 55/155/21	
Thermal shock	4.6.7 \rightarrow IEC 68-2-14 Na	MIL-STD-202, method 107, condition F
Moisture resistance	4.6.6 \rightarrow IEC 68-2-3 Ca	MIL-STD-202, method 106
Corrosion	4.6.10 \rightarrow IEC 68-2-11 Ka	saltspray test acc. to MIL-STD-202, method 101, condition B
Vibration	4.6.3 \rightarrow IEC 68-2-6 Fc	MIL-STD-202, method 204, condition C

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Series MMCX – technical data

Environmental data for "cube" connectors only	CECC 22000 test conditions	Equivalent MIL test conditions
Temperature range		-40 to +90 °C/-40 to +194 °F
Climatic category	4.6.5 → 40/90/21	
Thermal shock	4.6.7	MIL-STD-202, method 107, -40 °C/40 °F and +90 °C/+194 °F, 30 min. each
Moisture resistance	4.6.6	MIL-STD-202, method 103, condition B
Vibration	4.6.3	3 cycles in 3 opposite directions 10 to 150 Hz, 10 to 60 Hz: 0.75 mm/0.030 in., 60 to 150 Hz: 10 G
Mechanical shock	4.6.4	MIL-STD-202, method 213, condition B

Material data		
Connector parts	Material	Plating
Centre contact	copper-beryllium alloy, bronze	gold/SUCOPRO® gold plating
Body	brass	gold/SUCOPRO® gold plating
Crimp ferrules	brass	gold/SUCOPRO® gold plating
Insulators	PTFE or PFA	

Material data for "cube" connectors only		
Connector parts	Material	Plating
Leads Contact sockets	bronze	gold
Body	LCP (liquid crystal polymer), brass	gold
Outer contact	brass	gold
Insulators	LCP (liquid crystal polymer), PTFE or PFA	

Processing data		
for "cube" connectors only	Test standard	Requirement
Lead free reflow process	IPC/JEDECJ-STD-020C	recommended
Adherent to the print · Shearing · Pulling (vertical to PCB)		25 N/5.6 lbs 50 N/11.2 lbs

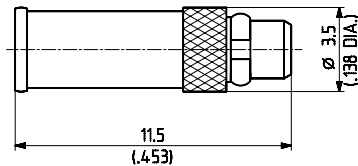
Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Series MMCX – cable connectors

Straight cable jacks (female)

For semi-rigid cables

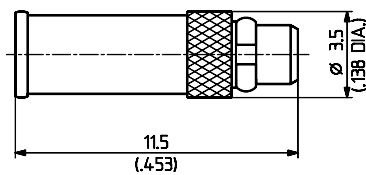
- Cable entry soldered
- Centre contact crimped



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
11_MMCX-50-1-3/111_OE	22648893	Y2 (EZ_47)	single	9078	1
11_MMCX-50-2-1/111_OE 11_MMCX-50-2-1/111_OH	22645297 22649039	Y3, Y11, Y16 (EZ_86)	single bulk 100 pcs.	9170	

For flexible cables

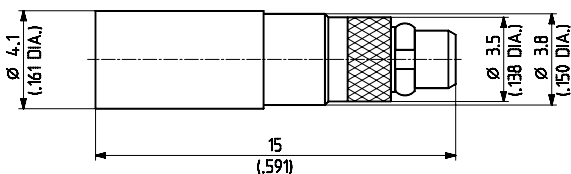
- HUBER+SUHNER full crimp



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
11_MMCX-50-1-1/111_OE 11_MMCX-50-1-1/111_OH	22645298 22651666	U1 (ENVIROFLEX_178)	single bulk 100 pcs.	9169	1/2.67
11_MMCX-50-1-2/111_OE 11_MMCX-50-1-2/111_OH	22645296 84027753	U0 (K_01152-07)	single bulk 100 pcs.		

For flexible cables

- HUBER+SUHNER full crimp



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
11_MMCX-50-2-3/111_OE 11_MMCX-50-2-3/111_OH	22649899 23000258	U2 (ENVIROFLEX_316)	single bulk 100 pcs.	9110	1 A
11_MMCX-50-2-4/111_OE	22649901	U4 (ENVIROFLEX_316_D)	single		

Series MMCX – cable connectors

Right angle cable plugs (male)

For semi-rigid cables

- Cable entry soldered
- Centre contact soldered

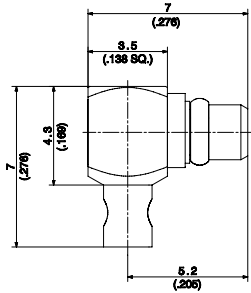


Fig. 1

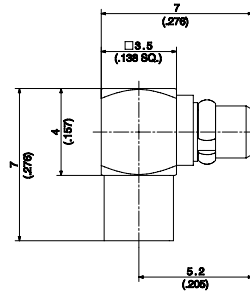


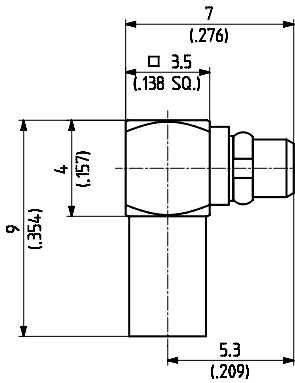
Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Fig.
16_MMCX-50-1-12/111_OE 16_MMCX-50-1-12/111_OH	84030531 21000178	Y2, Y15 (EZ_47)	single bulk 100 pcs.	0000180777	1
16_MMCX-50-2-13/111_OE 16_MMCX-50-2-13/111_OH	84032569 84007944	Y3, Y11 (EZ_86)	single bulk 100 pcs.	0000214734	2

For flexible cables

- Cable entry crimp
- Centre contact soldered



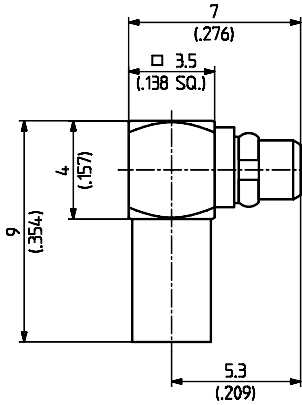
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
16_MMCX-50-1-1/111_OE 16_MMCX-50-1-1/111_OH	22645955 22648762	U1 (ENVIROFLEX_178)	single bulk 100 pcs.	9175	2.67

Series MMCX – cable connectors

Right angle cable plugs (male)

For flexible cables

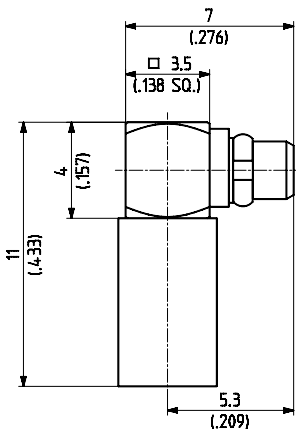
- Cable entry crimp
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
16_MMCX-50-1-2/111_OE	22645956	U0 (K_01152-07)	single	9175	2.67
16_MMCX-50-1-2/111_OH	22649009		bulk 100 pcs.		

For flexible cables

- Cable entry crimp
- Centre contact soldered



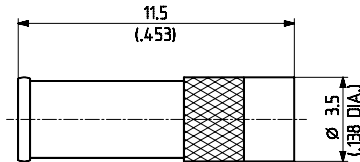
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
16_MMCX-50-2-2/111_OE	22649374	U4 (ENVIROFLEX_316_D)	single	9128	A
16_MMCX-50-2-2/111_OH	22651401		bulk 100 pcs.		
16_MMCX-50-2-4/111_OE	22649433	U2 (ENVIROFLEX_316)	single		
16_MMCX-50-2-4/111_OH	22649635		bulk 100 pcs.		

Series MMCX – cable connectors

Straight cable jacks (female)

For semi-rigid cables

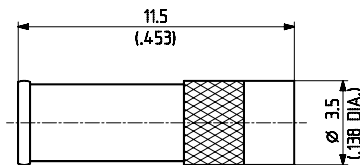
- Cable entry soldered
- Centre contact crimped



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
21_MMCX-50-2-1/111_OE	22645290	Y3, Y11, Y16 (EZ_86)	single	9170	1

For flexible cables

- HUBER+SUHNER full crimp

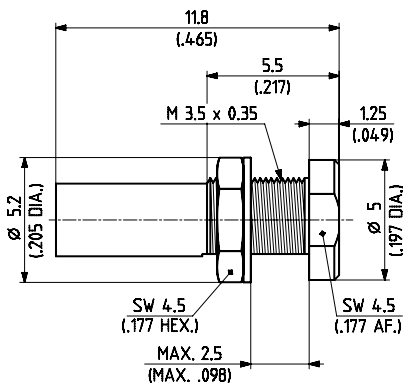


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
21_MMCX-50-1-1/111_OE	22645288	U1 (ENVIROFLEX_178)	single	9169	1/2.67
21_MMCX-50-1-2/111_OE	22645289	U0 (K_01152-07)			

Straight bulkhead cable jacks (female)

For semi-rigid cables

- Cable entry soldered
- Centre contact crimped
- Front mounting



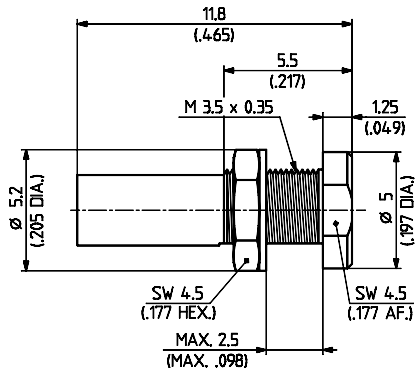
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert
24_MMCX-50-2-1/111_OE	22645954	Y3, Y11, Y16 (EZ_86)	single	9170	ML 68	1

Series MMCX – cable connectors

Straight bulkhead cable jacks (female)

For flexible cables

- HUBER+SUHNER full crimp
- Front mounting

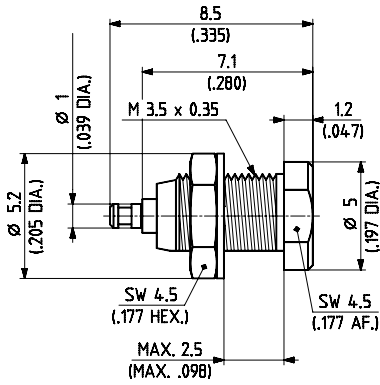


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert
24_MMCX-50-1-1/111_OE	22645952	U1 (ENVIROFLEX_178)	single bulk 100 pcs.	9169	ML 68	1/2.67

Series MMCX – receptacles with solder end

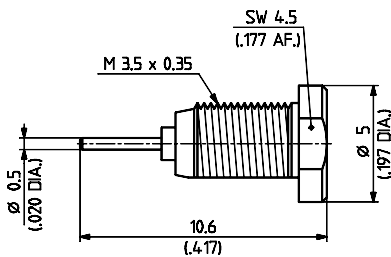
Receptacles, jacks (female)

- Bulkhead mounted



HUBER+SUHNER type	Item no.	Packaging	Mounting hole
22_MMCX-50-0-1/111_OE	22645951	single	ML 68
22_MMCX-50-0-1/111_OH	22660126	bulk 100 pcs.	

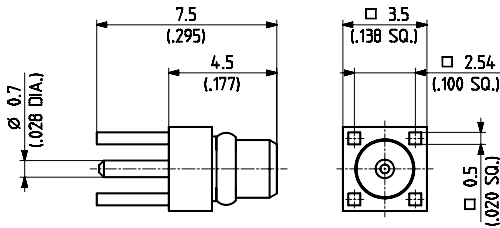
- Bulkhead mounted



HUBER+SUHNER type	Item no.	Packaging	Mounting hole
22_MMCX-50-0-4/111_OH	22660282	bulk 100 pcs.	M 3.5 × 0.35

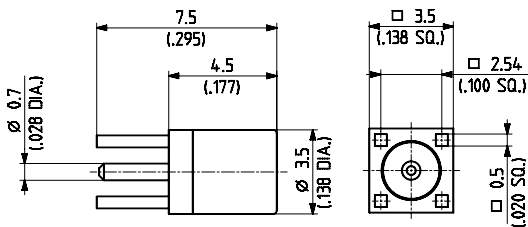
Series MMCX – PCB connectors

Straight PCB plugs (male)



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes
81_MMCX-50-0-1/111_OE	22646298	single	ML 44	without stand-off

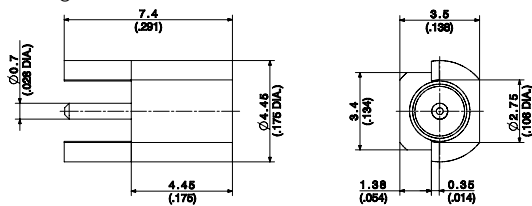
Straight PCB jacks (female)



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes
82_MMCX-50-0-1/111_NE	22645958	single	ML 44	without stand-off
82_MMCX-50-0-1/111_NH	22648469	bulk 100 pcs.		

Jacks for horizontal applications

- Edge mount



HUBER+SUHNER type	Item no.	Packaging	PCB layout	Notes
82_MMCX-S50-0-2/111_KE	22648789	single	see application notes on page 125	
82_MMCX-S50-0-2/111_KH	22649680	bulk 100 pcs.		
82_MMCX-S50-0-2/111_KG	22649679	tape and reel	see application notes on page 125	blister tape containing 750 pcs.

Series MMCX – PCB connectors

Straight PCB jacks (female)

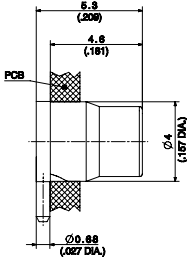


Fig. 1

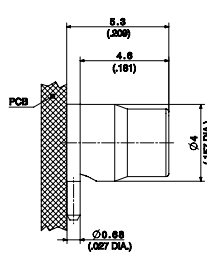
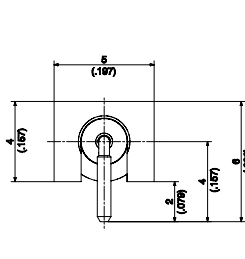
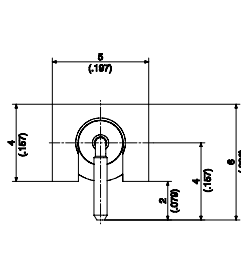
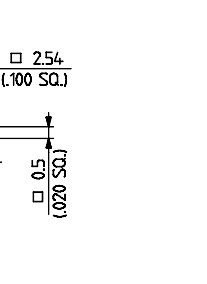
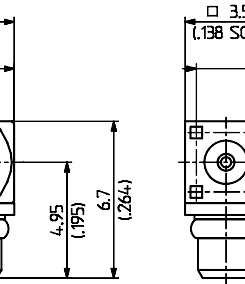
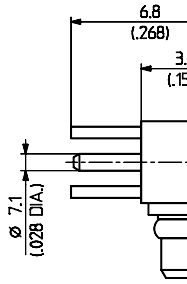


Fig. 2



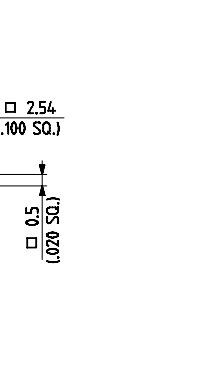
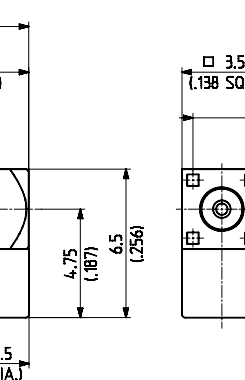
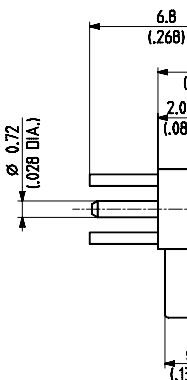
HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes
82_MMCX-50-0-8/111_OE	22652153	single	ML 167	through-hole mount
82_MMCX-50-0-8/111_OM	22660270	tape and reel		
82_MMCX-50-0-18/111_OM	23023564	tape and reel	ML 130	surface mount technology

Right angle PCB plugs (male)



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes
84_MMCX-50-0-1/111_OH	22658819	bulk 100 pcs.	ML 44	without stand-off

Right angle PCB jacks (female)



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes
85_MMCX-50-0-1/111_OE	22645968	single	ML 44	without stand-off
85_MMCX-50-0-1/111_OH	22646636	bulk 100 pcs.		

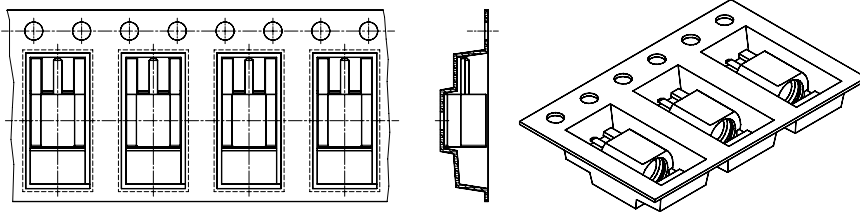
Series MMCX – edge mount connectors – packaging

Blister tape supply in accordance with IEC 286-3/EIA-481

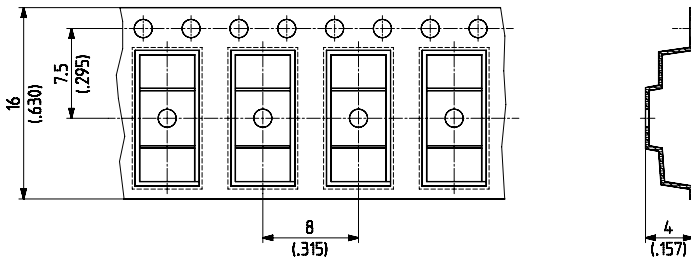
For automated placement the connectors can be supplied on industry standard type-and-reel.

Bulk supply in bags of 100 pcs.

This delivery form is suitable for manual or automated tube fed pick-and-place assembly.



Straight (horizontal) application

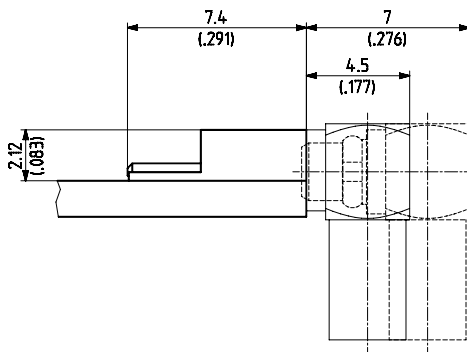


Dimensions of blister carrier tape

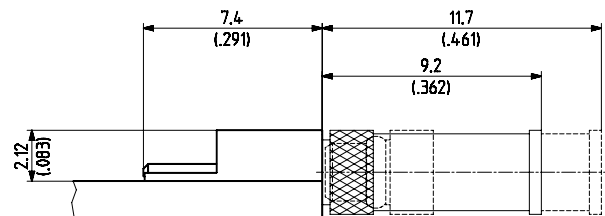
The 16 mm/0.630 in. blister tape is delivered on reels of 330 mm/13 in. diameter and in tough cardboard box.

Series MMCX edge mount connectors – application notes

Dimensions of mated pair and clearance for mating



Horizontal mounting together with a right angle cable connector.



Horizontal mounting together with a straight cable connector.

Series MMCX – edge mount connectors – application notes

Appropriate operation for MMCX edge mount

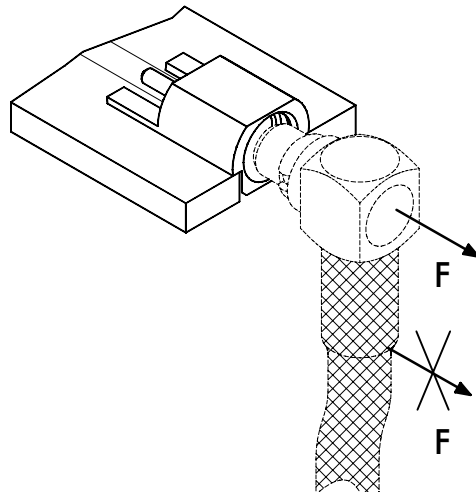
For appropriate operation the following has to be considered:

- Avoid forces from the cable of the mating connector to the surface mount connector.
Fix the cable sufficiently and in several places.
- Apply only axial forces during the mating and demating of the connector parts.

Non-axial forces – such as improper pulling at the cable entry or the cable portion of a right angle mating connector – may cause excessive torque forces, which could result in damage to the solder joints.



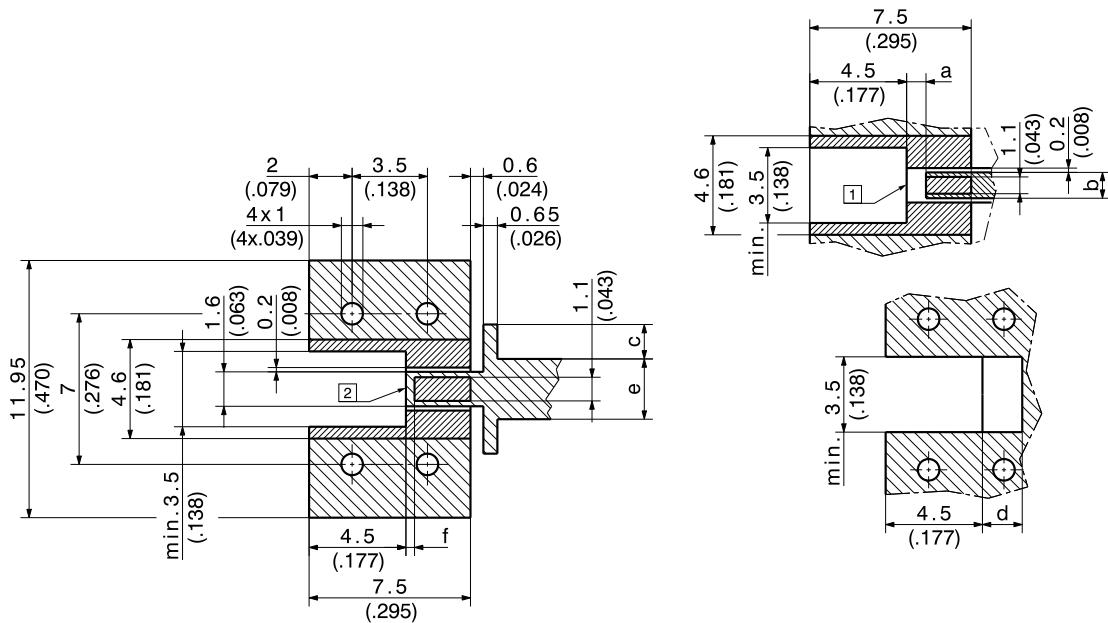
Warning:
force must not be applied to this region.



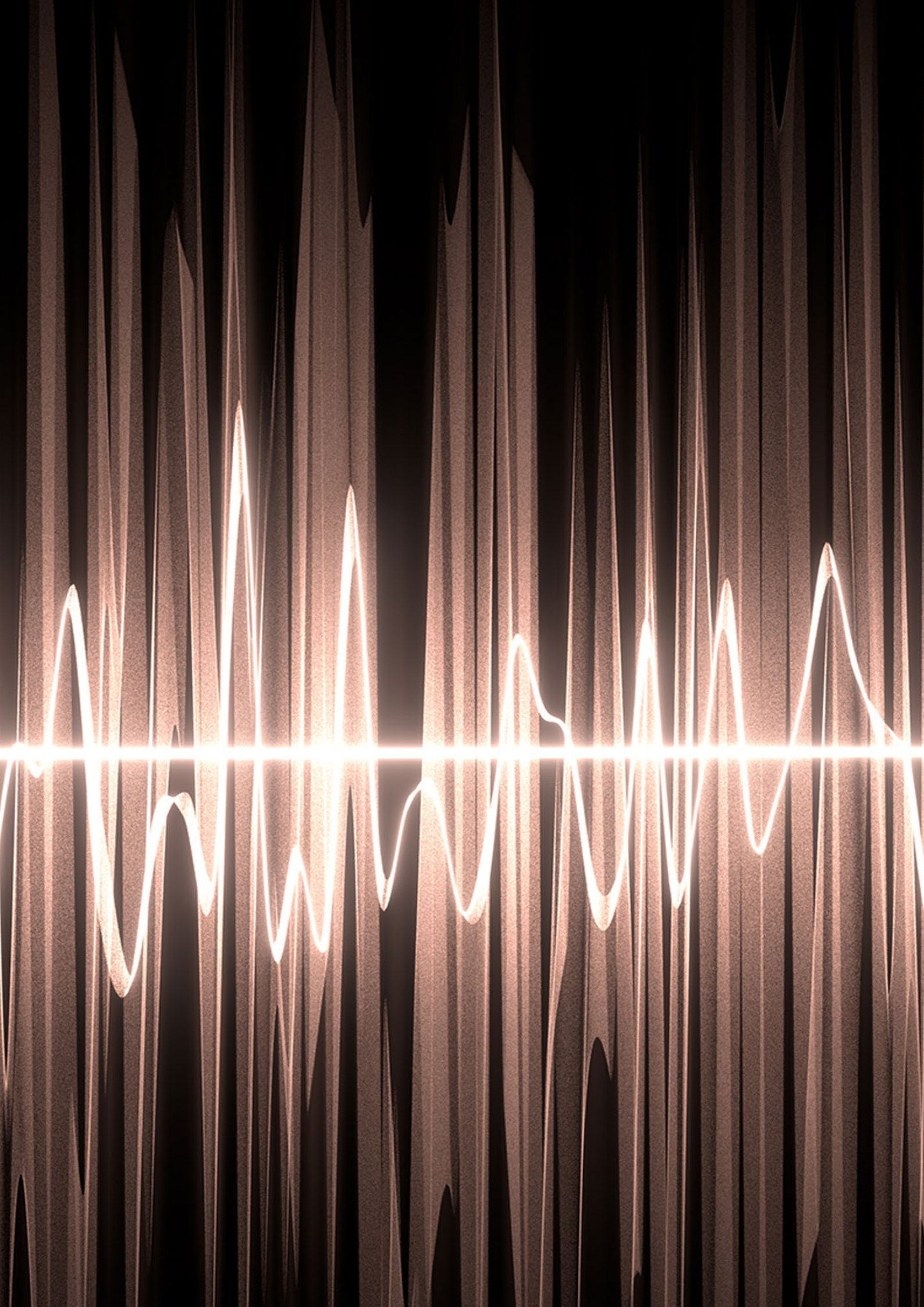
Recommended mounting pattern for MMCX edge mount

Material FR 4 (εr= 4.6)

- ▨ Pattern
- ▨ Land (free of solder mask)



PCB thickness	a	b	c	d	e	f
0.8 mm/0.031 in.	1.6/0.063	1.90/0.075		1.1/0.043	1.4/0.055	1.0/0.039
1.0 mm/0.039 in.	1.4/0.055	1.75/0.069	0.3/0.012	1.2/0.047	1.8/0.071	0.9/0.035
1.6 mm/0.063 in.	0.8/0.031	1.55/0.061	1.6/0.063	2.3/0.091	2.8/0.110	0.4/0.016



Series MCX 50 Ω – micro miniature connectors

Description

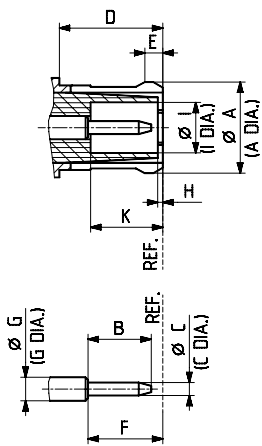
HUBER+SUHNER MCX micro miniature snap-on connectors offer you an excellent blend of size, weight, durability and performance for applications such as mobile and fixed telecommunications, in GPS applications and in test+measurement systems for testing instruments and apparatus. They are designed for frequencies up to 6 GHz and are tested according to the international standard CECC 22220. And they meet all the high requirements that micro coaxial connectors are expected to satisfy today.

Content

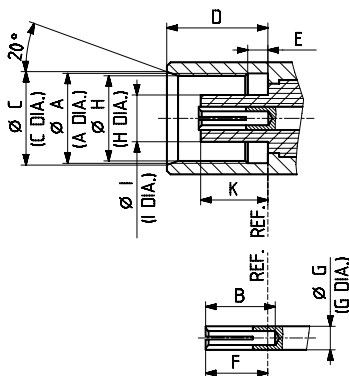
Description	155
Interface dimensions in mm/inches	155
Technical data	156
Cable connectors	158
Receptacles with solder end	162
PCB connectors	163

Interface dimensions (mm/inches)

Plug (male)



Jack (female)



	Plug		Jack	
	min.	max.	min.	max.
A	3.72/0.146 ¹⁾	3.80/0.150*	3.60/0.142	3.70/0.146
B	2.49/0.098	2.59/0.102	2.80/0.110	–
C	0.48/0.019	0.53/0.021	3.75/0.148	3.85/0.152
D	4.15/0.163	–	4.00/0.157	4.12/0.162
E	0.70/0.028	0.75/0.030	0.75/0.030	0.85/0.033
F	2.80/0.110	3.20/0.126	2.30/0.091	2.80/0.110
G	0.95/0.037 nom.		0.95/0.037 nom.	
H	–	0.30/0.012	3.42/0.135	3.48/0.137
I	2.00/0.079	2.07/0.081	1.80/0.071	1.98/0.078
K	2.80/0.110	3.20/0.126	2.60/0.102	2.80/0.110

Interface dimensions conformable to the standards:

International IEC 60169-36
Europe CECC 22220

¹⁾ prior to slotting

Series MCX 50 Ω – technical data

Electrical data	CECC 22000	Requirements
Impedance		50 Ω
Frequency range		DC to 6 GHz
Dielectric withstanding voltage (at sea level)	4.4.5	≥ 750 V rms, 50 Hz (depending on cable)
Working voltage (at sea level) · Unmated		≥ 170 V rms, 50 Hz (depending on cable)
Working voltage (at 21 000 m/70 000 ft) Unmated		≥ 42 V rms, 50 Hz (depending on cable)
Insulation resistance	4.4.4	≥10 ⁶ MΩ
Contact resistance · Centre contact · Outer contact	4.4.2 4.4.3	≤ 5.0 mΩ ≤ 1.0 mΩ
RF leakage (measured at 1 GHz) · Connectors for flexible cables · Connectors for semi-rigid cables	4.4.8	≥ 60 dB ≥ 70 dB

Mechanical data	CECC 22000	Requirements
Engagement force	4.5.1	≤ 25 N/5.6 lbs
Disengagement force	4.5.1	8 to 20 N/1.8 to 4.5 lbs
Contact captivation	4.5.2	≥ 10 N/2.3 lbs
Cable retention force ¹⁾	4.5.5	see pages 32 – 41
Durability (matings)	4.7.1	≥ 500

Environmental data	CECC 22000	Requirements
Temperature range		–55 to +155 °C/–67 to +311 °F
Climatic category		IEC → 55/155/21
Thermal shock	4.6.7	MIL-STD-202, method 107, condition F
High temperature endurance test	4.7.2	MIL-STD-202, method 108A, condition D
Moisture resistance	4.6.6	MIL-STD-202, method 106
Corrosion	4.6.10	saltspray test acc. to MIL-STD-202, method 101, condition B
Vibration	4.6.3	MIL-STD-202, method 204, condition D

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

¹⁾ Value considers maximum load of the cables without irreversible variations of specifications.

Series MCX 50 Ω – technical data

Material data		
Connector parts	Material	Plating
Bodies	brass	gold/SUCOPLATE®/SUCOPRO® gold plating
Pin contacts	brass	gold/SUCOPRO® gold plating
Socket contacts	copper-beryllium alloy	gold/SUCOPRO® gold plating
Outer contacts · Plug · Jack	copper-beryllium alloy brass	gold/SUCOPRO® gold plating SUCOPLATE®
Crimp ferrules	copper/brass	gold/SUCOPLATE®/SUCOPRO® gold plating
Insulators	PTFE or PFA	

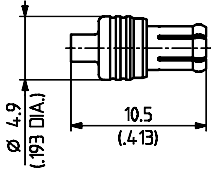
Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Series MCX 50 Ω – cable connectors

Straight cable plugs (male)

For semi-rigid cables, Sucoform and Multiflex cables

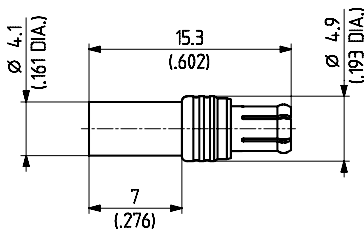
- Cable entry soldered
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
11_MCX-50-1-14/111_NE	23032081	Y2, Y15 (EZ_47)	single	27413
11_MCX-50-2-19/111_NE 11_MCX-50-2-19/111_NH	23024699 23032147	Y3, Y11, Y16 (EZ_86)	single bulk 100 pcs.	27496
11_MCX-50-3-1/111_NH	84006763	Y12, Y17 (SUCOFORM_141)	bulk 100 pcs.	0000200108

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554



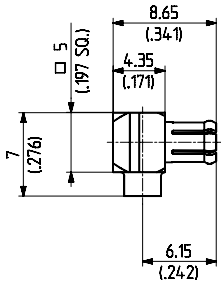
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
11_MCX-50-1-13/133_NH	22658307	U1 (ENVIROFLEX_178)	bulk 100 pcs.	27316	1 A
11_MCX-50-1-13/111_NH	23002830	U1 (ENVIROFLEX_178)	bulk 100 pcs.	27316	
11_MCX-50-2-15/111_NE 11_MCX-50-2-15/111_NH	84018641 23000440	U4 (ENVIROFLEX_316_D)	single bulk 100 pcs.	27306	
11_MCX-50-2-15/133_NH	23000566	U4 (ENVIROFLEX_316_D)	bulk 100 pcs.	27306	
11_MCX-50-2-16/111_NE 11_MCX-50-2-16/111_NH	84022831 22658275	U2 (ENVIROFLEX_316)	single bulk 100 pcs.	27306	
11_MCX-50-2-16/133_NH	23000437	U2 (ENVIROFLEX_316)	bulk 100 pcs.	27306	

Series MCX 50 Ω – cable connectors

Right angle cable plugs (male)

For semi-rigid cables, Sucoform and Multiflex cables

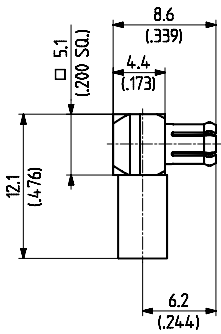
- Cable entry soldered
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
16_MCX-50-1-11/111_NE 16_MCX-50-1-11/111_NH	23024700 23032063	Y2, Y15 (EZ_47)	single bulk 100 pcs.	27495
16_MCX-50-2-104/111_NH-1	23032067	Y3, Y11, Y16 (EZ_86)	bulk 100 pcs.	27308

For flexible cables

- Cable entry crimp
- Centre contact soldered
- Taper sleeves see page 554



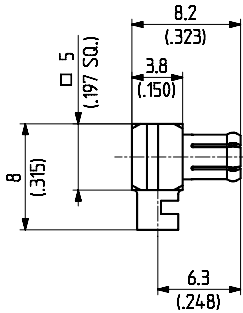
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
16_MCX-50-1-7/111_NH	23000443	U1 (ENVIROFLEX_178)	bulk 100 pcs.	27319	A
16_MCX-50-1-7/133_NH	22658308	U1 (ENVIROFLEX_178)	bulk 100 pcs.	27319	
16_MCX-50-2-11/133_NE 16_MCX-50-2-11/133_NH	22660003 22650803	U4 (ENVIROFLEX_316_D)	single bulk 100 pcs.	27102	
16_MCX-50-2-11/111_NH-1	23015358	U4 (ENVIROFLEX_316_D)	bulk 100 pcs.	27102	
16_MCX-50-2-14/133_NE 16_MCX-50-2-14/133_NH	22660002 22660001	U2 (ENVIROFLEX_316)	single bulk 100 pcs.	27102	
16_MCX-50-2-14/111_NH	23000445	U2 (ENVIROFLEX_316)	bulk 100 pcs.	27102	

Series MCX 50 Ω – cable connectors

Right angle cable plugs (male)

For flexible cables

- Low profile
- Cable entry soldered
- Centre contact soldered

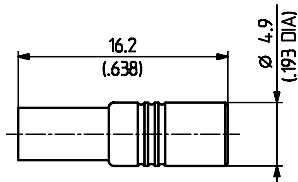


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
16_MCX-50-2-102/111_NH-1	23000454	U2 (ENVIROFLEX_316)	bulk 100 pcs.	27307

Straight cable jacks (female)

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
21_MCX-50-1-11/111_NE	84023972	U1 (ENVIROFLEX_178)	single	27317	1 A
21_MCX-50-2-12/111_NE	23032052	U4 (ENVIROFLEX_316_D)	single	27309	
21_MCX-50-2-12/133_NH	22658278	U4 (ENVIROFLEX_316_D)	bulk 100 pcs.	27309	
21_MCX-50-2-13/111_NH	23005298	U2 (ENVIROFLEX_316)	bulk 100 pcs.	27309	
21_MCX-50-2-13/133_NH	22658279	U2 (ENVIROFLEX_316)	bulk 100 pcs.	27309	

Series MCX 50 Ω – cable connectors

Straight bulkhead cable jacks (female)

For semi-rigid, Sucoform and Multiflex cables

- Cable entry soldered
- Centre contact soldered

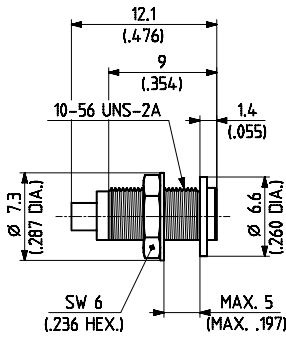


Fig. 1

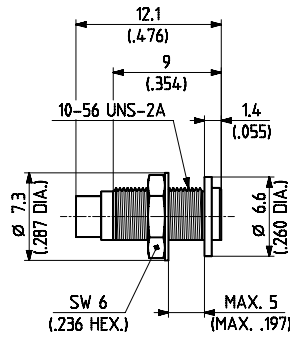


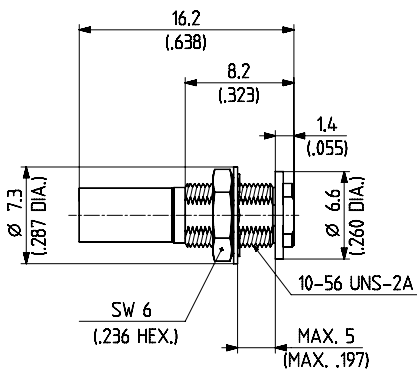
Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Fig.
24_MCX-50-1-3/111_NE	22641648	Y2, Y15 (EZ_47)	single	3100	ML 11	1
24_MCX-50-2-3/111_NE	22543580	Y3, Y11 (EZ_86)				2

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert
24_MCX-50-1-13/111_NH	23005299	U1 (ENVIROFLEX_178)	bulk 100 pcs.	27317	ML 11	1 A
24_MCX-50-1-13/133_NH	22658310	U1 (ENVIROFLEX_178)		27317		
24_MCX-50-2-6/111_NH	23005300	U4 (ENVIROFLEX_316_D)		27309		
24_MCX-50-2-7/111_NH	23000468	U2 (ENVIROFLEX_316)		27309		

Series MCX 50 Ω – receptacles with solder end

Receptacles, jacks (female)

- Bulkhead mounted
- Front mounting

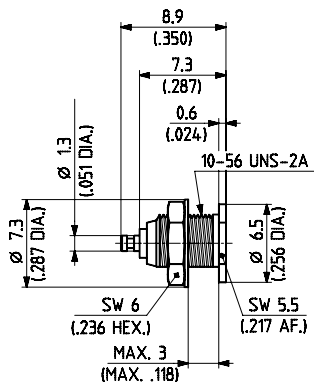


Fig. 1

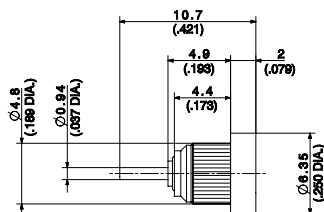


Fig. 2 (press-in)



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Fig.
22_MCX-50-0-2/111_NE	22640171	single	ML 11	1
22_MCX-50-0-2/111_NH	22646960	bulk 100 pcs.	ML 11	
22_MCX-50-0-2/133_NH	22644433	bulk 100 pcs.	ML 11	2
22_MCX-50-0-19/111_NH	22652984	bulk 100 pcs.	ML 103	

Series MCX 50 Ω – PCB connectors

Straight PCB plugs (male)

- With stand-off
- 2.54 mm/0.100 in. grid

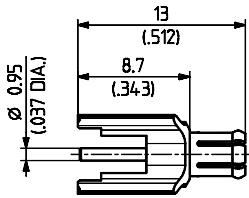


Fig. 1

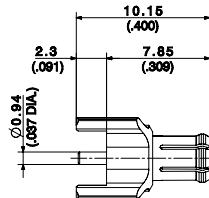
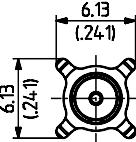
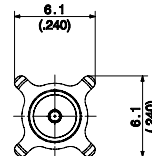


Fig. 2



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Fig.
81_MCX-50-0-6/111_NE	84023713	single	ML 15	1
81_MCX-50-0-6/111_NH	23005296	bulk 100 pcs.		
81_MCX-50-0-9/111_NH	23026871	bulk 100 pcs.		2

Straight PCB jacks (female)

- 2.54 mm/0.100 in. grid

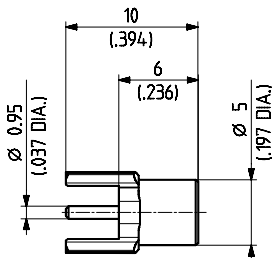


Fig. 1

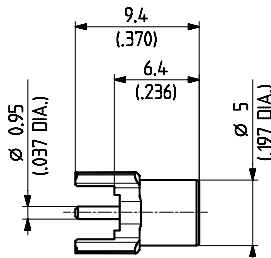
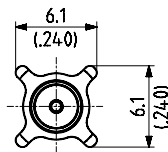
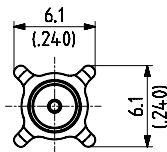


Fig. 2

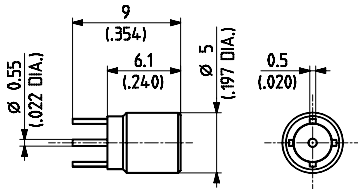


HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes	Fig.
82_MCX-50-0-17/111_NH-1	23006209	bulk 100 pcs.	ML 15	without stand-off	1
82_MCX-50-0-19/111_NE	84018352	single		with stand-off	
82_MCX-50-0-19/111_NH-1	22658305	bulk 100 pcs.			2
82_MCX-50-0-19/111_NM-1	84114692	tape and reel			

Series MCX 50 Ω – PCB connectors

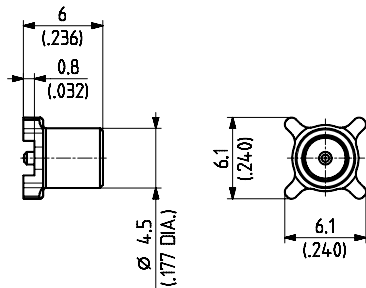
Straight PCB jacks (female)

- 1.27 mm/0.050 in. grid
- Space saving version



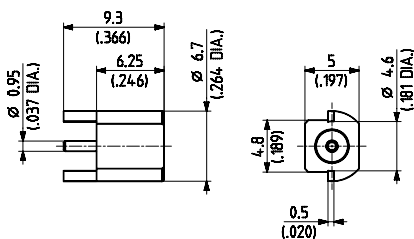
HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes
82_MCX-50-0-10/111_NE	22641649	single	ML 44	without stand-off
82_MCX-50-0-10/111_NH	22651980	bulk 100 pcs.		

- Surface mount type SMT



HUBER+SUHNER type	Item no.	Packaging	Mounting hole
82_MCX-S50-0-29/111_NE	84018482	single	ML 120
82_MCX-S50-0-29/111_NH	23001527	bulk 100 pcs.	
82_MCX-S50-0-29/111_NM	22658306	tape and reel	

- Surface mount type SMT
- Edge mount

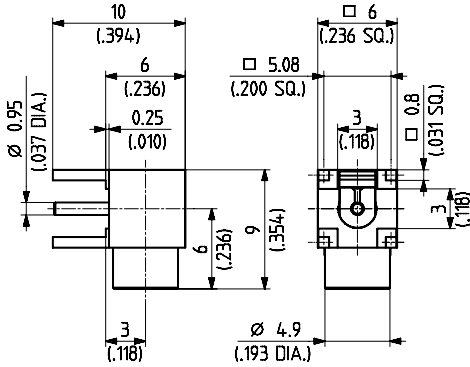


HUBER+SUHNER type	Item no.	Packaging	Mounting hole
82_MCX-S50-0-22/111_NE	22651467	single	ML 121
82_MCX-S50-0-22/111_NM	84011207	tape and reel	

Series MCX 50 Ω – PCB connectors

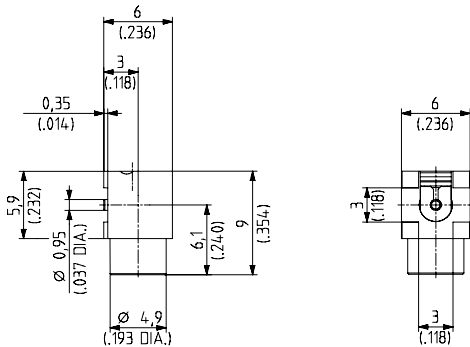
Right angle PCB jacks (female)

- 2.54 mm/0.100 in. grid

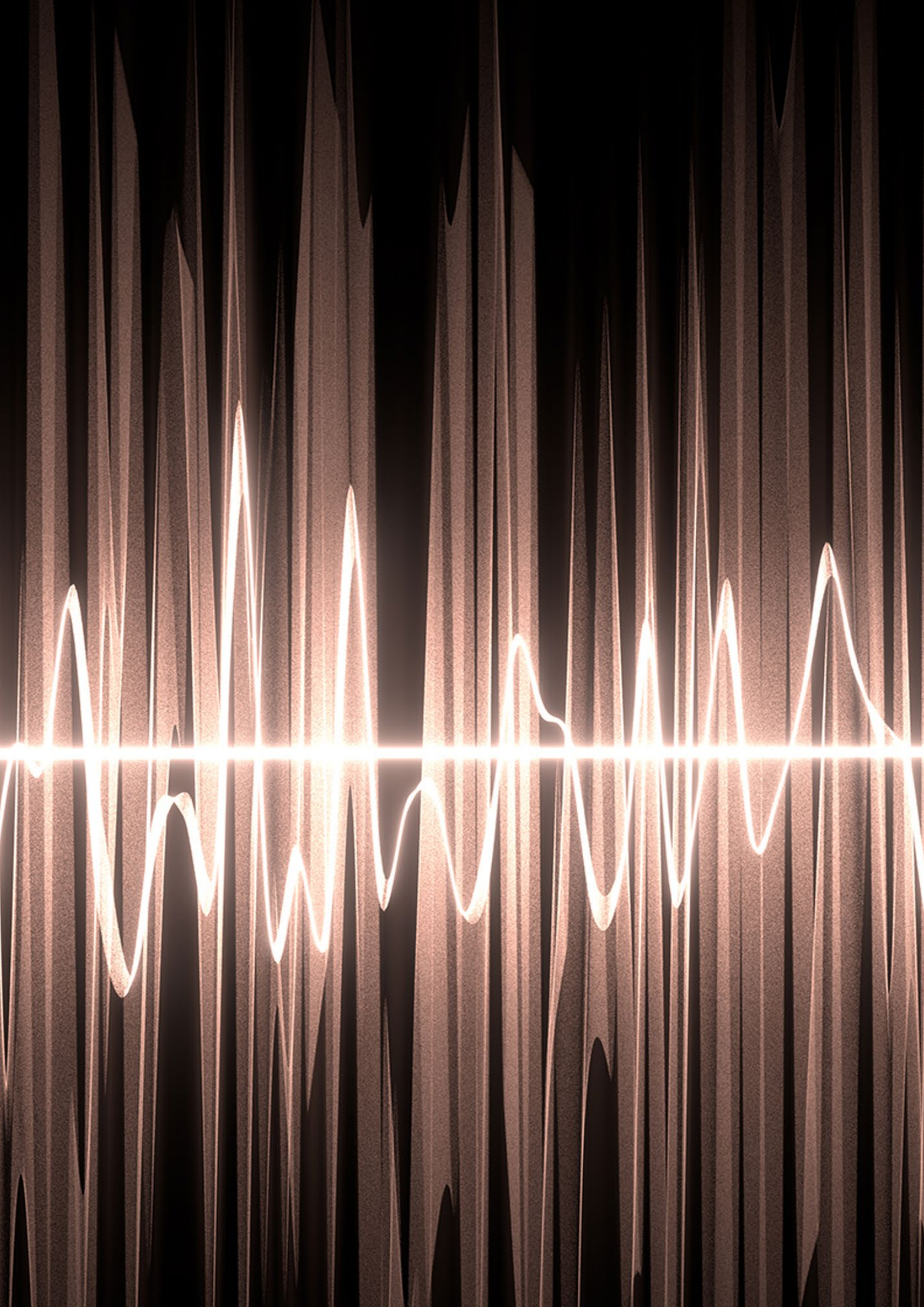


HUBER+SUHNER type	Item no.	Packaging	Mounting hole
85_MCX-50-0-16/111_NE	84018523	single	ML 15
85_MCX-50-0-16/111_NH	23001545	bulk 100 pcs.	
85_MCX-50-0-16/111_NM	84030779	tape and reel	

- Surface mount type SMT



HUBER+SUHNER type	Item no.	Packaging	Mounting hole
85_MCX-S50-0-25/111_NH	23005091	bulk 100 pcs.	ML 123
85_MCX-S50-0-25/111_NM	84036471	tape and reel	



Series MCX 75 Ω – micro miniature connectors

Description

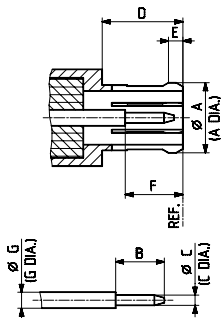
HUBER+SUHNER MCX 75 Ω connectors are derived from the MCX 50 Ω series but have a characteristic impedance of 75 Ω . They offer outstanding electrical properties up to 6 GHz and allow the transmission of digital signals with high bit rates.

Content

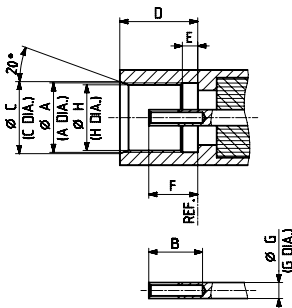
Description	167
Interface dimensions in mm/inches	167
Technical data	168
Cable connectors	169
PCB connectors	170

Interface dimensions (mm/inches)

Plug (male)



Jack (female)



	Plug		Jack	
	min.	max.	min.	max.
A	3.72/0.146 ¹⁾	3.80/0.150*	3.60/0.142	3.70/0.146
B	2.49/0.098	2.59/0.102	2.80/0.110	–
C	0.48/0.019	0.53/0.021	3.75/0.148	3.85/0.152
D	4.15/0.163	–	4.00/0.157	4.12/0.162
E	0.70/0.028	0.75/0.030	0.75/0.030	0.85/0.033
F	2.80/0.110	3.20/0.126	2.30/0.091	2.80/0.110
G	0.83/0.033 nom.		0.83/0.033 nom.	
H	3.42/0.135	3.48/0.137	–	–

Interface dimensions conformable to the standards:

Intermateable with MCX 50 Ω connectors acc. to CECC 22220.

¹⁾ prior to slotting

Series MCX 75 Ω – technical data

Electrical data	Requirements
Impedance	75 Ω
Frequency range	DC to 6 GHz
Dielectric withstanding voltage (at sea level)	≥ 500 V rms, 50 Hz (depending on cable)
Working voltage (at sea level) · Unmated	≥ 170 V rms, 50 Hz (depending on cable)
Working voltage (at 21 000 m/70 000 ft.) · Unmated	≥ 45 V rms, 50 Hz (depending on cable)
Insulation resistance	≥103 MΩ
Contact resistance · Centre contact · Outer contact	≤ 5.0 mΩ ≤ 2.5 mΩ

Mechanical data	Requirements
Engagement force	≥ 25 N/5.6 lbs
Disengagement force	8 to 20 N/1.8 to 4.5 lbs
Contact captivation	≥ 10 N/2.3 lbs
Cable retention force ¹⁾	see pages 32 – 41
Durability (matings)	≥ 500

Environmental data	Requirements
Temperature range	–65 to +165 °C/–85 to +329 °F
Climatic category	IEC → 55/155/21
Thermal shock	MIL-STD-202, method 107, condition F
Moisture resistance	MIL-STD-202, method 106
Corrosion	salt spray test acc. to MIL-STD-202, method 101, condition B
Vibration	MIL-STD-202, method 204, condition D

Material data		
Connector parts	Material	Plating
Bodies	brass	gold/SUCOPLATE®/SUCOPRO® gold plating
Pin contacts	brass	gold/SUCOPRO® gold plating
Socket contacts	copper-beryllium alloy	gold/SUCOPRO® gold plating
Outer contacts (resilient)	copper-beryllium alloy	gold/SUCOPLATE®/SUCOPRO® gold plating
Crimp ferrules	copper	SUCOPLATE®/SUCOPRO® gold plating
Insulators	PTFE or PFA	

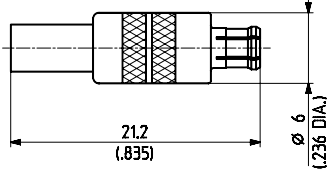
Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

¹⁾ Value considers maximum load of the cables without irreversible variations of specifications.

Series MCX 75 Ω – cable connectors

Straight cable plugs (male)

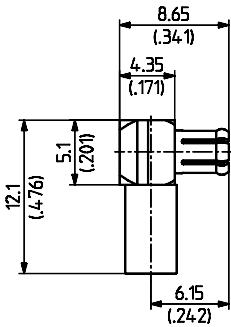
- HUBER+SUHNER full crimp
- Taper sleeves see page 554



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
11_MCX-75-2-1/113_NE	22646946	U5 (RG_179_B/U, ENVIROFLEX_179)	single	9196	1 A

Right angle cable plugs (male)

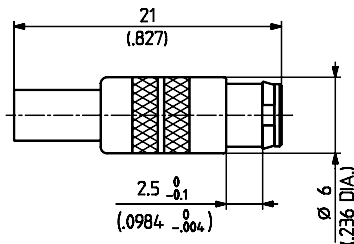
- Cable entry crimp
- Centre contact soldered
- Taper sleeves see page 554



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
16_MCX-75-2-5/133_NH	23008072	U5 (RG_179_B/U, ENVIROFLEX_179)	bulk 100 pcs.	27383	A

Straight bulkhead cable jacks (female)

- HUBER+SUHNER full crimp
- „Snap-on“ panel mounting
- Taper sleeves see page 554



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert
24_MCX-75-2-1/113_NE	22646948	U5 (RG_179_B/U, ENVIROFLEX_179)	single	9196	ML 82	1 A

Cable groups see page 32

Assembly tools see page 563

Mounting holes/PCB layouts see page 591

Series MCX 75 Ω – PCB connectors

Straight PCB jacks (female)

- 2.54 mm/0.100 in.

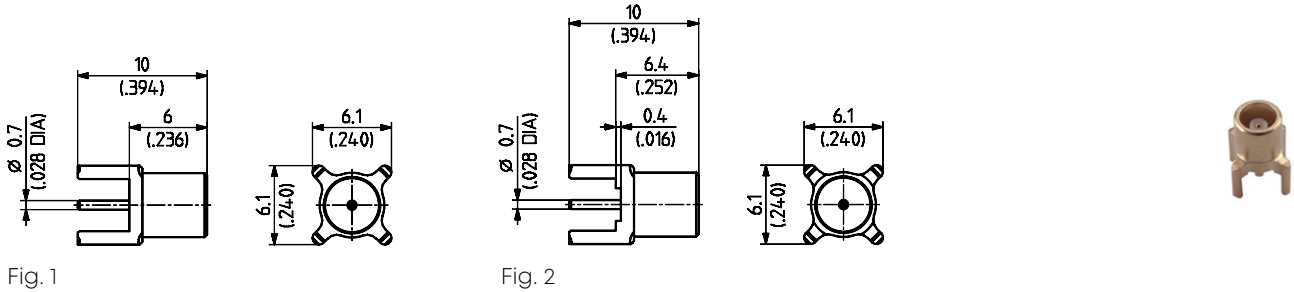


Fig. 1

Fig. 2

HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes	Fig.
82_MCX-75-0-4/111_NE	84023729	single	ML 15	without stand-off	1
82_MCX-75-0-4/111_NH	23004043	bulk 100 pcs.			
82_MCX-75-0-5/111_NH	23004046	bulk 100 pcs.		with stand-off	2

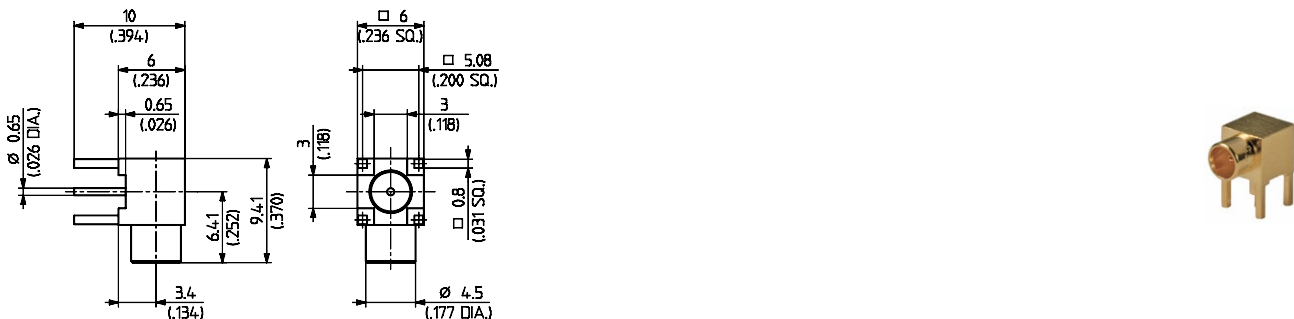
- Surface mount type SMT
- Edge mount



HUBER+SUHNER type	Item no.	Packaging
82_MCX-S75-0-2/111_NE	22651011	single bulk 100 pcs.
82_MCX-S75-0-2/111_NH	84020046	

Right angle PCB jacks (female)

- 2.54 mm/0.100 in.



HUBER+SUHNER type	Item no.	Packaging
85_MCX-75-0-1/111_NE	22649202	single bulk 100 pcs.
85_MCX-75-0-1/111_NH	22650766	

Series MMPX – 67 GHz snap-on connectors

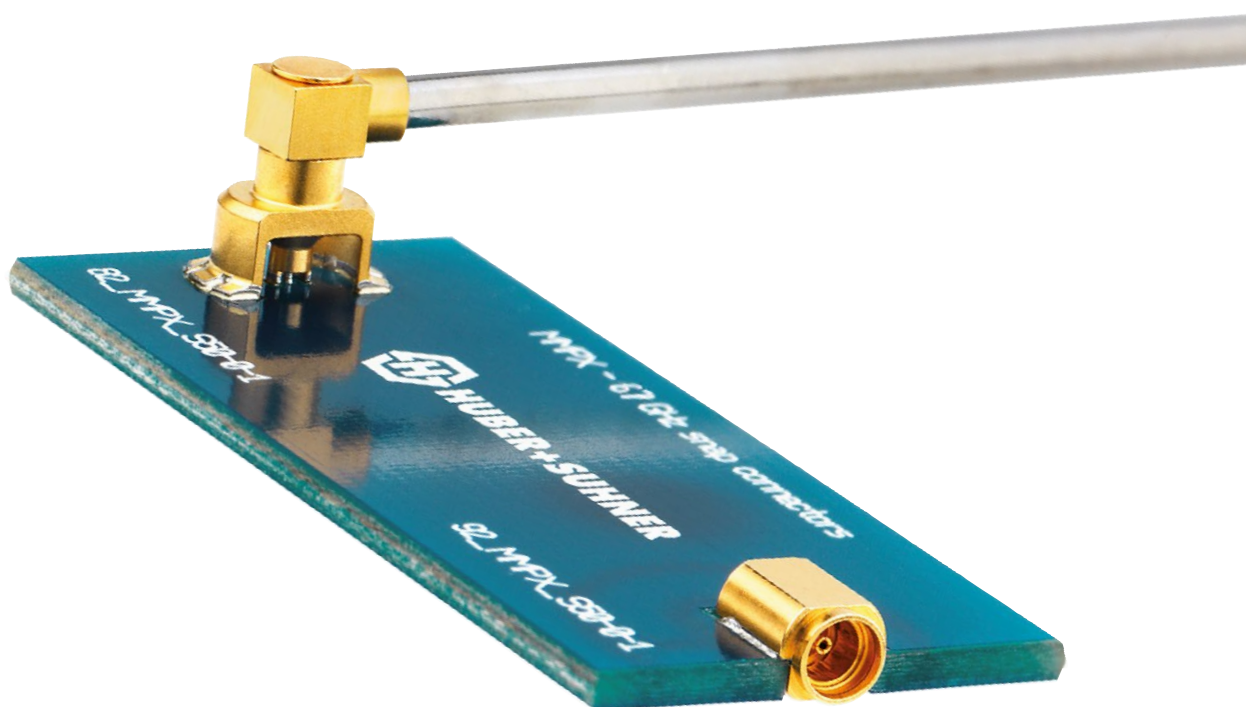
Description

The snap-on connector family MMPX is the most ideal coaxial-to-PCB system solution for operating frequencies up to 67 GHz. The comprehensive product range consists of cable connectors and assemblies, PCB connectors and adapters to open standards. MMPX connectors feature excellent electrical performance at smallest mechanical dimensions. The broadband characteristics, the small size and the outstanding performance permit new solutions for applications in numerous markets such as high speed digital testing and radio frequency testing (60 GHz WPAN), industrial, mobile communication, space and defence.

Content

Description	171
Key features	172
Benefits	172
Technical data	173
Cable connectors	174
PCB connectors	176
Decoupling tools	179

Interface dimensions conformable to the standards:
HUBER+SUHNER proprietary interface standard



Series MMPX – smallest dimensions and highest performance

Key features

- True 67 GHz coaxial-to-PCB transition
- Broadband characteristics from DC to 67 GHz
- Excellent return loss
- Excellent shielding, low cross-talk
- Via-in-pad capable
- 5.08 mm pitch (0.2 inch)
- Mechanically robust design
- Extensive technical support

Benefits

• Future proof design

Thanks to the broadband characteristics, the excellent return loss and the true 67 GHz coaxial-to-PCB transition, MMPX helps in developing future proof RF systems.

• Quick and reliable mating

The MMPX snap-on mechanism is completely decoupled from the electrical path and therefore specifically optimised for quick and reliable mating.

• Space saving

The minimal pitch on boards of 5.08 mm (0.2 inch) saves expensive board material.

• One connector for several applications

The unique electrical and mechanical performance as well as the compact form makes MMPX ideal for a variety of applications.

• Overall cost saving

The attractive pricing, the extensive technical support including footprint service and the HUBER+SUHNER one-stop shop approach minimises the overall costs for design-ins and trade procedures.

Comprehensive product range of standard products

- Various PCB connector and cable connector types
- Broad range of standard Multiflex 86 HE cable assemblies (MMPX to SMA, PC 3.5, SK (2.92 mm standard) and PC 1.85/phase match: ± 1 ps absolute)
- Customised assemblies with semi-rigid, Sucoform, Multiflex and Minibend L cables
- Adapters to SK (2.92 mm standard) and to PC 1.85
- Decoupling tools for easy and safe connector decoupling

Series MMPX – technical data

Electrical data				
Impedance	50 Ω			
Frequency range	DC to 67 GHz			
Return loss	typical values for coaxial-to-PCB transition (measured) ¹⁾			
	configuration	DC to 26,5 GHz	26,5 to 50 GHz	50 to 67 GHz
	straight PCB jack mated with a straight cable plug	25 dB	20 dB	10 dB
	straight PCB jack mated with a right angle cable plug	25 dB	20 dB	10 dB
edge mount PCB jack mated with a straight cable plug	25 dB	20 dB	16 dB	
RF leakage (interface only)	-40 dB (DC to 67 GHz)			
Dielectric withstanding voltage (at sea level)	500 V rms, 50 Hz			
Working voltage (at sea level)	≤ 170 V rms, 50 Hz			
Insulation resistance	≥ 1 G Ω			
Contact resistance				
· Centre contact	≤ 5 m Ω			
· Outer contact	≤ 2 m Ω			

Mechanical data	
Engagement force	max. 30 N/6.7 lbf (typical 20 N/4.4 lbf)
Disengagement force	max. 30 N/6.7 lbf (typical 15 N/3.3 lbf)
Durability (matings)	100 (adapters: 500)

Environmental data	Testing conditions
Temperature range	-65 to +155 °C/-85 to +31 °F
Thermal shock	MIL-STD-202, method 107 G, condition A/F
High temperature endurance	IEC-61-169-1
Corrosion	MIL-STD-202, method 101, condition B
Vibration	MIL-STD-202, method 204 D, condition D
Mechanical shock	MIL-STD-202, method 213 B, condition I
Solderability	MIL-STD-883

Processing data		
Typical values adherent to the PCB	straight PCB jack full SMT	edge mount PCB full SMT
· Shearing	90 N/20.2 lbf	70 N/15.7 lbf
· Pulling (vertical to the PCB)	50 N/11.2 lbf	no standard value available

Material data		
Male connector parts	Material	Plating
Centre contact	CuBe/brass	SUCOPRO® gold plating
Outer contact	brass	SUCOPRO® gold plating
Body	brass	SUCOPRO® gold plating
Insulators	PTFE	
Female connector parts		
Centre contact	CuBe	SUCOPRO® gold plating
Outer contact	CuBe	SUCOPRO® gold plating
Body	brass	SUCOPRO® gold plating
Insulators	PTFE	

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

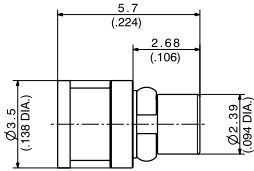
¹⁾ Valid for recommended PCB material/stacking only!

Series MMPX – cable connectors

Straight cable plugs (male)

For semi-rigid cables

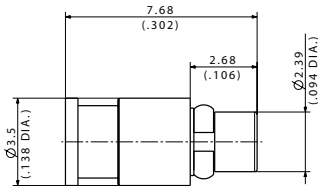
- Outer contact soldered
- Center contact soldered



HUBER+SUHNER type	Item no.	Cable	Packaging	Notes
11_MMPX-50-2-1/111_NE	84022225	EZ_86, SR_86	single	precision interface, air dielectric

For semi-rigid, semi-flexible and flexible cables

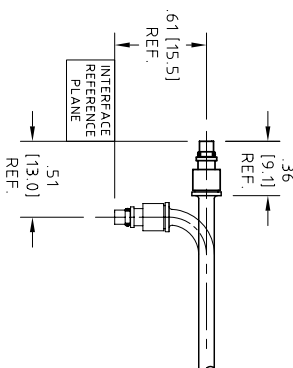
- Outer contact soldered
- Center contact plugged



HUBER+SUHNER type	Item no.	Cable	Packaging	Notes
11_MMPX-50-1-4/111_NE	84122130	MULTIFLEX_53-02	single	for HUBER+SUHNER Multiflex 53-02 cable
11_MMPX-50-2-2/111_NE	84022228	EZ_86, SUCOFORM_86, SR_86		for semi-rigid and HUBER+SUHNER Sucoform cables
11_MMPX-50-2-3/111_NE	84089228	MULTIFLEX_86_HE		for HUBER+SUHNER Multiflex 86 HE cables

For minibend L assemblies

- Bend to the end cable entry
- Available as assembly only



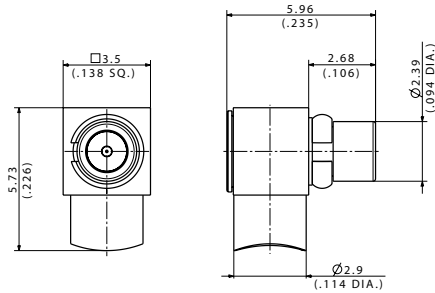
HUBER+SUHNER type	Item no.	Cable	Packaging
11_MMPX-50-0-1/19-_NE	85021747	Minibend L	single

Series MMPX – cable connectors

Right angle cable plugs (male)

For semi-rigid, semi-flexible and flexible cables

- Outer contact soldered
- Center contact plugged

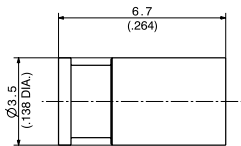


HUBER+SUHNER type	Item no.	Cable	Packaging	Notes
16_MMPX-50-2-1/111_NE	84022227	EZ_86, SUCOFORM_86, SR_86	single	for semi-rigid and HUBER+SUHNER Sucoform cables
16_MMPX-50-2-2/111_NE	84067778	MULTIFLEX_86_HE		for HUBER+SUHNER Multiflex 86 HE cable

Straight cable jack (female)

For semi-rigid and semi-flexible cables

- Outer contact soldered
- Center contact soldered

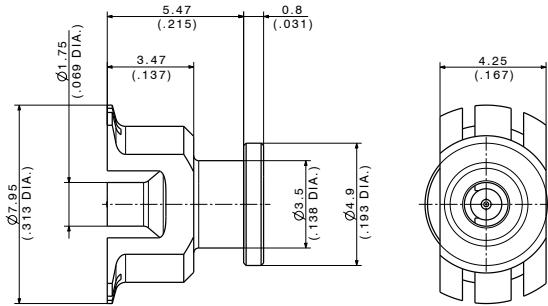


HUBER+SUHNER type	Item no.	Cable size	Packaging
21_MMPX-50-2-1/111_NE	84022226	EZ_86, SUCOFORM_86, SR_86	single

Series MMPX – PCB connectors

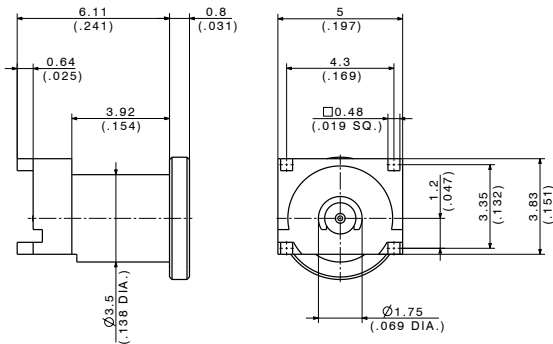
Straight PCB jacks (female)

- Full surface mount (SMD)
- Decoupling tool 74_Z-0-0-491 or 74_Z-0-0-555 recommended



HUBER+SUHNER type	Item no.	Packaging	Notes
82_MMPX-S50-0-2/111_NM	84096711	tape	blister tape containing 10 pcs.
82_MMPX-S50-0-2/111_NM-1	84096752	tape and reel	reeled blister tape containing 750 pcs.

- Semi surface mount (semi-SMD)
- Short print legs
- Decoupling tool 74_Z-0-0-491 or 74_Z-0-0-555 recommended

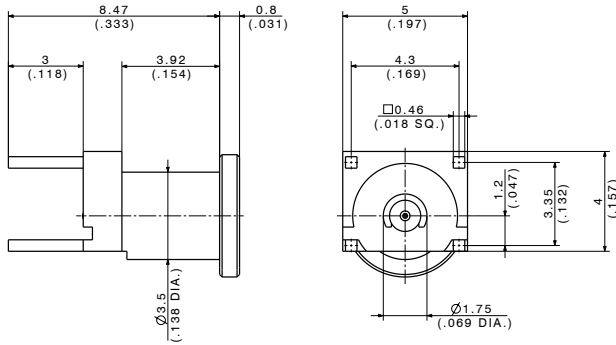


HUBER+SUHNER type	Item no.	Packaging	Notes
96_MMPX-50-0-2/111_NM-1	84093961	tape	blister tape containing 10 pcs.
96_MMPX-50-0-2/111_NM	84093966	tape/reel	reeled blister tape containing 750 pcs.

Series MMPX – PCB connectors

Straight PCB jacks (female)

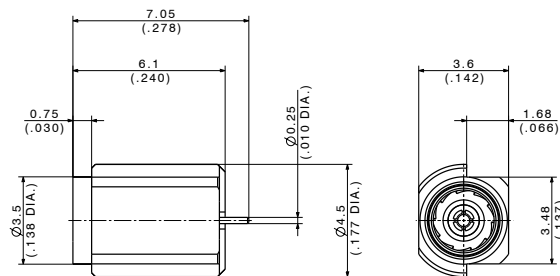
- Semi surface mount (semi-SMD)
- Long print legs



HUBER+SUHNER type	Item no.	Packaging	Notes
96_MMPX-50-0-3/111_NM-1	84099981	tape	blister tape containing 10 pcs.
96_MMPX-50-0-3/111_NM	84099988	tape and reel	reeled blister tape containing 500 pcs.

Straight PCB jacks (female), edge-mount

- Full surface mount (SMD)
- PCB cut out required
- Decoupling tool 74_Z-0-0-491 or 74_Z-0-0-555 recommended

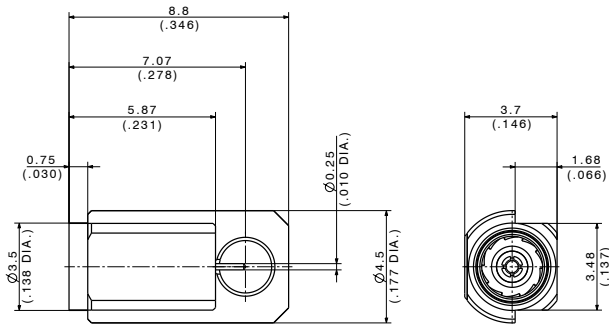


HUBER+SUHNER type	Item no.	Packaging	Notes
92_MMPX-S50-0-1/111_NM	84009138	tape	blister tape containing 10 pcs.
92_MMPX-S50-0-1/111_NM-1	84009140	tape and reel	reeled blister tape containing 500 pcs.

Series MMPX – PCB connectors

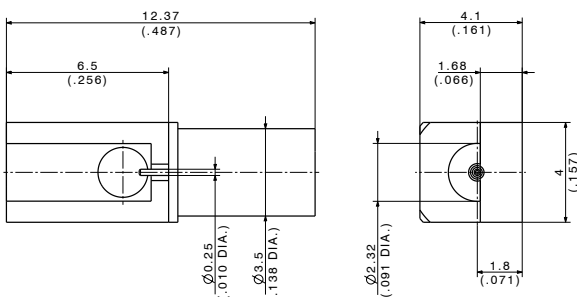
Straight PCB jacks (female), edge-mount

- Full surface mount (SMD)
- PCB cut out required
- Extra shielded for EMF sensitive applications
- Operating range at up to 26.5 GHz
- Decoupling tool 74_Z-0-0-491 or 74_Z-0-0-555 recommended



HUBER+SUHNER type	Item no.	Packaging
92_MMPX-S50-0-2/111_NE	84016110	single

- Full surface mount (SMD)
- No PCB cut-out required
- Operating range at up to 15 GHz
- Decoupling tool 74_Z-0-0-491 or 74_Z-0-0-555 recommended





HUBER+SUHNER type	Item no.	Packaging	Notes
92_MMPX-S50-0-3/111_NM-1	84100614	tape	blister tape containing 10 pcs.
92_MMPX-S50-0-3/111_NM	84096563	tape and reel	blister tape containing 1750 pcs.

Series MMPX – decoupling tools

„All-round“ decoupling tool

This decoupling tool is suitable for all kind of MMPX combinations.

HUBER+SUHNER type	Item no.
74_Z-0-0-555	84020011

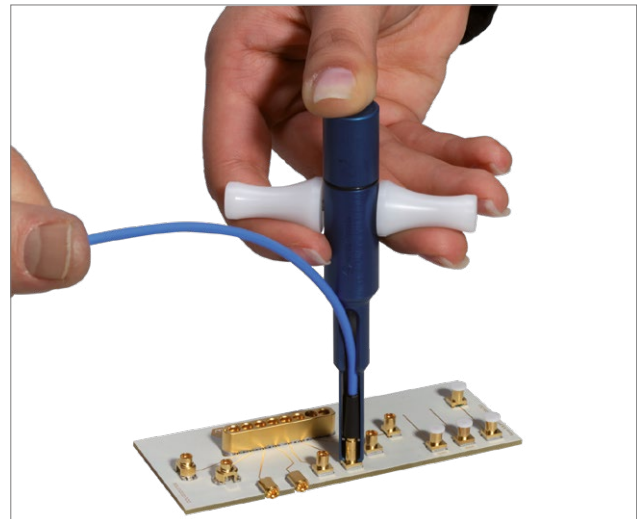
„PCB“ decoupling tool

This high-end decoupling tool is especially suited for decoupling MMPX combinations when the PCB connectors are placed very close to each other. The anodized surface is non-conductive and helps to prevent short-cutting circuits on the PCB.

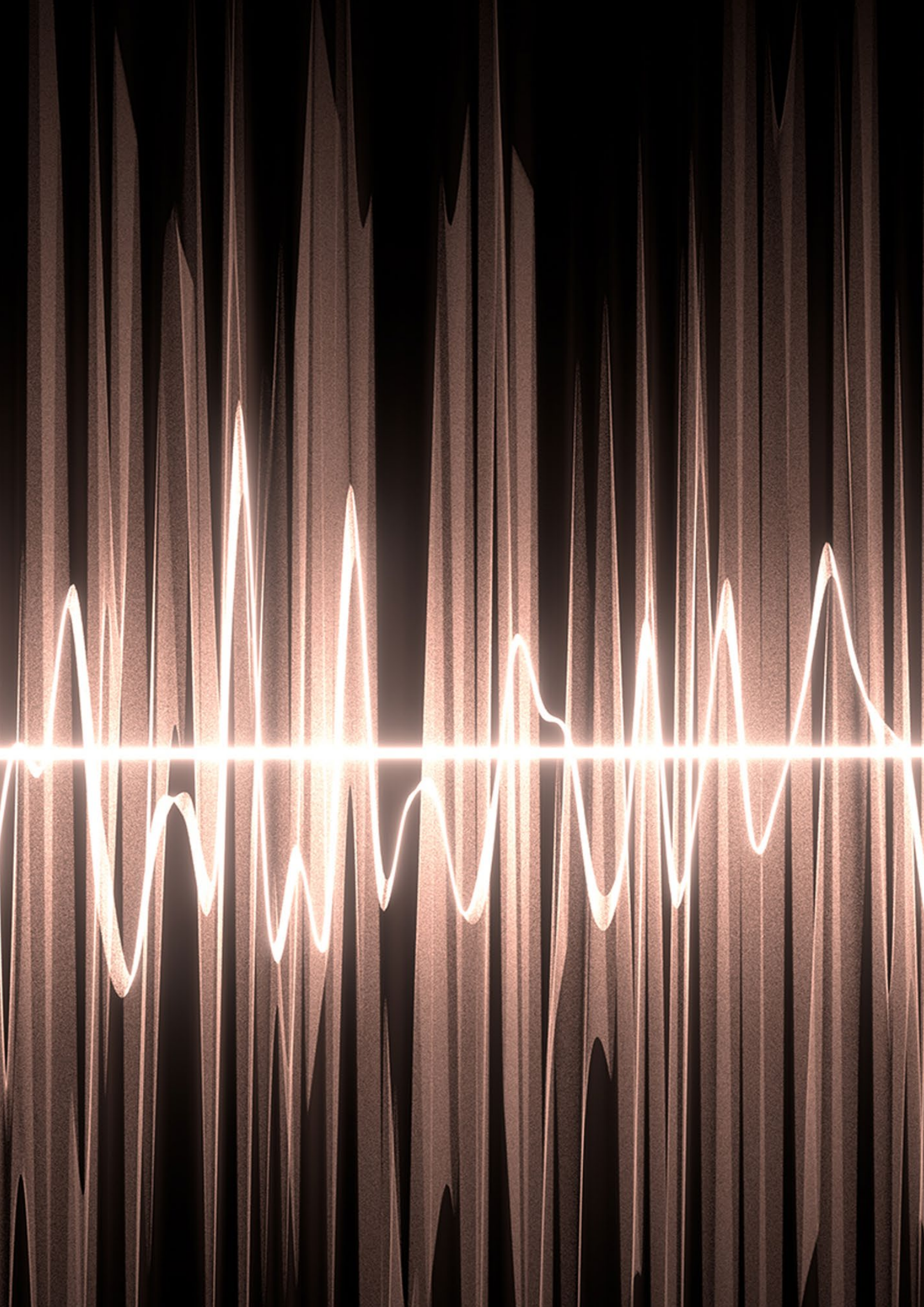
Note: Suitable for flexible cables only!

Possible combination of patterns

- 11_MMPX/82_MMPX
- 11_MMPX/92_MMPX
- 11_MMPX/96_MMPX
- 16_MMPX/82_MMPX
- 16_MMPX/96_MMPX



HUBER+SUHNER type	Item no.
74_Z-0-0-491	84114252



Series SMB – subminiature connectors

Description

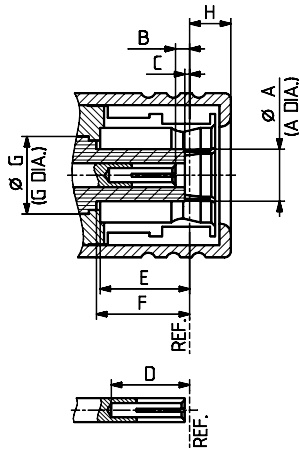
The HUBER+SUHNER subminiature connectors series SMB and SMC have the same basic design. They only differ with regard to their coupling mechanism. HUBER+SUHNER SMB subminiature connectors are suitable for applications from DC up to 4 GHz.

Content

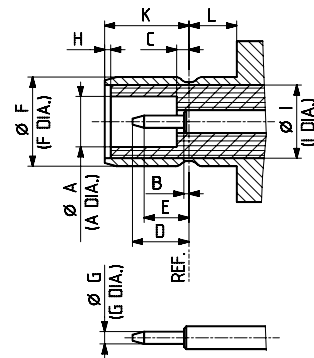
Description	181
Interface dimensions in mm/inches	181
Technical data	182
Cable connectors	183
Receptacles with solder end	187
PCB connectors	188

Interface dimensions (mm/inches)

Plug (male)



Jack (female)



	Plug		Jack	
	min.	max.	min.	max.
	–	2.06/0.081	2.08/0.082	–
B	0.18/0.007	0.94/0.037	–	0.18/0.007
C	0.18/0.007	–	–	0.18/0.007
D	2.97/0.117	–	–	2.97/0.117
E	3.58/0.141	–	1.32/0.052	–
F	3.58/0.141	–	3.66/0.144	3.71/0.146
G	3.05/0.120 nom.		0.48/0.019	0.53/0.021
H	–	1.63/0.064	0.00/0.000	–
I	–	–	3.05/0.120 nom.	
K	–	–	3.33/0.131	3.58/0.141
L	–	–	1.65/0.065	–

Interface dimensions conformable to the standards:

International: IEC 60169-10
 Europe: CECC 22130
 USA: MIL-PRF-39012
 Interface MIL-STD-348/311

Series SMB – technical data

Electrical data	Requirements
Impedance	50 Ω
Frequency range	DC to 4 GHz
Dielectric withstanding voltage (at sea level)	750 V rms, 50 Hz (depending on cable)
Working voltage (at sea level)	250 V rms for cables with 1 mm/0.039 in. dielectric 335 V rms for cables with 2 mm/0.078 in. dielectric
Insulation resistance	$\geq 10^4$ M Ω
Contact resistance	
· Centre contact	≤ 5 m Ω
· Outer contact	≤ 2.5 m Ω
RF leakage (measured at 1 GHz)	≥ 55 dB

Mechanical data	Requirements
Engagement force	8 to 63 N/1.8 to 14.2 lbs
Disengagement force	8 to 63 N/1.8 to 14.2 lbs
Contact captivation	≥ 18 N/4.0 lbs
Cable retention force ¹⁾	see pages 32 – 41
Durability (matings)	≥ 500

Environmental data	Requirements
Temperature range	-65 to +165 °C/-85 to +329 °F
Climatic category	IEC \rightarrow 55/155/21
Thermal shock	MIL-STD-202, method 107, condition B
Moisture resistance	MIL-STD-202, method 106
Corrosion	saltspray test acc. to MIL-STD-202, method 101, condition B
Vibration	MIL-STD-202, method 204, condition B

Material data		
Connector parts	Material	Plating
Bodies	brass	gold or SUCOPLATE®
Pin contacts	brass	gold
Socket contacts	copper-beryllium alloy	gold
Crimp ferrules	copper/brass	gold or SUCOPLATE®
Springs and washers	copper-beryllium alloy	gold or SUCOPLATE®
Insulators	PTFE or PFA	

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

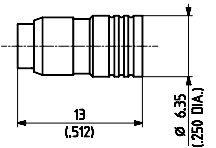

¹⁾ Value considers maximum load of the cables without irreversible variations of specifications.

Series SMB – cable connectors

Straight cable plugs (male)

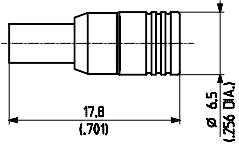

For semi-rigid cables

- Open entry
- Cable entry soldered
- Centre contact crimp or soldered

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
 					
11_SMB-50-2-13/111_NE 11_SMB-50-2-13/111_NH	22543362 22658765	Y3, Y11, (SR_86)	single bulk 100 pcs.	9002	1

For flexible cables

- Closed entry
- HUBER+SUHNER full crimp
- Taper sleeves see page 554

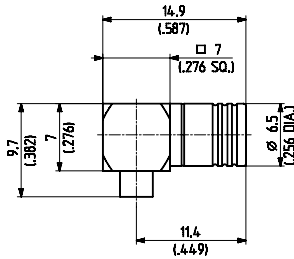
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Notes
 						
11_SMB-50-1-40/111_NE 11_SMB-50-1-40/111_NH	22648050 22650186	U1 (RG_178_B/U, ENVIROFLEX_178)	single bulk 100 pcs.	3077	1 A	low retention
11_SMB-50-2-40/111_NE 11_SMB-50-2-40/111_NH	22648051 23014146	U2 (RG_316/U, ENVIROFLEX_316)	single bulk 100 pcs.			
11_SMB-50-2-40/133_NE 11_SMB-50-2-40/133_NH	22648498 22650179		single bulk 100 pcs.			
11_SMB-50-2-41/111_NE 11_SMB-50-2-41/111_NH	22648052 22650536	U4 (K_02252_D, ENVIROF- LEX_316_D)	single bulk 100 pcs.			

Series SMB – cable connectors

Right angle cable plugs (male)

For semi-rigid cables

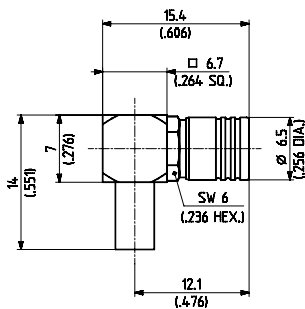
- Closed entry
- Cable entry soldered
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
16_SMB-50-2-23/111_NE	22644079	Y3, Y11 (SR_86)	single	9160

For flexible cables

- Closed entry
- HUBER+SUHNER full crimp
- Taper sleeves see page 554



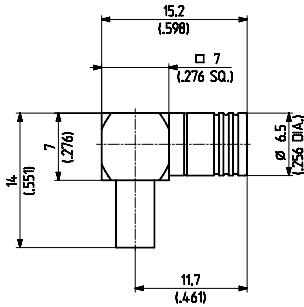
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Notes
16_SMB-50-2-110/111_NE	22659113	U2 (RG_316_/U, ENVIROFLEX_316)	single	3096	1 A	high retention, open entry
16_SMB-50-2-110/133_NH	22659116	U2 (RG_316_/U, ENVIROFLEX_316)	bulk 100 pcs.			high retention, open entry
16_SMB-50-2-111/111_NH	22659120	U4 (K_02252_D, ENVIROFLEX_316_D)	bulk 100 pcs.			
16_SMB-50-1-40/111_NE	22648053	U1 (RG_178_B/U, ENVIROFLEX_178)	single			
16_SMB-50-2-40/111_NE	22648054	U2 (RG_316_/U, ENVIROFLEX_316)	single			
16_SMB-50-2-40/111_NH	22650695		bulk 100 pcs.			
16_SMB-50-2-41/111_NH	22660335	U4 (K_02252_D, ENVIROFLEX_316_D)	bulk 100 pcs.			

Series SMB – cable connectors

Right angle cable plugs (male)

For flexible cables

- Closed entry
- Cable entry crimp
- Centre contact soldered
- Taper sleeves see page 554

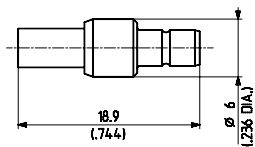


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Plating body
16_SMB-50-2-50/111_NE 16_SMB-50-2-50/111_NH	22648057 23011371	U2(RG_316_/U, ENVIROFLEX_316)	single bulk 100 pcs.	9157	A	
16_SMB-50-2-50/133_NH ¹⁾	22650181	U2 (RG_316_/U, ENVIROFLEX_316)	bulk 100 pcs.			SUCOPLATE®
16_SMB-50-2-51/111_NE 16_SMB-50-2-51/111_NH	22648058 22658985	U 4 (K_02252_D, ENVIROFLEX_316_D)	single bulk 100 pcs.			
16_SMB-50-2-51/133_NH ¹⁾	22650182	U 4 (K_02252_D, ENVIROFLEX_316_D)	single bulk 100 pcs.			SUCOPLATE®

Straight cable jacks (female)

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
21_SMB-50-1-10/111_NE ²⁾	22543424	U1 (RG_178_B/U, ENVIROFLEX_178)	single	3077	1 A
21_SMB-50-2-10/111_NE 21_SMB-50-2-10/111_NH	22640205 22651810	U2 (RG_316_/U, ENVIROFLEX_316)	single bulk 100 pcs.		
21_SMB-50-2-11/111_NE	22642407	U4, (K_02252_D, ENVIROFLEX_316_D)	single		

¹⁾ Cost effective

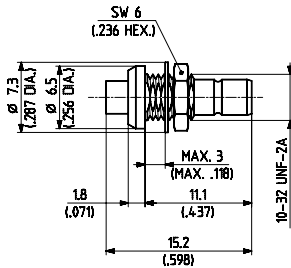
²⁾ Centre contact not captivated

Series SMB – cable connectors

Straight bulkhead cable jacks (female)

For semi-rigid cables

- Cable entry soldered
- Centre contact crimp or soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert
24_SMB-50-2-13/111_NE ¹⁾	22640822	Y3, Y11, Y16	single	9002	ML 11	1
24_SMB-50-2-13/111_NH ¹⁾	84047710	(SR_86)	bulk 100 pcs.			

For flexible cables

- HUBER+SUHNER full crimp
- Rear mounting
- Mounting hole ML 11
- Taper sleeves see page 554

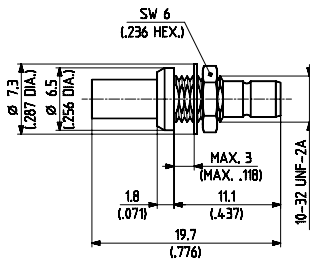


Fig. 1

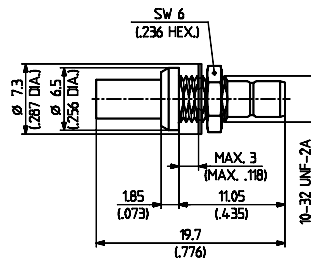


Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Plating body	Fig.
24_SMB-50-1-10/111_NE ¹⁾	22543631	U1 (RG_178_B/U,	single	3077	1 A		1
24_SMB-50-1-10/111_NH	22645690	ENVIROFLEX_178)	bulk 100 pcs.				
24_SMB-50-2-110/111_NE	22658161	U2 (RG_316_/U,	single				
24_SMB-50-2-110/111_NH	22659126	ENVIROFLEX_316)	bulk 100 pcs.				
24_SMB-50-2-110/133_NH ²⁾	22659128	U2 (RG_316_/U,	bulk 100 pcs.			SUCOPLATE®	2
24_SMB-50-2-111/111_NH	22659130	U2 (RG_316_/U,	bulk 100 pcs.				

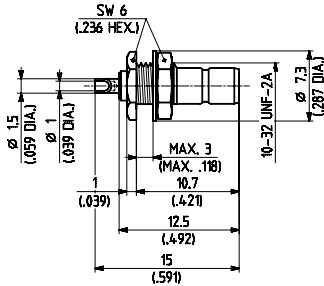
¹⁾ Cost effective

²⁾ Centre contact not captivated

Series SMB – receptacles with solder end

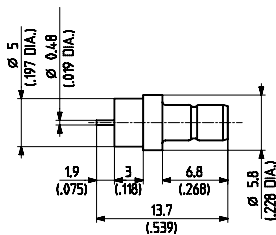
Receptacle jack (female)

- Bulkhead mounted
- Rear mounting
- Insulating washers see page 556



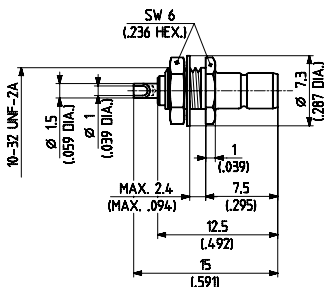
HUBER+SUHNER type	Item no.	Packaging	Mounting hole
22_SMB-50-0-3/111_NE	22640207	single	ML 11

- Bulkhead mounted
- Hermetically sealed
- RoHS compliant alternative on request



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes
22_SMB-50-0-5/111_NE	22640209	single	ML 90	panel sealing: laser beam welding leak rate $\leq 10^{-8}$ Torr l/s (atm cc/s)

- Bulkhead mounted
- Front mounting
- Insulating washers see page 556

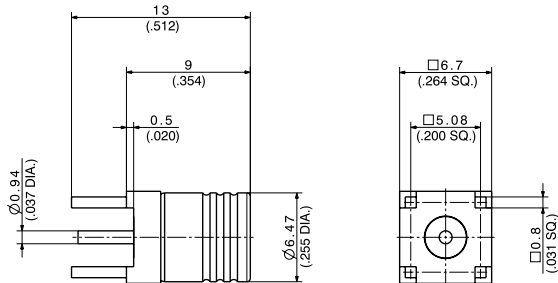


HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Plating body
22_SMB-50-0-2/133_NH	22651503	bulk 100 pcs.	ML 11	SUCOPLATE®

Series SMB – PCB connectors

Straight PCB plug (male)

- 2.54 mm/0.100 in. grid
- Open entry



HUBER+SUHNER type	Item no.	Mounting hole	Plating body	Notes
81_SMB-50-0-41/111_NE	22648059	ML 15	gold	with stand-off

Straight PCB jacks (female)

- 2.54 mm/0.100 in. grid

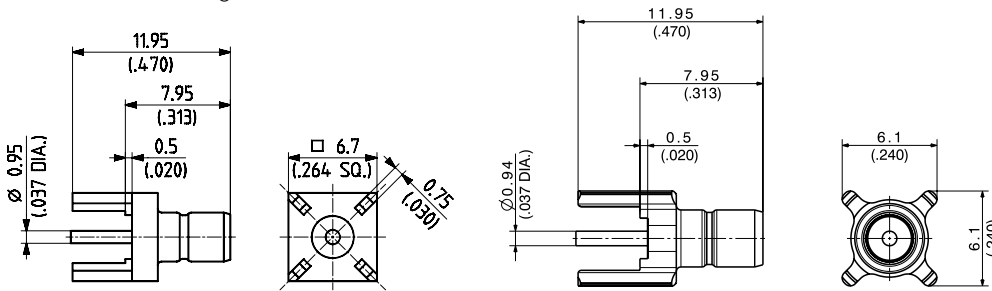


Fig. 1

Fig. 2

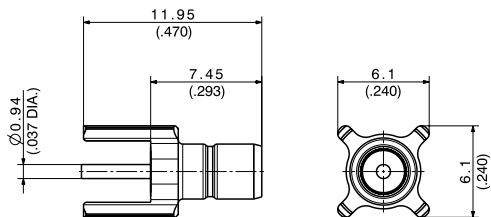


Fig. 3

HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Plating body	Fig.	Notes
82_SMB-50-0-1/133_NE	22641492	single	ML 15	SUCOPLATE®	1	with stand-off
82_SMB-50-0-1/111_NH-1	23017254	bulk 100 pcs.		SUCOPRO® plating	1	with stand-off
82_SMB-50-0-17/111_NH	23010991	bulk 100 pcs.		SUCOPRO® gold plating	2	with stand-off
82_SMB-50-0-19/111_NH	23011018	bulk 100 pcs.		SUCOPRO® gold plating	3	without stand-off

Series SMB – PCB connectors

Right angle PCB jacks (female)

- 2.54 mm/0.100 in. grid
- With stand-off

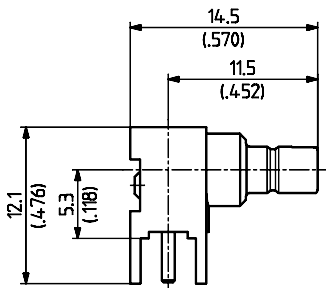


Fig. 1

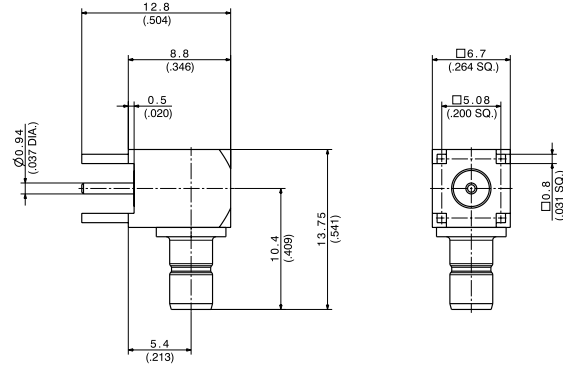
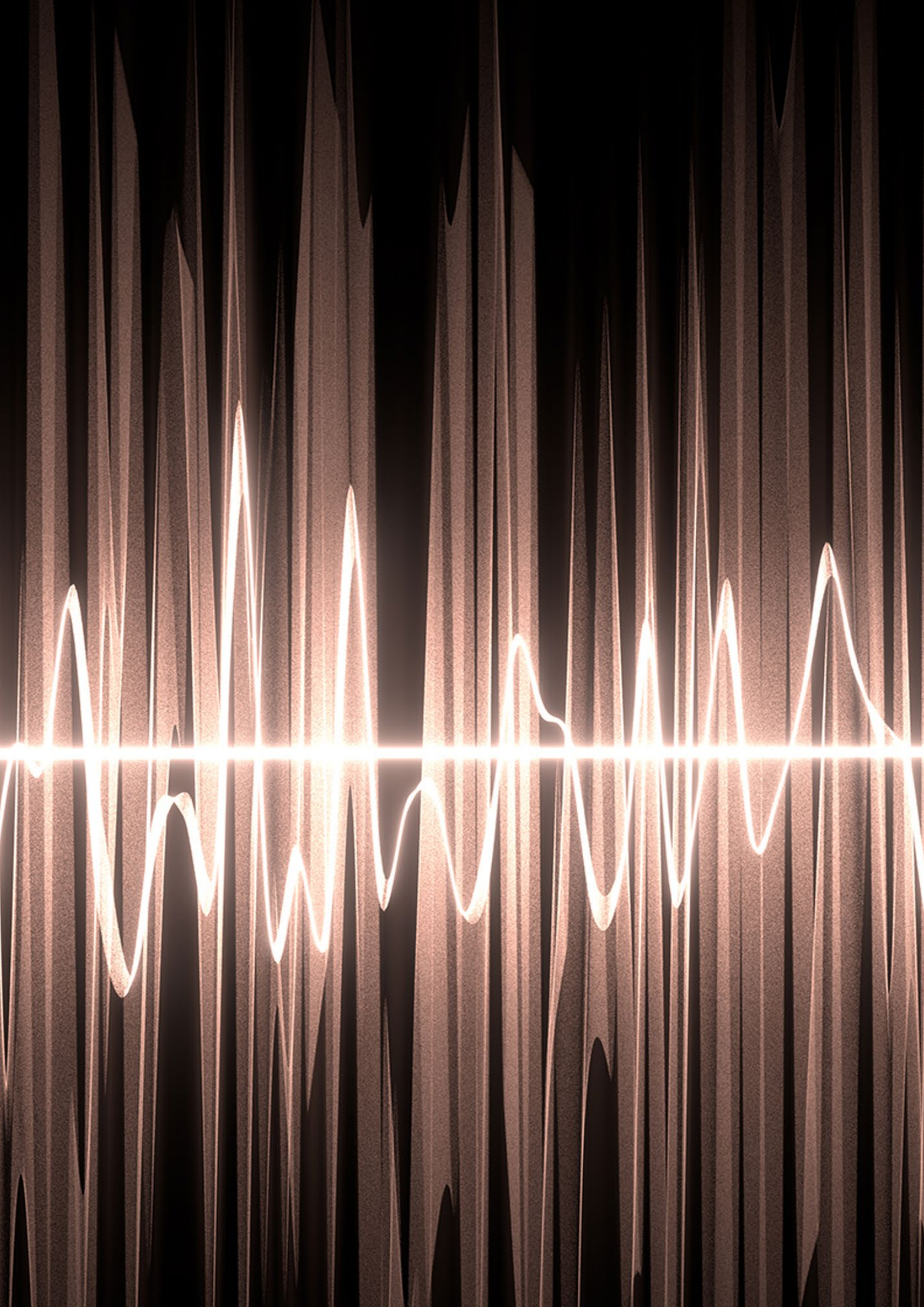


Fig. 2

HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Plating body	Fig.
85_SMB-Z50-0-19/111_NE	84041359	single	ML 15	SUCOPRO® gold plating	1
85_SMB-Z50-0-19/111_NH	23010999	bulk 100 pcs.		gold	2
85_SMB-50-0-1/111_NE	22640235	single	ML 15	SUCOPLATE®	
85_SMB-50-0-1/111_NH	22645989	bulk 100 pcs.			
85_SMB-50-0-1/133_NE ¹⁾	22641270	single			
85_SMB-50-0-1/133_NH ¹⁾	22644524	bulk 100 pcs.			

¹⁾ Cost effective



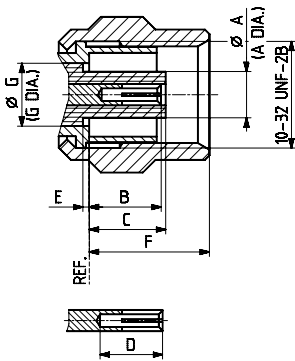
Series SMC – subminiature connectors

Description

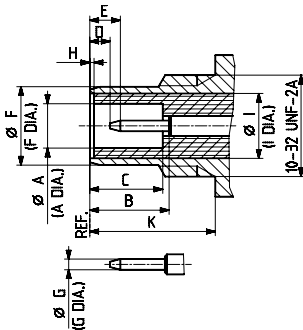
The HUBER+SUHNER SMC subminiature connector series is based on the same design as the SMB series. But due to its screw-on coupling mechanism, the HUBER+SUHNER SMC subminiature connectors are suitable for applications up to 10 GHz.

Interface dimensions (mm/inches)

Plug (male)



Jack (female)



Content

Description	191
Interface dimensions in mm/inches	191
Technical data	192
Cable connectors	193
Receptacles	196
PCB connectors	197

	Plug		Jack	
	min.	max.	min.	max.
A	–	2.60/0.081	2.08/0.082	–
B	2.85/0.112	3.40/0.134	3.40/0.134	–
C	–	3.40/0.134	3.40/0.134	–
D	2.79/0.110	–	0.61/0.024	–
E	0.00/0.000	–	–	2.13/0.084
F	–	5.92/0.233	–	3.71/0.146
G	3.05/0.120 nom.		0.48/0.019	0.53/0.021
H	–	–	0.00/0.000	–
I	–	–	3.05/0.120 nom.	
K	–	–	5.94/0.234	–

Interface dimensions conformable to the standards:

International: IEC 60169-9
 Europe: CECC 22140
 USA: MIL-PRF-39012

Series SMC – technical data

Electrical data	Requirements
Impedance	50 Ω
Frequency range	DC to 10 GHz
Dielectric withstanding voltage (at sea level)	750 V rms, 50 Hz (depending on cable)
Working voltage (at sea level)	250 V rms for cables with 1 mm/0.039 in. dielectric 335 V rms for cables with 2 mm/0.078 in. dielectric
Insulation resistance	$\geq 10^4$ M Ω
<ul style="list-style-type: none"> · Contact resistance · Centre contact · Outer contact 	<ul style="list-style-type: none"> ≤ 5 mΩ ≤ 2.5 mΩ
RF leakage (measured at 1 GHz)	≥ 90 dB

Mechanical data	Requirements
Coupling nut torque <ul style="list-style-type: none"> · Recommended 	25 to 35 Ncm/2.2 to 3.1 in lbs
Coupling nut retention force	≥ 150 N/33.72 lbs
Contact captivation	≥ 10 N/2.25 lbs
Cable retention force ¹⁾	see pages 32 – 41
Durability (matings)	≥ 500

Environmental data	Requirements
Temperature range	-65 to +165 °C/-85 to +329 °F
Climatic category	IEC → 55/155/21
Thermal shock	MIL-STD-202, method 107, condition B
Moisture resistance	MIL-STD-202, method 106
Corrosion	salt spray test acc. to MIL-STD-202, method 101, condition B
Vibration	MIL-STD-202, method 204, condition D

Material data		
Connector parts	Material	Plating
Bodies	brass	SUCOPLATE®/SUCOPRO® gold plating/gold
Pin contacts	brass	gold
Socket contacts	copper-beryllium alloy	gold
Crimp ferrules	copper/brass	SUCOPLATE®/SUCOPRO® gold plating/gold
Coupling nut	brass	SUCOPLATE®/SUCOPRO® gold plating/gold
Insulators	PTFE or PFA	

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

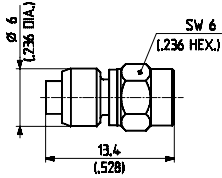
¹⁾ Value considers maximum load of the cables without irreversible variations of specifications.

Series SMC – cable connectors

Straight cable plugs (male)

For semi-rigid cables

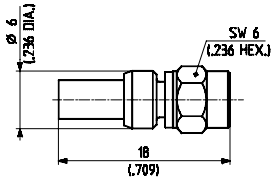
- Cable entry soldered
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
11_SMC-50-2-13/111_NH	22650675	Y3, Y11, Y15 (SR_86)	bulk 100 pcs.	9002

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554



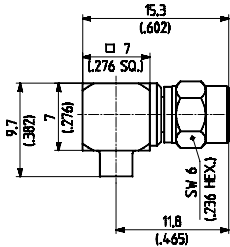
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Plating body	Assembly instruction	Crimp insert
11_SMC-50-1-10/111_NH	22648629	U1 (RG_178_B/U, ENVIROFLEX_178)	bulk 100 pcs.	gold	3077	1A
11_SMC-50-2-10/111_NE 11_SMC-50-2-10/111_NH	22640811 22645841	U2 (RG_316_/U, ENVIROFLEX_316)	single bulk 100 pcs.	gold		
11_SMC-50-2-10/133_NE	22641528	U2 (RG_316_/U, ENVIROFLEX_316)	single	SUCOPLATE®		
11_SMC-50-2-11/111_NE	22640251	U4 (K_02252_D, ENVIROFLEX_316_D)	single	gold		

Series SMC – cable connectors

Right angle cable plugs (male)

For semi-rigid cables

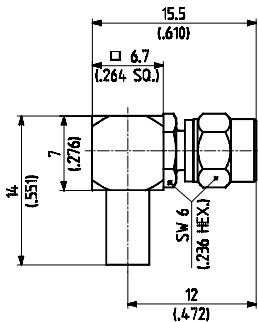
- Cable entry soldered
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
16_SMC-50-2-25/111_NE	22644126	Y3, Y11, Y15 (SR_86)	single	9160
16_SMC-50-2-25/111_NH	23003713		bulk 100 pcs.	

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554



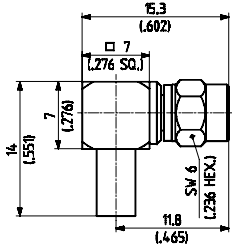
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Plating body	Assembly instruction	Crimp insert
16_SMC-50-1-10/111_NE	22543364	U1 (RG_178_B/U,	single	gold	3096	1A
16_SMC-50-1-10/111_NH	22648283	ENVIROFLEX_178)	bulk 100 pcs.			
16_SMC-50-2-10/111_NE	22640269	U2 (RG_316_/U,	single	gold	3096	1A
16_SMC-50-2-10/111_NH	22645323	ENVIROFLEX_316)	bulk 100 pcs.			
16_SMC-50-2-11/111_NE	22543366	U4 (K_02252_D,	single	gold	3096	1A
		ENVIROFLEX_316_D)				

Series SMC – cable connectors

Right angle cable plugs (male)

For flexible cables

- Cable entry crimp
- Centre contact soldered
- Taper sleeves see page 554

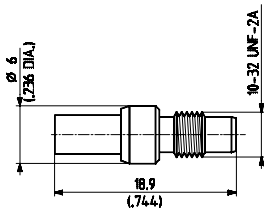


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
16_SMC-50-1-20/111_NE	22644083	U1 (RG_178_B/U, ENVIROFLEX_178)	single	9157	A
16_SMC-50-2-20/111_NE	22643949	U2 (RG_316_/U, ENVIROFLEX_316)			

Straight cable jacks (female)

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554

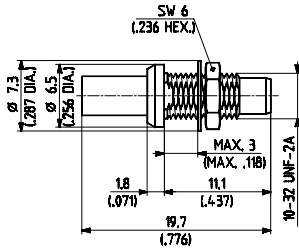


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
21_SMC-50-2-10/111_NE	22640279	U2 (RG_316_/U, ENVIROFLEX_316)	single	3077	1 A

Series SMC – cable connectors

For flexible cables

- HUBER+SUHNER full crimp
- Rear mounting
- Taper sleeves see page 554



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert
24_SMC-50-1-10/111_NE ¹⁾	22640290	U1 (RG_178_B/U, ENVIROFLEX_178)	single	3077	ML 11	1A
24_SMC-50-2-110/111_NE	22660133	U2 (RG_316_/U, ENVIROFLEX_316)	single			

Series SMC – receptacles

Straight bulkhead receptacles, jacks (female)

- Solder end
- Insulating washers see page 556

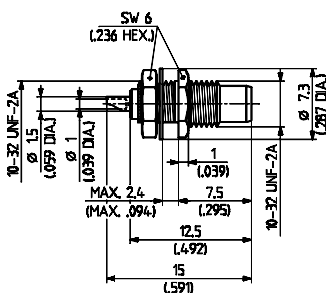


Fig. 1

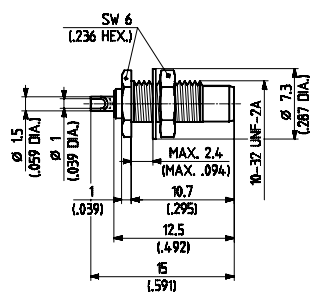


Fig. 2



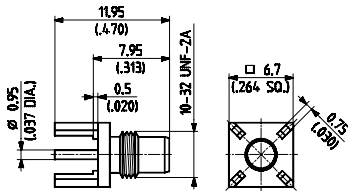
HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Fig.	Notes
22_SMC-50-0-2/111_NE	22640281	single	ML 11	1	front mounting
22_SMC-50-0-3/111_NE	22640282			2	rear mounting

¹⁾ Centre contact NOT captivated

Series SMC – PCB connectors

Straight PCB jacks (female)

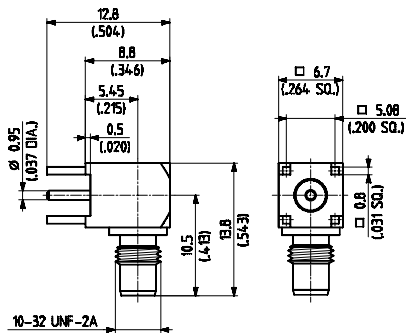
- 2.54 mm/0.100 in. grid
- With stand-off



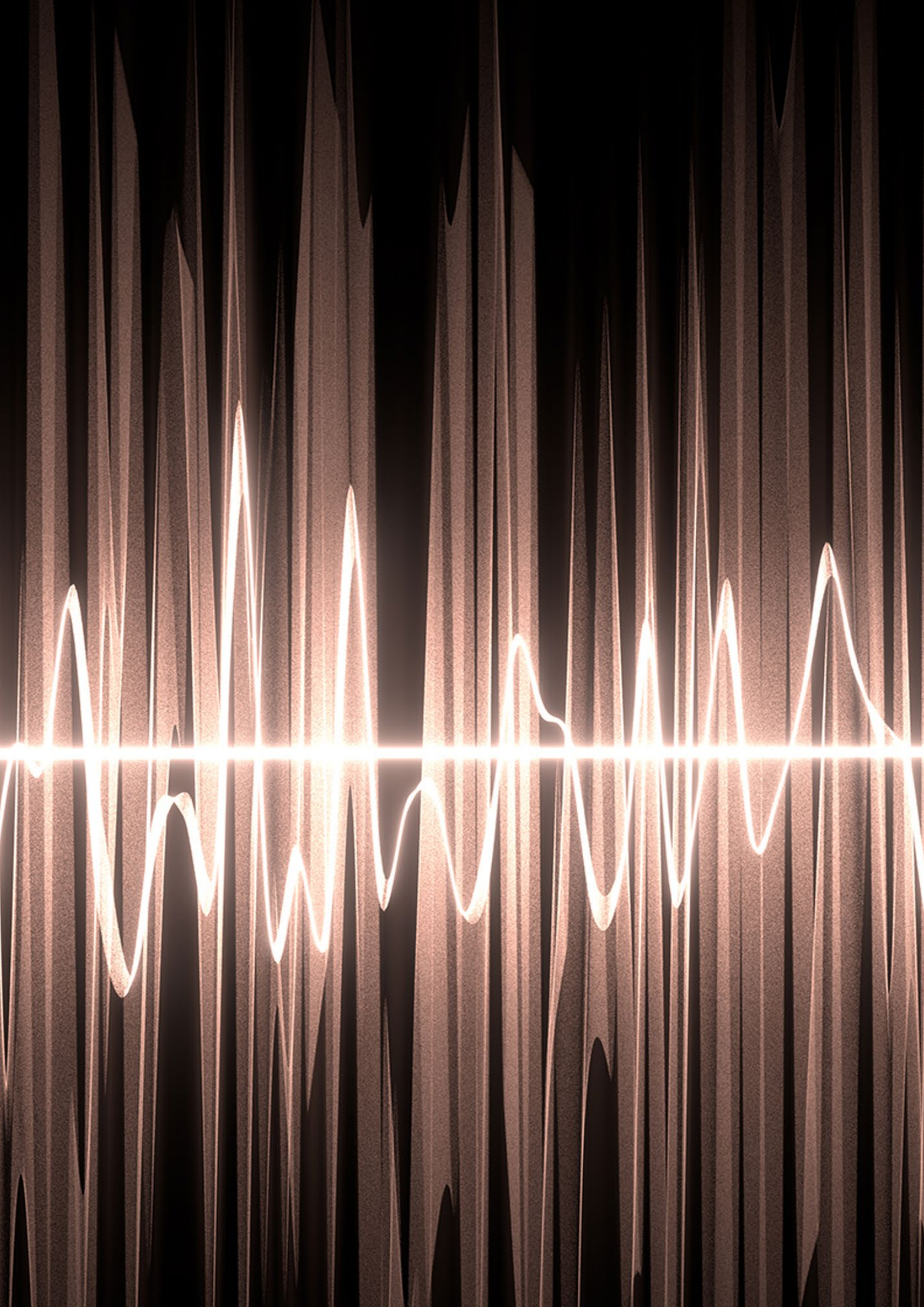
HUBER+SUHNER type	Item no.	Packaging	Mounting hole
82_SMC-50-0-1/111_NE	22640313	single	ML 15
82_SMC-50-0-1/111_NH	22646201	bulk 100 pcs.	

Right angle PCB jacks (female)

- 2.54 mm/0.100 in. grid
With stand-off



HUBER+SUHNER type	Item no.	Packaging	Mounting hole
85_SMC-50-0-1/111_NE	22640326	single	ML 15
85_SMC-50-0-1/111_NH	22652987	bulk 100 pcs.	
85_SMC-50-0-1/133_NE	22642472	single	



Series NEX10® – low PIM performance connectors

Description

NEX10 interface offers very low PIM performance together with a robust design and small size. Another key feature of NEX10 is the separation of the electrical contact from the mechanical contact area, which yields a low PIM and high return loss performance independent of the coupling mechanism or applied torque. This characteristic also gives the possibility of offering the connector plug with screw and quick-lock designs, thus simplifying the installation effort while guaranteeing a very high electrical performance for all coupling mechanisms.

Applications

NEX10 is the ideal candidate for applications requiring PIM stability and robustness in a small size such as remote radios, distributed antenna systems (DAS), small cells and in-building architecture:

- In small cell applications,
- In low power base stations,
- In multi-operator/multiband DAS,
- Blind mate for panel-to-panel and test and measurement

Features

- Radial contact
- Interface optimized for return loss
- Compact size
- Protection of electrical contact areas
- Multiple coupling mechanisms
- Rubber boot weather protection

Content

Description	199
Applications	199
Features and Benefits	199
Technical data	200
Admissible RF power	201
Cable connectors	202
Receptacles	204
Protective cap	204

Benefits

- Low PIM, independent of coupling mechanism
- Reliable performance eliminating installation errors
- Compact and space saving modules
- Interface safe from installation damages
- Flexibility in installation
- Interface specific boot guaranteeing protection in extreme weather



Series NEX10® – technical data

Electrical data				
Frequency	DC to 20 GHz			
Impedance	50 Ω			
PIM (Passive Intermodulation)	-166 dBc, 2 × 43 dBm (static and dynamic)			
Power	100 W @ 2 GHz @ 85 °C			
Interface return loss (typical)	DC to 4 GHz	4 to 6 GHz	6 to 10 GHz	10 to 20 GHz
	≥ 36 dB	≥ 34 dB	≥ 30 dB	≥ 20 dB
Working voltage	1000 V			
Screening effectiveness Screw Quick lock	DC to 6 GHz: ≥ 110 dB DC to 3 GHz: ≥ 90 dB (typical) 3 to 6 GHz: ≥ 70 dB (typical)			
Mechanical data				
Durability (mating cycles)	100 min. 500 for test and measurement adapters			
Mating characteristics Quick lock: engagement force Screw type: rec. torque	40 N typical 1.5 Nm			
Interface retention force	quick lock 150 N min.	screw 500 N min		
Bending force	≥ 5 Nm			
Vibration	100 m/s ² , 10 – 500 Hz (IEC 61169-1§9.3.3)			
Flange height	12.7 mm			
Environmental data				
Temperature range	-55 °C to +125 °C			
Corrosion	48 h salt mist test (720 h on request)			
Interface ingress protection	IP68 (24 h, 1 m, room temp, mated pair)			
RoHS	compliant			

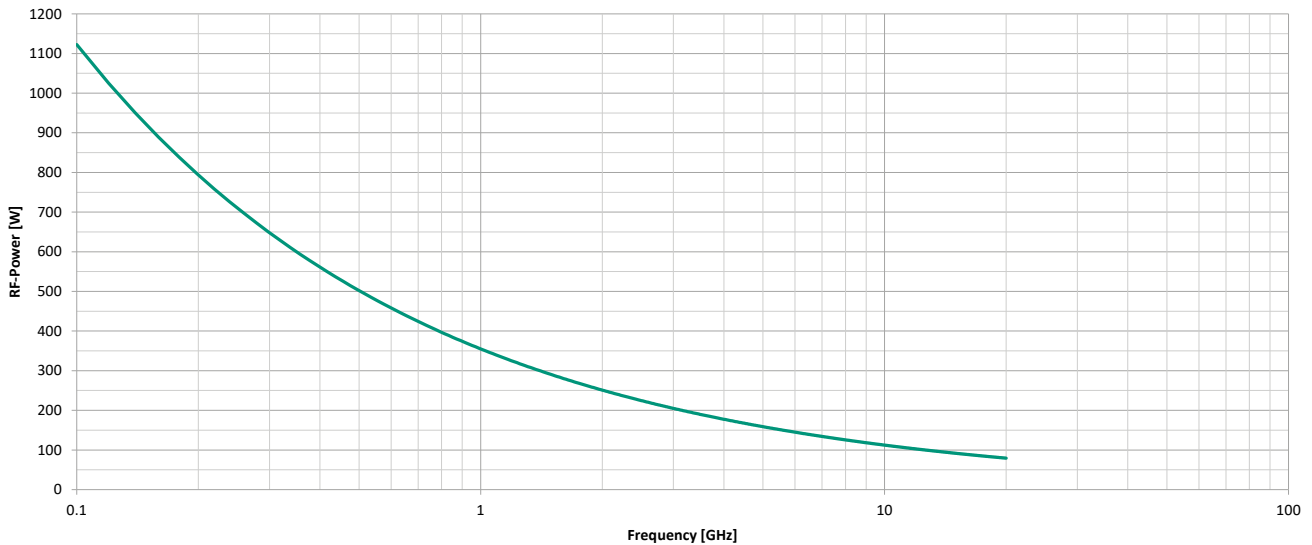
Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Series NEX10® – admissible RF power

The maximum temperature usually occurs on the connector inner conductor. When connectors are employed in a coaxial cable assembly, the connector should have a center conductor diameter that is equal to or larger than the cable center conductor diameter in order to maximise the power handling of the assembly.

The curves are the results of a typical application and are simulation results. Curves may vary depending on the connector. For specific questions please contact nearest HUBER+SUHNER sales office.

$T_{amb} = 25\text{ °C/sea level}$
VSWR = 1.0



Material data		
Connector parts	Material	Plating
Bodies	brass	SUCOPLATE®, Tin-Nickel, silver, Nickel-Phosphorus
Outer contact	spring bronze	silver
Insulators	PTFE	
Centre contact	brass/CuBe	silver
Gaskets	MVQ	
Coupling nut	brass	SUCOPLATE®

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Series NEX10[®] – cable connectors

Straight cable plugs (male)

- Cable entry soldered
- Centre contact soldered

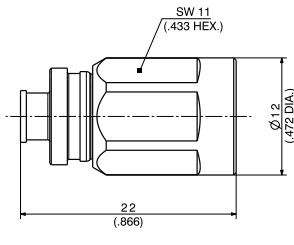


Fig. 1

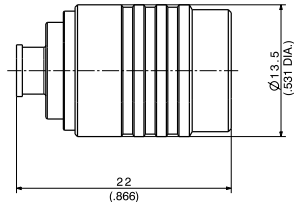


Fig. 2

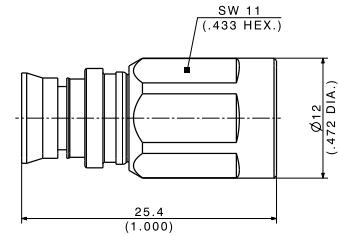


Fig. 3

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Fig.
11_NEX10-50-3-X1/003_-H	85091361	Y12, (Sucoform_141)	bulk	1
11_NEX10-50-3-Z2/003_-H	85095347	Y12, (Sucoform_141)	bulk	2
11_NEX10-50-5-X1/000_-H	85095631	M5 (SUcoFEED_1/4_HF)	bulk	3

Right angle jacks (male)

- Cable entry soldered
- Centre contact soldered

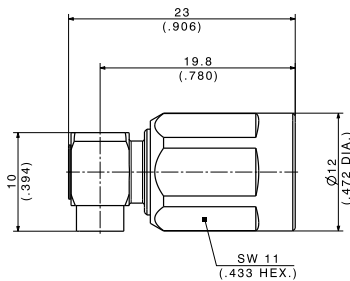


Fig. 1

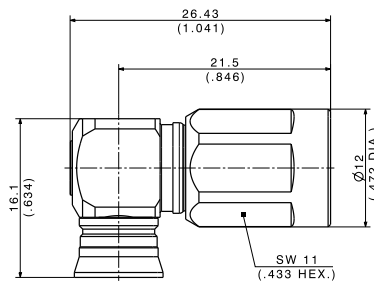


Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Fig.
16_NEX10-50-3-X1/003_-H	85102764	Y12, (Sucoform_141)	bulk	1
16_NEX10-50-5-X1/003_-H	85095633	M5 (SUcoFEED_1/4_HF)	bulk	2

X: torque, Z: quick-lock

Cable groups see page 32

Assembly tools see page 551

Mounting holes/PCB layouts see page 579

Series NEX10[®] – cable connectors

Straight cable jacks (female)

For Sucoform, the hand formable cables

- Cable entry soldered
- Centre contact soldered

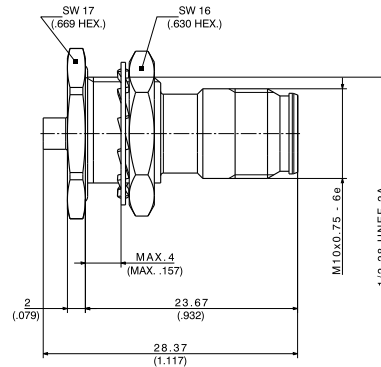
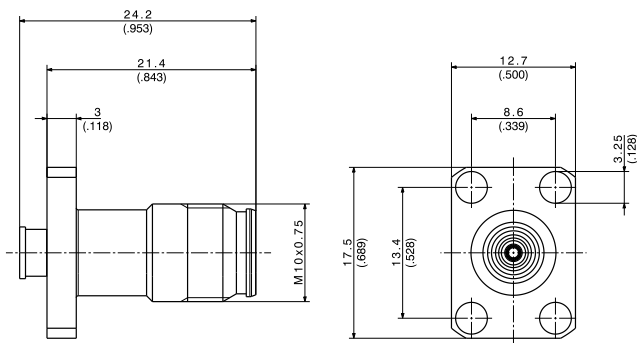


Fig. 1

Fig. 2

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Fig.
25_NEX10-50-3-1/033_-E	85091413	Y12, (Sucoform_141)	Bulk	1
24_NEX10-50-2-1/033_-Y	85095339	Y16, (Sucoform_86)	Bulk	2

Series NEX10[®] – receptacles

Straight panel receptacle (jack)

With solder end

- 4 hole, 12.5 mm flange height
- M3 mounting screws

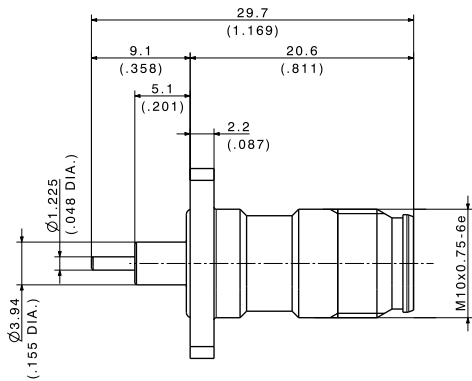


Fig. 1

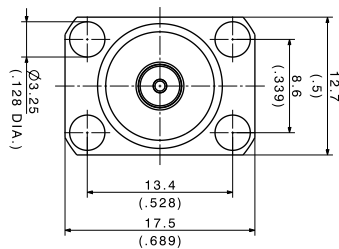


Fig. 2



HUBER+SUHNER type	Item no.	Packaging	Fig.
23_NEX10-50-0-3/033_-Y	85094630	bulk	1

Series NEX10[®] – protective cap

- Cap for NEX10 female (jack) interface
- Economical design



HUBER+SUHNER type	Item no.	Packaging	Notes
62_NEX10-0-0-1/---_-Z	85095030	bulk	Ingress Protection IP X8

MQ4/MQ5 Cluster Connectors

Description

Rising numbers of connections on base stations lead to even lower available space on the antennas and lead to higher complexity to connect them in the field. Cluster connectors help to reduce the number of mating processes, avoid mismatching and simplifying the cable management.

The IEC standardized interface MQ4/MQ5 provides four or five PIM-stable connections on the footprint of a DIN 7/16 connector. Mechanical coding avoids any mismatching. The rugged and watertight design (IP68) guarantees reliable connection from radio to the antennas.

Applications

- BTS antennas with multiple ports
- Antennas / Radios and filter output
- Applications requiring PIM stability
- Outdoor and indoor applications

Features

- Multiple connections mated at the same time
- Mechanical coding for correct alignment
- Waterproof (IP 68)
- Space saving (same footprint as 7/16)
- Cable size ¼" HF for jumpers
- Standard Interface (IEC 63138)

Content

Description	205
Applications	205
Features and Benefits	205
Technical data	206
Cable connectors	207
Protective cap	208

Benefits

- Fast and easy connection of multiple connections
- Correct channel alignment secured
- Easy to connect
- Increased density (channel per pitch)
- Lower total cost of ownership



Series MQ4/MQ5 – Technical data

Electrical data		
Frequency	DC to 6 GHz	
Impedance	50 Ω	
PIM (Passive Intermodulation)	≥ 160 dBc, 0-2.7GHz, 2x20W & 2x40dBm (static and dynamic)	
Power	150W @2GHz, CW	
Interface return loss	≥ 26 dB (DC to 3 GHz)	≥ 19 dB (3 GHz to 6 GHz)
Proof voltage (at sea level)	1000 V	
Screening effectiveness	≥ 90 dB (up to 3 GHz)	≥ 70 dB (3 GHz to 6 GHz)
Isolation	≥ 90 dB (0.05 to 6 GHz)	

Mechanical data		
Durability (mating cycles)	≥ 100	
Recommended torque (screw type)	25 Nm	
Mating characteristics	≥ 30 N (engagement)	≥ 30 N (disengagement)
Coupling torque resistance	≥ 450 N (Quick-lock)	
Vibration	100 m/s ² , 10 – 2000 Hz	

Environmental data	
Temperature range	-55°C – 125°C
Corrosion	48h salt mist test (720h on request)
Interface ingress protection	IP68 (24h, 1m, room temp, mated, IEC 60529))
RoHS	compliant

Values meet connector standards ISO-63138-2 (MQ4) and ISO-63138-3 (MQ5)

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Material data		
Connector parts	Material	Plating
Bodies	Brass	Tin-Nickel, SUCOPLATE®, silver, Nickel-Phosphorus
Outer contact	Brass/CuBe	Silver
Insulator	PTFE	
Center contact	Brass/CuBe	Silver
Gasket	MVQ	
Coupling nut	brass	Tin-Nickel, SUCOPLATE®, silver, Nickel-Phosphorus

Series MQ4/MQ5 – cable connectors

Straight cable plugs (male)

- Available as Lisca Cluster jumpers
- For Cables SUCOFEED_1/4_HFX and SUCOFEED_1/3_HF

Straight cable jacks female

- Cable entry soldered
- Centre contact soldered

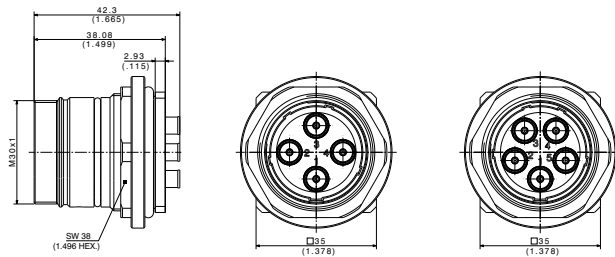


Fig. 1

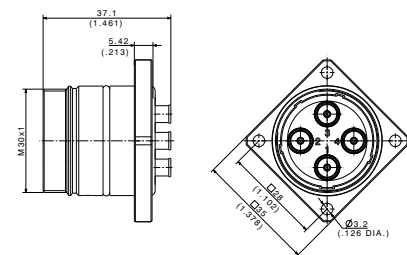


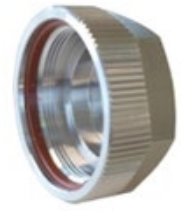
Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Mounting hole	Fig.
24_MQ4-50-3-1/005_NY	85117216	Y12 (Sucoform_141)	Box with 12pcs	ML 187	1
24_MQ5-50-3-1/005_NY	85117202	Y12 (Sucoform_141)	Box with 12pcs	ML 187	1
25_MQ4-50-3-2/005_NY	85197039	Y12 (Sucoform_141)	Box with 12pcs		2

Series MQ4/MQ5 – protective cap

- Cap for MQ4/MQ5 female (jack) interface
- Long time weather resistant
- Ingress protection IP68



HUBER+SUHNER type	Item no.	Packaging
62_MQ4-0-0-X1/--3_-E	85154396	Single

Series SSMA – subminiature precision connectors

Description

HUBER+SUHNER SSMA connectors are subminiature pre-precision stainless steel connectors for microwave applications. The SSMA is 30 % smaller than SMA and its standard frequency range is DC to 40 GHz and the extended frequency version operates up to 60 GHz. There is a wide variety of applications for SSMA connectors in telecom, test and measurement, instruments, avionics and defense.

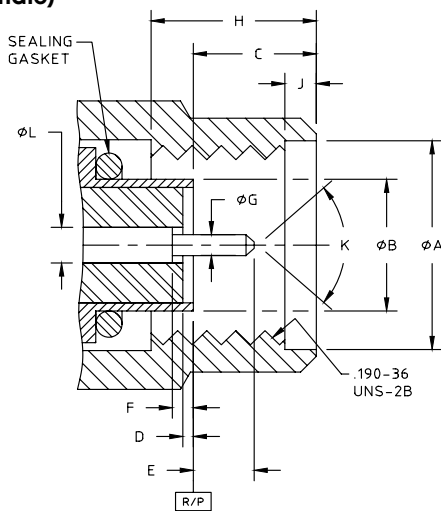
SSMA connectors conform to MIL-PRF-39012 and MIL-STD-348 requirements.

Compatibility

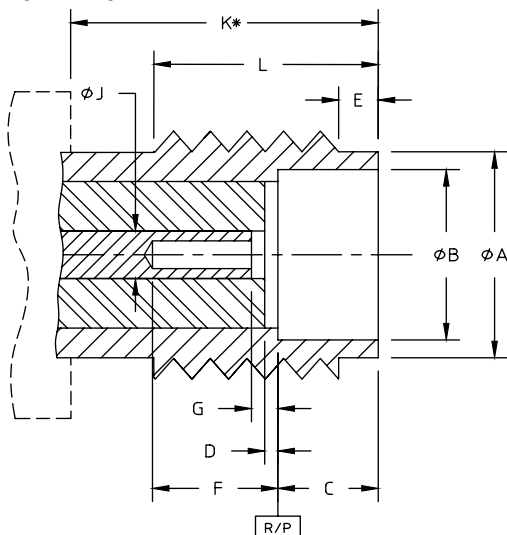
50 Ω SSMA connectors are intermateable without restrictions.

Interface dimensions (mm/inches)

Plug (male)



Jack (female)



Content

Description	209
Interface dimensions in mm/inches	209
Technical data	210
Cable connectors	212
Receptacles	217
Adapters	220

	Plug		Jack	
	min.	max.	min.	max.
A	0.196/4.98	0.202/5.13	0.153/3.88	0.160/4.06
B	0.124/3.15	0.1268/ 3.221	0.127/3.23	0.130/3.30
C	0.100/2.54	0.133/3.38	0-075/1.91	0.077/1.96
D	–	0.005/0.13	–	0.005/0.13
E	0.060/1.52	0.065/1.65	0.020/0.51	0.040/1.02
F	–	0.010/0.25	0.075/1.91	–
G	0.0195/ 0.495	0.0208/ 0.528	–	0.010/0.25
H	0.130/3.30	–		
J	0.015/0.38	0.045/1.14	0.0335/ 0.851	0.0348/ 0.884
K	70°	95°	0.230/5.84	–
L	0.335/ 0.851	0.0348/ 0.884	0.190/4.83	0.210/5.33

Interface dimensions conformable to the standards:

International: IEC 60169-23
 USA: MIL-PRF-39012
 SSMA interface MIL-STD-348

Series SSMA – technical data

Electrical data	MIL-PRF-39012	Requirements					
Impedance		50 Ω					
Frequency range for interface		DC to 40 GHz (extended range DC to 65 GHz)					
RL (typical value)		for cable connectors refer to table below					
Cable type		semi-rigid			flexible*		
Cable diameter (mm/in)		1.194/ 0.047	2.184/ 0.086	3.581/ 0.141	1.194/ 0.047**	2.184/ 0.086**	3.581/ 0.141**
RF leakage measured at 3 GHz	3.26	≥ 100 dB	≥ 100 dB	≥ 100 dB	≥ 100 dB	≥ 100 dB	≥ 100 dB
Dielectric withstanding voltage (at sea level, in Vrms, 50 Hz)	3.17	500	750	750	350	500	500
Corona extinction voltage (at 21000 m/70000 ft, in V rms, 50 Hz)	3.22	125	190	190	110	125	125
RF withstanding voltage at 5 MHz (V rms)	3.23	190	250	250	125	190	190
Insulation resistance	3.11	$\geq 5 \cdot 10^3$ M Ω					
Contact resistance	3.16						
Center contact		≥ 3 m Ω					
Outer contact		≥ 5 m Ω					

* Flexible highly shielded cables have RF leakage at 3 GHz ≥ 120 dB.

** Flexible replacement cables for standard size diameters have larger outer diameter due to the jacket.

Typical RL for HUBER+SUHNER standard SSMA cable connectors

Electrical data for extended frequency designs available upon request.

Typical RL (dB)	Frequency range					
Connector type	1 GHz	2.5 GHz	5 GHz	12.4 GHz	26.5 GHz	40 GHz
Straight connectors	37	37	30	28	25	22
Right angle connectors	37	32	28	25	23	

Series SSMA – technical data

Mechanical data		MIL-PRF-39012
Recommended coupling nut torque		0.8 to 0.9 Nm/7 to 8 inlbs
Coupling nut retention force	3.25	≥ 270 N/60.7 lbs
Contact captivation	3.12	≥ 27 N/6 lbs
Cable retention force ¹⁾	see suitable cables on pages 32 – 41	
Durability (matings)		≤ 500

¹⁾ Value considers maximum load of the cables without irreversible variations of specifications.

Environmental data	Test conditions
Temperature rage	-55 to +125 °C / -131 to +257 °F
Thermal shock	MIL-STD-202, method 107, method B
Moister resistance	MIL-STD-202, method 106
Corrosion	saltspray test acc. to MIL-STD-202, method 101, method B
Vibration	MIL-STD-202, method 204, method D
Shock	MIL-STD-202, method 213, condition I
RoHS 6 complaint	complaint designs available

Material data		
Connector part	Material	Plating
Bodies and nut	steel, corrosion resistant per ASTM A-582, UNS No. S30300, cond. A. Non-magnetic, passivated per SAE-AMS-2700. No dichromate solutions used	nickel plated 100 µin (2.54 µm) min. thk per SAE-AMS-C-26074 or ASTM B-733 SC1, type II class 3
Back nut and mounting nut	steel, corrosion resistant per ASTM A-582, UNS No. S30300, cond. A. Non-magnetic, passivated per SAE-AMS-2700. No dichromate solutions used	nickel alloy per AMS-2433, class 1
Center conductors	beryllium copper alloy per ASTM B-196, UNS No. C17300, TEMPER TD04(H)	gold plated 1.27 µM/50 µIN per ASTM B-488, code C, type II, class 1.27 over nickle plate, 1.27 µM/50 µIN thk per SAE-AMS-QQ-N-290, class 1
Retainning ring	beryllium copper, per ASTM B-197 UNS No. C17200 TEMPER TD04(H)	
Lockwasher	copper alloy UNS No. C425xx series per ASTM B-591	nickel plated 100 µIN min. thk (2.54 µM) per SAE-AMS-C-26074 or ASTM B-733
Crimp ferrules	seamlessbrass tubing per ASTM B-135, UNS alloy No. C26000	
Insulators	Polytetrafluoroethylene (PTFE) per ASTM D-1710, or ASTM D-4894, type I, grade I	
Gaskets	silicone rubber per GSA CID A-A-59588-2B and SAE-AMS-3304 or low out gassing silicone rubber per GSA CID A-A-59588 or fluorosilicone polymer, fluoro-silicone filled with silver per MIL-DLT-83528 type F or other options available upon request	

Notes:

HUBER+SUHNER SSMA connectors satisfy in principle the above technical data.

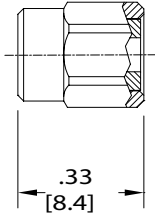
For detailed specifications refer to the published data sheets on our webpage www.hubersuhner.com or contact your corresponding H+S representative.

Low outgassing alternatives that meet or exceed NASA low outgassing requirements available.

Series SSMA – cable connectors

SSMA plug (male)

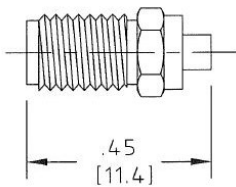
For semi-rigid cables



HUBER+SUHNER type	Cable type	Cable group	Packaging
29100	semi-rigid	A92 – 0.086 semi-rigid (2.18/0.086)	single

SSMA jack (female)

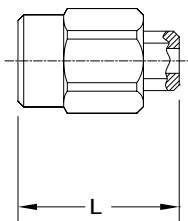
For semi-rigid cables



HUBER+SUHNER type	Cable type	Cable group	Packaging
29101	semi-rigid	A92 – 0.086 semi-rigid (2.18/0.086)	single

SSMA plug (male)

For semi-rigid cables



HUBER+SUHNER type	Cable type	Cable dia, mm/in	L, mm/in
29123	0.086 semi-rigid	2.18/0.86	11.18/0.44
29123-1	0.047 semi-rigid	1.19/0.47	12.95/0.51

Series SSMA – cable connectors

SSMA bulkhead jack (female)

For flexible cables

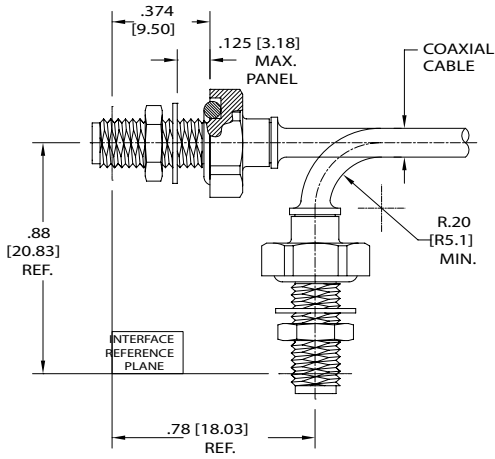


Fig. 1

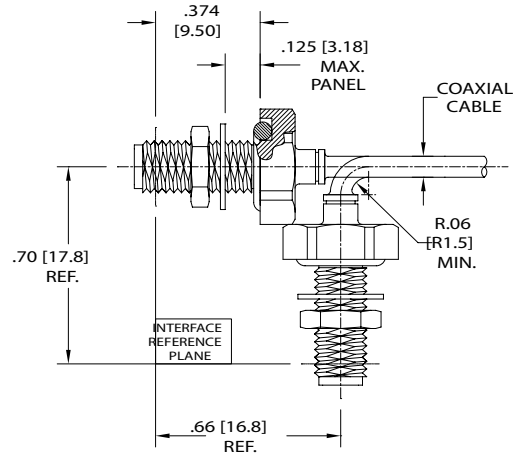


Fig. 2

HUBER+SUHNER type	Cable group (mm/in)	Cable type	Cable	Fig.
29102CR-32-24	A11- (1.70/0.067)	flexible	32024E – Minibend L	1
29102CR-32-41	A20 – (1.14 /0.045)	flexible	32041E – Microbend	2
29102CR-32-81	A10 – (2.18 /0.086)	flexible	32081E – Minibend	1
29102CR-32-85	A21 – (1.22 /0.048)	flexible	32085E – Microbend L	1
29102CR-32-87	A14 – (1.22 /0.048)	flexible	32087E – Minibend LH	1
29102CR-32-91	A13 – (1.14 /0.045)	flexible	32091E – Minibend H	1

Note: Sold on cable assemblies only.

Series SSMA – cable connectors

SSMA plug (male)

For flexible cables

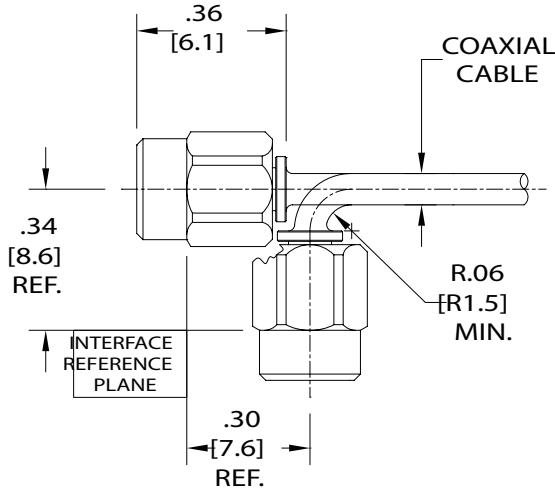


Fig. 1

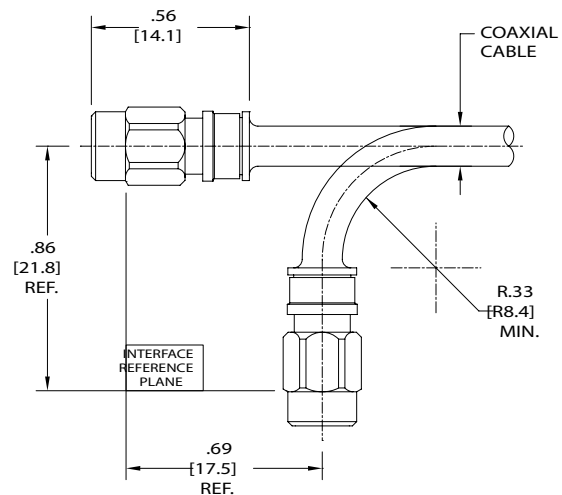
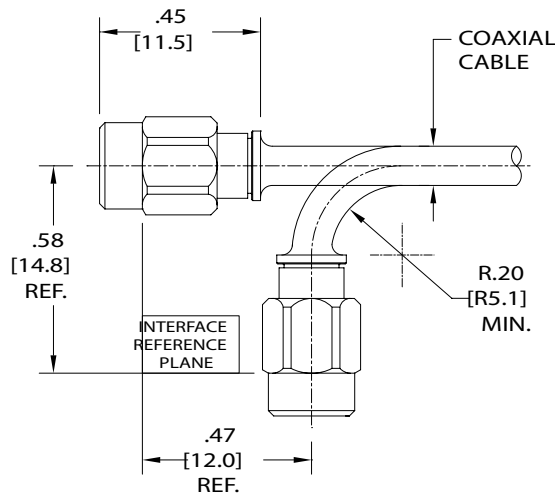


Fig. 2

Fig. 3

HUBER+SUHNER type	Cable group (mm/in)	Cable type	Cable	Fig.
29112CR-32-41	A20 – (1.14 /0.045)	flexible	32041E – Microbend	1
29112CR-32-81	A10 – (2.18 /0.086)	flexible	32081E – Minibend	2
29112CR-32-85	A21 – (1.22 /0.048)	flexible	32085E – Microbend L	2
29112CR-32-87	A14 – (1.22 /0.048)	flexible	32087E – Minibend LH	2
29112CR-32-91	A13 – (1.14 /0.045)	flexible	32091E – Minibend H	2
29112CR-32381	A10 – (2.18 /0.086)	flexible	32081E – Minibend	2
29112CR-32-24	A11- (1.70/0.067)	flexible	32024E – Minibend L	2
29112CR-32-21	A32 – (2.36 /0.093)	flexible	32021E – Mini141 H	3
29112CR-32-22	A30 – (2.69 /0.106)	flexible	32022E – Mini141	3
29112CR-32322	A31 – (2.59 /0.102)	flexible	32322E – Mini141 CT	3

Note: Sold on cable assemblies only.

Series SSMA – cable connectors

SSMA bulkhead jack (female)

For flexible cables

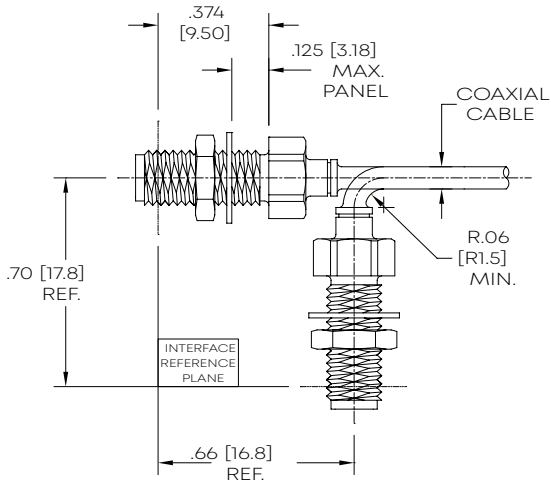


Fig. 1

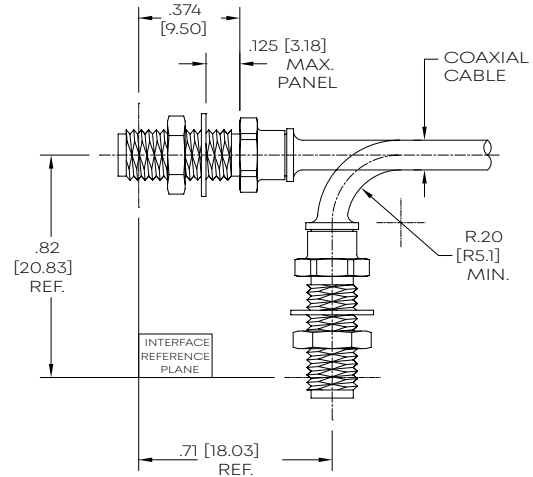


Fig. 2

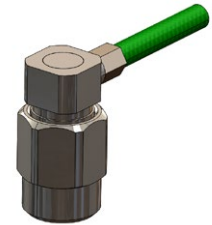
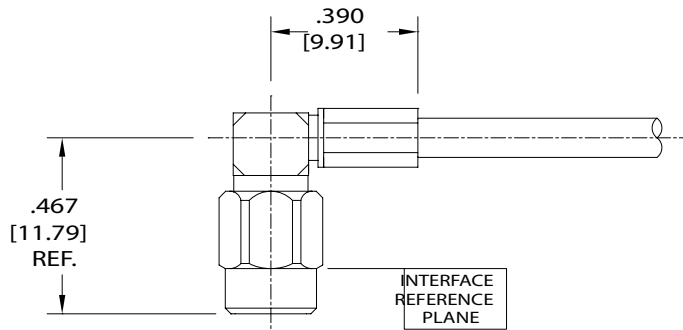
HUBER+SUHNER type	Connectors	Cable group (mm/in)	Cable type	Cable	Fig.
29125CR-32-41	SSMA jack (f) bulkhead	A20 – (1.14 /0.045)	flexible	32041E – Microbend	1
29125CR-32-24	SSMA jack (f) bulkhead	A11- (1.70/0.067)	flexible	32024E – Minibend L	2
29125CR-32-81	SSMA jack (f) bulkhead	A10 – (2.18 /0.086)	flexible	32081E – Minibend	2
29125CR-32-85	SSMA jack (f) bulkhead	A21 – (1.22 /0.048)	flexible	32085E – Microbend L	2
29125CR-32-87	SSMA jack (f) bulkhead	A14 – (1.22 /0.048)	flexible	32087E – Minibend LH	2
29125CR-32-91	SSMA jack (f) bulkhead	A13 – (1.14 /0.045)	flexible	32091E – Minibend H	2
29125CR-32381	SSMA jack (f) bulkhead	A10 – (2.18 /0.086)	flexible	32081E – Minibend	2

Note: Sold on cable assemblies only.

Series SSMA – cable connectors

SSMA right angle plug (male)

For flexible cables



HUBER+SUHNER type	Cable group (mm/in)	Cable type	Cable
29111CR-32-41	A20 – (1.14 /0.045)	flexible	32041E – Microbend
29111CR-32-24	A11- (1.70/0.067)	flexible	32024E – Minibend L
29111CR-32-81	A10 – (2.18 /0.086)	flexible	32081E – Minibend
29111CR-32-85	A21 – (1.22 /0.048)	flexible	32085E – Microbend L
29111CR-32-87	A14 – (1.22 /0.048)	flexible	32087E – Minibend LH
29111CR-32-91	A13 – (1.14 /0.045)	flexible	32091E – Minibend H
29111CR-32381	A10 – (2.18 /0.086)	flexible	32081E – Minibend

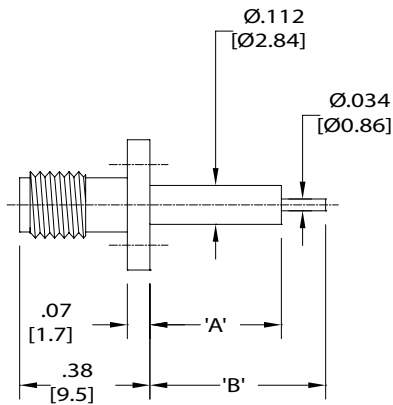
Series SSMA – receptacles

Straight bulkhead receptacles

Straight panel receptacles

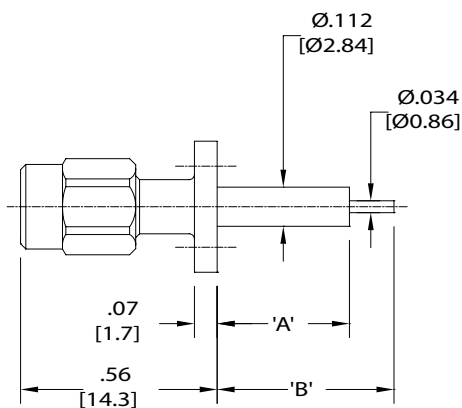
Flanged and panel mount

- SSMA panel mount



HUBER+SUHNER type	Contact type	A		B	
		in	mm	in	mm
29109-1C	1D	0.035	0.89	0.200	5.08
29109-2C	3F	0.375	9.53	0.500	12.70
29109-3C	4F	0.000	0.00	0.100	2.54
29109-4C	5F	0.000	0.00	0.100	2.54
29109-5C	3F	0.040	1.02	0.070	1.96

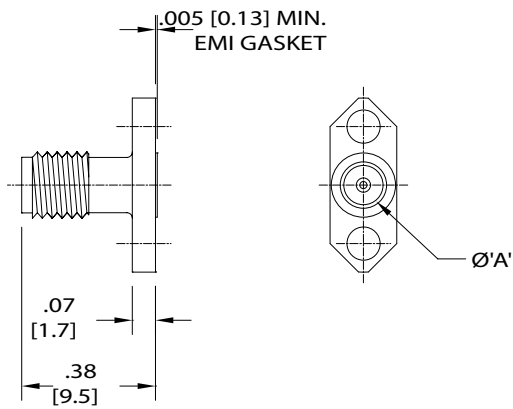
- SSMA panel mount plug (male)



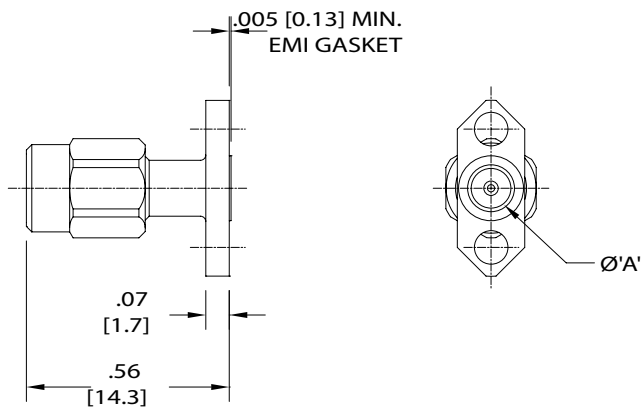
HUBER+SUHNER type	Contact type	A		B	
		in	mm	in	mm
29126-1	1F	0.035	0.89	0.200	5.08
29126-2	3F	0.375	9.53	0.500	12.70
29126-3	4F	0.000	0.00	0.100	2.54
29126-4	5F	0.000	0.00	0.100	2.54

Series SSMA – receptacles

- SSMA flanged mount jack (female)



HUBER+SUHNER type	Connectors	Accepts pin dia. mm/in	Ø A mm/in
29196	SSMA jack (f)	0.51 ± 0.03/0.020 ± 0.001	2.79/0.110
29196-1	SSMA jack (f)	0.38 ± 0.03/0.015 ± 0.001	2.79/0.110
29196-2	SSMA jack (f)	0.31 ± 0.03/0.012 ± 0.001	2.11/0.083

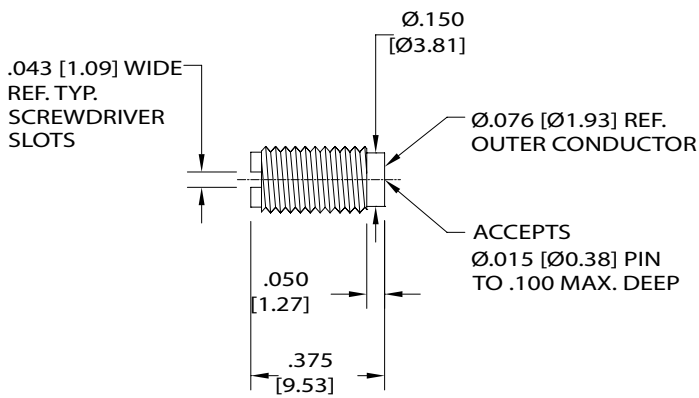


HUBER+SUHNER type	Connectors	Accepts pin dia. mm/in	Ø A mm/in
29195	SSMA plug (m)	0.51 ± 0.03 × 1.65/0.020 ± 0.001 × 0.065	2.79/0.110
29195-1	SSMA plug (m)	0.38 ± 0.03 × 1.27/0.015 ± 0.001 × 0.050	2.79/0.110
29195-2	SSMA plug (m)	0.31 ± 0.03 × 1.02/0.012 ± 0.001 × 0.040	2.11/0.083

Note: replacement gasket part number 632-2.

Series SSMA – receptacles

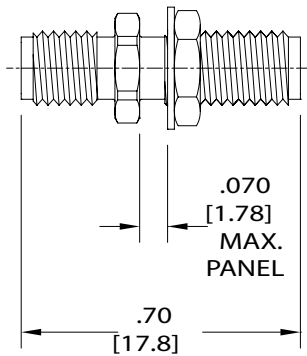
- Panel mount SSMA jack (f)



HUBER+SUHNER type	Connectors
29172-3	SSMA jack (f)

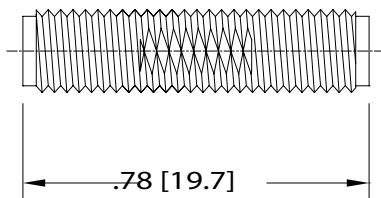
Series SSMA – adapters

- Bulkhead adapter SSMA jack/jack (female/female)



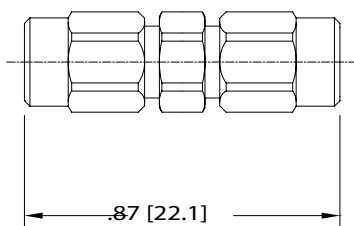
HUBER+SUHNER type	Connectors
29110	adapter bulkhead SSMA jack (f) to jack (f)

- Adapter SSMA jack/jack (female/female)



HUBER+SUHNER type	Connectors
29105	adapter SSMA jack (f) to jack (f)

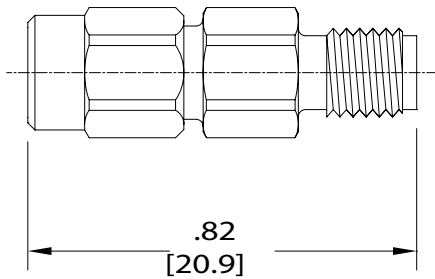
- Adapter SSMA plug/plug (male/male)



HUBER+SUHNER type	Connectors
29124	adapter SSMA plug (m)/plug (m)

Series SSMA – adapters

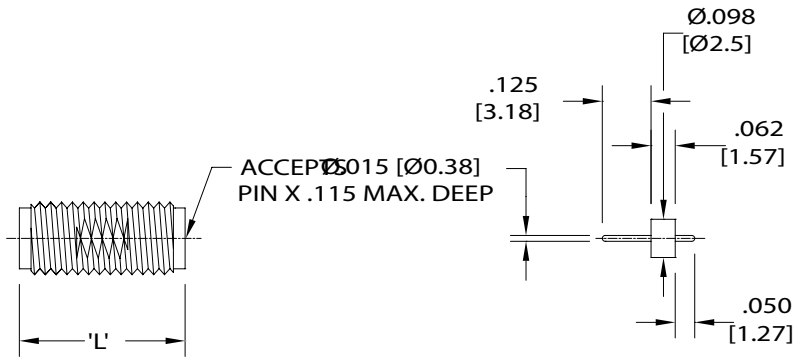
- Adapter SSMA plug/jack (male/female)



HUBER+SUHNER type	Connectors
29167	adapter SSMA plug (m)/jack (f)

Hermitic Adapter

- Hermetic adapter SSMA jack/jack (female/female)



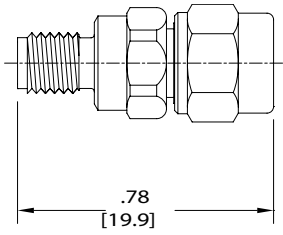
HUBER+SUHNER type	Glass seal P/N	Length	
		mm	in
29172	1805-2	10.80	0.425
29172-1	1805-3	13.94	0.549
29172-2	1805-3	10.80	0.425

Glass bead included with the adapter, additional glass bead can be purchased separately.

Series SSMA – adapters

Adapters in between series

- SSMA jack (f) to SK plug (m)



HUBER+SUHNER type	Connectors
29264-3	adapter SSMA jack (f) to SK plug (m)

Series SMA – coaxial connectors

Description

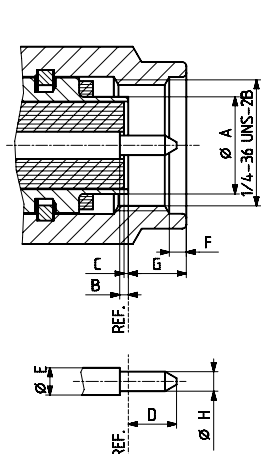
HUBER+SUHNER SMA connectors are precision connectors for microwave applications up to 18 GHz. The extended frequency version operates with excellent return loss performances up to 26.5 GHz. There is a huge variety of applications for HUBER+SUHNER SMA connectors, as in telecom, test+measurement, instruments, avionics, etc.

The HUBER+SUHNER series SMA is classified into two categories:

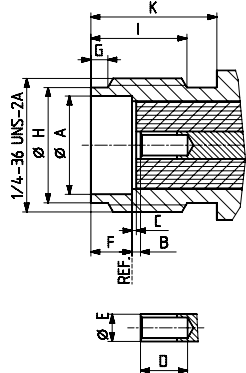
- HUBER+SUHNER standard SMA connectors for high end applications or applications subject to rough conditions.
- HUBER+SUHNER ECO SMA connectors for high volume applications.

Interface dimensions (mm/inches)

Plug (male)



Jack (female)



Content

Description	223
Interface dimensions in mm/inches	223
Features	223
Technical data	224
Cable connectors	227
Receptacles	243
PCB connectors	251
Protective caps and shorts	253

	Plug		Jack	
	min.	max.	min.	max.
A	–	4.59/1.81	4.59/0.181	–
B	0.00/0.000	0.25/0.010	0.00/0.000	0.25/0.010
C	0.00/0.000	0.25/0.010	0.00/0.000	0.25/0.010
D	–	2.54/0.100	2.67/0.105	–
E	1.24/0.049	1.29/0.051	1.24/0.049	1.29/0.051
F	0.38/0.015	1.14/0.045	1.88/0.074	1.98/0.078
G	–	3.43/0.135	0.38/0.015	1.14/0.045
H	0.90/0.036	0.94/0.037	5.28/0.208	5.49/0.216
I	–	–	4.32/0.170	–
K	–	–	5.54/0.218	–

Features

- Frequency range up to 18 GHz, extended frequency version up to 26.5 GHz
- Excellent return loss
- Intermateable with PC3.5 and SK
- The SMA (subminiature A) interface dimensions conform to the following standards:
 - International: IEC 60169-15
 - Europe: CECC 22110
 - USA: MIL-PRF-39012 SMA
Interface MIL-STD-348/310

Series SMA – technical data

Electrical data		MIL-C-39012			
Impedance		50 Ω			
Frequency range for interface		DC to 18 GHz (extended range DC to 26.5 GHz)			
RL (typical value)		for cable connectors refer to table below			
Cable type		semi-rigid		flexible	
Cable dielectric diameter (mm/in)		1.5/0.066	3/0.117	1.5/0.066	3/0.117
RF leakage measured at 3 GHz	3.26	≥ 100 dB-f (GHz)		≥ 60 dB	
Dielectric withstanding voltage (at sea level, in V rms, 50 Hz)	3.17	1000	1500	750	1000
Working voltage (at sea level, in V rms, 50 Hz)		335	500	250	335
Corona extinction voltage (at 21 000 m/70 000 ft, in V rms, 50 Hz)	3.22	250	375	190	250
Working voltage (at 21 000 m/70 000 ft, in V rms, 50 Hz)		85	125	65	85
RF withstanding voltage at 5 MHz (V rms)	3.23	670	1000	500	670
Insulation resistance	3.11	≥ 5 · 10 ³ MΩ			
Contact resistance · Centre contact · Outer contact	3.16	≤ 3 mΩ ≤ 2.5 mΩ			

Typical RL for HUBER+SUHNER standard SMA cable connectors

Typical RL (dB)	Frequency range					Cable group
Connector type	1 GHz	2.5 GHz	5 GHz	12.4 GHz	18 GHz	
Straight connectors	37	37	37	29	28	Y3, Y11
	37	37	34	29	23	Y5, Y12
	32	29	28			U2, U4
	34	32	29			U7, U9
Right angle connectors	37	32	26	19		Y3, Y11
	37	32	28	22		Y5, Y12
	32	29	26			U2, U4
	37	32	29			U7, U9


Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Series SMA – technical data

Typical RL for HUBER+SUHNER ECO SMA cable connectors

Typical RL (dB)	Frequency range				Cable group
Connector type	1 GHz	2.5 GHz	5 GHz	6 GHz	
Straight connectors	36	36	35	30	Y3, Y11
	36	36	35	30	Y5, Y12
	32	29	26	25	U2, U4
	34	32	27	25	U7, U9
Right angle connectors	36	32	26	25	Y3, Y11
	36	32	28	24	Y5, Y12
	32	29	26	25	U2, U4
	36	32	26	25	U7, U9

Mechanical data	MIL-C-39012		
Recommended coupling nut torque		HUBER+SUHNER standard SMA	0.8 to 1.1 Nm (7.1 to 9.7 in lbs)
		HUBER+SUHNER ECO SMA	0.45 Nm (4.0 in lbs)
Coupling nut retention force	3.25		≥ 270 N/60.7 lbs
Contact captivation Axial	3.12	HUBER+SUHNER standard SMA	≥ 27 N/6.1 lbs
		HUBER+SUHNER ECO SMA	≥ 20 N/5.4 lbs
Cable retention force ¹⁾		see suitable cables, pages 32 – 41	
Durability (matings)			≤ 500

Environmental data	Test conditions
Temperature range	–65 to +165 °C / –85 to +329 °F
Climatic category	IEC → 55/155/21
Thermal shock	MIL-STD-202, method 107, condition B
Moisture resistance	MIL-STD-202, method 106
Corrosion	saltspray test acc. to MIL-STD-202, method 101, condition B
Vibration	MIL-STD-202, method 204, condition D
Shock	MIL-STD-202, method 213, condition I
	Except the hermetic sealed SMA connectors all other connector types satisfy RoHS compability.

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

1) Value considers maximum load of the cables without irreversible variations of specifications.

Series SMA – technical data

Material data			
Connector part		Material	Plating
Bodies, outer contacts, nut	HUBER+SUHNER standard SMA	copper-beryllium alloy stainless steel, spring bronze	gold, passivated
	HUBER+SUHNER ECO SMA	brass, spring bronze	SUCOPLATE®/ SUCOPRO® gold plating
Pin contacts		copper-beryllium alloy, brass	gold/SUCOPRO® gold plating
Socket contacts		copper-beryllium alloy/spring bronze	gold
Crimp ferrules		copper, brass	gold
Insulators		PTFE or PFA	
Gaskets		silicone rubber	

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Series SMA – cable connectors

Straight cable plugs (male)

For semi-rigid cables

- With pin and insulator
- Cable entry soldered
- Centre contact soldered

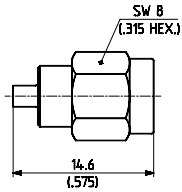


Fig. 1

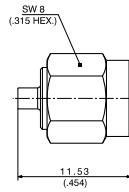


Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Plating body	Fig.	Notes
11_SMA-50-1-1/111_NE ^{1) 2)}	22642387	Y19 (SR_34)	single	9118	gold	1	
11_SMA-50-1-2/111_NE ^{1) 2)}	22642388	Y2, Y15 (SUCOFORM_47, SR_47)	single	9119		1	
11_SMA-50-1-53/119_NH	23013327	Y2, Y15 (SUCOFORM_47, SR_47)	bulk 100 pcs.	150006		2	nut passivated stainless steel

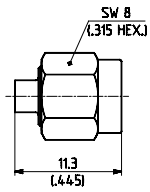


Fig. 1

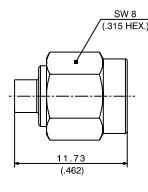
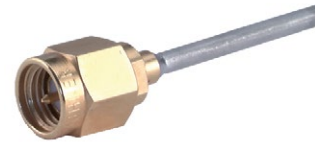


Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Plating body	Fig.	Notes
11_SMA-50-2-15/111_NE ⁵⁾	22544545	Y3, Y11, Y16 (SUCOFORM_86, SR_86)	single	9056	gold	1	
11_SMA-50-2-15/111_NH	22645898	(SUCOFORM_86, SR_86)	bulk 100 pcs.				
11_SMA-50-2-65/119_NE ^{3) 5)}	22642315	Y3, Y11, Y16 (SUCOFORM_86, SR_86)	single	9056	gold	1	nut passivated stainless steel
11_SMA-50-2-65/119_NH ³⁾	22645366	(SUCOFORM_86, SR_86)	bulk 100 pcs.				
11_SMA-50-2-110/133_NE ⁴⁾	84130715	Y3, Y11, Y16 (SUCOFORM_86, SR_86)	single	0000349249	SUCO-PLATE®	2	
11_SMA-50-2-110/133_NP ⁴⁾	84117816	(SUCOFORM_86, SR_86)	bulk 500 pcs.				

All highlighted types are HUBER+SUHNER ECO types.

¹⁾ VCompound 74_Z-0-0-116 needed

²⁾ SUCOPRO® (economical) version on request

³⁾ Cable entry CuBe/gold

⁴⁾ Use torque wrench 74_Z-0-0-79

⁵⁾ SUCOPRO® (economical) version on request

Series SMA – cable connectors

Straight cable plugs (male)

For semi-rigid cables

- With pin and insulator
- Cable entry soldered
- Centre contact soldered

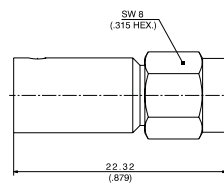
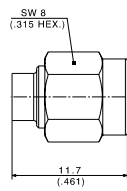
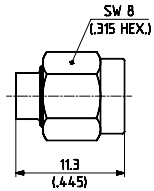


Fig. 1

Fig. 2

Fig. 3

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Plating body	Fig.	Notes
11_SMA-50-3-15/111_NE ²⁾ 11_SMA-50-3-15/111_NH	22544547 22651601	Y5, Y12, Y17 (SUCOFORM_141, SR_141)	single bulk 100 pcs.	9056	gold	1	
11_SMA-50-3-65/119_NE 11_SMA-50-3-65/119_NH	22641643 22646570	Y5, Y12, Y17 (SUCOFORM_141, SR_141)	single bulk 100 pcs.	9056	gold	1	nut passivated stainless steel
11_SMA-50-3-235/133_NE ¹⁾ 11_SMA-50-3-235/133_NP ¹⁾	84130698 84104274	Y5, Y12, Y17 (SUCOFORM_141, SR_141)	single bulk 500 pcs.	0000333508	SUCO-PLATE®	2	
11_SMA-50-5-1/111_NE ²⁾	22642399	Y7, Y14 (SUCOFORM_250_01, SR_250)	single	0000181414	gold	3	

All highlighted types are HUBER+SUHNER ECO types.

26.5 GHz – straight cable plugs (male)

For semi-rigid cables

- With pin and insulator
- Centre contact soldered

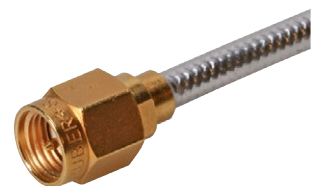
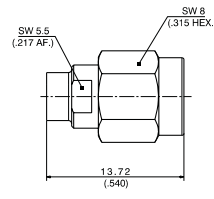
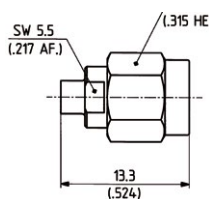


Fig. 1

Fig. 2

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Fig.	Plating body
11_SMA-50-2-100/111_NE ²⁾	22648717	Y3, Y11, (SUCOFORM_86, SR_86)	single	0000181590	1	gold
11_SMA-50-3-100/111_NE ²⁾ 11_SMA-50-3-100/111_NH	22648718 22658936	Y5, Y12, Y17 (SUCOFORM_141, SR_141)	single bulk 100 pcs.		2	

¹⁾ Use torque wrench 74_Z-0-0-79

²⁾ SUCOPRO® (economical) version on request

Series SMA – cable connectors

26.5 GHz – straight cable plugs (male)

For semi-rigid cables

- Without pin and insulator

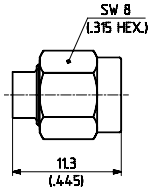


Fig. 1

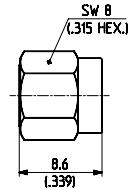
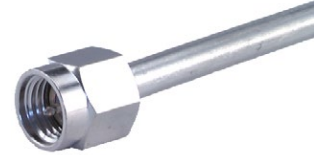


Fig. 2

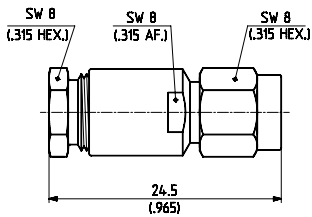


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Plating body	Fig.	Notes
11_SMA-50-3-14/-11_NH	22644467	Y5 (SR_141)	bulk 100 pcs.	9055	gold	1	
11_SMA-50-3-16/-11_NH	22644470		bulk 100 pcs.		gold	2	
11_SMA-50-3-42/-33_NE	22649222		single bulk 100 pcs.		SUCOPLATE®	2	
11_SMA-50-3-64/-19_NH	22649224		bulk 100 pcs.		gold	1	nut passivated stainless steel
11_SMA-50-3-66/-19_NE 11_SMA-50-3-66/-19_NH	22641644 22645207		single bulk 100 pcs.		gold	2	nut passivated stainless steel

Straight cable plugs (male)

For flexible cables

- Cable entry clamp
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Plating body
11_SMA-50-3-7/111_NE ¹⁾	22640050	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	3071	gold
11_SMA-50-3-8/111_NH ¹⁾	22648630	U9 (RG_142_B/U, ENVIROFLEX_142)	bulk 100 pcs.		
11_SMA-50-3-10/111_NE ¹⁾	22640053	U11 (RG_400_/U, ENVIROFLEX_400)	single		

¹⁾ SUCOPRO® (economical) version on request

Series SMA – cable connectors

Straight cable plugs (male)

For flexible cables

- Cable entry crimp
- Centre contact soldered

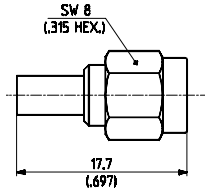


Fig. 1

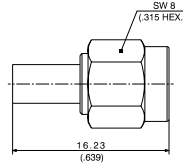


Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Plating body	Crimp insert	Fig.
11_SMA-50-1-4/111_NE ³⁾	22645871	U1 (RG_178_B/U, ENVIROFLEX_178)	single	27061	gold	A	1
11_SMA-50-2-5/111_NE ³⁾ 11_SMA-50-2-5/111_NH	22640042 22646312	U2 (RG_316_/U, ENVIROFLEX_316)	single bulk 100 pcs.	27266	gold	A	1
11_SMA-50-2-6/111_NE ³⁾ 11_SMA-50-2-6/111_NH	22640043 22650740	U4 (K_02252_D, ENVIROFLEX_316_D)	single bulk 100 pcs.	27266	gold	A	1
11_SMA-50-2-27/111_NE ^{1), 3)} 11_SMA-50-2-27/111_NH ¹⁾	84022967 22652923	U2 (RG_316_/U, ENVIROFLEX_316)	single bulk 100 pcs.	27164	gold	1 A	1
11_SMA-50-2-55/199_NE	22641377	U2 (RG_316_/U, ENVIROFLEX_316)	single	3069	passivated stainless steel	A	1
11_SMA-50-2-56/199_NE 11_SMA-50-2-56/199_NH	22641376 22651486	U4 (K_02252_D, ENVIROFLEX_316_D)	single bulk 100 pcs.	3069	passivated stainless steel	A	1
11_SMA-50-2-111/133_NE ²⁾ 11_SMA-50-2-111/133_NP ²⁾	84130699 84117820	U2 (RG_316_/U, ENVIROFLEX_316_D)	single bulk 500 pcs.	0000348839	SUCOPLATE®	A	2
11_SMA-50-2-112/133_NE ²⁾ 11_SMA-50-2-112/133_NP ²⁾	84130700 84115820	U4 (K_02252_D, ENVIROFLEX_316_D)	single bulk 500 pcs.	0000347891	SUCOPLATE®	A	2
11_SMA-50-2-116/111_NE	85199138	U2 (RG_316_/U, ENVIROFLEX_316)	single	0001166880	gold	A	2

All highlighted types are HUBER+SUHNER ECO types.

 The product is lead free.

¹⁾ HUBER+SUHNER full crimp

²⁾ use torque wrench 74_Z-0-0-79

³⁾ SUCOPRO® (economical) version on request

Series SMA – cable connectors

Straight cable plugs (male)

For flexible cables

- Cable entry crimp

Centre contact soldered (11_SMA-50-4-77 plugged center conductor)

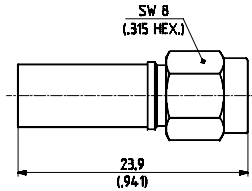


Fig. 1

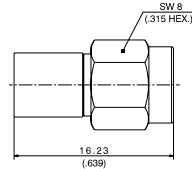


Fig. 2

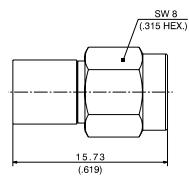


Fig. 3

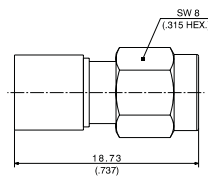


Fig. 4

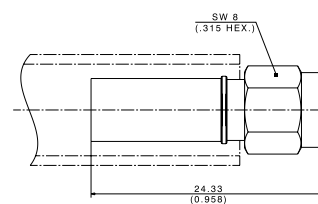


Fig. 5

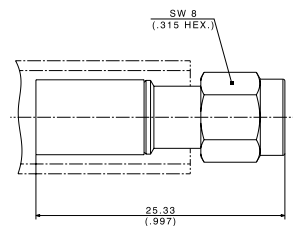


Fig. 6

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Plating body	Crimp insert	Fig.
11_SMA-50-3-5/111_NE ²⁾ 11_SMA-50-3-5/111_NH	22640048 22644684	U7 (RG_58_C/U, ENVIROFLEX_B58)	single bulk 100 pcs.	3069	gold	B	1
11_SMA-50-3-6/111_NE ²⁾ 11_SMA-50-3-6/111_NH	22640049 22650739	U9, U11 (RG_400_/U, ENVIROFLEX_400)	single bulk 100 pcs.	3069	gold	B	1
11_SMA-50-3-55/199_NE	22641371	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	3069	passivated stainless steel	B	1
11_SMA-50-3-56/199_NE 11_SMA-50-3-56/199_NH	22543647 22648300	U9, U11 (RG_400_/U, ENVIROFLEX_400)	single bulk 100 pcs.	3069	passivated stainless steel	B	1
11_SMA-50-3-236/133_NE ¹⁾ 11_SMA-50-3-236/133_NP ¹⁾	84130702 84117821	U9, U11, U41 (RG_400_/U, ENVIROFLEX_400)	single bulk 500 pcs.	0000349507	SUCOPLATE®	1 ³⁾	2
11_SMA-50-3-237/133_NE ¹⁾ 11_SMA-50-3-237/133_NP ¹⁾	84130703 84117823	U7 (RG_58_C/U, ENVIROFLEX_B58)	single bulk 500 pcs.	0000349571	SUCOPLATE®	B	3
11_SMA-50-3-239/133_NF	85010668	X27 (SPUMA_195, SPUMA_195-FR-01)	single	0000417562	SUCOPLATE®	B	5
11_SMA-50-4-50/133_NE ¹⁾ 11_SMA-50-4-50/133_NP ¹⁾	84130705 84112519	S16, X9 (SX_04172_B-60)	single bulk 500 pcs.	0000347768	SUCOPLATE®	2 ⁴⁾	4
11_SMA-50-4-77/133_NE	85010193	X28 (SPUMA_240, SPUMA_240-FR-01)	single	0000416855	SUCOPLATE®	C	6

All highlighted types are HUBER+SUHNER ECO types.

¹⁾ Use torque wrench 74_Z-0-0-79

²⁾ SUCOPRO® (economical) version on request

³⁾ Crimp tool 76_Z-0-0-57

⁴⁾ Crimp tool 76_Z-0-4-23

Series SMA – cable connectors

Right angle cable plugs (male)

For semi-rigid cables

- With pin and insulator
- Cable entry soldered
- Centre contact soldered

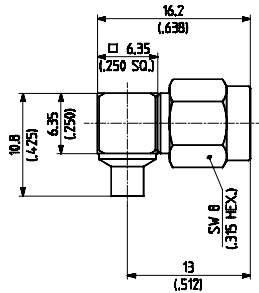


Fig. 1

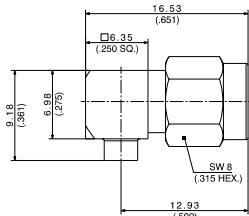


Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Plating body	Fig.	Notes
16_SMA-50-2-53/119_NE 16_SMA-50-2-53/119_NH	22644242 22646639	Y3, Y11, Y16 (SUCOFORM_86, SR_86)	single bulk 100 pcs.	3068	gold	1	nut passivated stainless steel
16_SMA-50-2-103/111_NE ²⁾ 16_SMA-50-2-103/111_NH	84018309 22652924	Y3, Y11, Y16 (SUCOFORM_86, SR_86)	single bulk 100 pcs.	3068	gold	1	
16_SMA-50-2-110/133_NE ¹⁾ 16_SMA-50-2-110/133_NP ¹⁾	84130706 84117807	Y3, Y11, Y16 (SUCOFORM_86, SR_86)	single bulk 500 pcs.	0000335631	SUCO-PLATE®	2	

All highlighted types are HUBER+SUHNER ECO types.

- With pin and insulator
- Cable entry soldered
- Centre contact soldered

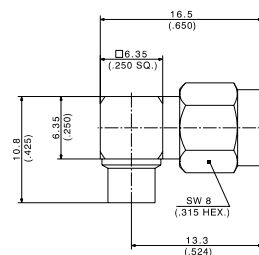


Fig. 1

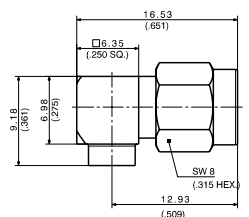


Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Plating body	Fig.	Notes
16_SMA-50-3-3/111_NE ²⁾ 16_SMA-50-3-3/111_NH	22640073 22646569	Y5, Y12, Y17 (SUCOFORM_141, SR_141)	single bulk 100 pcs.	3068	gold	1	
16_SMA-50-3-13/133_NE ¹⁾ 16_SMA-50-3-13/133_NP ¹⁾	84130707 84117810	Y5, Y12, Y17 (SUCOFORM_141, SR_141)	single bulk 500 pcs.	0000335642	SUCO-PLATE®	2	
16_SMA-50-3-53/119_NE 16_SMA-50-3-53/119_NH	22644243 22646561	Y5, Y12, Y17 (SUCOFORM_141, SR_141)	single bulk 100 pcs.	3068	gold	1	nut passivated stainless steel

All highlighted types are HUBER+SUHNER ECO types.

¹⁾ Use torque wrench 74_Z-0-0-79

²⁾ SUCOPRO® (economical) version on request

Series SMA – cable connectors

26.5 GHz – right angle cable plugs (male)

For semi-rigid cables

- With pin and insulator
- Cable entry soldered
- Centre contact plugged

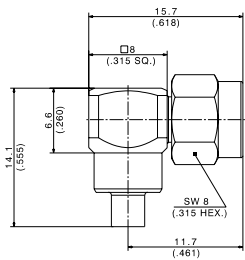


Fig. 1

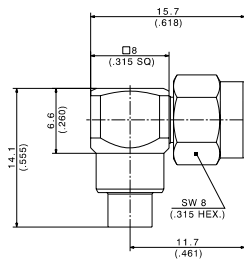


Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Plating body	Fig.
16_SMA-50-2-100/199_NH	23018813	Y3, Y11, Y16 (SUCOFORM_86, SR_86)	bulk 100 pcs.	27055	passivated stainless steel	1
16_SMA-50-3-100/199_NE	22648293	Y5, Y12, Y17 (SUCOFORM_141, SR_141)	single			2

Series SMA – cable connectors

Right angle cable plugs (male)

For flexible cables

- Cable entry crimp
- Centre contact soldered

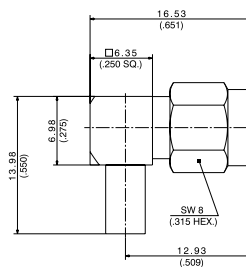
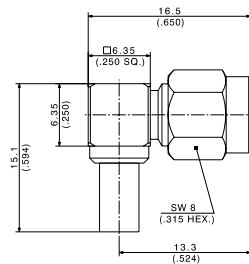
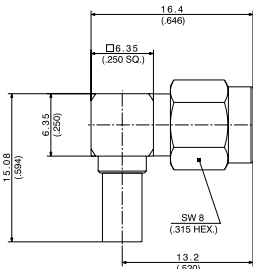


Fig. 1

Fig. 2

Fig. 3

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Plating body	Crimp insert	Fig.
16_SMA-50-1-1/111_NE ²⁾ 16_SMA-50-1-1/111_NH	22641805 22660358	U1 (RG_178_B/U, ENVIROFLEX_178)	single bulk 100 pcs.	3070	gold	A	1
16_SMA-50-2-55/199_NE 16_SMA-50-2-55/199_NH	22642661 84028953	U2 (RG_316_/U, ENVIROFLEX_316)	single bulk 100 pcs.	3070	passivated stainless steel		2
16_SMA-50-2-56/199_NE 16_SMA-50-2-56/199_NH	22642662 22658888	U4 (K_02252_D, ENVIROFLEX_316_D)	single bulk 100 pcs.	3070	passivated stainless steel		2
16_SMA-50-2-105/111_NE ²⁾ 16_SMA-50-2-105/111_NH	22651455 22651456	U2 (RG_316_/U, ENVIROFLEX_316)	single bulk 100 pcs.	3070	gold		1
16_SMA-50-2-106/111_NE ²⁾ 16_SMA-50-2-106/111_NH	22651457 22651458	U4 (K_02252_D, ENVIROFLEX_316_D)	single bulk 100 pcs.	3070	gold		1
16_SMA-50-2-111/133_NE ¹⁾ 16_SMA-50-2-111/133_NP ¹⁾	84130708 84117808	U2 (RG_316_/U, ENVIROFLEX_316)	single bulk 500 pcs.	0000335656	SUCOPLATE®		3
16_SMA-50-2-112/133_NE ¹⁾ 16_SMA-50-2-112/133_NP ¹⁾	84130709 84117809	U4 (K_02252_D, ENVIROFLEX_316_D)	single bulk 500 pcs.	0000335656	SUCOPLATE®		3
16_SMA-50-2-114/111_NE	85199312	U2 (RG_316_/U, ENVIROFLEX_316)	single	0001167445	gold		2

All highlighted types are HUBER+SUHNER ECO types.

 The product is lead free.

¹⁾ Use torque wrench 74_Z-0-0-79

²⁾ SUCOPRO® (economical) version on request

Series SMA – cable connectors

Right angle cable plugs (male)

For flexible cables

- Cable entry crimp
- Centre contact soldered

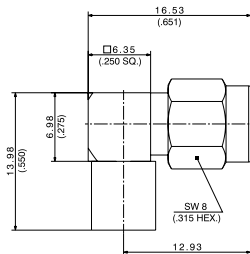


Fig. 1

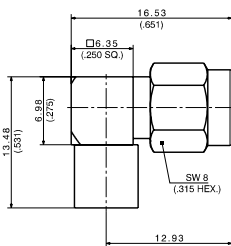


Fig. 2

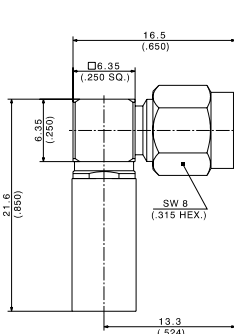


Fig. 3

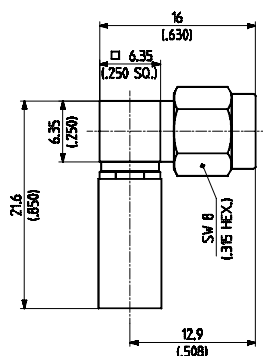


Fig. 4

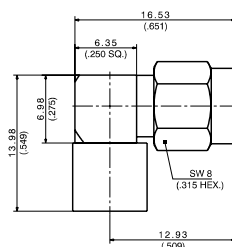


Fig. 5

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Plating body	Crimp insert	Fig.
16_SMA-50-3-14/133_NE ¹⁾ 16_SMA-50-3-14/133_NP ¹⁾	84130711 84117811	U9, U11, U41 (RG_400_/U, ENVIROFLEX_400)	single bulk 500 pcs.	0000335678	SUCOPLATE®	B	1
16_SMA-50-3-15/133_NE ¹⁾	84130712	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	0000335679	SUCOPLATE®	B	2
16_SMA-50-3-56/199_NE	22642660	U9, U11 (RG_400_/U, ENVIROFLEX_400)	single	3070	passivated stainless steel	B	3
16_SMA-50-3-105/111_NE ²⁾ 16_SMA-50-3-105/111_NH	22651585 22651800	U7 (RG_58_C/U, ENVIROFLEX_B58)	single bulk 100 pcs.	3070	gold	B	4
16_SMA-50-3-106/111_NE ²⁾ 16_SMA-50-3-106/111_NH	22650546 22650545	U9, U11 (RG_400_/U, ENVIROFLEX_400)	single bulk 100 pcs.	3070	gold	B	4
16_SMA-50-4-50/133_NE ¹⁾ 16_SMA-50-4-50/133_NP ¹⁾	84130714 84117813	S16, X9 (SX_04172_B-60)	single bulk 500 pcs.	0000335684	SUCOPLATE®	C	5

All highlighted types are HUBER+SUHNER ECO types.

¹⁾ Use torque wrench 74_Z-0-0-79

²⁾ SUCOPRO® (economical) version on request

Series SMA – cable connectors

Straight cable jacks (female)

For semi-rigid cables

- Cable entry soldered
- Centre contact soldered

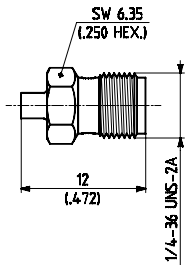


Fig. 1

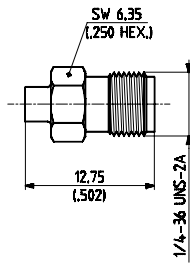


Fig. 2

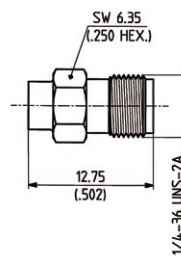


Fig. 3



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Plating body	Fig.
21_SMA-50-1-1/111_NE ¹⁾	22642385	Y19 (SR_34)	single	9118	gold	1
21_SMA-50-1-2/111_NE	22642386	Y2, Y15 SUCOFORM_47, SR_47)	single	9119		1
21_SMA-50-2-15/111_NE ¹⁾ 21_SMA-50-2-15/111_NH	22544549 22652141	Y3, Y11, Y16 (SUCOFORM_86, SR_86)	single bulk 100 pcs.	9057		2
21_SMA-50-3-15/111_NE ¹⁾ 21_SMA-50-3-15/111_NH	22544550 22645042	Y5, Y12, Y17 (SUCOFORM_141, SR_141)	single bulk 100 pcs.	9057		3

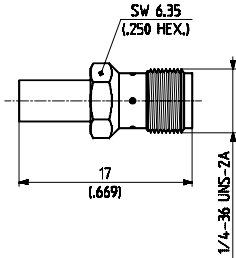
¹⁾ SUCOPRO* (economical) version on request

Series SMA – cable connectors

Straight cable jacks (female)

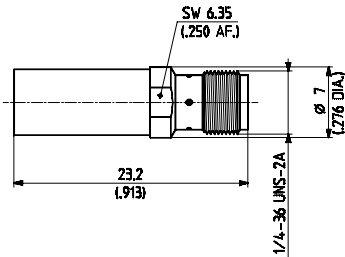
For flexible cables

- Cable entry crimp
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Plating body	Crimp insert
21_SMA-50-2-5/111_NE ¹⁾	22640077	U2 (RG_316_/U, ENVIROFLEX_316)	single	3069	gold	A
21_SMA-50-2-6/111_NE ¹⁾ 21_SMA-50-2-6/111_NH	22640078 22651818	U4 (K_02252_D, ENVIROFLEX_316_D)	single bulk 100 pcs.			

- Cable entry crimp
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Plating body	Crimp insert
21_SMA-50-3-5/111_NE ¹⁾	22640081	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	3069	gold	B
21_SMA-50-3-6/111_NE ¹⁾	22640082	U9, U11, U39 (RG_400_/U, ENVIROFLEX_400)				

¹⁾ SUCOPRO® (economical) version on request

Series SMA – cable connectors

Straight bulkhead cable jacks (female)

For semi-rigid cables

- Cable entry soldered
- Centre contact soldered
- With panel seal

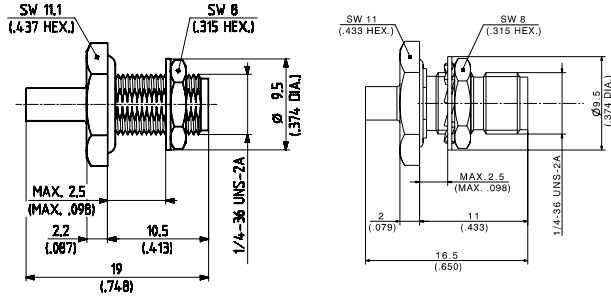


Fig. 1

Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Plating body	Mounting hole	Fig.
24_SMA-50-2-15/111_NE ¹⁾ 24_SMA-50-2-15/111_NH	22544532 22645490	Y3, Y11, Y16 (SUCOFORM_86)	single bulk 100 pcs.	9057	gold	ML 35	1
24_SMA-50-2-41/133_NE 24_SMA-50-2-41/133_NH	22641381 22645368	Y3, Y11, Y16 (SUCOFORM_86)	single bulk 100 pcs.	0000185051	SUCOPLATE®	ML 20	2

All highlighted types are HUBER+SUHNER ECO types.

- Cable entry soldered
- Centre contact soldered
- With panel seal

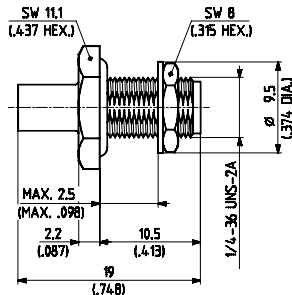


Fig. 1



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Plating body	Mounting hole	Fig.
24_SMA-50-3-15/111_NE ¹⁾ 24_SMA-50-3-15/111_NH	22641153 22645259	Y5, Y12, Y17 (SUCOFORM_141, SR_141)	single bulk 100 pcs.	9057	gold	ML 35	1

¹⁾ SUCOPRO® (economical) version on request

Series SMA – cable connectors

26.5 GHz – straight bulkhead cable jacks (female)

For semi-rigid cables

- Cable entry soldered
- Centre contact soldered

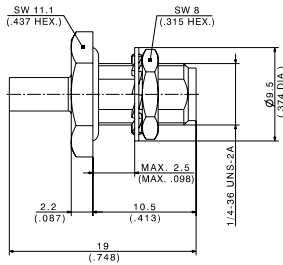


Fig. 1

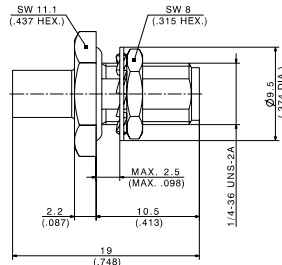


Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Plating body	Mounting hole	Fig.
24_SMA-50-2-100/111_NE ¹⁾	22648727	Y3, Y11, Y16 (SUCOFORM_86, SR_86)	single	27055	gold	ML 35	1
24_SMA-50-3-100/111_NE ¹⁾	22648728	Y5, Y12, Y17 (SUCOFORM_141, SR_141)	single				2

¹⁾ SUCOPRO® (economical) version on request

Series SMA – cable connectors

Straight bulkhead cable jacks (female)

For flexible cables

- Cable entry crimp
- Centre contact soldered

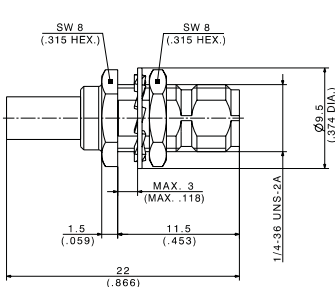


Fig. 1

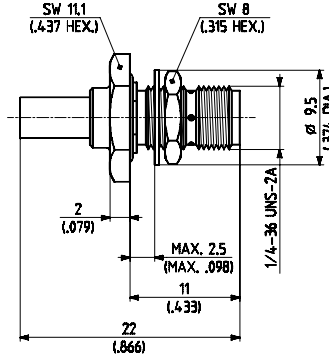


Fig. 2

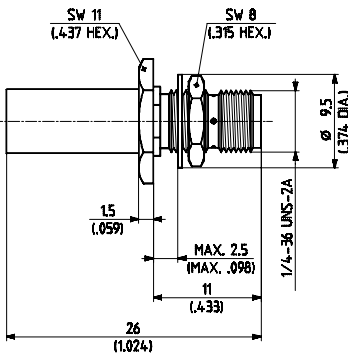


Fig. 4

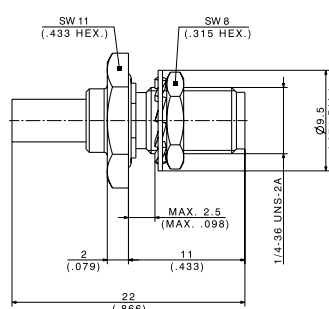


Fig. 5

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Plating body	Crimp insert	Mounting hole	Fig.
24_SMA-50-1-3/111_NE ¹⁾	22649873	U1 (RG_178, ENVIROFLEX_178)	single	27104	gold	A	ML 35	1
24_SMA-50-2-13/111_NE ¹⁾	22651767	U4 (K_02252_D, ENVIROFLEX_316_D)	single	3069	gold	A	ML 20	2
24_SMA-50-2-13/111_NH	22651719		bulk 100 pcs.					
24_SMA-50-2-14/111_NE ¹⁾	22651748	U2 (RG_316_/U, ENVIROFLEX_316)	single	3069	gold	A	ML 20	2
24_SMA-50-2-14/111_NH	22651747		bulk 100 pcs.					
24_SMA-50-3-42/133_NE	85201112	U2 (RG_316_/U, ENVIROFLEX_316)	single	0001171910	gold	A	ML 20	2
24_SMA-50-2-37/133_NE	85013993	U4 (K_02252_D, ENVIROFLEX_316_D)	single	3069	SUCOPLATE®	A	ML 20	4
24_SMA-50-2-46/133_NE	22644246	U2 (RG_316_/U, ENVIROFLEX_316)	single	3069	SUCOPLATE®	A	ML 20	2
24_SMA-50-2-46/133_NH	22646565		bulk 100 pcs.					
24_SMA-50-3-42/133_NE	22641358	U9 (RG_142_B/U, ENVIROFLEX_142)	single	3072	SUCOPLATE®	B	ML 20	3
24_SMA-50-2-116/111_NE	85201112	U2 (RG_316_/U, ENVIROFLEX_316)	single	0001171910	gold	A	ML 20	2

All highlighted types are HUBER+SUHNER ECO types.

 The product is lead free.

¹⁾ SUCOPRO® (economical) version on request

Series SMA – cable connectors

Straight panel cable jacks (female)

For semi-rigid cables

- Cable entry soldered
- Centre contact soldered

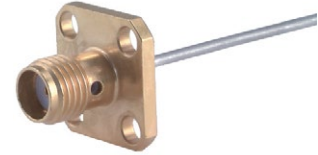
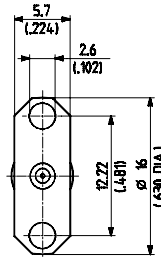
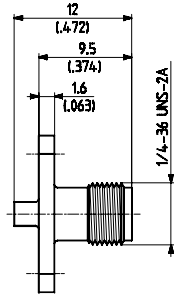
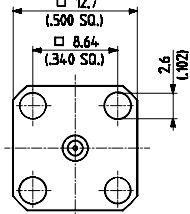
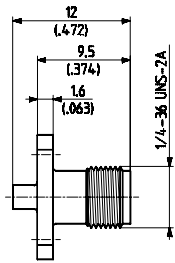


Fig. 1

Fig. 2

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Plating body	Mounting hole	Fig.
25_SMA-50-1-2/111_NE ²⁾	22642390	Y2, Y15 (SUCOFORM_47, SR_47)	single	9119	gold	ML 19	1
25_SMA-50-1-4/111_NE ²⁾	22642391	Y2, Y15 (SUCOFORM_47, SR_47)	single bulk 100 pcs.	9119		–	2
25_SMA-50-2-15/111_NE ^{1) 2)}	22544551	Y3, Y11, Y16 (SUCOFORM_86, SR_86)	single	9057		ML 19	1
25_SMA-50-2-25/111_NE ^{1) 2)}	22641493	Y3, Y11, Y16 (SUCOFORM_86, SR_86)	single	9057		–	2

¹⁾ VCentre contact not captivated

²⁾ SUCOPRO® (economical) version on request

Series SMA – cable connectors

Straight panel cable jacks (female)

For semi-rigid cables

- Cable entry soldered
- Centre contact soldered

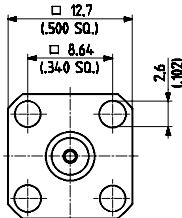
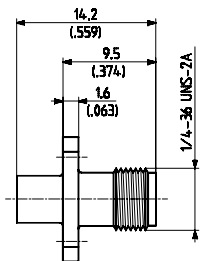


Fig. 1

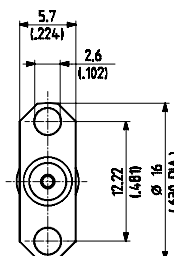
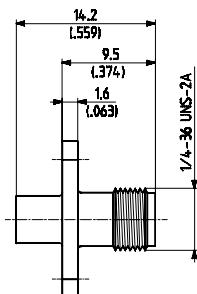
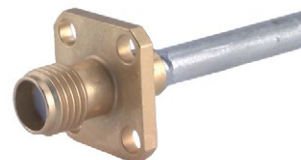


Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Plating body	Mounting hole	Fig.
25_SMA-50-3-15/111_NE ^{1) 2)}	22544552	Y5, Y12, Y17 (SUCO-FORM_141, SR_141)	single	9057	gold	ML 19	1
25_SMA-50-3-15/111_NH ¹⁾	22644717		bulk 100 pcs.				
25_SMA-50-3-25/111_NE ^{1) 2)}	22641410	Y5, Y12, Y17 (SUCO-FORM_141, SR_141)	single			-	2

- Cable entry crimp
- Centre contact soldered

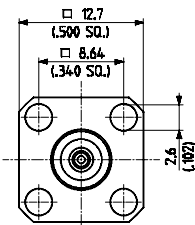
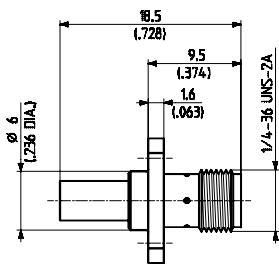


Fig. 1

Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Plating body	Mounting hole	Crimp insert
25_SMA-50-2-5/111_NE ²⁾	22640112	U2 (RG_316_/U, ENVIROFLEX_316)	single	3072	gold	ML 19	A
25_SMA-50-2-5/111_NH	22650755		bulk 100 pcs.				
25_SMA-50-2-6/111_NE ²⁾	22640113	U4 (K_02252, ENVIROFLEX_316_D)	single				
25_SMA-50-2-46/133_NE	22642246	U4 (K_02252, ENVIROFLEX_316_D)	single	3072	SUCOPLATE®	ML 19	A

All highlighted types are HUBER+SUHNER ECO types.

¹⁾ Centre contact not captivated

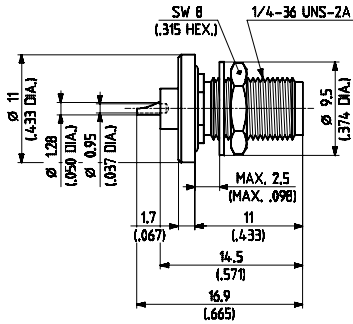
²⁾ SUCOPRO® (economical) version on request

Series SMA – receptacles

Straight bulkhead receptacles

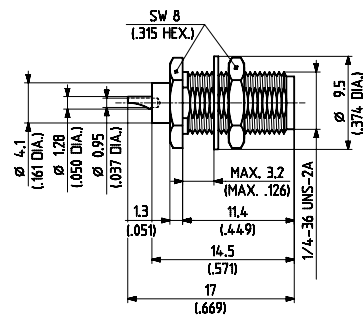
With solder end, jacks (female)

- With panel seal



HUBER+SUHNER type	Item no.	Packaging	Plating body	Mounting hole	Mounting
22_SMA-50-0-1/111_NE	22640087	single	gold	ML 20	rear mounting

- Without panel seal



HUBER+SUHNER type	Item no.	Packaging	Plating body	Mounting hole	Mounting
22_SMA-50-0-4/111_NE	22640962	single	gold	ML 35	rear mounting
22_SMA-50-0-4/111_NH	22649418	bulk 100 pcs.	gold	ML 35	rear mounting

Series SMA – receptacles

Straight bulkhead receptacles

With coaxial end, jacks (female)

- Without panel seal

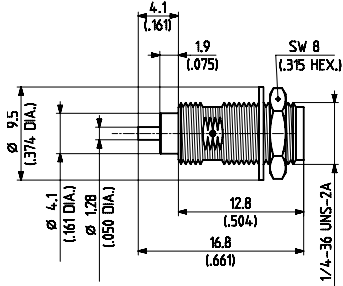


Fig. 1

HUBER+SUHNER type	Item no.	Packaging	Plating body	Mounting hole	Mounting	Fig.
22_SMA-50-0-3/111_NE	22640089	single	gold	ML 98	front mounting	1
22_SMA-50-0-53/199_NE	22543498	single	passivated stainless steel			

Series SMA – receptacles

Straight bulkhead receptacles

Hermetically sealed, jacks (female)

- RoHs compliant alternative on request
- Front mounting

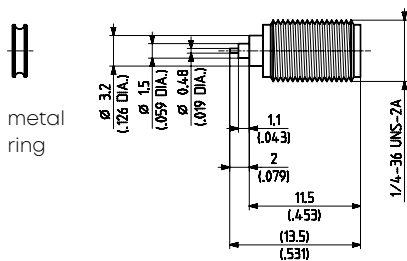


Fig. 1

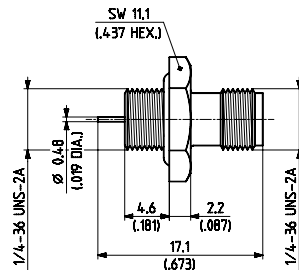


Fig. 2

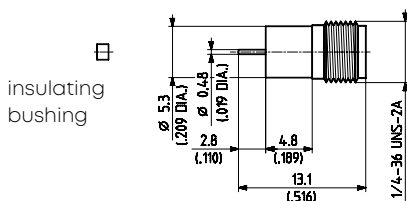


Fig. 3

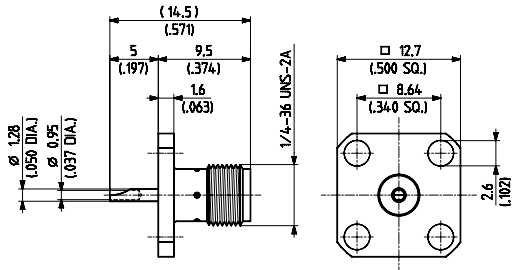
HUBER+SUHNER type	Item no.	Packaging	Plating body	Mounting hole	Fig.	Notes
22_SMA-50-0-10/111_NE ¹⁾	22641291	single	gold	ML 42	1	"Spark plug" with metal ring seal leak rate ≤ 10 ⁻⁸ Torr l/s (atm cc/s)
22_SMA-50-0-12/111_NE 22_SMA-50-0-12/111_NY	84042904 22641293	single tray 75 pcs.		ML 98	2	with panel seal leak rate ≤ 10 ⁻⁶ Torr l/s (atm cc/s)
22_SMA-50-0-15/111_NE	22544588	single		ML 96	3	panel sealing: laser beam welding 1) soldering temperature 250 °C/482 °F leak rate ≤ 10 ⁻⁸ Torr l/s (atm cc/s)

¹⁾ Use assembly tool 74_Z-0-0-75 and torque wrench 74_Z-0-0-80.

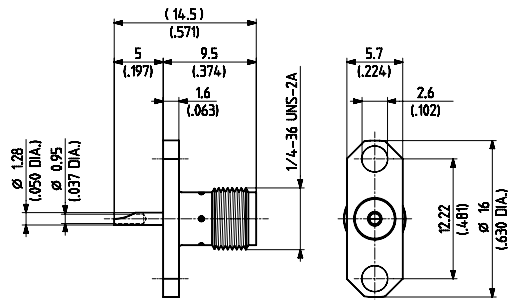
Series SMA – receptacles

Straight panel receptacles

With solder end, jacks (female)



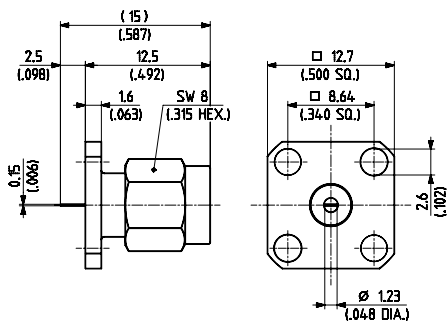
HUBER+SUHNER type	Item no.	Packaging	Plating body	Notes
23_SMA-50-0-1/111_NE	22640090	single bulk 100 pcs.	gold	flush dielectric
23_SMA-50-0-51/199_NE	22543948	single	passivated stainless steel	



HUBER+SUHNER type	Item no.	Packaging	Plating body	Notes
23_SMA-50-0-11/111_NE	22640095	single	gold	flush dielectric
23_SMA-50-0-41/133_NE	22543984	single	SUCOPLATE®	flush dielectric
23_SMA-50-0-41/133_NH	22644383	bulk 100 pcs.		
23_SMA-50-0-61/199_NE	22544796	single	passivated stainless steel	flush dielectric

All highlighted types are HUBER+SUHNER ECO types.

With tab end, plug (male)

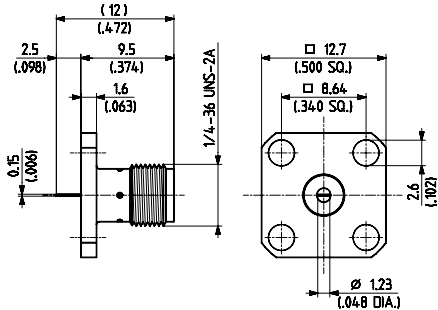


HUBER+SUHNER type	Item no.	Packaging	Plating body	Notes
13_SMA-50-0-2/111_NE	22640056	single	gold	flush dielectric

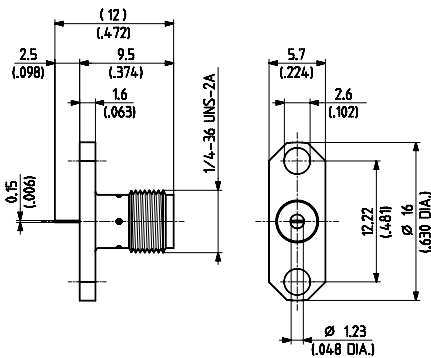
Series SMA – receptacles

Straight panel receptacles

With tab end, jacks (female)



HUBER+SUHNER type	Item no.	Packaging	Plating body	Notes
23_SMA-50-0-2/111_NE	22640091	single	gold	flush dielectric
23_SMA-50-0-52/199_NE	22543487		passivated stainless steel	



HUBER+SUHNER type	Item no.	Packaging	Plating body	Notes
23_SMA-50-0-12/111_NE	22640096	single	gold	flush dielectric
23_SMA-50-0-62/199_NE	22544779		passivated stainless steel	

Series SMA – receptacles

Straight panel receptacles

With coaxial end, jacks (female)

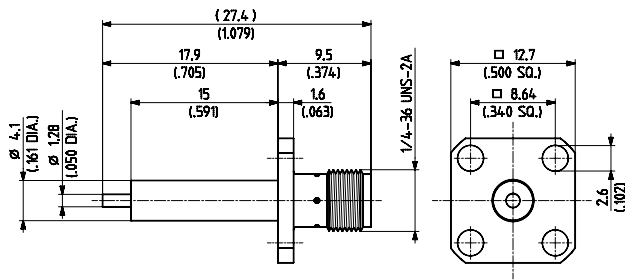
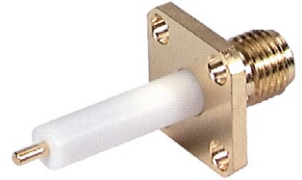


Fig. 1

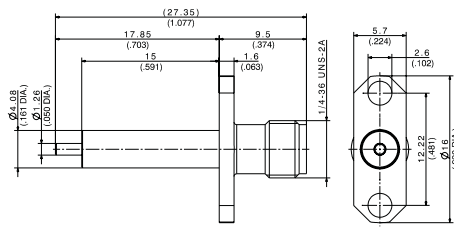


Fig. 2

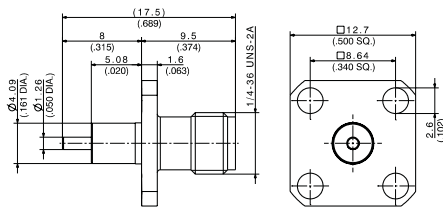


Fig. 3

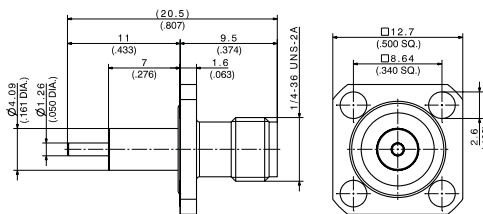


Fig. 4

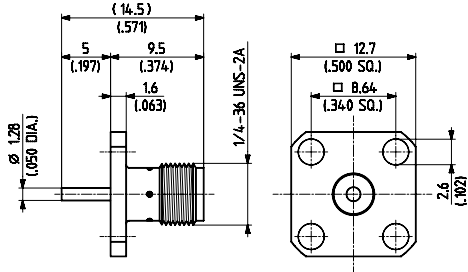
HUBER+SUHNER type	Item no.	Packaging	Plating body	Notes	Fig.
23_SMA-50-0-3/111_NE	22640092	single	gold	extended dielectric	1
23_SMA-50-0-13/111_NE	22640097	single	gold	extended dielectric	2
23_SMA-50-0-13/111_NH	22658873	bulk 100 pcs.			
23_SMA-50-0-53/199_NE	22641394	single	passivated stainless steel	extended dielectric	1
23_SMA-50-0-53/199_NH	22649843				
23_SMA-50-0-272/133_NH	23030310	bulk 100 pcs	SUCOPLATE®	extended dielectric	3
23_SMA-50-0-324/111_NY	84035778	tray 100 pcs.	SUCOPRO® gold plating	extended dielectric with panel sealing	4

All highlighted types are HUBER+SUHNER ECO types.

Series SMA – receptacles

Straight panel receptacle

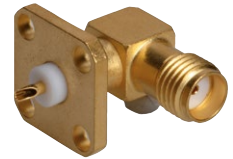
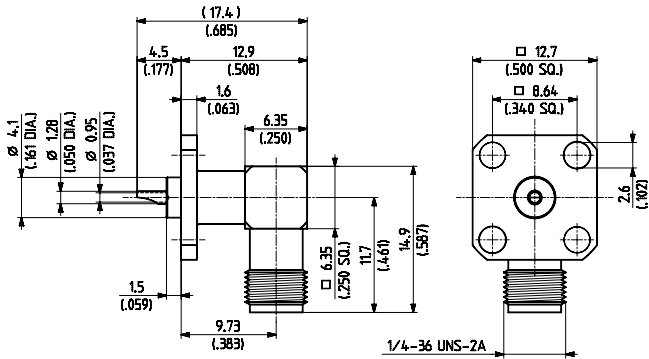
With coaxial end, jack (female)



HUBER+SUHNER type	Item no.	Packaging	Plating body	Notes
23_SMA-50-0-21/111_NE	22640101	single	gold	flush dielectric

Right angle panel receptacle

With solder end, jack (female)

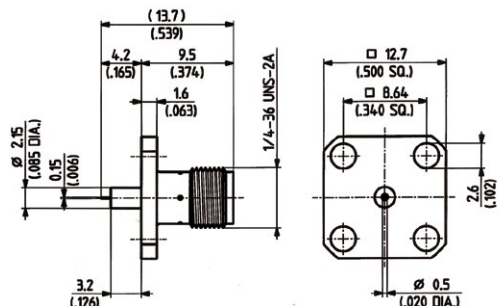


HUBER+SUHNER type	Item no.	Packaging	Plating body	Notes
28_SMA-50-0-1/111_NE	22641321	single	gold	extended dielectric

Series SMA – receptacles

26.5 GHz – straight panel receptacle

With tab end, jack (female)



HUBER+SUHNER type	Item no.	Packaging	Plating body	Mounting hole	Notes
23_SMA-50-0-94/199_NE	22649049	single	passivated stainless steel	ML 93	extended dielectric

Series SMA – PCB connectors

Straight PCB jacks (female)

- Edge mount

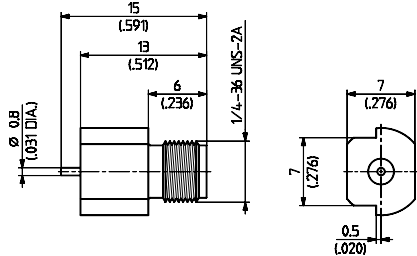


Fig. 1

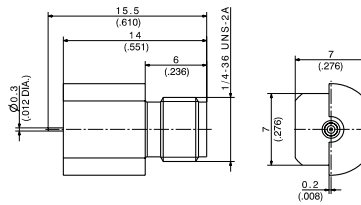


Fig. 2

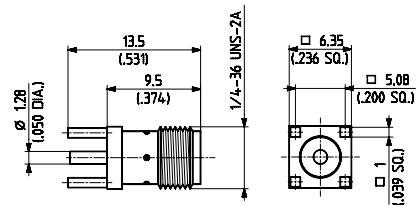


HUBER+SUHNER type	Item no.	Packaging	Plating body	Mounting hole	Fig.
82_SMA-S50-0-45/111_NE 82_SMA-S50-0-45/111_NM	22652330 84037646	single tape and reel 500 pcs.	SUCOPRO® gold plating	ML 132	1
92_SMA-50-0-10/111_NE 92_SMA-50-0-10/111_NM	84120623 84036781	single tape and reel 500 pcs.	SUCOPRO® gold plating	ML 132	2

All highlighted types are HUBER+SUHNER ECO types.

Straight PCB jacks (female)

- Without stand-off



HUBER+SUHNER type	Item no.	Packaging	Plating body	Mounting hole
82_SMA-50-0-1/111_NE 82_SMA-50-0-1/111_NH	22543359 22644334	single bulk 100 pcs.	gold	ML 41
82_SMA-50-0-21/111_NE	85201191	single	gold	ML 41

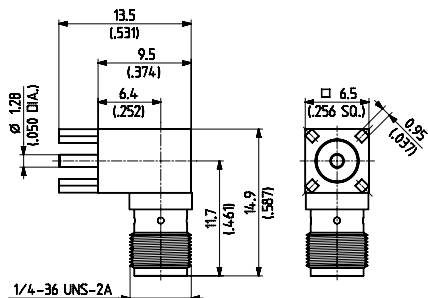


The product is lead free.

Series SMA – PCB connectors

Right angle PCB jacks (female)

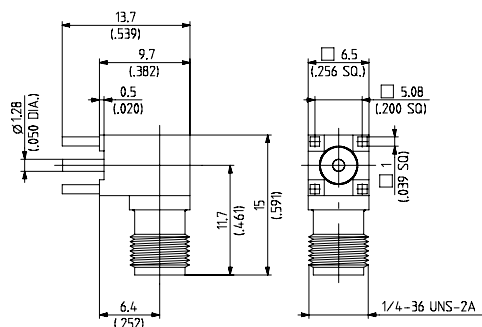
- Without stand-off



HUBER+SUHNER type	Item no.	Packaging	Plating body	Mounting hole
85_SMA-50-0-101/111_NE	22658792	single	gold	ML 41
85_SMA-50-0-101/111_NH	22652140	bulk 100 pcs.		
85_SMA-50-0-103/111_NE	85201239	single	gold	ML 41

The product is lead free.

- With stand-off



HUBER+SUHNER type	Item no.	Packaging	Plating body	Mounting hole
85_SMA-50-0-144/111_YH	23000527	bulk 100 pcs.	gold	ML 41

Series SMA – protective caps and shorts

Caps for jacks

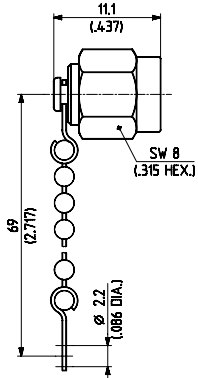


Fig. 1

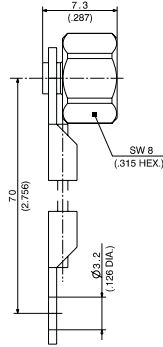


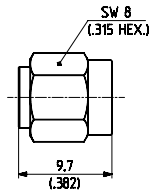
Fig. 2



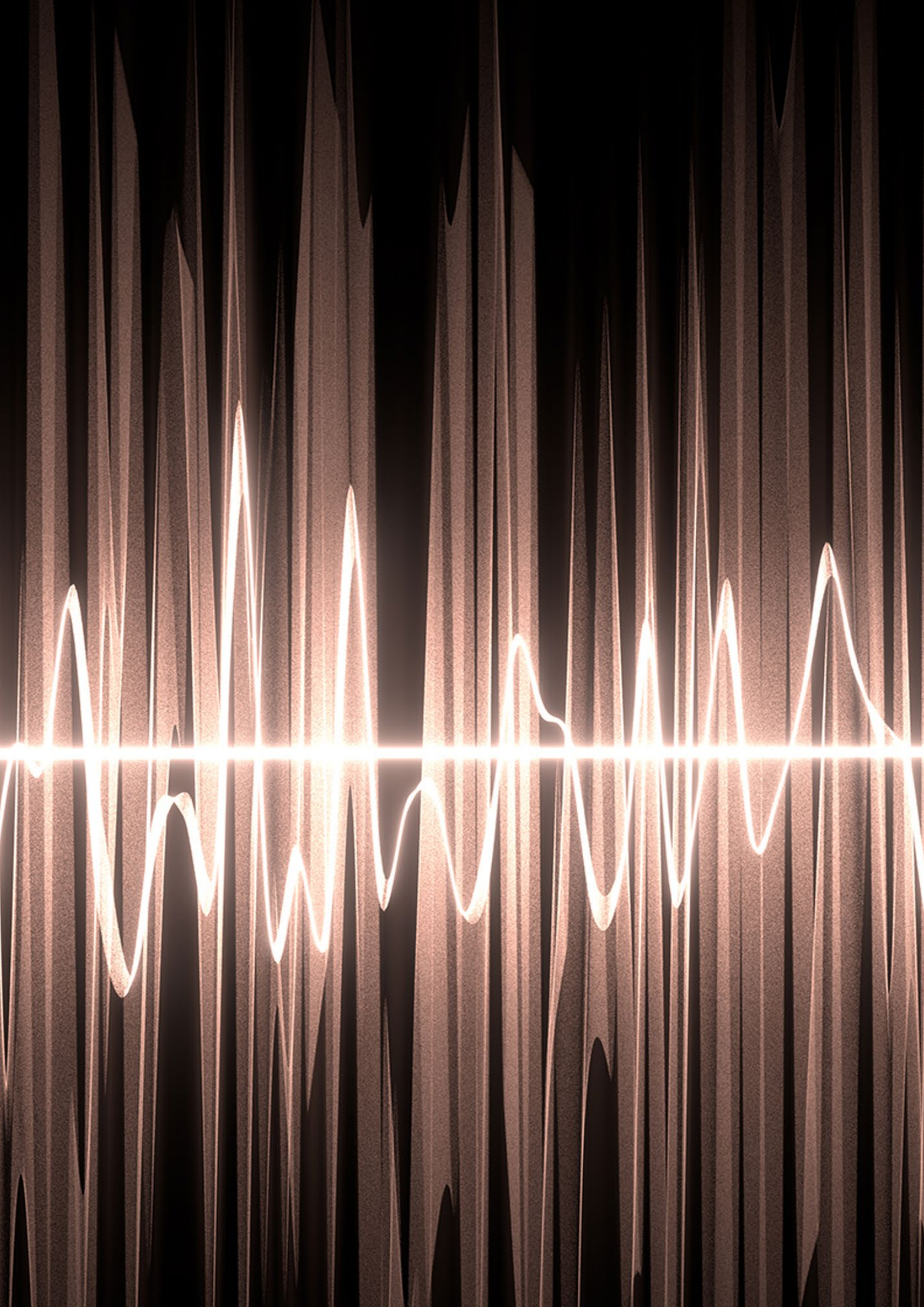
HUBER+SUHNER type	Item no.	Packaging	Plating body	Notes	Fig.
62_SMA-0-0-1/-11_E	22640159	single	gold	with chain	1
62_SMA-0-0-8/- -3_E	84120887	single	SUCOPLATE®	with wire, IP68	2

All highlighted types are HUBER+SUHNER ECO types.

Shorting cap



HUBER+SUHNER type	Item no.	Packaging	Plating body
64_SMA-50-0-1/111_NE	22640161	single	gold



Series PC 3.5 – precision subminiature connectors

Description

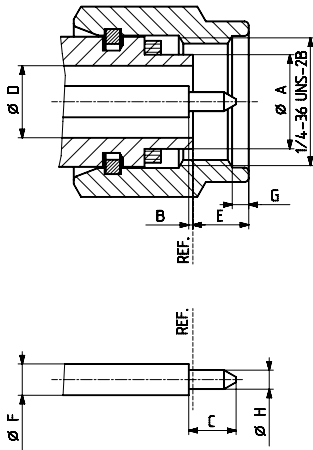
HUBER+SUHNER PC 3.5 connectors are precision connectors for use in microwave applications up to 26.5 GHz. They are especially suitable for use with semi-rigid cables and microwave components. They are intermateable with SMA and SK (2.92 mm) connectors. Due to an air dielectric interface and the more durable construction a superior repeatability further enhances the performance.

Content

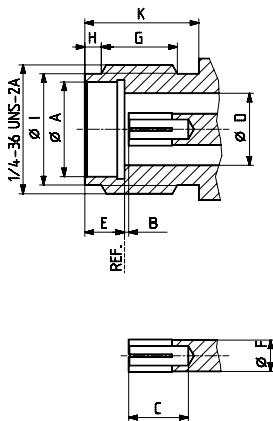
Description	255
Interface dimensions in mm/inches	255
Technical data	256
Cable connectors	257
Flange mount connectors	259
Transition pins	260

Interface dimensions (mm/inches)

Plug (male)



Jack (female)



	Plug		Jack	
	min.	max.	min.	max.
A	4.55/0.179	4.58/0.180	4.60/0.181	4.63/0.182
B	0.00/0.000	0.08/0.003	0.00/0.000	0.08/0.003
C	2.03/0.080	2.29/0.090	2.79/0.110	3.18/0.125
D	3.49/0.138	3.51/0.138	3.49/0.138	3.51/0.138
E	2.36/0.093	3.56/0.135	1.88/0.074	1.98/0.078
F	1.51/0.060	1.52/0.060	1.51/0.060	1.52/0.060
G	0.38/0.015	1.14/0.045	3.35/0.132	4.62/0.182
H	0.92/0.036	0.93/0.037	0.38/0.015	1.14/0.045
I	–	–	5.30/0.209	5.40/0.213
K	–	–	5.54/0.218	–

Interface dimensions conformable to the standards:

International: IEC 60169-23

Series PC 3.5 – technical data

Electrical data	Requirements
Impedance	50 Ω
Frequency range	DC to 26.5 GHz
Dielectric withstanding voltage (at sea level) · RG 405/U · RG 402/U	750 V rms, 50 Hz 1000 V rms, 50 Hz
Working voltage (at sea level) · RG 405/U · RG 402/U	≤ 250 V rms, 50 Hz ≤ 335 V rms, 50 Hz
Insulation resistance	$\geq 5 \cdot 10^3$ M Ω
Contact resistance · Centre contact · Outer contact	≤ 3 m Ω ≤ 2 m Ω
RF leakage	≥ 100 dB · f (GHz) dB
VSWR (typical values) · RG 405/U · RG 402/U · Adapters	≤ 1.13 up to 26.5 GHz ≤ 1.10 up to 26.5 GHz ≤ 1.08 up to 18 GHz/ ≤ 1.15 up to 26.5 GHz

Mechanical data	Requirements
Coupling nut torque · Recommended	0.80 to 1.10 Nm/7.1 to 9.7 in. lbs
Coupling nut retention force	≥ 270 N/60.7 lbs
Contact captivation	≥ 27 N/6.1 lbs
Cable retention force ¹⁾	see pages 32 – 41
Durability (matings)	≥ 500

Environmental data	Test conditions
Temperature range	-60 to +100 C / -76 to +212 °F
Thermal shock	MIL-STD-202, method 107, condition B
Moisture resistance	MIL-STD-202, method 106
Corrosion	saltspray test acc. to MIL-STD-202, method 101, condition B
Vibration	MIL-STD-202, method 204, condition D
Shock	MIL-STD-202, method 213, condition I

Material data		
Connector part	Material	Plating
Bodies	stainless steel	passivated
Cable entries	brass	gold
Centre contacts	copper-beryllium alloy	gold
Support beads	polystyrene, crosslinked	
Gaskets	silicone rubber	

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

¹⁾ Value considers maximum load of the cables without irreversible variations of specifications.

Series PC 3.5 – cable connectors

Straight cable plugs (male)

For semi-rigid cables

- Cable entry soldered
- Centre contact plugged-in

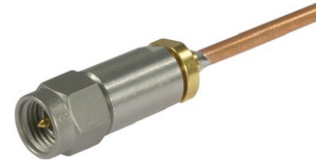
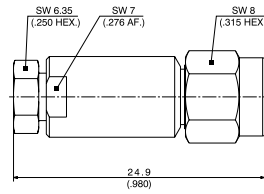
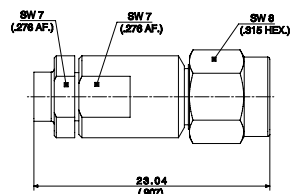
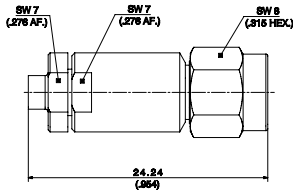


Fig. 1

Fig. 2

Fig. 3

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Fig.
11_PC35-50-2-4/199_UE	84009440	Y3, Y16 (EZ_86)	single	0000215467	1
11_PC35-50-3-4/199_UE	84009380	Y5, Y12 (EZ_141)		0000215467	2
11_PC35-50-2-5/199_UE	84139219	Y11 (MULTIFLEX_86)		0000381973	3

Straight cable jacks (female)

For semi-rigid cables

- Cable entry soldered
- Centre contact plugged-in

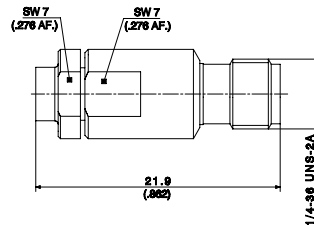
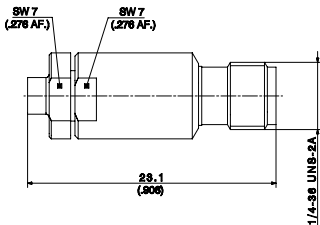


Fig. 1

Fig. 2

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Fig.
21_PC35-50-2-4/199_UE	84009419	Y3, Y16 (EZ_86)	single	0000215467	1
21_PC35-50-3-3/199_UE	84009382	Y5, Y12 (EZ_141)		0000215467	2

Series PC 3.5 – cable connectors

Straight bulkhead cable jacks (female)

For semi-rigid cables

- Bulkhead mounted
- Cable entry soldered
- Centre contact plugged-in
- With panel seal

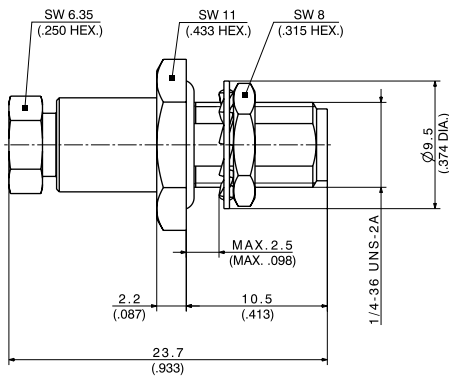


Fig. 1

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Fig.
24_PC35-50-2-3/19-_UE	84023357	Y3, Y16 (EZ_86)	single	0000238568	ML 35	1

Series PC 3.5 – flange mount connectors

Flange mount, jacks (female)

- Panel mounted

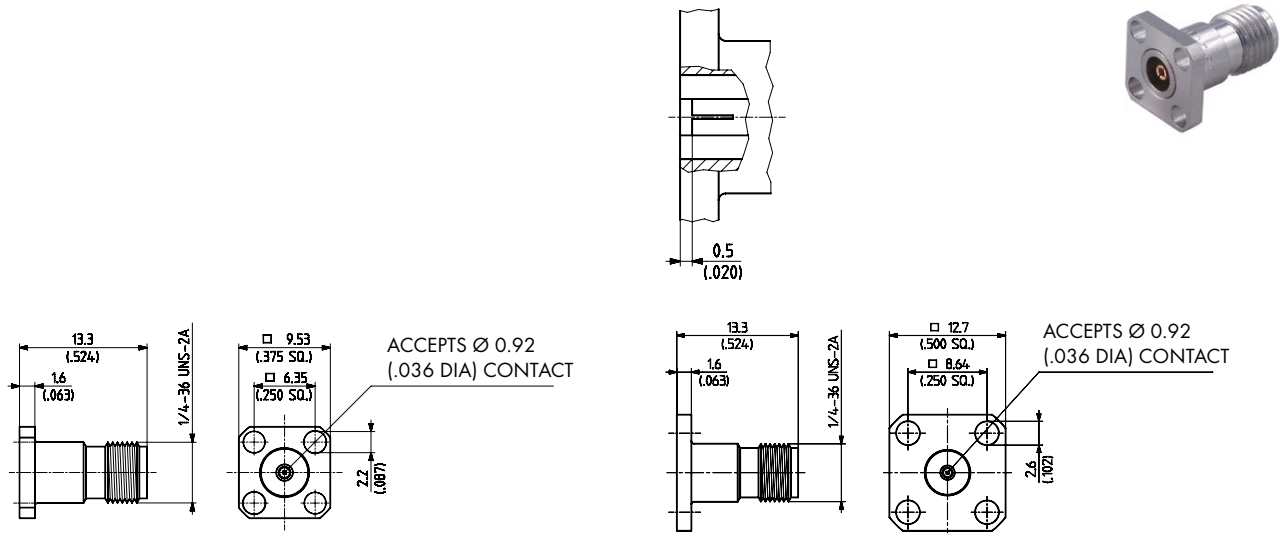


Fig. 1

Fig. 2

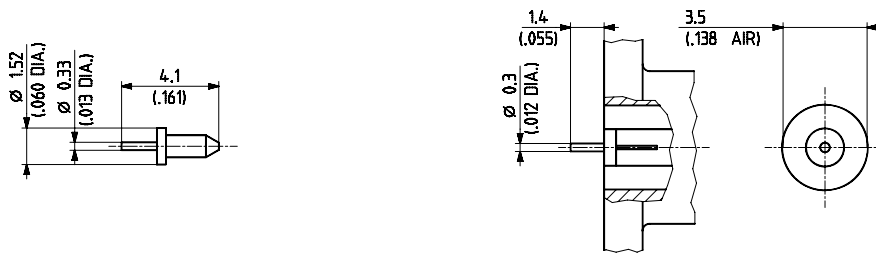
HUBER+SUHNER type	Item no.	Packaging	Flange type	Fig.
23_PC35-50-0-51/199_UE	22644918	single	square	1
23_PC35-50-0-53/199_UE	22644910			2

Series PC 3.5 – transition pins

Transition pins

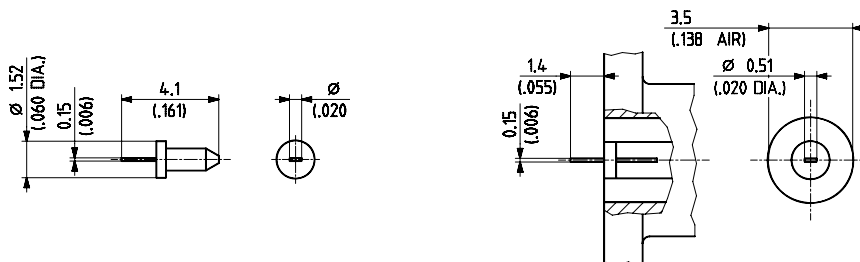
for PC 3.5 connectors with interchangeable contact pins

Pin contact



HUBER+SUHNER type	Item no.	Packaging	Plating
73_Z-0-0-168	22644927	10 pins	gold

Tab contact



HUBER+SUHNER type	Item no.	Packaging	Plating
73_Z-0-0-169	22644931	10 pins	gold

Series SK (2.92 mm standard) – prec. submini. connectors

Description

HUBER+SUHNER SK connectors are precision connectors for microwave applications up to 40 GHz.

They are intermateable with series SMA and PC 3.5. They have a high mechanical stability and an excellent repeatability. The shortened male pin ensures a non-destructive mating process. The glass beads, when used in conjunction with the SK launchers, enable the connectors to be replaced without disturbing the hermetic seal.

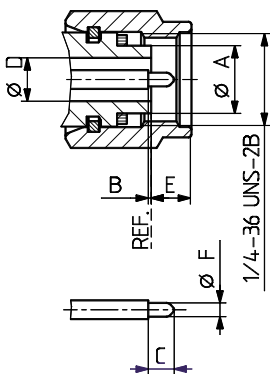
For a mechanical decoupling between glass bead and internal microwave circuit, stress relief contacts are available.

Content

Description	261
Interface dimensions in mm/inches	261
Technical data	262
Cable connectors	263
Launchers	264
Accessories	265

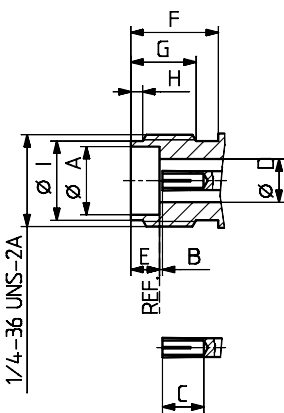
Interface dimensions (mm/inches)

Plug (male)



	Plug		Jack	
	min.	max.	min.	max.
A	4.53/0.178	4.57/0.180	4.60/0.181	4.64/0.183
B	0.00/0.000	0.13/0.005	0.00/0.000	0.13/0.005
C	1.55/0.061	1.65/0.065	2.80/0.110	–
D	2.89/0.114	2.95/0.116	2.89/0.114	2.95/0.116
E	–	3.28/0.129	1.88/0.074	1.98/0.078
F	0.91/0.036	0.94/0.037	5.90/0.232	–
G	–	–	4.40/0.173	–
H	–	–	0.70/0.028	0.90/0.036
I	–	–	5.30/0.208	5.40/0.213

Jack (female)



Series SK (2.92 mm standard) – technical data

Electrical data	Requirements
Impedance	50 Ω
Frequency range	DC to 40 GHz
Dielectric withstanding voltage (at sea level)	750 V rms, 50 Hz
Working voltage (at sea level) mated/unmated	\leq 250 V rms, 50 Hz
Insulation resistance	$\geq 5 \cdot 10^5$ M Ω
Contact resistance · Centre contact · Outer contact	≤ 3 m Ω ≤ 2 m Ω
VSWR (typical values) · Cable connectors (cable assembly with 2 connectors) · Launchers	≤ 1.37 DC to 40 GHz ≤ 1.43 DC to 40 GHz

Mechanical data	Requirements
Coupling nut torque Recommended	1.30 Nm/11.47 in lbs
Contact captivation	≥ 27 N/4.9 lbs
Durability (matings)	≥ 500

Environmental data	Requirements
Temperature range	-40 to +125 °C/-40 to +257 °F
Thermal shock	MIL-STD-202, method 107, condition B
Vibration	MIL-STD-202, method 204, condition D

Material data		
Connector parts	Material	Plating
Bodies, cable connectors Bodies, receptacles	copper beryllium alloy/stainless steel stainless steel/copper alloy	gold passivated/gold
Centre contacts	copper beryllium alloy	gold
Support beads	PPO (polyphenylene oxide)	

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Series SK (2.92 mm standard) – cable connectors

Straight cable plugs (male)

For semi-rigid cables

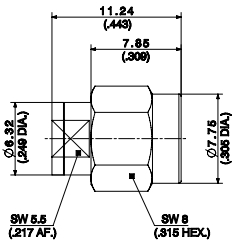


Fig. 1

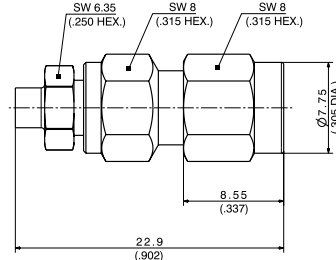


Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Fig.	Notes
11_SK-50-2-56/119_NE	84013230	Y16 (EZ_86)	single	27445	1	plug
11_SK-50-2-60/199_NE	84098644	Y11 (MULTIFLEX_86)		0000331903	2	plug

Straight cable jacks (female)

For semi-rigid cables

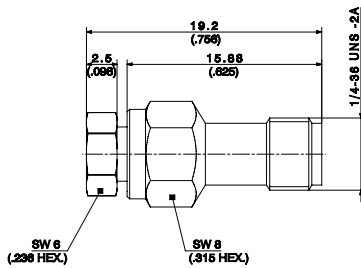


Fig. 1

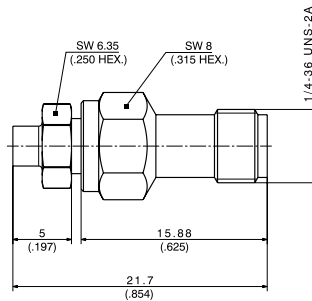


Fig. 2



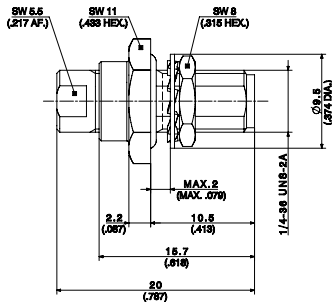
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Fig.	Notes
21_SK-50-2-58/199_NE	84019664	Y16 (EZ_86)	single	0000234990	1	jack
21_SK-50-2-61/199_NE	84094378	Y11 (MULTIFLEX_86)		0000326138	2	jack

Series SK (2.92 mm standard) – cable connectors

Straight bulkhead cable jacks (female)

For semi-rigid cables

- with panel seal



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Fig.
24_SK-50-2-55/1--_NE	84016419	Y10 (EZ_118-TP)	single	0000229976	ML 35	1

Series SK (2.92 mm standard) – launchers

„Spark plug“ launchers

Fig. 1

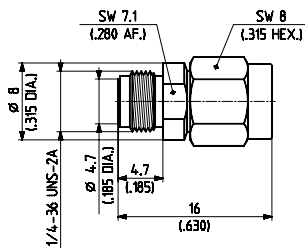
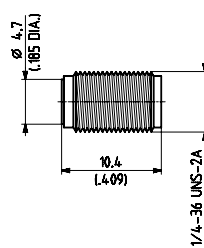


Fig. 2

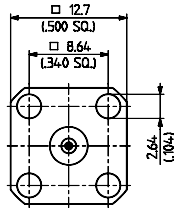
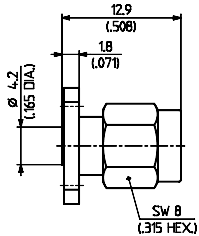


HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Suitable glass-bead	Fig.
12_SK-50-0-51/199_NE	22645974	single	ML 75	73_Z-0-0-203 ¹⁾	1
22_SK-50-0-51/199_NE	22645975	single	ML 75	73_Z-0-0-203 ¹⁾	2

¹⁾ For fixing hermetic seal while soldering, fixture 74_Z-0-0-226 is recommended, see page 545.

Series SK (2.92 mm standard) – launchers

Panel launchers (male)



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Suitable glass-bead	Fig.
13_SK-50-0-51/199_NE	22645978	single	ML 77	73_Z-0-0-203 1)	1

1) For fixing hermetic seal while soldering, fixture 74_Z-0-0-227 is recommended, see page 545.

Panel launchers (male)

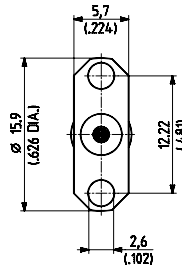
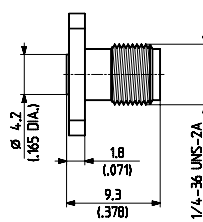
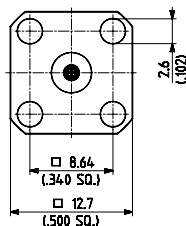
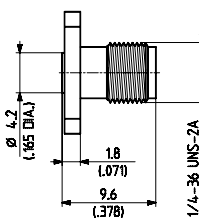


Fig. 1

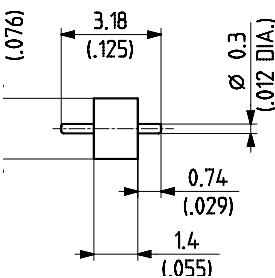
Fig. 2

HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Suitable glass-bead	Fig.
23_SK-50-0-51/199_NE	22645979	single	ML 77	73_Z-0-0-203 1)	1
23_SK-50-0-52/199_NE	22645977	single	ML 78	73_Z-0-0-203 1)	2

1) For fixing hermetic seal while soldering, fixture 74_Z-0-0-227 is recommended, see page 545.

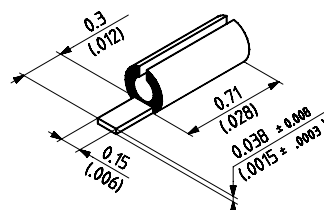
Series SK (2.92 mm) – accessories

Glass bead for 12 SK, 13 SK, 22 SK, 23 SK launchers (package with 1 piece)

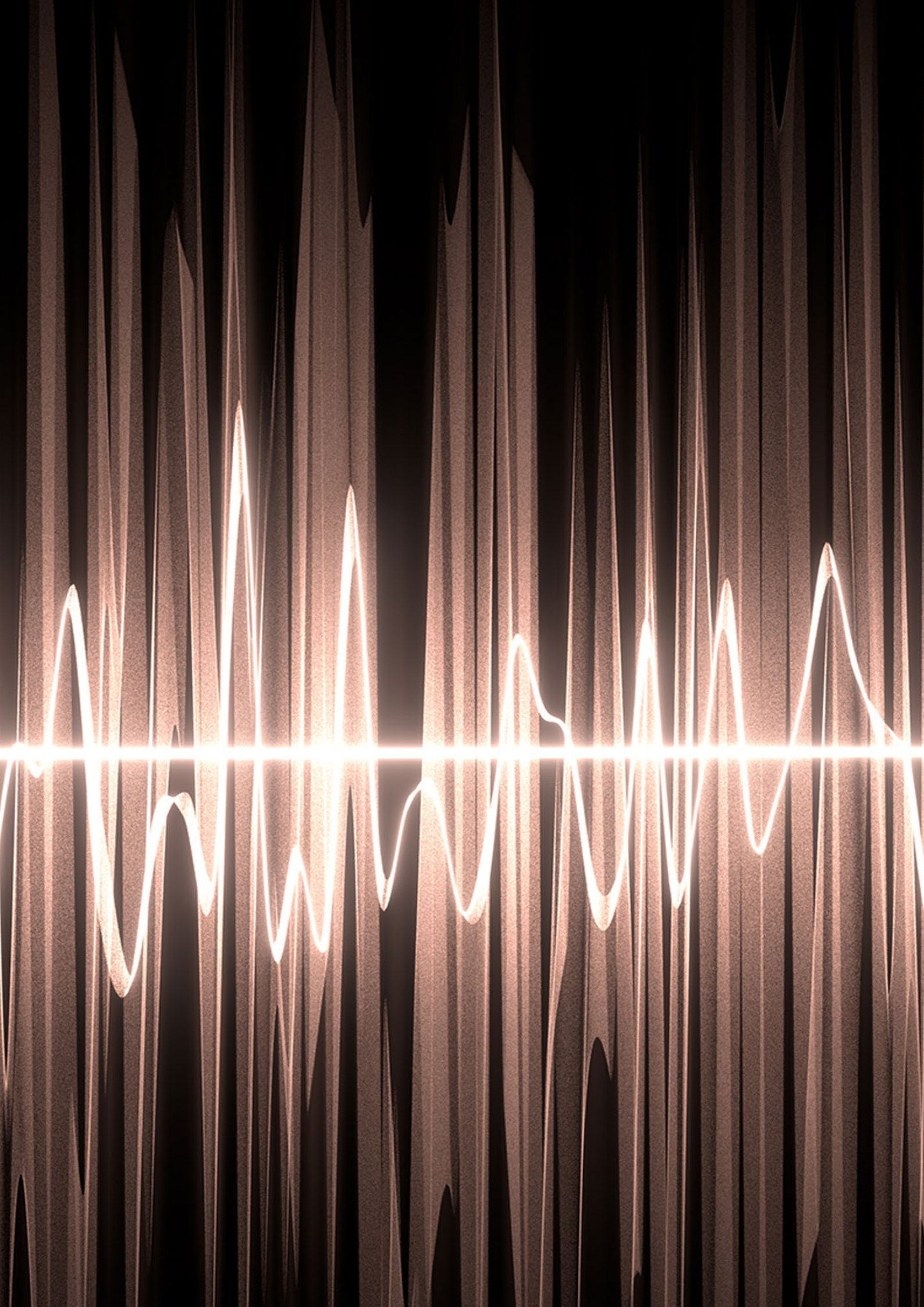


HUBER+SUHNER type
73_Z-0-0-203/11-_E
Item no. 22645983

Microstrip stress relief contacts (package with 100 pieces)



HUBER+SUHNER type
73_Z-0-0-204/1--_NH
Item no. 22645980



Series PC 1.85 – precision subminiature connectors

Description

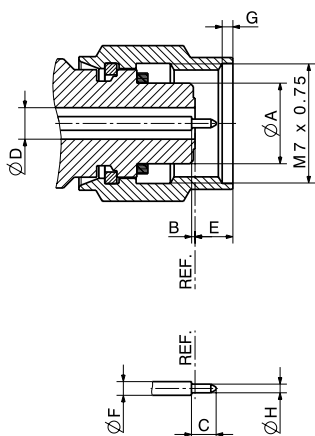
HUBER+SUHNER PC 1.85 connectors are precision connectors for use in microwave applications up to 67 GHz. The connectors features best electrical performance, excellent mechanical stability as well as extreme reliability. They are particularly well suited for semi-rigid, semi-flexible and flexible microwave cables. PC 1.85 is intermateable with PC 2.4.

Content

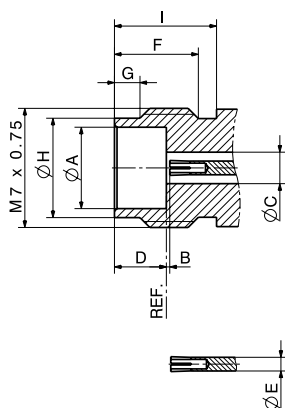
Description	267
Interface dimensions in mm/inches	267
Technical data	268
Cable connectors	269

Interface dimensions (mm/inches)

Plug (male)



Jack (female)



	Plug		Jack	
	min.	max.	min.	max.
A	4.725/0.186	4.75/0.187	4.77/0.1878	4.795/0.1888
B	0.00/0.00	0.08/0.003	0.00/0.00	0.08/0.003
C	1.34/0.053	1.44/0.057	1.84/0.07233	1.86/0.07333
D	1.838/0.07233	1.862/0.07333	3.00/0.118	3.10/0.122
E	1.85/0.073	2.45/0.096	0.791/0.0311	0.816/0.0321
F	0.791/0.0311	0.816/0.0321	4.80/0.189	5.06/0.199
G	0.5/0.02	0.76/0.03	1.37/0.054	1.63/0.064
H	0.498/0.0196	0.523/0.0206	5.79/0.228	5.89/0.232
I	–	–	6.00/0.236	–

Interface dimensions conformable to the standards:

International: IEC 60169-32

Series PC 1.85 – technical data

Electrical data	Requirements
Impedance	50 Ω
Frequency range	DC to 67 GHz
Dielectric withstanding voltage (at sea level)	500 V rms, 50 Hz
Working voltage (at sea level)	150 V rms, 50 Hz
Insulation resistance	$\geq 5 \cdot 10^5 \text{ M}\Omega$
Contact resistance · Centre contact · Outer contact	$\leq 4 \text{ m}\Omega$ $\leq 2.5 \text{ m}\Omega$
Return loss (typical values cable assemblies) · Multiflex 86 HE · Semi-rigid 86 (SR_86_LA) · Sucoform 86	$\leq 16 \text{ dB}$ up to 67 GHz $\leq 15 \text{ dB}$ up to 67 GHz $\leq 15 \text{ dB}$ up to 67 GHz

Mechanical data	Requirements
Coupling nut torque · Recommended	0.8 to 1.1 Nm/7.1 to 9.7 in lbs
Contact captivation	$\geq 20 \text{ N}$ /4.5 lbs
Durability (matings)	≥ 500

Environmental data	Test conditions
Temperature range	-55 to +155 °C/-67 to +311 °F
Thermal shock	IEC 60068-2-14
Damp heat steady state	IEC 60068-2-78
Vibration	IEC 60068-2-6
Shock	IEC 60068-2-27

Material data		
Connector part	Material	Plating
Body/nut	stainless steel	
Cable entry	BZ4	SUCOPRO®/gold plating
Centre contact	copper beryllium alloy	SUCOPRO®/gold plating
Support bead	LCP	
Gaskets	silicone rubber	

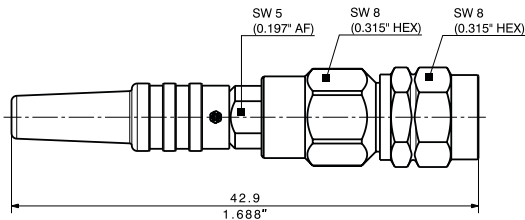
Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Series PC 1.85 – cable connectors

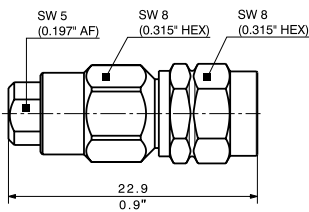
Straight cable plugs (male)

For semi-rigid, Sucoform and Multiflex cables

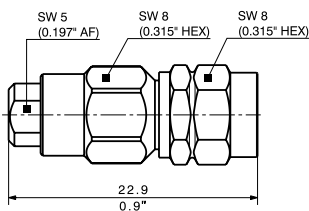
- Cable entry soldered
- Centre contact plugged-in



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
11_PC185-50-2-4/19-_NE	84144282	Y11 (MULTIFLEX_86_HE)	single	0000373606



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
11_PC185-50-2-5/19-_NE	84152948	U99 (SR_86_LA)	single	0000373655



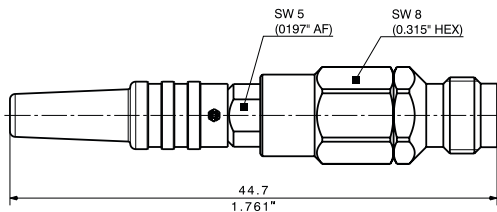
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
11_PC185-50-2-6/19-_NE	85001960	Y16 (SUCOFORM_86)	single	0000388588

Series PC 1.85 – cable connectors

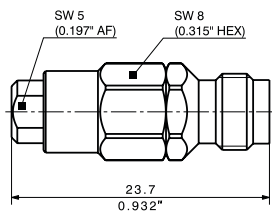
Straight cable jacks (female)

For semi-rigid, Sucoform and Multiflex cables

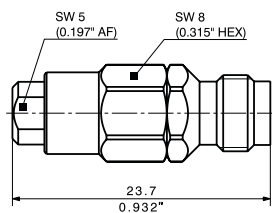
- Cable entry soldered
- Centre contact plugged-in



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
21_PC185-50-2-4/19-_NE	84144175	Y11 (MULTIFLEX_86_HE)	single	0000397321



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
21_PC185-50-2-5/19-_NE	85001993	U99 (SR_86_LA)	single	0000397354



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
21_PC185-50-2-6/19-_NE	85002004	Y16 (SUCOFORM_86)	single	0000397358

Series 1.0/2.3 inserts according to DIN 41626/2

Description

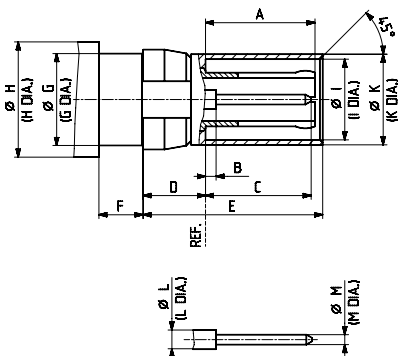
HUBER+SUHNER coaxial "inserts" 1.0/2.3 are suitable for the insertion of mixed layout connectors DIN 41612 (pattern M). These inserts feature a slide-on coupling mechanism, which ensures a short connect-disconnect time. Impedance accuracy, fast and easy assembly as well as high reproducibility due to the full crimp cable entry are typical characteristics of these HUBER+SUHNER connectors. The 1.0/2.3 inserts are suitable for applications up to 4 GHz.

Contents

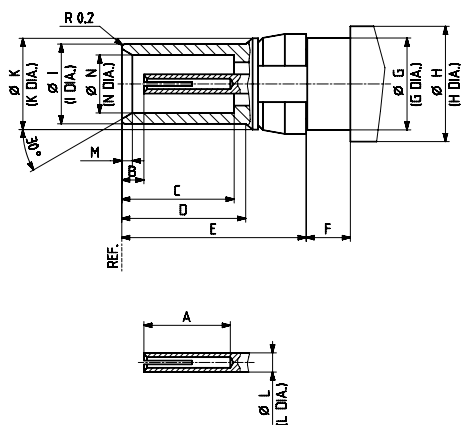
Description	271
Interface dimensions in mm/inches	271
Technical data	272
Cable connectors	274
PCB connectors	275

Interface dimensions (mm/inches)

Plug (male)



Jack (female)



	Plug		Jack	
	min.	max.	min.	max.
A	5.40/0.213	5.70/0.224	4.50/0.177	–
B	–	1.15/0.045	1.15/0.045	1.45/0.057
C	5.20/0.205	5.50/0.217	5.80/0.228	5.90/0.232
D	3.05/0.120	3.20/0.126	6.40/0.252	6.50/0.256
E	9.25/0.364	9.35/0.368	9.50/0.374	9.60/0.378
F	2.22/0.087	2.40/0.094	2.22/0.087	2.40/0.094
G	4.76/0.187	4.79/0.189	4.76/0.187	4.79/0.189
H	–	6.00/0.236	–	6.00/0.236
I	4.20/0.165	4.28/0.169	4.03/0.159	4.15/0.163
K	4.66/0.183	4.78/0.188	4.72/0.186	4.75/0.187
L	1.00/0.039 nom.		1.00/0.039 nom.	
M	0.48/0.019	0.52/0.020	0.50/0.020	0.60/0.024
N	–	–	3.00/0.118	3.06/0.120

Interface dimensions conformable to the standards:

Germany: DIN 41626/2

Series 1.0/2.3 – technical data

Electrical data	Requirements
Impedance	50 Ω
Frequency range (GHz)	DC to 4
Dielectric withstanding voltage (at sea level)	750 V rms, 50 Hz (depending on cable)
Working voltage (at sea level)	250 V rms, 50 Hz (depending on cable)
Insulation resistance	$\geq 200 \text{ M}\Omega$
Contact resistance	
· Centre conductor	$\leq 10 \text{ m}\Omega$
· Outer conductor	$\leq 3 \text{ m}\Omega$

Mechanical data	Requirements
Engagement force	$\leq 10 \text{ N}/2.3 \text{ lbs}$
Disengagement force	$\leq 10 \text{ N}/2.3 \text{ lbs}$
Contact captivation	$\geq 10 \text{ N}$
Cable retention force ¹⁾	see pages 32 – 41
Durability (matings)	≥ 500

Environmental data	Requirements
Temperature range	-55 to $+125 \text{ }^\circ\text{C}/-67$ to $+257 \text{ }^\circ\text{F}$
Climatic category	IEC \rightarrow 50/125/56
Moisture resistance	MIL-STD-202, method 106
Corrosion	saltspray test acc. to MIL-STD-202, method 101, condition B
Vibration	MIL-STD-202, method 204, condition A

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

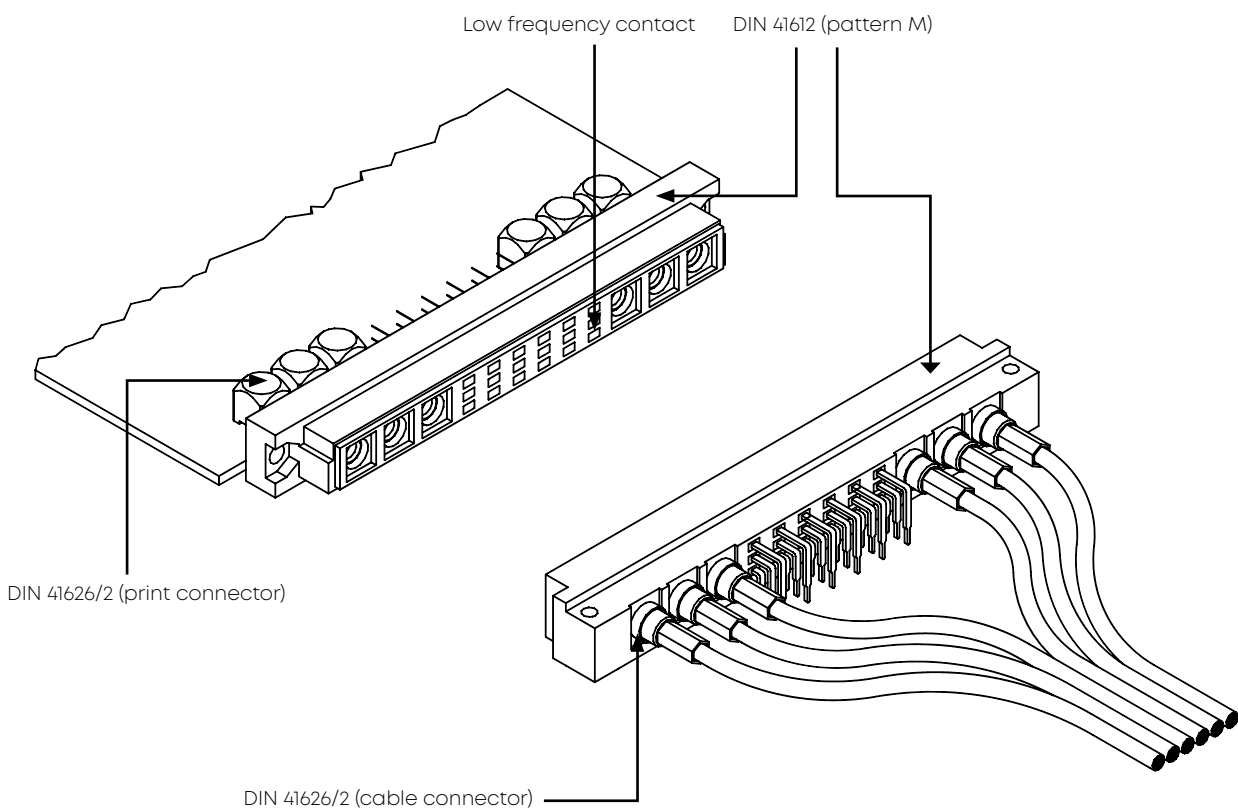
¹⁾ Value considers maximum load of the cables without irreversible variations of specifications.

Series 1.0/2.3 – technical data

Material data		
Connector part	Material	Plating
Bodies	brass	gold/SUCOPRO® gold plating
Outer contacts	copper-beryllium alloy, brass	gold/SUCOPRO® gold plating
Pin contacts	brass	gold/SUCOPRO® gold plating
Socket contacts	copper-beryllium alloy	gold/SUCOPRO® gold plating
Crimp ferrules	copper	gold/SUCOPRO® gold plating
Insulators	PTFE or PFA	

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

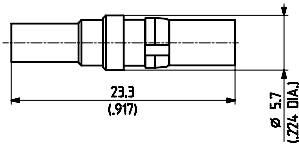
Typical application



Series 1.0/2.3 – cable connectors

Straight cable plugs (male)

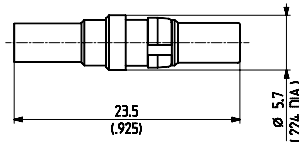
- HUBER+SUHNER full crimp
- Removal tool see page 546



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Plating
11_1023-C50-2-2/111_NE-1 ¹⁾	84148590	U4 (K_02252_D, ENVIROFLEX_316_D)	single	9191	1 A	SUCOPRO® gold plating
11_1023-C50-2-2/111_NE 11_1023-C50-2-2/111_NH	22648559 22649631		single bulk 100 pcs.			gold
11_1023-C50-2-3/111_NE 11_1023-C50-2-3/111_NH	22648780 22649007	U2 (RG_316_/U, ENVIROFLEX_316)	single bulk 100 pcs.			gold

Straight cable jacks (female)

- HUBER+SUHNER full crimp
- Removal tool see page 546

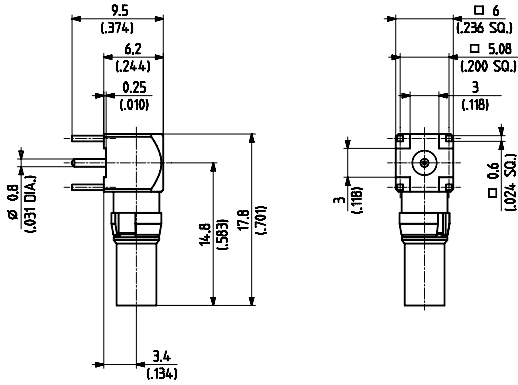


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Plating
21_1023-C50-2-2/111_NE	22648560	U4 (K_02252_D, ENVIROFLEX_316_D)	single	9191	1 A	gold
21_1023-C50-2-3/111_NE	22648790	U2 (RG_316_/U, ENVIROFLEX_316)				gold

Series 1.0/2.3 – PCB connectors

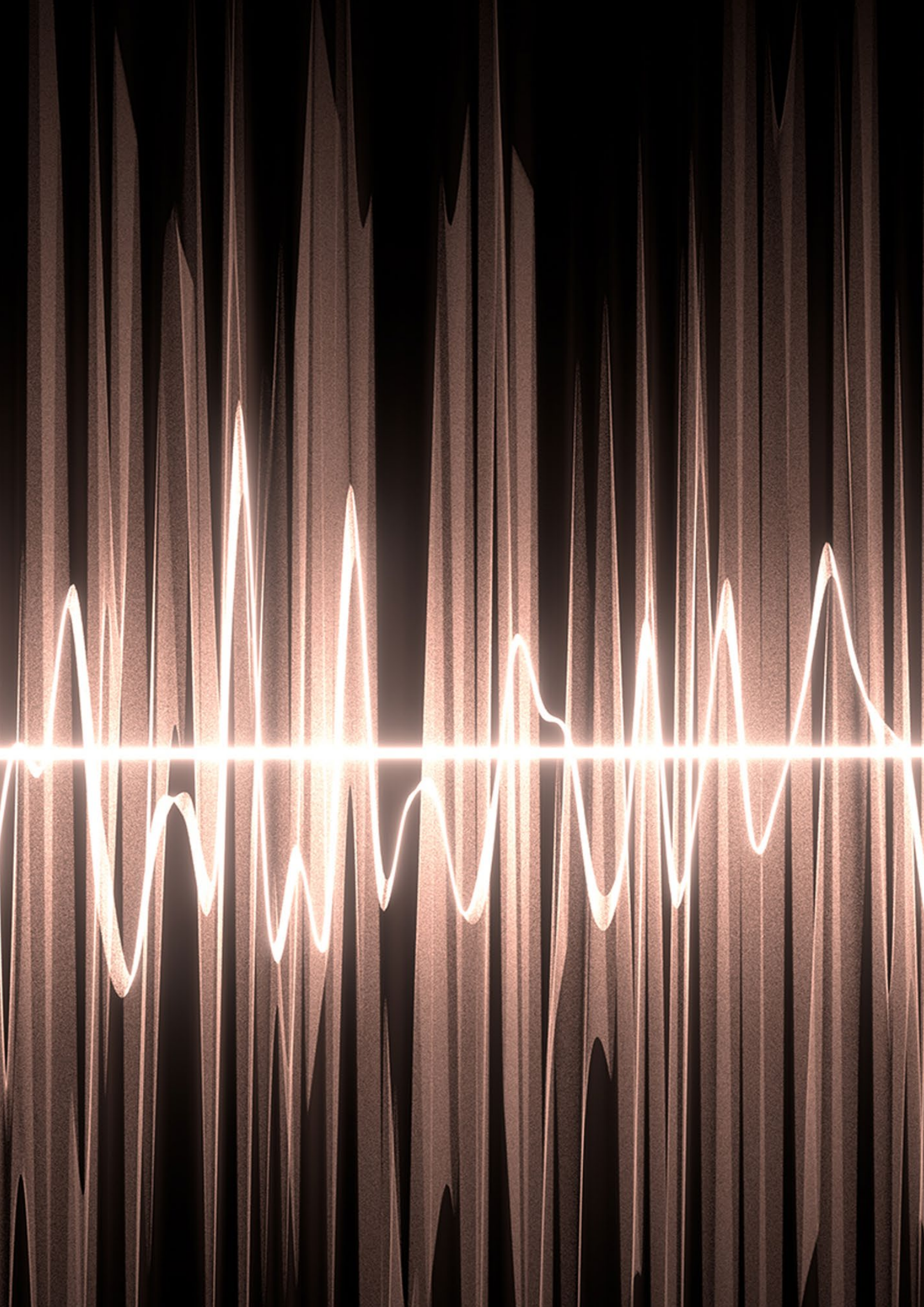
Right angle PCB jacks (female)

- Removal tool see page 546



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Plating
85_1023-C50-0-1/111_NE	22648561	single	ML 15	gold

¹⁾ Preferred type



Series QLA 00 – subminiature coaxial connectors

Description

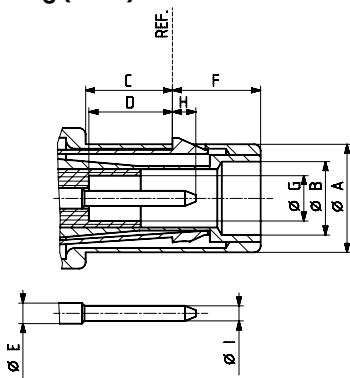
The QLA 00 series contains connectors with a quick latch coupling mechanism: connection is achieved by simply pushing the plug into the jack. Three latching springs automatically engage, thereby securing the mated connectors against axial forces. No twisting action is required. The connectors are easily released by slightly pulling back the outer sleeve of the plug. This coupling mechanism provides a fast and reliable connection for applications up to 1.4 GHz.

Compatibility

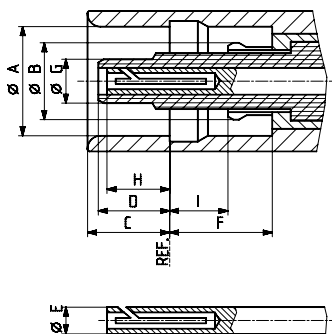
All connectors of the series QLA 00 are without any restrictions intermateable with Lemo series 00.250.

Interface dimensions (mm/inches)

Plug (male)



Jack (female)



Content

Description	277
Compatibility	277
Interface dimensions in mm/inches	277
Technical data	278
Cable connectors	279
Receptacles with solder end	281
PCB connectors	282

	Plug		Jack	
	min.	max.	min.	max.
A	4.96/0.195	5.03/0.198	5.05/0.199	5.11/0.201
B	3.38/0.133	3.44/0.135	3.50/0.138 ¹⁾	3.55/0.140 ¹⁾
C	3.93/0.155	4.08/0.161	3.73/0.147	3.86/0.152
D	3.55/0.140	–	–	3.48/0.137
E	0.95/0.037 nom.		1.24/0.049 nom.	
F	4.00/0.157	4.16/0.164	4.23/0.167	4.88/0.192
G	2.10/0.830	2.16/0.085	1.95/0.077	2.03/0.080
H	–	1.32/0.052	–	3.30/0.130
I	0.69/0.027	0.72/0.028	2.35/0.093	2.90/0.114

Interface dimensions conformable to the standards:

NIM-CAMAC-Standard CD/N549

¹⁾ Prior to slotting

Series QLA 00 – technical data

Electrical data	Requirements
Impedance	50 Ω
Frequency range	DC to 1.4 GHz
Dielectric withstanding voltage (at sea level)	1.5 kV, 50 Hz
Working voltage (at sea level)	
Unmated	≤ 300 V rms, 50 Hz
Mated	≤ 500 V rms, 50 Hz
Insulation resistance	$\geq 10^6$ M Ω
Contact resistance	
· Centre contact	≤ 4 m Ω
· Outer contact	≤ 2 m Ω
VSWR	DC to 300 MHz = 1.15
typical value for mated connector pair: 11_QLA to 21_QLA	300 MHz to 1.4 GHz = 1.20
RF leakage (measured at 500 MHz)	≥ 80 dB

Mechanical data	Requirements
Engagement force	typ. 2 N/0.45 lbs
Disengagement force	typ. 5 N/1.1 lbs
Contact captivation	≥ 20 N/4.5 lbs
Cable retention force ¹⁾	see pages 32 – 41
Durability (matings)	$\geq 10\,000$

Environmental data	Requirements
Temperature range	-55 to +150 °C / -67 to +302 °F
Thermal shock	MIL-STD-202, method 107, condition B
Moisture resistance	MIL-STD-202, method 106
Corrosion	saltspray test acc. to MIL-STD-202, method 101, condition B
Vibration	MIL-STD-202, method 204, condition D
Shock	MIL-STD-202, method 213, condition I

Material data		
Connector parts	Material	Plating
Bodies	brass, annealed	nickel
Pin contacts	brass, annealed	gold/SUCOPRO® gold plating
Socket contacts	copper-beryllium alloy	gold/SUCOPRO® gold plating
Crimp ferrules	copper	SUCOPLATE®
Insulators	PTFE or PFA	

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

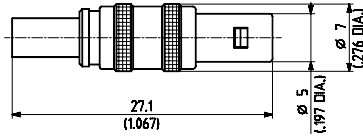
¹⁾ Value considers maximum load of the cables without irreversible variations of specifications.

Series QLA 00 – cable connectors

Straight cable plugs (male)

For flexible cables

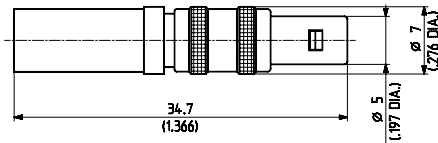
- HUBER+SUHNER full crimp



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
11_QLA-01-1-8/122_NE	22641146	U1 (RG_178_B/U, ENVIROFLEX_178)	single	9007	1 A
11_QLA-01-2-8/122_NE 11_QLA-01-2-8/122_NH	22544043 22544042	U2 (RG_316_/U, ENVIROFLEX_316)	single bulk 100 pcs.		
11_QLA-01-2-9/122_NH	22648228	U4 (K_02252_D, ENVIROFLEX_316_D)	bulk 100 pcs.		
11_QLA-01-2-13/122_NH	22644547	U3 (G_01130_HT)	bulk 100 pcs.	27020	

For flexible cables

- HUBER+SUHNER full crimp



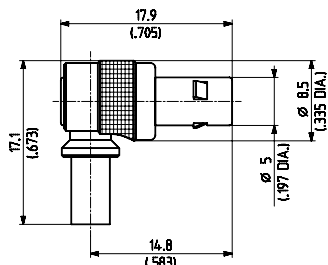
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
11_QLA-01-3-1/122_NE	22641313	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	3015	2 B
11_QLA-01-3-2/122_NE	22643326	U9 (RG_223_/U, ENVIROFLEX_B223)			

Series QLA 00 – cable connectors

Right angle cable plugs (male)

For flexible cables

- Cable entry crimp
- Centre contact soldered

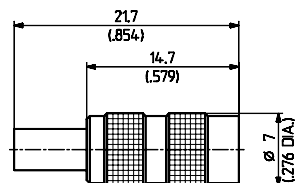


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
16_QLA-01-2-1/122_NE	22640013	U2 (RG_316_/U, ENVIROFLEX_316)	single	3091	A
16_QLA-01-2-13/122_NE	22544279	U3 (G_01130_HT)			

Straight cable jack (female)

For flexible cables

- HUBER+SUHNER full crimp



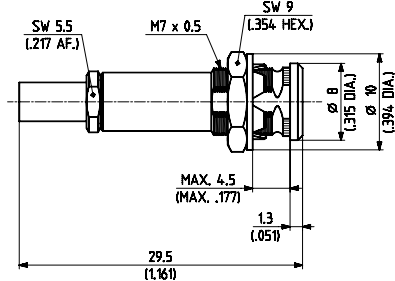
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
21_QLA-01-2-5/112_NH	22652371	U2 (RG_316_/U, ENVIROFLEX_316)	bulk 100 pcs.	27158	1 A

Series QLA 00 – cable connectors

Straight bulkhead cable jacks (female)

For flexible cables

- Cable entry crimp
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert
24_QLA-01-2-1/112_NE	22640026	U2 (RG_316_/U, ENVIROFLEX_316)	single	3089	ML 99	A

Series QLA 00 – receptacles with solder end

Receptacles, jacks (female)

- Bulkhead mounted

Fig. 1

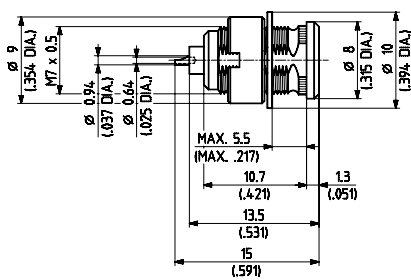
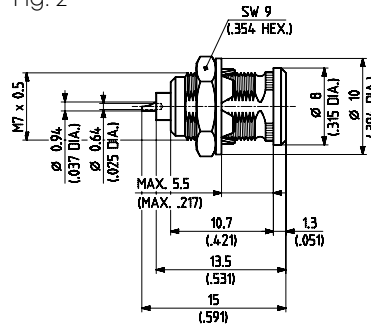


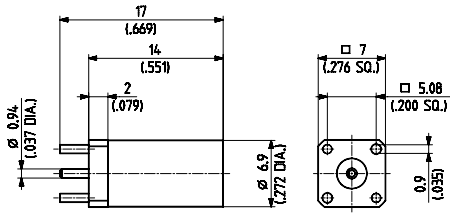
Fig. 2



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Fig.	Notes
22_QLA-01-0-1/112_NH	22646308	single bulk 100 pcs.	ML 23	1	
22_QLA-01-0-2/112_NE	22640024	single	ML 99	2	counter sunk from rear

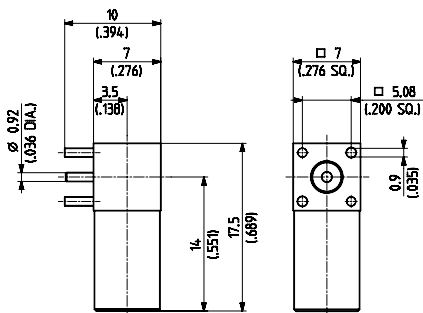
Series QLA 00 – PCB connectors

Straight PCB jack (female)



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes
82_QLA-01-0-2/112_NE	22543414	single	ML 97	without stand-off

Right angle PCB jacks (female)



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes
85_QLA-01-0-2/112_NE	22640039	single	ML 97	without stand-off
85_QLA-01-0-2/110_NH	22646483	bulk 100 pcs.		

Series BMA – subminiature blind mate connectors

Description

HUBER+SUHNER BMA blind mate connectors open up special dimensions in microwave applications up to 18 GHz. HUBER+SUHNER offers a range of "floating" connector configurations with certain axial or radial misalignment taken out by the outer contact of the jacks. The BMA series presents an outstanding range of products featuring high reliability and ease of assembly.

Compatibility

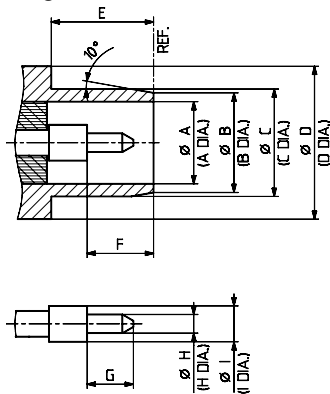
The HUBER+SUHNER range of BMA connectors is intermateable with the OSP connector series.

Content

Description	283
Compatibility	283
Interface dimensions in mm/inches	283
Technical data	284
Connector applications	285
Cable connectors	288
Receptacles with solder-in hermetic sea	291
Receptacles with solder end	292
PCB connectors	294

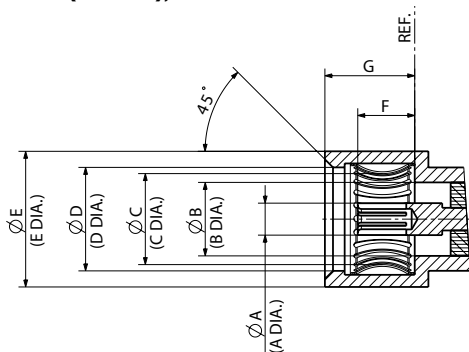
Interface dimensions (mm/inches)

Plug (male)



	Plug		Jack	
	min.	max.	min.	max.
A	4.09/0.161 nom.		1.78/ 070 nom.	
B	4.88/0.192 nom.		4.09/ 161 nom.	
C	5.31/0.209	5.35/0.211	–	5.08/0.200
D	7.62/0.300 nom.		5.71/0.225	–
E	5.03/0.198	–	7.37/0.290	–
F	3.25/0.128	–	3.05/0.120	3.23/0.127
G	2.29/0.090 nom.		–	5.03/0.198
H	0.90/0.035	0.94/0.037		
I	1.78/0.070 nom.			

Jack (female), N50 variant



Interface dimensions conformable to the standards:

USA: MIL-STD-348/321

N50 variant is fully intermateable with MIL-STD-348/321.

Series BMA – technical data

Electrical data	Requirements	
Cable type	0.086" semi-rigid	0.141" semi-rigid
Impedance	50 Ω	
Frequency range	DC to 18 GHz	
Dielectric withstanding voltage (at sea level)	1.0 kV rms, 50 Hz	1.5 kV rms, 50 Hz
Insulation resistance	$\geq 5 \cdot 10^5$ M Ω	
Contact resistance		
· Centre contact	≤ 2 m Ω	
· Outer contact	≤ 2 m Ω	
RF-testing voltage (at sea level)	670 V rms, 5 MHz	1.0 kV rms, 5 MHz
Admissible power (at sea level and room temperature)	≤ 300 W at 3 GHz	

Mechanical data	Requirements
Engagement force	≤ 13.5 N
Disengagement force	≥ 2 N
Contact captivation	≥ 27 N/6.1 lbs
Cable retention force ¹⁾	see pages 32 – 41
Durability (matings)	≥ 1000

Environmental data	Requirements
Temperature range	-65 to +125 °C/-85 to +257 °F
Thermal shock	MIL-STD-202, method 107, condition B
Moisture resistance	MIL-STD-202, method 106
Corrosion	saltspray test acc. to MIL-STD-202, method 101, condition B
Vibration	MIL-STD-202, method 204, condition D
Shock	MIL-STD-202, method 213, condition I

Material data		
Connector parts	Material	Plating
Bodies	copper beryllium alloy stainless steel	gold
Pin contacts	copper beryllium alloy	gold
Spring basket	copper beryllium alloy	gold
Springs (floating connectors)	stainless steel	
Insulators	PTFE or PFA	
Gaskets	EPDM, 40 shore A	

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

¹⁾ Value considers maximum load of the cables without irreversible variations of specifications.

Series BMA – connector applications

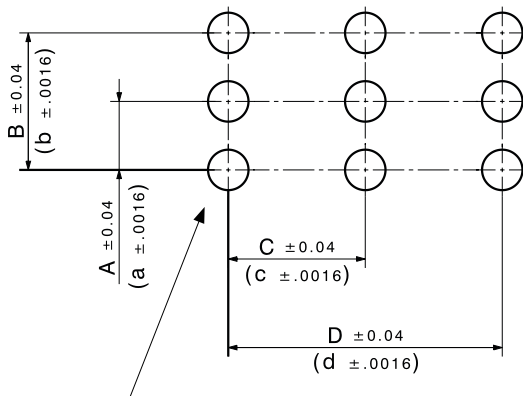
Quick and reliable engagement and disengagement of multiple microwave transmission lines, high packaging density of flexible coaxial lines and cable free connection of modules to motherboard are some needs of modern microwave systems.

HUBER+SUHNER BMA connectors offer an economical solution for the most demanding interconnector applications found today in civil and military microwave circuits. To help ensure a problem free, reliable long term operation the following guidelines should be used.

Assembly hints

Radial and axial misalignments can be accommodated with the spring outer contacts of the HUBER+SUHNER BMA connector. These misalignments are due to the build-up of tolerances with the major contributions coming from: axial direction, mounting plate distances and plate distortions. Radial direction: mounting hole positions and concentricity, plate distortion and mis-alignment. For recommended mounting hole sizes see page 561p.

Hole disposition



origin, single datum point

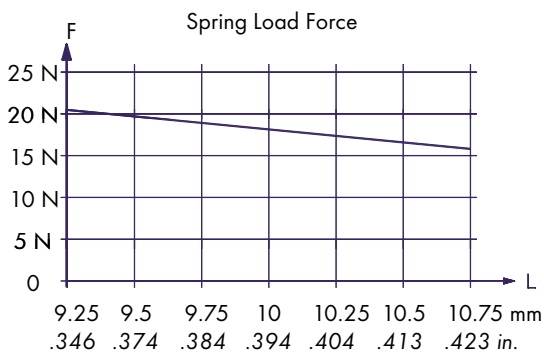
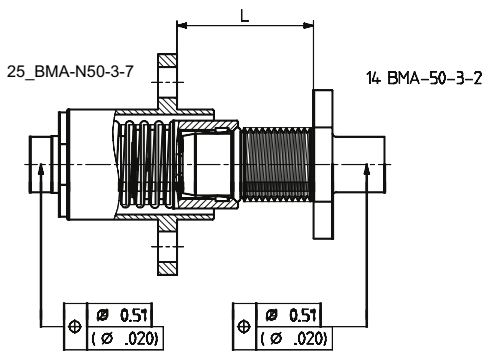
To avoid tolerances build-up all mounting holes shall be toleranced from a single datum point.

It is also important that both of the mounting plates are properly affixed and correctly positioned.

¹⁾ For applications with reduced return loss specifications 0.76 mm/0.030 in. is allowable.

Series BMA – connector applications

Float mounting (example)



To ensure optimum contact under extreme radial misalignment the following points must be considered:

A:

The maximum misalignment tolerances shall not be exceeded. Any possible bending of the mounting plate due to the spring preloading of the individual connectors shall be taken into account. If distortion occurs, the following steps should be taken to minimise the effect:

- Re-dimensioning,
- Bracing of the mounting plate,
- Reduction of maximum connector preloading force which will result in the limitation of length L.

The increased tolerance correction of the connector is achieved by using an extra spring system.

This allows the centre assembly of the connector to move freely within the flange body.

Recommended maximum tolerances:

Axial: 1.52 mm/0.060 in.

Radial: 0.51 mm/0.020 in.

The adjacent diagram shows the relationship between the connector preloading force and the separation distance „L“ between the mounting reference planes for a typical connector pair (25_BMA-N50-3-7 and 14_BMA-50-3-2).

B:

A minimum preloading force of 16 N shall be ensured for each connector pair so that the maximum engaging force will be exceeded. This represents the upper limit of separation.

For the example above this is a length L of maximum 10.65 mm/0.419 in.

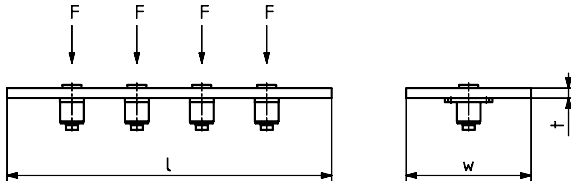
Data on other connector combinations available on request. For the dimensioning of the holes the same points must be considered as for the rigid mounting.

Series BMA – connector applications

Mounting plate bending

For an array of BMA connectors to be mounted on a chassis, the forces on the connectors must be taken into account and in the case of a floating assembly the preloading forces must be considered.

For a simplified calculation the mounting plate can be considered as a beam under deflection, thus the bending is:



Legend:

$$D = \frac{n \cdot F \cdot l^3}{384 E \cdot I}$$

E modulus of elasticity
aluminium: $E = 70\,000 \text{ N/mm}^2$
steel: $E = 210\,000 \text{ N/mm}^2$

F preloading force

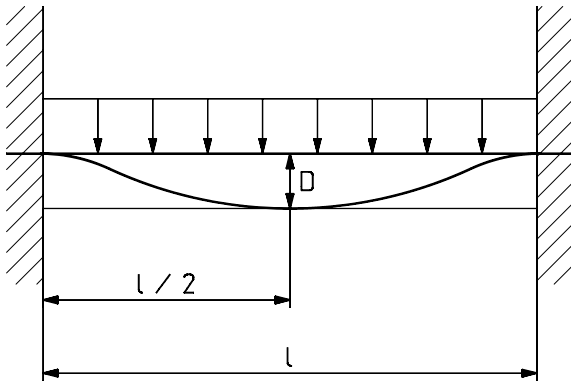
$$I = \frac{w \cdot t^3}{12}$$

l length of panel

n number of connectors

t thickness of panel

w width of panel



Example:

4 connectors of type 25_BMA-N50-3-7 (preloading force $F = 20 \text{ N}$ each):

$E = 70\,000 \text{ N/mm}^2$ (aluminium chassis)

thickness of panel (t) 2 mm

width of panel (w) 20 mm

length of panel (l) 80 mm

$$I = \frac{20 \text{ mm} \cdot (2 \text{ mm})^3}{12} = 13.33 \text{ mm}^4$$

$$D = \frac{4 \cdot 20 \text{ N} \cdot (80 \text{ mm})^3}{384 \cdot 70'000 \frac{\text{N}}{\text{mm}^2} \cdot 13.33 \text{ mm}^4} = 0.11 \text{ mm}$$

Series BMA – cable connectors

Straight bulkhead cable plugs (male)

For semi-rigid cables

- Cable entry soldered
- Bulkhead mounted, rigid
- Body material: CuBe, gold plated

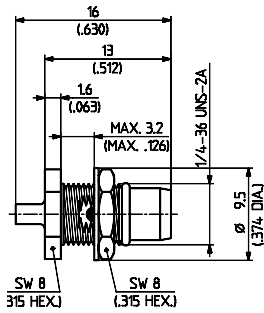


Fig. 1

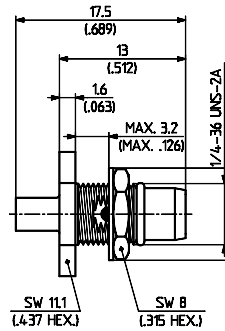


Fig. 2

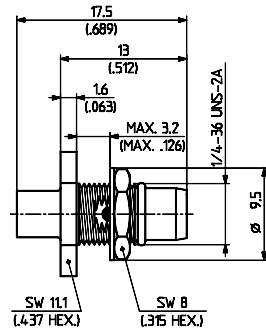


Fig. 3



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Fig.
14_BMA-50-1-15/111_NE	22646663	Y2, Y15 (SR_47)	single	27180	ML 56	1
14_BMA-50-2-2/111_NE	22645600	Y3, Y11, Y16 (SR_86)		9171		2
14_BMA-50-3-2/111_NE	22645601	Y5, Y12, Y17 (SR_141)		9171		3

For flexible cables

- Cable entry crimp
- Bulkhead mounted, rigid
- Body material: stainless steel

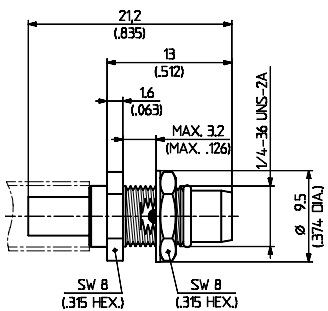


Fig. 1

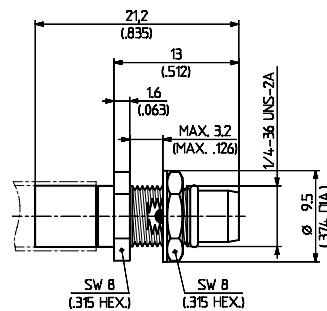


Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert	Fig.
14_BMA-50-2-3/199_NE	22645614	U2 (RG_316_/U, ENVIROFLEX_316)	single	9172	ML 56	A ¹⁾	1
14_BMA-50-3-3/199_NE	22645615	U9, U11 (RG_400_/U, ENVIROFLEX_400)		9173		B ²⁾	2

¹⁾ MIL insert M22520/5-03A can also be used

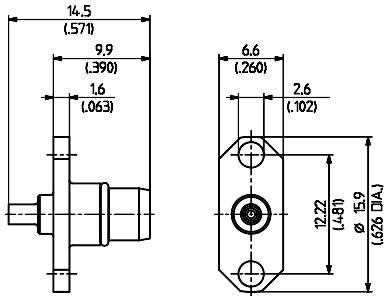
²⁾ MIL insert M22520/5-05A can also be used

Series BMA – cable connectors

Straight panel cable plug (male)

For semi-rigid cables

- Cable entry soldered
- 2-hole mounted
- Body material: CuBe, gold plated



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
15_BMA-50-1-15/111_NE	22649704	Y2, Y15 (SR_47)	single	27180

Straight bulkhead cable jacks (female)

For semi-rigid cables

- Cable entry soldered
- Snap-in, floating
- Body material: CuBe, gold plated

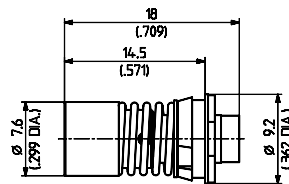
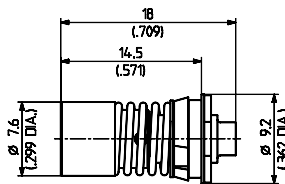


Fig. 1

Fig. 2

Connector fixed into mounting panel with snap-in mechanism. Recommended removal tool: 74_Z-0-0-213

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Fig.
24_BMA-N50-2-20/111_NE	84097552	Y3, Y11, Y16 (SR_86)	single	0000230377	ML 66	1
24_BMA-N50-3-18/111_NE	85018694	Y5, Y12, Y17 (SR_141)		0000453501		2

It is recommended to use a service loop to facilitate the float features of the connector.

Series BMA – cable connectors

Straight panel cable jacks (female)

For semi-rigid cables

- Cable entry soldered
- Flange mount, floating

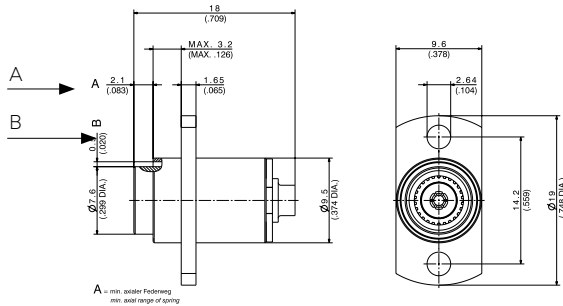


Fig. 1

A = min. 2.1 mm/0.083 in. axial range of spring
 B = min. 0.5 mm/0.020 in. radial misalignment

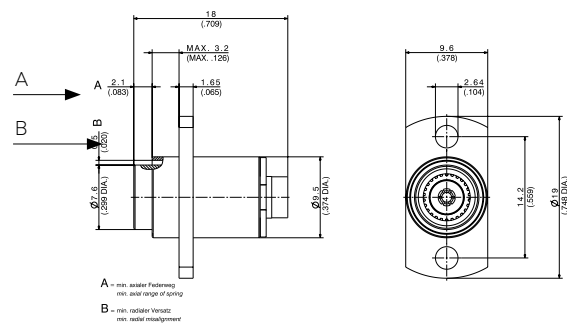


Fig. 2

Outer connector body and flange of stainless steel, inner floating part of gold plated CuBe

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Fig.
25_BMA-N50-2-13/119_NE	84145709	Y3, Y11, Y16 (SR_86)	single	0000230377	ML 58	1
25_BMA-N50-3-7/119_NE	85018698	Y5, Y12, Y17 (SR_141)		0000453517		2

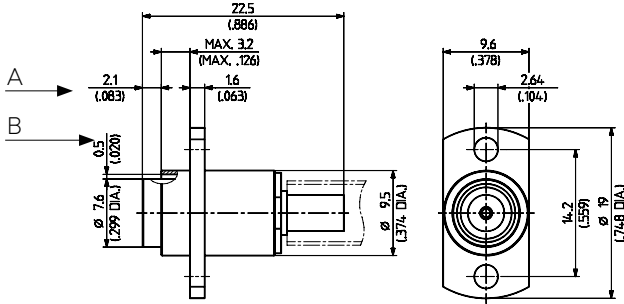
It is recommended to use a service loop to facilitate the float features of the connector.

Series BMA – cable connectors

Straight panel cable jacks (female)

For flexible cables

- Cable entry crimp
- Flange mount, floating



A = min. 2.1 mm/0.083 in. axial range of spring
 B = min. 0.5 mm/0.020 in. radial misalignment

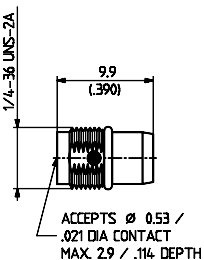
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert
25_BMA-N50-2-14/119_NE	85018785	U2 (RG_316_/U, ENVIROFLEX_316)	single	0000291185	ML 58	A

Series BMA – receptacles with solder-in hermetic seal

Receptacle, plug (male)

- Bulkhead mounted
- Threaded installation
- Body material: stainless steel

HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Suitable glass-bead
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12_BMA-50-0-3/199_NE	22645636	single	ML 61	73_Z-0-0-198 ¹⁾
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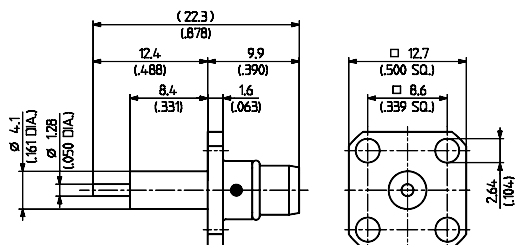
For mounting: recommended tool: collet chuck and torque wrench from Radiall R282.340.000, diam. 5.3 mm, 280 Ncm.
 For fixing hermetic seal while soldering, fixture 74_Z-0-0-211 is recommended.

¹⁾ See page 559

Series BMA – receptacles with solder end

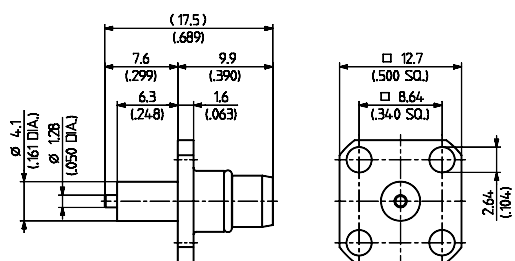
Receptacles, plugs (male)

- Panel mounted
- Body material: stainless steel



HUBER+SUHNER type	Item no.	Packaging	Flange type	Notes
13_BMA-50-0-1/199_NE	22645622	single	square	with extended dielectric

- Panel mounted
- Body material: stainless steel

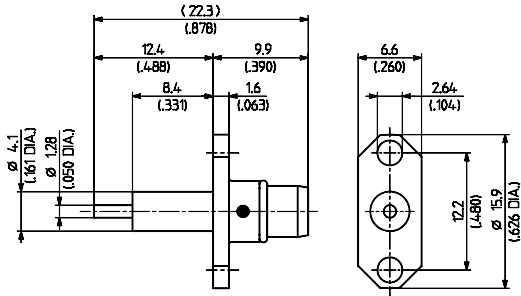


HUBER+SUHNER type	Item no.	Packaging	Flange type	Notes
13_BMA-50-0-13/199_NE	22660107	single	square	with extended dielectric

Series BMA – receptacles with solder end

Receptacle, plug (male)

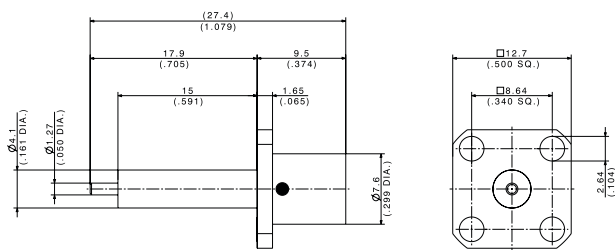
- Panel mounted
- Body material: stainless steel



HUBER+SUHNER type	Item no.	Packaging	Flange type	Notes
13_BMA-50-0-2/199_NE	22645623	single	2-hole	with extended dielectric

Receptacles, jack (female)

- Panel mounted
- Body material: stainless steel

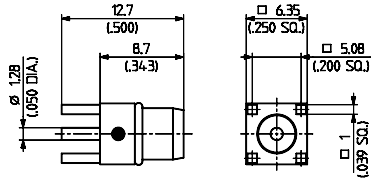


HUBER+SUHNER type	Item no.	Packaging	Flange type	Notes
23_BMA-N50-0-16/119_NE	85079352	single	square	with extended dielectric

Series BMA – PCB connectors

Straight PCB plug (male)

- Body material: CuBe, gold plated



HUBER+SUHNER type	Item no.	Packaging	Flange type
81_BMA-50-0-1/111_NE	22645630	single	ML 41

Series QMA – subminiature connectors

Description

HUBER+SUHNER QMA coaxial connectors are according to QLF standard and available with 50 Ω impedance. The frequency range extends to 18 GHz, depending on the connector and cable type. However most of the QMA connectors are return loss optimised for frequencies up to 6 GHz. The interface is based on the SMA dimension but instead of a threaded coupling mechanism a new snap-lock mechanism is used.

The QMA interface has a very similar performance to the SMA, but in addition it offers an easier, faster and safer coupling operation, helping customers to save significantly time during production. The packaging density of QMA is increased compared to SMA connectors thanks to the fact that no torque spanner is required to fasten the coupling nut.

QMA is not intermateable with SMA.

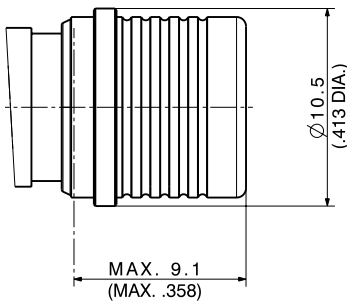
QMA connectors are also available as waterproof version (IP68) and are compatible with QLF standard.

Content

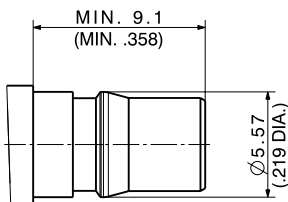
Description	295
Interface dimensions in mm/inches	295
Features	295
Technical data	296
Cable connectors	298
Receptacles	307
PCB connectors	309
Protection caps	311
QMA eXtreme – XQMA	312
Calibration	313

Interface dimensions (mm/inches)

Plug (male)



Jack (female)



Features

- Easy to mate
- 10 times faster than with threaded SMA
- Increased reliability
- No torque or tooling required
- 360° rotatable interface
- Easy routing of cable assembly without mechanical stress or electrical performance degradation
- Higher packing density
- Size equivalent to SMA, but space saving as there is no need for wrench clearance
- Excellent electrical performance
- Consistent VSWR performance enables to replace standard SMA
- Return loss optimised DC to 6 GHz

Series QMA – technical data

Electrical data	Requirements
Impedance	50 Ω
Frequency range	DC to 18 GHz
Dielectric withstanding voltage (at sea level)	1000 V rms, 50 Hz
Working voltage (at sea level)	480 V rms, 50 Hz
Insulation resistance	$\geq 5 \cdot 10^5$ M Ω
Contact resistance · Centre contact · Outer contact	≤ 3.0 m Ω max. (initial) ≤ 2.5 m Ω max. (initial)
Passive intermodulation	-120 dBc static at 1.8 GHz, 2 x 20 W
Screening effectiveness · DC to 3 GHz · 3 to 6 GHz	-80 dB min. -70 dB min.
Return loss (typical) · DC to 3 GHz · 3 to 6 GHz	≥ 32 dB ≥ 25 dB

Mechanical data	Requirements
Mating characteristics · Engagement force · Disengagement force	25 N typical 20 N typical
Interface retention force	60 N min.
Durability	100 mating cycles min.
Connector pitch	12.4 mm min center to center

Environmental data	Test conditions for standard QMA
Temperature range	-40 to +85 °C
Thermal shock	IEC 60169-1 16.4 (-40 to +85 °C)
Corrosion	IEC 60169-1 16.7 (48 hrs)
Damp heat	IEC 60169-1 16.3 (96 hrs) steady state
Vibration	IEC 60068-2-64 random 5 to 20 Hz: 1.29 (m/s ²) ² /Hz 20 to 500 Hz: -3 dB/octave

Environmental data	Test conditions for waterproof QMA
Temperature range	-40 to +105 °C
Thermal shock	MIL-STD-202, method 107, condition B
Corrosion	MIL-STD-202, method 101, condition B
Damp heat	MIL-STD-202, method 106 F
Vibration	MIL-STD-202, method 204, condition D
Ingress protection	IP68 IEC 60529, mated condition

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Series QMA – technical data

Material data		
Connector parts	Material	Plating
Bodies, outer contact	brass/spring bronze	SUCOPLATE®/SUCOPRO® gold plating
Pin contacts	brass	SUCOPRO® gold plating
Socket contacts	spring bronze/copper-beryllium alloy	SUCOPRO® gold plating
Insulators	PTFE or PFA	
Crimp ferrules	copper	SUCOPLATE®
Gaskets	silicone rubber	

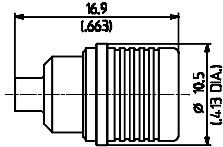
Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Series QMA – cable connectors

Straight cable plugs (male)

For semi-rigid, Sucoform and Multiflex cables

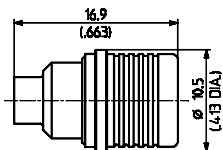
- Cable entry soldered
- Centre contact plugged-in



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
11_QMA-50-2-3/133_NE	23017704	Y3, Y11, Y16	single	27428
11_QMA-50-2-3/133_NH	23017705	(SUCOFORM_86, SR_86)	bulk 100 pcs.	

For semi-rigid, Sucoform and Multiflex cables

- Cable entry soldered
- Centre contact plugged-in



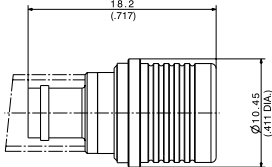
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Notes
11_QMA-50-3-3/133_NE	23017695	Y5, Y12, Y17 (SUCOFORM_141),	single	27428	body: SUCOPRO® gold plating
11_QMA-50-3-3/133_NH	23017696	SR_141	bulk 100 pcs.		

Series QMA – cable connectors

Straight cable plugs (male)

For semi-rigid, Sucoform and Multiflex cables

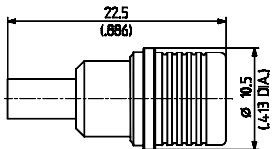
- Waterproof
- Cable entry soldered
- Centre contact plugged or soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Notes
11_QMA-W50-3-7/113_NE	84075868	Y5, Y12, Y17 (SUCOFORM_141, SR_141)	single	0000263762	

For flexible cables

- HUBER+SUHNER full crimp



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
11_QMA-50-2-1/133_NE	23017700	U4 (K_02252_D,	single	27427	1 A
11_QMA-50-2-1/133_NH	23017701	ENVIROFLEX_316_D)	bulk 100 pcs.		
11_QMA-50-2-2/133_NE	23017720	U2 (RG_316_/U,	single	27427	1 A
11_QMA-50-2-2/133_NH	23017721	ENVIROFLEX_316)	bulk 100 pcs.		

Series QMA – cable connectors

Straight cable plugs (male)

For flexible cables

- Cable entry crimp
- Centre contact plugged or soldered

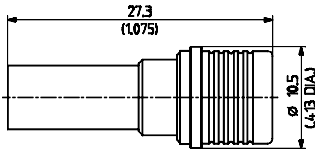


Fig. 1

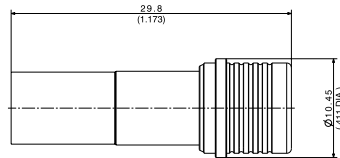


Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Fig.
11_QMA-50-3-1/133_NE 11_QMA-50-3-1/133_NH	23017697 23017698	U9, U11 (RG_400_/U, ENVIROFLEX_400)	single bulk 100 pcs.	27429	B	1
11_QMA-50-3-2/133_NE 11_QMA-50-3-2/133_NH	23017702 23017703	U7 (RG_58_C/U, ENVIROFLEX_B58)	single bulk 100 pcs.			
11_QMA-50-4-2/133_NH	84000234	S16, X9, X28 (SX_04172_B-60, SPUMA_240, SPUMA_240-FR-01)	bulk 100 pcs.	0000231592	C	2

For flexible cables

- Waterproof
- Cable entry crimp
- Centre contact plugged or soldered

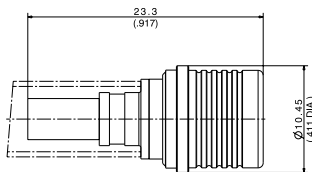


Fig. 1

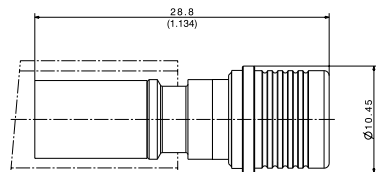


Fig. 2



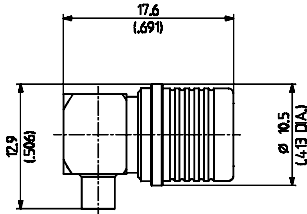
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Fig.
11_QMA-W50-2-8/133_NH	84104479	U2 (RG_316_/U, ENVIROFLEX_316)	bulk 100 pcs.	0000312675	A	1
11_QMA-W50-4-3/133_NE 11_QMA-W50-4-3/133_NH	84075865 84023153	S16, X9, X28, X34 (SX_04172_B-60, SPUMA_240, SPUMA_240-FR-01, SPUMA_240-RS-FR)	single bulk 100 pcs.	0000239799	C	2

Series QMA – cable connectors

Right angle cable plugs (male)

For semi-rigid, Sucoform and Multiflex cables

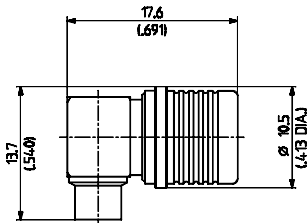
- Cable entry soldered
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
16_QMA-50-2-3/133_NH	23017667	Y3, Y11, Y16 (SUCOFORM_86, SR_86)	bulk 100 pcs.	27444

For semi-rigid, Sucoform and Multiflex cables

- Cable entry soldered
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
16_QMA-50-3-3/133_NE	23017693	Y5, Y12, Y17	single	27444
16_QMA-50-3-3/133_NH	23017694	(SUCOFORM_141, SR_141)	bulk 100 pcs.	

Series QMA – cable connectors

Right angle cable plugs (male)

For semi-rigid, Sucoform and Multiflex cables

- Waterproof
- Cable entry soldered
- Centre contact soldered

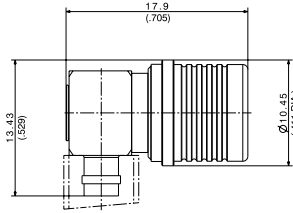


Fig. 1

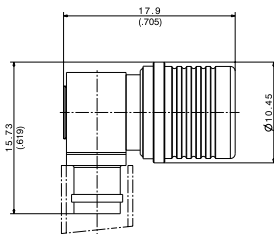


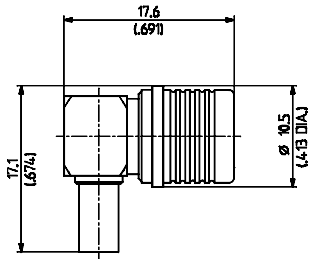
Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Fig.	Notes
16_QMA-W50-2-9/113_NE 16_QMA-W50-2-9/113_NH	84068219 84075867	Y3, Y11, Y16 (SUCOFORM_86)	single bulk 100 pcs.	0000263789	1	body: SUCOPRO® gold plating
16_QMA-W50-3-5/113_NE	84075863	Y5, Y12, Y17 (SUCOFORM_141)	single	0000263850	2	body: SUCOPRO® gold plating

For flexible cables

- Cable entry crimp
- Centre contact soldered



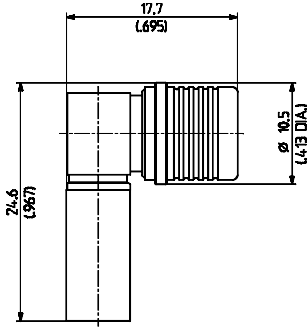
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
16_QMA-50-2-1/133_NE 16_QMA-50-2-1/133_NH	23017654 23017644	U4 (K_02252_D, ENVIROF-LEX_316_D)	single bulk 100 pcs.	27443	A
16_QMA-50-2-2/133_NE 16_QMA-50-2-2/133_NH	23017657 23017658	U2 (RG_316_/U, ENVIROFLEX_316)	single bulk 100 pcs.		

Series QMA – cable connectors

Right angle cable plugs (male)

For flexible cables

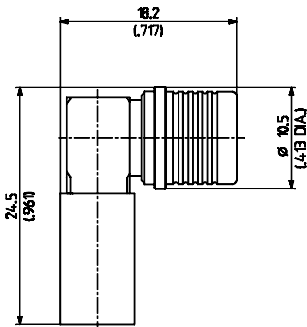
- Cable entry crimp
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
16_QMA-50-3-1/133_NE 16_QMA-50-3-1/133_NH	23017686 23017687	U9, U11, U39 (RG_400_/U, ENVIROFLEX_400)	single bulk 100 pcs.	27443	B
16_QMA-50-3-2/133_NE 16_QMA-50-3-2/133_NH	23017691 23017692	U7 (RG_58_C/U, ENVIROFLEX_B58)	single bulk 100 pcs.		

For flexible cables

- Cable entry crimp
- Centre contact soldered



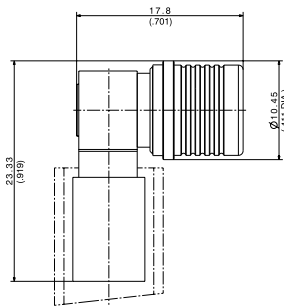
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
16_QMA-50-4-1/133_NH	23012849	S16 (SX_04172_B-60)	bulk 100 pcs.	27405	C

Series QMA – cable connectors

Right angle cable plugs (male)

For flexible cables

- Waterproof
- Cable entry crimp
- Centre contact soldered

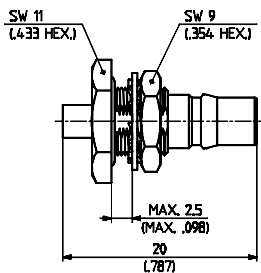


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
16_QMA-W50-4-5/133_NE 16_QMA-W50-4-5/133_NH	84075864 84023140	X9, X28, X34 (SX_04172_B-60, SPUMA_240, SPUMA_240-FR-01, SPUMA_240-RS-FR)	single bulk 100 pcs.	0000241978	C

Straight bulkhead cable jacks (female)

For semi-rigid, Sucoform and Multiflex cables

- Cable entry soldered
- Centre contact plugged-in
- With panel seal



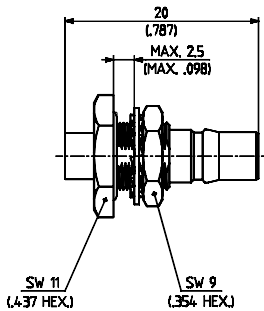
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole
24_QMA-50-2-1/111_NE 24_QMA-50-2-1/111_NH	23017742 23017743	Y3, Y11, Y16 (SUCOFORM_86, SR_86)	single bulk 100 pcs.	27428	ML 20

Series QMA – cable connectors

Straight bulkhead cable jacks (female)

For semi-rigid, Sucoform and Multiflex cables

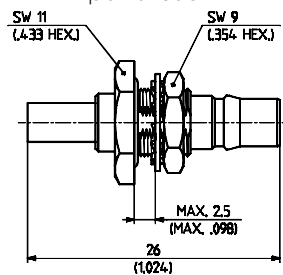
- Cable entry soldered
- Centre contact plugged-in
- With panel seal



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole
24_QMA-50-3-3/111_NE 24_QMA-50-3-3/111_NH	23017683 23017684	Y5, Y12, Y17 (SUCOFORM_141, SR_141)	single bulk 100 pcs.	27428	ML 20

For flexible cables

- Cable entry crimp
- Centre contact soldered
- With panel seal



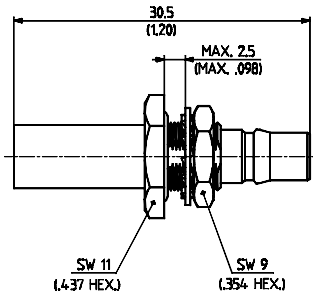
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert
24_QMA-50-2-2/133_NE 24_QMA-50-2-2/133_NH	23017829 23017830	U4 (K_02252_D, ENVIROFLEX_316_D)	single bulk 100 pcs.	27429	ML 20	A
24_QMA-50-2-3/133_NE 24_QMA-50-2-3/133_NH	23017837 23017838	U2 (RG_316_/U, ENVIROFLEX_316)	single bulk 100 pcs.			

Series QMA – cable connectors

Straight bulkhead cable jacks (female)

For flexible cables

- Cable entry crimp
- Centre contact soldered
- With panel seal

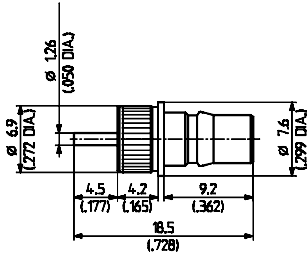


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert
24_QMA-50-3-1/133_NE	23017822	U9, 11 (RG_400_/U, ENVIROFLEX_400)	single	27429	ML 20	B
24_QMA-50-3-1/133_NH	23017823		bulk 100 pcs.			
24_QMA-50-3-2/133_NE	23017795	U7 (RG_58_C/U, ENVIROFLEX_B58)	single			

Series QMA – receptacles

Straight bulkhead receptacles, jacks (female)

- Coaxial end
- Press-in chassis mount



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes
22_QMA-50-0-7/133_NF	84001926	bulk 50 pcs.	ML 143	press-in

- Coaxial end
- Screw-in chassis mount

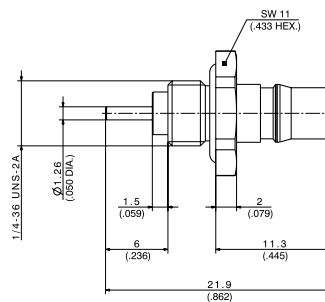
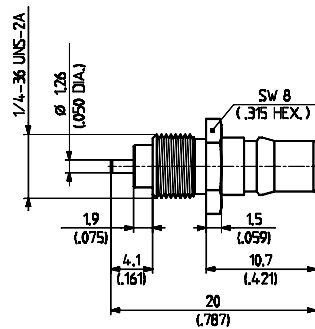


Fig. 1

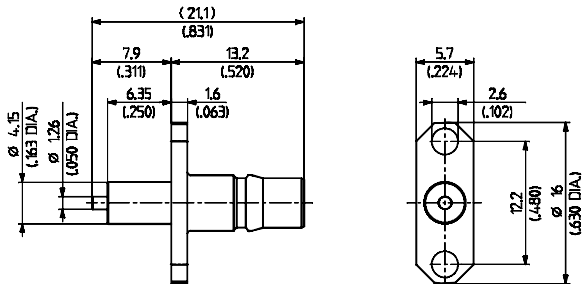
Fig. 2

HUBER+SUHNER type	Item no.	Packaging	Fig.	Notes
22_QMA-50-0-4/133_NH	23022628	bulk 100 pcs.	1	extended dielectric, without panel seal
22_QMA-50-0-34/133_NH	84061333		2	extended dielectric, with panel seal

Series QMA – receptacles

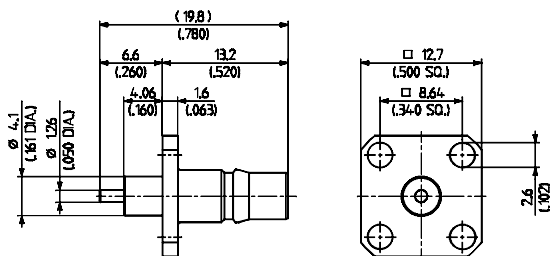
Straight panel receptacle, jack (female)

- 2-hole flange
- Without panel seal
- With coaxial end



HUBER+SUHNER type	Item no.	Packaging	Notes
23_QMA-50-0-2/111_NH	23024985	bulk 100 pcs.	extended dielectric

- 4-hole flange
- Without panel seal
- With coaxial end

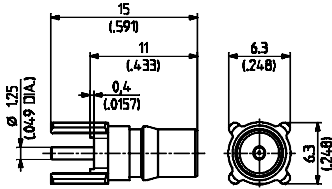


HUBER+SUHNER type	Item no.	Packaging	Notes
23_QMA-50-0-3/111_NH	23025007	bulk 100 pcs.	extended dielectric

Series QMA – PCB connectors

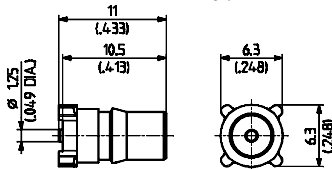
Straight PCB jacks (female)

- With stand-off



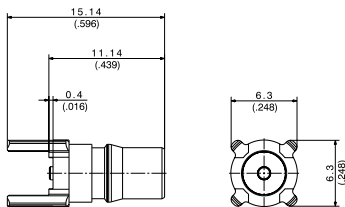
HUBER+SUHNER type	Item no.	Packaging	PCB layout
82_QMA-50-0-3/111_NH	23017656	bulk 100 pcs.	ML 41

- Surface mount type SMT



HUBER+SUHNER type	Item no.	Packaging	PCB layout
82_QMA-S50-0-2/111_NH	23017631	bulk 100 pcs.	ML 136

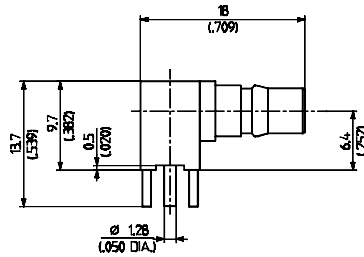
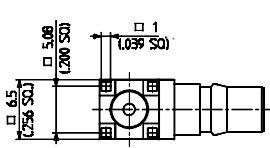
- With ground pins through-hole and SMT signal pin



HUBER+SUHNER type	Item no.	Packaging	PCB layout
96_QMA-50-0-1/111_NH	84003328	bulk 100 pcs.	ML 155

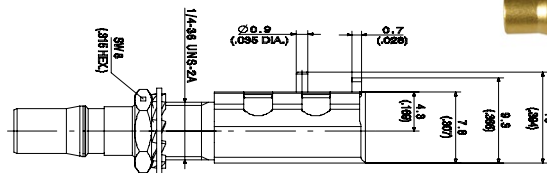
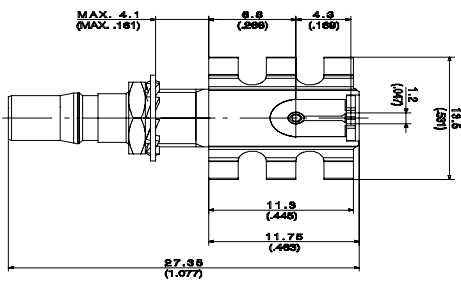
Series QMA – PCB connectors

Right angle PCB jacks (female)



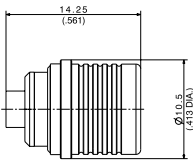
HUBER+SUHNER type	Item no.	Packaging	PCB layout
85_QMA-50-0-3/111_NH	23021463	bulk 100 pcs.	ML 41

- Surface mount type SMT
- Bulkhead mounted



HUBER+SUHNER type	Item no.	Packaging	PCB layout
85_QMA-S50-0-5/111_NH	23037099	bulk 100 pcs.	ML 137

Series QMA – Protection caps



HUBER+SUHNER type	Item no.	Packaging	Notes
62_QMA-W0-0-4/-33_-E	84068119	single	waterproof

QMA eXtreme – XQMA

Description

QMA eXtreme is the advanced version of the waterproof QMA, combining the quick lock mechanism and waterproof properties also in rough environmental conditions. The coupling mechanism is completely waterproof and not only the RF signal path, thus protecting the connector from corrosion in a salty atmosphere and from freezing in case of high humidity and low temperature.

Key features

- IP68 sealing on the complete connection including coupling mechanism
- High corrosion resistance
- Freezing protection

Benefits

- Compact modules design
- Easy connection with outdoor protection
- All benefits of the quick lock connection



For more product information please contact our offices.

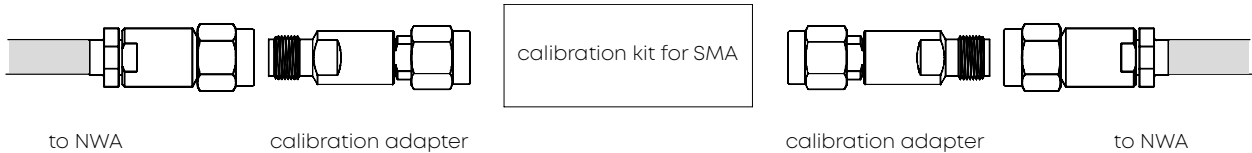


Series QMA – calibration with adapter swapping method

For return loss/VSWR measurement of QMA connectors, HUBER+SUHNER recommends the following calibration method:

Calibration with PC3.5 to PC3.5 calibration adapters (SMA calibration)

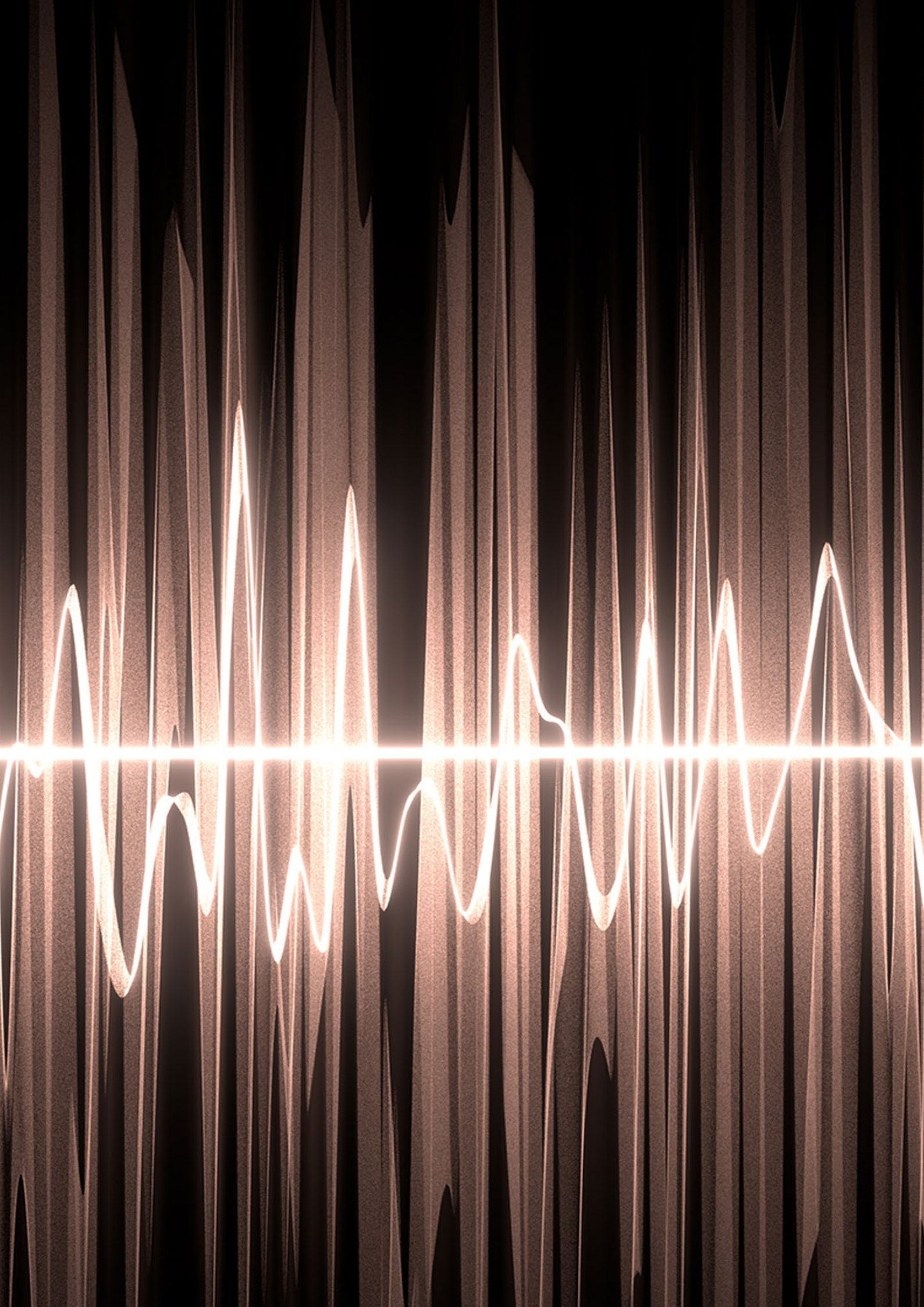
Adapters: 31_PC35-50-0-2/199_NE (item no. 23020456) or
32_PC35-50-0-2/199_NE (item no. 23020457) or
33_PC35-50-0-2/199_NE (item no. 23020453) see all three adapters on page 518 - 520



Exchanging of the calibration adapters with the required QMA adapters

31_PC35-QMA-50-1/199_NE (Item no. 23017468) see page 519 or
33_PC35-QMA-50-1/199_NE (Item no. 23017467) see page 520 or
33_QMA-PC35-50-1/1--_NE (Item no. 23017488) see page 520





Series QN – coaxial connectors

Description

HUBER+SUHNER QN coaxial connectors are available with 50 Ω impedance. The frequency range extends to 11 GHz, depending on the connector and cable type, however most of the QN connectors are return loss optimised for frequencies up to 6 GHz. The interface is based on the inner dimensions of the N connector but instead of a threaded coupling mechanism a snap-lock mechanism is used.

The QN interface has a very similar performance to N, but in addition it offers an easier, faster and safe coupling operation, helping the customers to save significantly time during production of their systems.

The packaging density of QN increased compared to N thanks to the fact that no torque spanner is required to fasten the coupling nut. Additionally the outer dimensions of QN are smaller than N, leading to the advantage that even TNC-size flanges can be used at QN connectors.

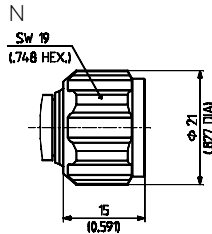
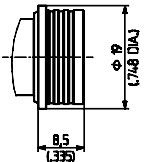
Content

Description	315
Interface dimensions in mm/inches	315
Features	315
Technical data	316
Cable connectors	317
Receptacles with solder end	321
QN eXtreme – XQN	322
QN calibration	323

Interface dimensions compared to N

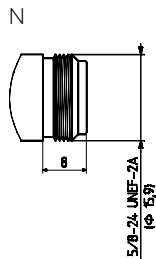
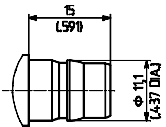
Plug (male)

QN



Jack (female)

QN



Features of QN connectors

- Cycle time improvement for making RF connections (10 times faster to mount than threaded connectors)
- No torque required
- Higher packaging density
- Free-rotating connection when mated (cable torsion relief)
- Eliminates loosening problems associated with threaded connectors
- Same performance as N
- Best intermodulation performance thanks to the unique interface design

HUBER+SUHNER QN – the cost effective solution for advanced RF interconnections!

IP rating (interface, mated) IP68

Series QN – technical data

Electrical data	Requirements
Impedance	50 Ω
Frequency range	DC to 6 GHz (optimised) DC to 11 GHz (working range)
Dielectric withstanding voltage (at sea level)	2500 V rms, 50 Hz
Working voltage (at sea level)	≤ 1000 V rms, 50 Hz
Insulation resistance	$\geq 5 \cdot 10^5$ M Ω
Contact resistance · Centre contact · Outer contact	≤ 1.5 m Ω ≤ 1.5 m Ω
RF leakage	100 MHz to 3 GHz ≥ 90 dB
Return loss (typical)	DC to 3 GHz ≥ 32 dB; 3 to 6 GHz ≥ 25 dB; 6 to 11 GHz ≥ 20 dB
Intermodulation	better -155 dBc (2 \times 43 dBm carrier)

Mechanical data	Requirements
Engagement force (typical)	30 N
Disengagement force (typical)	30 N
Retention force for interface	≥ 450 N
Bending moment admissible (interface)	≤ 10 Nm
Contact captivation	≥ 28 N
Durability (matings)	≥ 100

Environmental data	Requirements
Temperature range	-40 to +125 °C / -40 to +257 °F
Climatic category	40/125/21 (IEC 60169_1 16.2)
Moisture resistance	MIL-STD-202, method 106 F
Corrosion	saltspray test acc. to MIL-STD-202, method 101 D, condition B
Vibration	IEC-1169-1 paragraph 9.3.3. (10 to 500 Hz; 5 g)
Shock	MIL-STD-202, method 213, condition 1
Rapid change of temperature	IEC 60169-1 16.4 (-40 to +125 °C / -40 to +257 °F)

Material data		
Connector parts	Material	Plating
Bodies	brass	SUCOPLATE®
Pin contacts	brass	SUCOPRO® gold plating
Socket contacts	spring bronze	SUCOPRO® gold plating
Insulators	PTFE or PFA	
Contact washer	spring bronze or copper-beryllium	SUCOPRO® gold plating

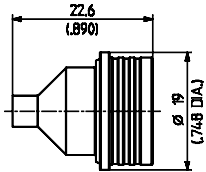
Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Series QN – cable connectors

Straight cable plugs (male)

For semi-rigid, Sucoform and Multiflex cables

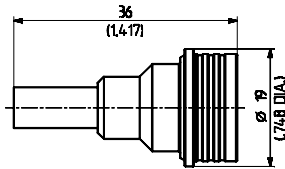
- Cable entry soldered
- Centre contact plugged-in



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
11_QN-50-3-3/113_NE	23033393	Y5, Y12 (SUCOFORM_141)	single	27502

For flexible cables

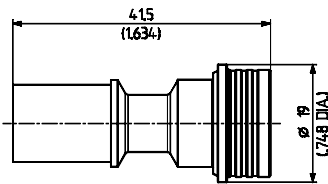
- HUBER+SUHNER full crimp



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
11_QN-50-3-1/133_NE	23033391	U9 (RG_142_B/U, ENVIROFLEX_142)	single	27500	2 B
11_QN-50-3-2/133_NE	23033392	U7 (RG_58_C/U, ENVIROFLEX_B58)		27501	
11_QN-50-3-4/133_NE	84016563	U11, U41 (RG_400_/U, ENVIROFLEX_400)		230235	

For flexible cables

- HUBER+SUHNER full crimp



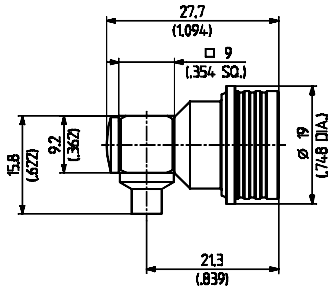
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
11_QN-50-7-1/133_NE	23033394	U32, U43 (RG_214_/U, ENVIROFLEX_B214)	single	27503	3 D
11_QN-50-7-2/133_NE	23033395	U33 (RG_393_/U, ENVIROFLEX_393)		27504	2.5 D
11_QN-50-7-3/133_NE	23033396	U29, U42 (RG_213_/U, RADOX_RF_213)		27505	3 D

Series QN – cable connectors

Right angle cable plugs (male)

For semi-rigid, Sucoform and Multiflex cables

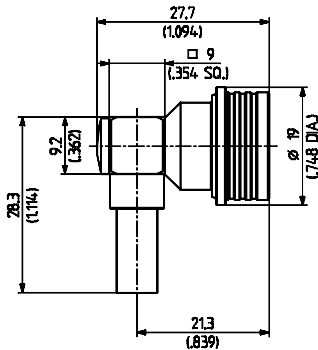
- Cable entry soldered
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
16_QN-50-3-3/13-_NE	23033268	Y5, Y12, Y1 (SUCOFORM_141)	single	27508

For flexible cables

- Cable entry crimp
- Centre contact soldered



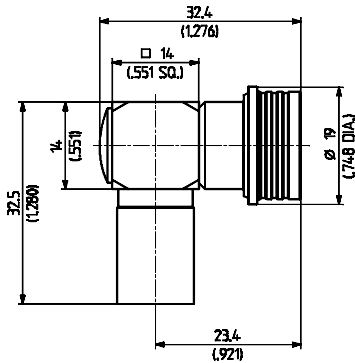
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
16_QN-50-3-1/133_NE	23033267	U9, U11, U39 (RG_400_/U, ENVIROFLEX_400)	single	27506	B
16_QN-50-3-2/133_NE	23033398	U7 (RG_58_C/U, ENVIROFLEX_B58)		27507	B
16_QN-50-4-1/133_NE	23033078	S16 (SX_04172_B-60)		27509	C

Series QN – cable connectors

Right angle cable plugs (male)

For flexible cables

- Cable entry crimp
- Centre contact soldered

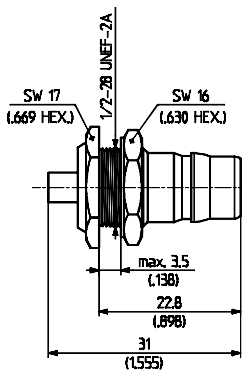


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
16_QN-50-7-1/133_NE	23032410	U32, U33 (RG_393_/U, ENVIROFLEX_393)	single	27510	D
16_QN-50-7-2/133_NE	23033399	U29 (RG_213_/U, RADOX_RF_213)		27511	
16_QN-50-7-5/133_NE	84078879	U30, X32 (SPUMA_400, SPUMA_400-FR-01, SPUMA_400-RS-FR)	27511		

Straight bulkhead cable jacks (female)

For semi-rigid, Sucoform and Multiflex cables

- Cable entry soldered
- Centre contact plugged-in



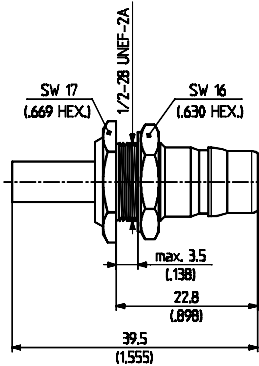
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole
24_QN-50-3-3/13-_NE	23033423	Y5, Y12, Y17 (SUCOFORM_141)	single	27514	ML 112

Series QN – cable connectors

Straight bulkhead cable jacks (female)

For flexible cables

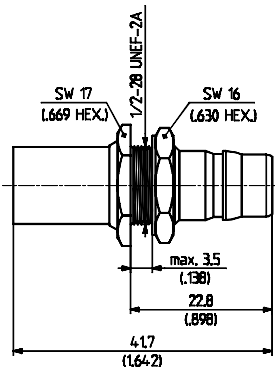
- HUBER+SUHNER full crimp



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert
24_QN-50-3-1/133_NE	23033400	U9 (RG_142_B/U, ENVIROFLEX_142)	single	27512	ML 112	2 B
24_QN-50-3-2/133_NE	23033402	U7 (RG_58_C/U, ENVIROFLEX_B58)		27513		

For flexible cables

- HUBER+SUHNER full crimp



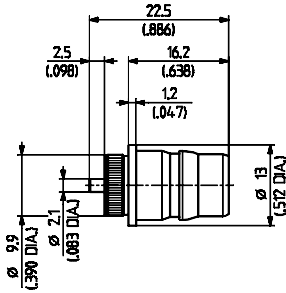
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert
24_QN-50-7-1/133_NE	23033403	U33 (RG_393_/U, ENVIROFLEX_393)	single	27515	ML 112	2.5 D
24_QN-50-7-2/133_NE	23033404	U32, U43 (RG_214_/U, ENVIROFLEX_B214)		27516		3 D
24_QN-50-7-5/133_NE	84039869	U30, X32 (SPUMA_400, SPUMA_400-FR-01, SPUMA_400-RS-FR)		253545		4 D

Series QN – receptacles with solder end

Receptacles, jacks (female)

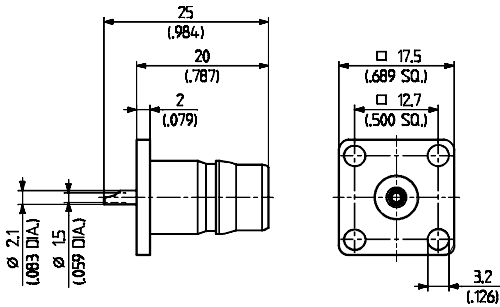
For flexible cables

- Bulkhead mounted
- Press-in chassis mount



HUBER+SUHNER type	Item no.	Packaging	Notes
22_QN-50-0-1/133_NY	23033904	bulk 100 pcs.	press-in

- Panel mounted



HUBER+SUHNER type	Item no.	Packaging	Notes
23_QN-50-0-1/133_NE	23033251	single	flange with same dimensions as TNC
23_QN-50-0-1/133_NY	23033252	bulk 150 pcs.	

QN eXtreme – XQN

Description

Besides the outstanding characteristics of the quick lock connector QN, this advanced version has some extra features. The coupling mechanism is completely waterproof and not only the RF signal path, thus protecting the complete connector from corrosion in a salty atmosphere and from freezing in case of high humidity and low temperatures.

This extra features besides the excellent PIM performance (typical -162 dBc) and the optimum power performance (≈ 350 W by 2 GHz) makes this connector the ideal solution for antenna connections.

Key features

- IP67 sealing for the complete connection including coupling mechanism
- High corrosion resistance
- Freezing protection

Benefits

- Compactness (X-QN size is smaller than DIN716 and DIN 4.1/9.5)
- Easy to install (tool-less, quick-lock)
- No taping required (secure mating with outdoor protection)
- Overall lower costs of ownership
- Excellent PIM performance



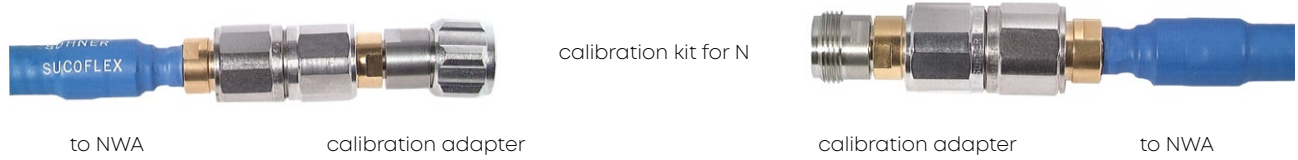
For more product information please contact our offices.



Series QN – calibration with adapter swapping method

1. Calibration with N to PC7 calibration adapters (N calibration)

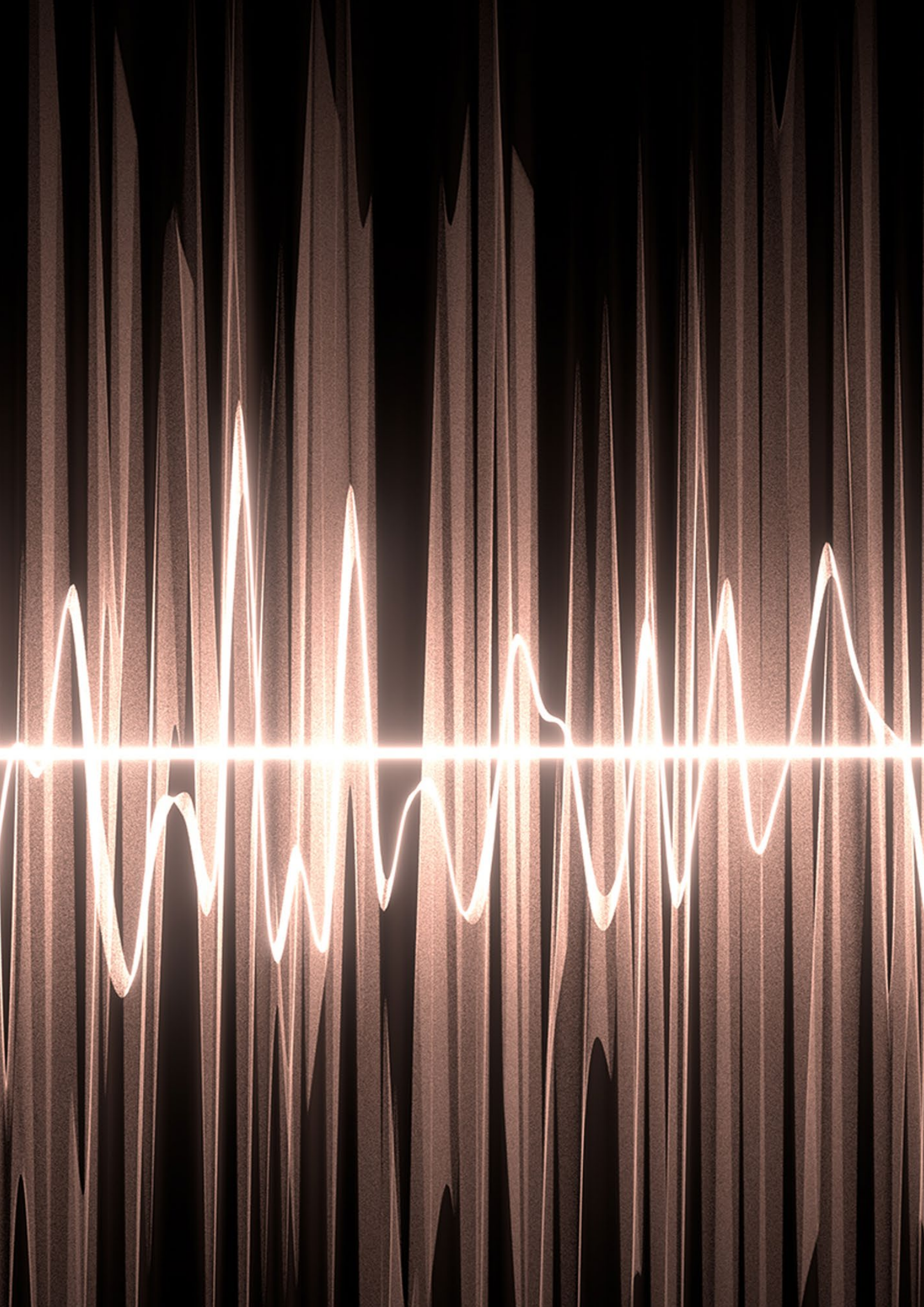
Adapters: 32_N-PC7-50-6/1--_NE (item no. 23032917) see page 506



2. Exchanging of the calibration adapters with the required QN adapters

32_PC7-QN-50-1/1--_NE (item no. 23032720) see page 520





Series BNC 50 Ω – coaxial miniature connectors

Description

HUBER+SUHNER BNC is still a popular connector series, featuring a two stud bayonet coupling mechanism, which is particularly useful for frequently coupled and uncoupled RF connections with frequencies up to 4 GHz.

Compatibility

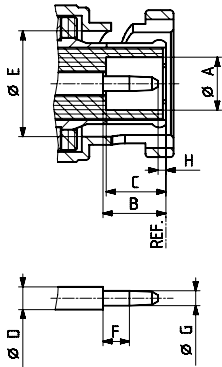
50 Ω BNC connectors and 75 Ω BNC connectors are intermateable without any restrictions.

Content

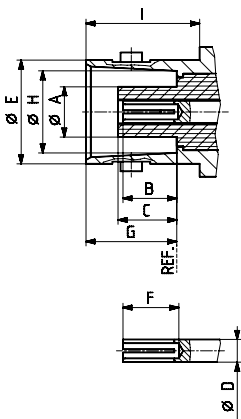
Description	325
Compatibility	325
Interface dimensions in mm/inches	325
Technical data	326
Cable connectors	327
Receptacles with solder end	336
PCB connectors	341
Protective caps and shorts	342

Interface dimensions (mm/inches)

Plug (male)



Jack (female)



	Plug		Jack	
	min.	max.	min.	max.
A	4.83/0.190	–	–	4.72/0.186
B	5.33/0.210	5.84/0.230	4.72/0.186	5.23/0.206
C	5.28/0.208	5.79/0.228	4.78/0.188	5.28/0.208
D	2.06/0.081	2.21/0.087	2.06/0.081	2.21/0.087
E	9.78/0.385	9.91/0.390	9.60/0.378	9.70/0.382
F	1.98/0.078	–	4.95/0.195	–
G	1.32/0.052	1.37/0.054	8.31/0.327	8.51/0.335
H	0.08/0.003	–	8.10/0.319	8.15/0.321
I	–	–	10.52/0.414	–

Interface dimensions conformable to the standards:

International:	IEC 61169-8
Europe:	CECC 22120
USA:	MIL-PRF-39012 BNC Interface MIL-STD-348/301
Great Britain:	BS 9210 N 004

Series BNC 50 Ω – technical data

Electrical data	Requirements
Impedance	50 Ω
Frequency range	DC to 4 GHz
Dielectric withstanding voltage (at sea level)	1.5 kV rms, 50 Hz (depending on cable)
Working voltage (at sea level)	500 V rms, 50 Hz (depending on cable)
Insulation resistance	≥ 5 · 10 ⁵ MΩ
Contact resistance	
· Centre contact	≤ 1.5 mΩ
· Outer contact	≤ 1 mΩ
RF leakage (between 2 to 3 GHz)	≥ 55 dB

Mechanical data	Requirements
Coupling nut torque	7 to 28 Ncm/0.6 to 2.5 in lbs
Coupling nut retention force	≥ 450 N/101.2 lbs
Contact captivation	≥ 27 N/6.1 lbs
Cable retention force ¹⁾	see pages 32 – 41
Durability (matings)	≥ 500

Environmental data	Requirements
Temperature range	–65 to +165 °C/–85 to +329 °F
Climatic category	IEC → 55/155/21
Thermal shock	MIL-STD-202, method 107, condition B
Moisture resistance	MIL-STD-202, method 106
Corrosion	saltspray test acc. to MIL-STD-202, method 101, condition B
Vibration	MIL-STD-202, method 204, condition B
Shock	MIL-STD-202, method 213, condition G

Material data		
Connector parts	Material	Plating
Bodies	brass	SUCOPLATE®/SUCOPRO® gold plating
Pin contacts	brass	gold/SUCOPRO® gold plating
Socket contacts	copper-beryllium alloy copper alloy	gold/SUCOPRO® gold plating
Crimp ferrules	copper/brass	SUCOPLATE®
Insulators	PTFE or PFA	
Gaskets	silicone rubber	

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

¹⁾ Value considers maximum load of the cables without irreversible variations of specifications.

Series BNC 50 Ω – cable connectors

Straight cable plugs (male)

For semi-rigid cables

- Cable entry soldered
- Centre contact soldered

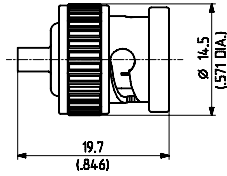


Fig. 1

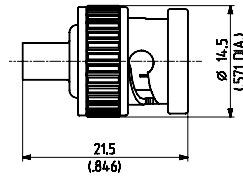


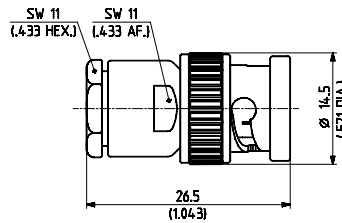
Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Fig.
11_BNC-50-2-20/103_NE ¹⁾	22641778	Y3, Y11, Y16 (SR_86)	single	9100	1
11_BNC-50-3-54/103_NE ¹⁾	22540108	Y5, Y12, Y17 (SR_141)		9106	2

For flexible cables

- Cable entry clamp
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
11_BNC-50-1-1/133_NE	22540021	U1 (RG_178_B/U, ENVIROFLEX_178)	single	3005
11_BNC-50-2-1/133_NE	22540029	U2 (RG_316_/U, ENVIROFLEX_316)		
11_BNC-50-3-1/133_NE ¹⁾	22540045	U7, U9 (RG_58_C/U, ENVIROFLEX_B58)		3004
11_BNC-50-3-5/133_NE	22540054			3005

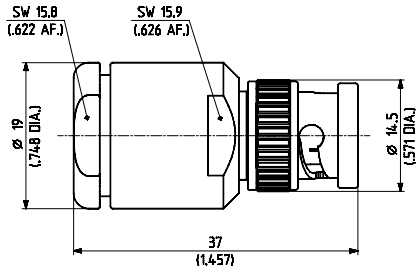
¹⁾ Centre contact NOT captivated.

Series BNC 50 Ω – cable connectors

Straight cable plugs (male)

For flexible cables

- Cable entry clamp
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
11_BNC-50-7-1/133_NE	22540145	U29 (RG_213/U, RADOX_RF_213)	single	3008
11_BNC-50-7-2/133_NE	22540149	U32 (RG_214/U, ENVIROFLEX_B214)		

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554

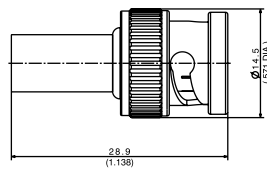
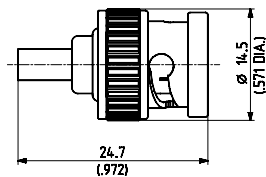


Fig. 1

Fig. 2



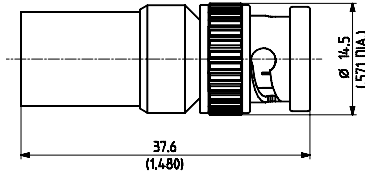
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Fig.
11_BNC-50-1-5/133_NE	22641759	U1 (RG_178_B/U, ENVIROFLEX_178)	single	9068	1 A	1
11_BNC-50-2-13/133_NE	22543749	U2 (RG_316_/U, ENVIROFLEX_316)	single			
11_BNC-50-2-13/133_NH	22644716	U2 (RG_316_/U, ENVIROFLEX_316)	bulk 100 pcs.			
11_BNC-50-2-14/133_NE	22641683	U4 (K_02252_D, ENVIROFLEX_316_D)	single	3015	2 B	2
11_BNC-50-2-14/133_NH	22649839	U4 (K_02252_D, ENVIROFLEX_316_D)	bulk 100 pcs.			
11_BNC-50-2-16/133_NE	22544026	U3 (G_01130_HT)	single	27057	2 C	
11_BNC-50-2-16/133_NH	22648466	U3 (G_01130_HT)	bulk 100 pcs.			
11_BNC-50-3-87/133_NE	84057578	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	3015	2 B	2
11_BNC-50-3-87/133_NH	84057579	U7 (RG_58_C/U, ENVIROFLEX_B58)	bulk 100 pcs.			
11_BNC-50-3-86/133_NE	84057576	U9 (RG_223_/U, ENVIROFLEX_B223)	single	27057	2 C	
11_BNC-50-3-86/133_NH	84057577	U9 (RG_223_/U, ENVIROFLEX_B223)	bulk 100 pcs.			
11_BNC-50-3-36/133_NE	22540089	U13 (G_03130_HT)	single	3015	2 B	
11_BNC-50-3-88/133_NE	84057580	U11, U41 (RG_400_/U, ENVIROFLEX_400)	single			
11_BNC-50-3-88/133_NH	84057581	U11, U41 (RG_400_/U, ENVIROFLEX_400)	bulk 100 pcs.	27057	2 C	
11_BNC-50-4-4/133_NE	22540115	U16 (RG_59_B/U, RADOX_RF_59)	single			
11_BNC-50-4-4/133_NH	22648238	U16 (RG_59_B/U, RADOX_RF_59)	bulk 100 pcs.			

Series BNC 50 Ω – cable connectors

Straight cable plugs (male)

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554

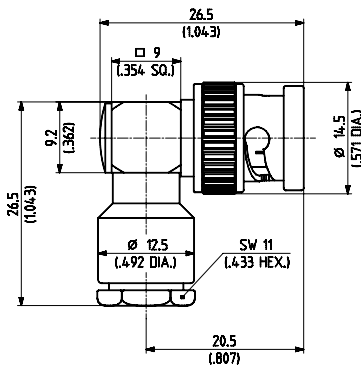


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
11_BNC-50-7-6/133_NE	22640863	U32, U43 (RG_214/U, ENVIROFLEX_B214)	single	3061	3 D
11_BNC-50-7-7/133_NE	22543766	U29, U42 (RG_213/U, RADOX_RF_213)			

Right angle cable plugs (male)

For flexible cables

- Cable entry clamp



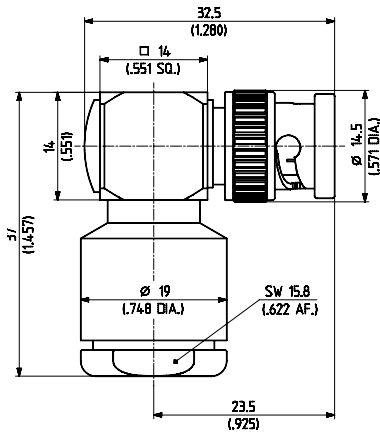
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
16_BNC-50-2-9/133_NE	84013192	U2 (RG_316_/U, ENVIROFLEX_316)	single	3024
16_BNC-50-3-25/133_NE	84013233	U7, U9 (RG_58_C/U, ENVIROFLEX_B58)		

Series BNC 50 Ω – cable connectors

Right angle cable plugs (male)

For flexible cables

- Cable entry clamp



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
16_BNC-50-7-6/133_NE	22651588	U29 (RG_213_/U, RADOX_RF_213) U32 (RG_214_/U, ENVIROFLEX_B214)	single	27121

For flexible cables

- Cable entry crimp
- Center contact soldered
- Taper sleeves see page 554

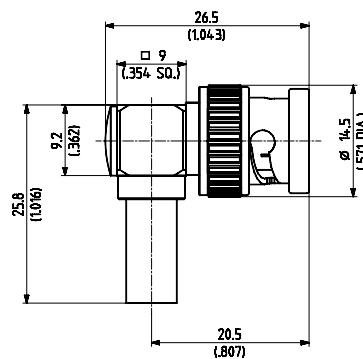
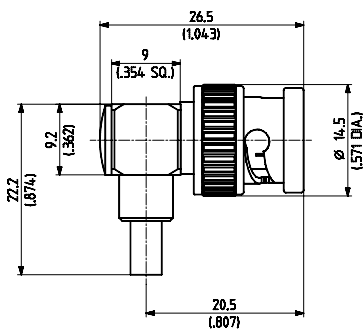


Fig. 1

Fig. 2

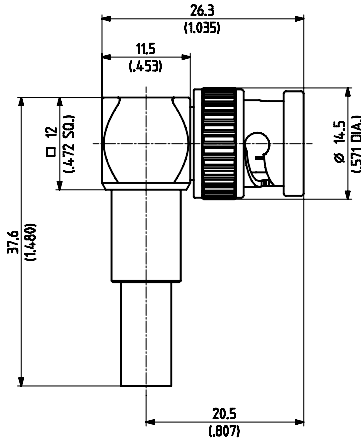
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Fig.
16_BNC-50-2-3/133_NE	22540168	U2 (RG_316_/U, ENVIROFLEX_316)	single	3079	A	1
16_BNC-50-2-3/133_NH	22648628		bulk 100 pcs.			
16_BNC-50-2-5/133_NE	22540169	U4 (K_02252_D, ENVIROFLEX_316_D)	single	3058	B	2
16_BNC-50-2-5/133_NH	22650221		bulk 100 pcs.			
16_BNC-50-3-5/133_NE	22540185	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	3079	A	1
16_BNC-50-3-7/133_NE	22540192	U9, U11; U39 (RG_400_/U, ENVIROFLEX_400)	single			
16_BNC-50-3-7/133_NH	22650222		bulk 100 pcs.			

Series BNC 50 Ω – cable connectors

Right angle cable plugs (male)

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554

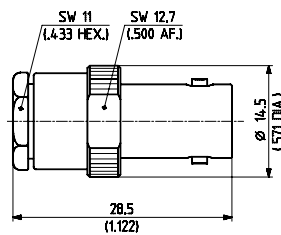


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
16_BNC-50-3-13/133_NE	22540198	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	3015	2 B

Straight cable jacks (female)

For flexible cables

- Cable entry clamp



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
21_BNC-50-2-1/133_NE	22540228	U2 (RG_316_/U, ENVIROFLEX_316)	single	3005
21_BNC-50-3-12/133_NE	22540263	U7, U9 (RG_58_C/U, ENVIROFLEX_B58)		

Series BNC 50 Ω – cable connectors

Straight cable jacks (female)

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554

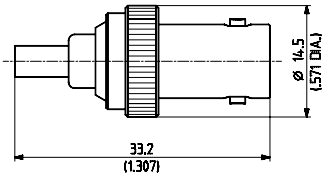


Fig. 1

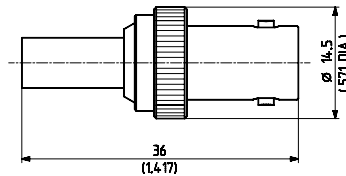


Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Fig.
21_BNC-50-1-4/133_NE	22641777	U1 (RG_178_B/U, ENVIROFLEX_178)	single	9068	1 A	1
21_BNC-50-2-9/133_NE	22641732	U2 (RG_316_/U, ENVIROFLEX_316)				
21_BNC-50-2-10/133_NE	22641779	U4 (K_02252_D, ENVIROFLEX_316_D)				
21_BNC-50-3-27/133_NE	84057699	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	0000231215	2 B	2
21_BNC-50-3-28/133_NE	84057722	U9, U39 (RG_223_/U)		0000231453		

Straight bulkhead cable jacks (female)

For semi-rigid cables

- Cable entry soldered
- Insulating washers see page 556
- With panel seal

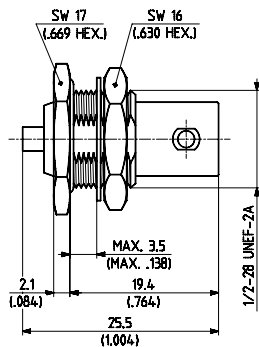


Fig. 1

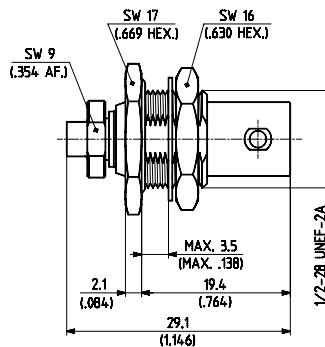


Fig. 2



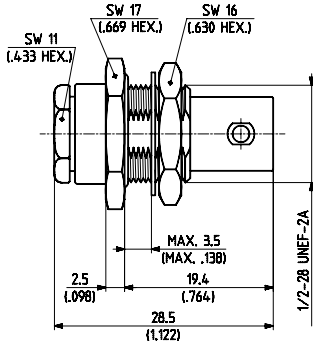
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Fig.
24_BNC-50-2-20/133_NE	22641886	Y3, Y11, Y16 (SR_86)	single	9100	ML 4	1
24_BNC-50-3-33/133_NE	22641923	Y5, Y12, Y17 (SR_141)		9005		

Series BNC 50 Ω – cable connectors

Straight bulkhead cable jacks (female)

For flexible cables

- Cable entry clamp
- With panel seal
- Insulating washers see page 556



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole
24_BNC-50-1-1/133_NE	22540362	U1 (RG_178_B/U, ENVIROFLEX_178)	single	3005	ML 4
24_BNC-50-2-1/133_NE	22540365	U2 (RG_316_/U, ENVIROFLEX_316)			
24_BNC-50-3-5/133_NE	22540385	U7, U9 (RG_58_C/U, ENVIROFLEX_B58)			

For flexible cables

- HUBER+SUHNER full crimp
- With panel seal
- Insulating washers see page 556
- Taper sleeves see page 554

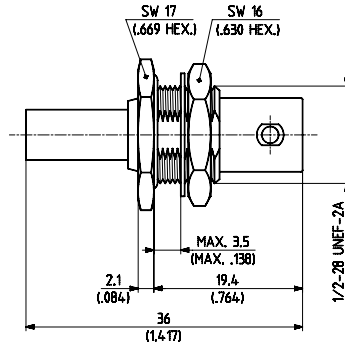
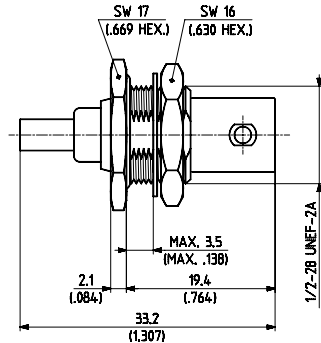


Fig. 1

Fig. 2



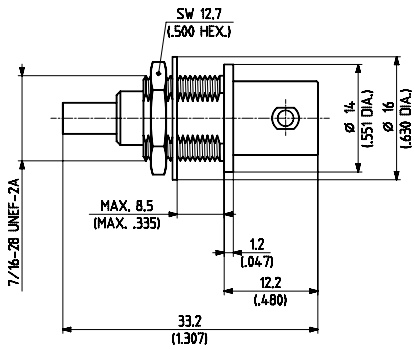
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction/ Mounting hole	Crimp insert	Fig.
24_BNC-50-1-6/133_NE	22641781	U1 (RG_178_B/U, ENVIROFLEX_178)	single	9068/ML 4	1 A	1
24_BNC-50-1-6/133_NH	84011438		bulk 100 pcs.			
24_BNC-50-2-45/133_NE	84057863	U2 (RG_316_/U, ENVIROFLEX_316)	single	3015/ML 4	2 B	2
24_BNC-50-2-45/133_NH	84057864		bulk 100 pcs.			
24_BNC-50-2-46/133_NE	84057872	U4 (K_02252_D, ENVIROFLEX_316_D)	single	3015/ML 4	2 B	2
24_BNC-50-2-46/133_NH	84057873		bulk 100 pcs.			
24_BNC-50-3-1/133_NE	22540378	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	3015/ML 4	2 B	2
24_BNC-50-3-8/133_NE	22540389	U9 (RG_223_/U, ENVIROFLEX_B223)	single			
24_BNC-50-3-25/133_NE	22658913	U11 (RG_400_/U, ENVIROFLEX_400)	single	3015/ML 4	2 B	2
24_BNC-50-3-25/133_NH	22660362		bulk 100 pcs.			

Series BNC 50 Ω – cable connectors

Straight bulkhead cable jacks (female)

For flexible cables

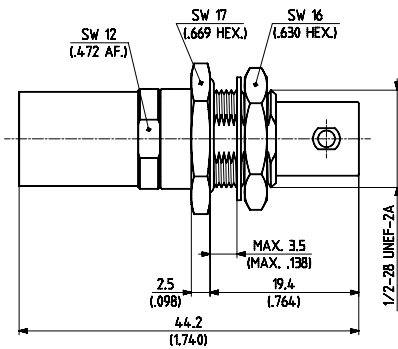
- HUBER+SUHNER full crimp
- Taper sleeves see page 554
- Front mounting
- Without panel seal



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert
24_BNC-50-2-29/133_NE	22648682	U2 (RG_316_/U, ENVIROFLEX_316)	single	9068	ML 3	1 A

For flexible cables

- HUBER+SUHNER full crimp
- With panel seal
- Insulating washers see page 556
- Taper sleeves see page 554



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert
24_BNC-50-7-3/133_NE	22540415	U29, U42 (RG_213_/U, RADOX_RF_213)	single	9121	ML 4	3 D

Series BNC 50 Ω – cable connectors

Straight panel cable jacks (female)

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554

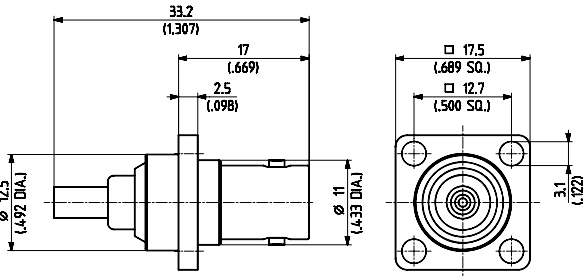


Fig. 1

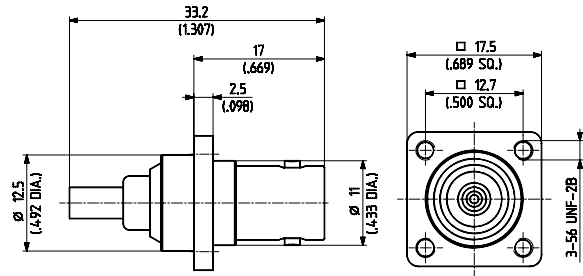


Fig. 2

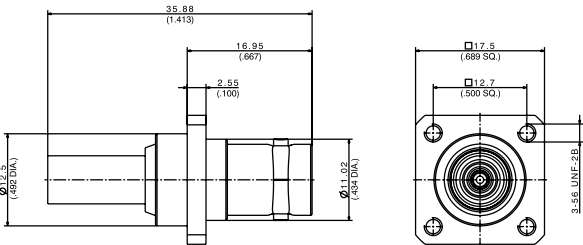


Fig. 3



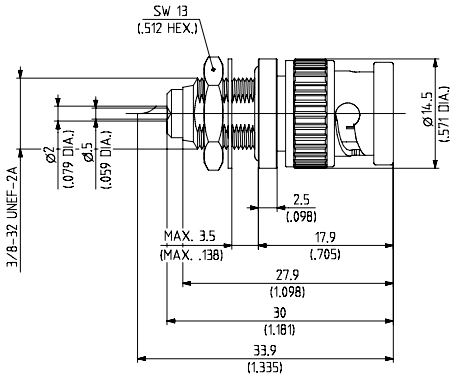
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert	Fig.
25_BNC-50-2-13/133_NE	22641919	U2 (RG_316_/U, ENVIROFLEX_316)	single	9068	ML 8	1 A	2 ¹⁾
25_BNC-50-2-14/133_NE	22641924						1
25_BNC-50-2-16/133_NE	22641795	U4 (K_02252_D, ENVIROFLEX_316_D)					
25_BNC-50-3-39/133_NE	84057974	U7 (RG_58_C/U, ENVIROFLEX_B58)		0000231565		2 B	3

¹⁾ Mounting also possible with screws ISO M 2.5.

Series BNC 50 Ω – receptacles with solder end

Receptacles, plugs (male)

- Bulkhead mounted
- Insulating washers see page 556
- Solder tags see page 557



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Panel thickness	Notes
12_BNC-50-0-1/133_NE	22540154	single	ML 2	max. 3.5 mm	with panel seal

Receptacles, jacks (female)

- Bulkhead mounted
- Insulating washers see page 556
- Solder tags see page 557

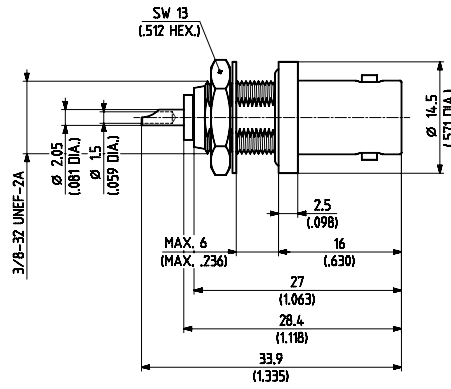
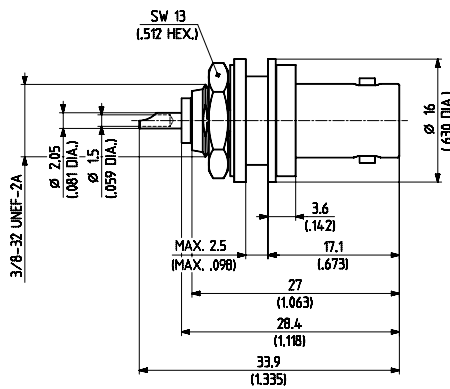


Fig. 1

Fig. 2

HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Fig.	Notes
22_BNC-50-0-2/133_NE	22540293	single	ML 102	1	insulated mounting ¹⁾
22_BNC-50-0-3/133_NE	22540301	single	ML 1	2	with panel seal
22_BNC-50-0-3/133_NH	22645500	bulk 100 pcs.			

¹⁾ equipped with insulating washers 77_Z-0-0-2 (not protected against rotation)

Series BNC 50 Ω – receptacles with solder end

Receptacles, jacks (female)

- Bulkhead mounted
- Insulating washers see page 556
- Solder tags see page 557

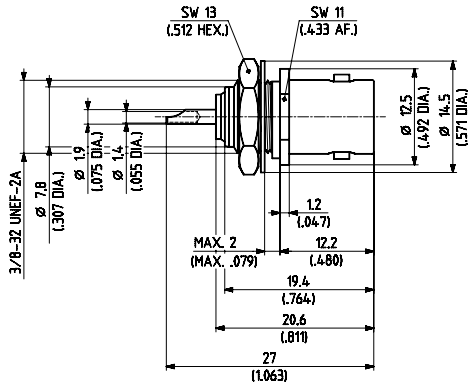


Fig. 1

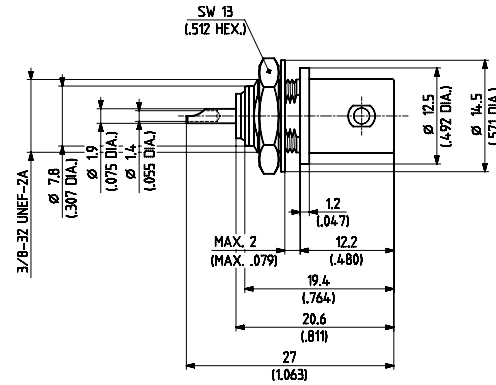


Fig. 2



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Fig.	Notes
22_BNC-50-0-4/133_NE	22540303	single	ML 3	1	not suitable for insulated mounting
22_BNC-50-0-5/133_NE	22540308	single	ML 2	2	suitable for insulated mounting
22_BNC-50-0-5/133_NH	22650242	bulk 100 pcs.			

- Bulkhead mounted
- Insulating washers see page 556
- Solder tags see page 557

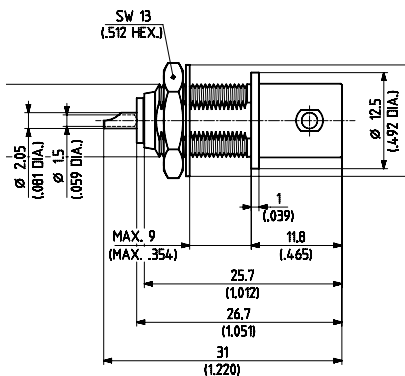


Fig. 1

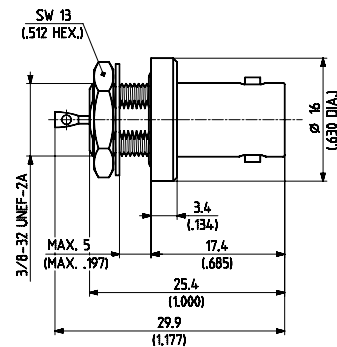


Fig. 2



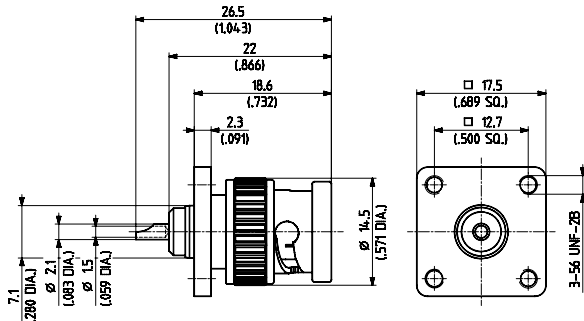
HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Fig.	Notes
22_BNC-50-0-16/133_NE	22540314	single	ML 2	1	suitable for insulated mounting
22_BNC-50-0-24/100_NE ¹⁾	22540321			2	hermetically sealed/body silver plated leak rate ≤ 10 ⁻⁶ Torr l/sec.(atm cc/s)

¹⁾ RoHS compliant alternative on request.

Series BNC 50 Ω – receptacles with solder end

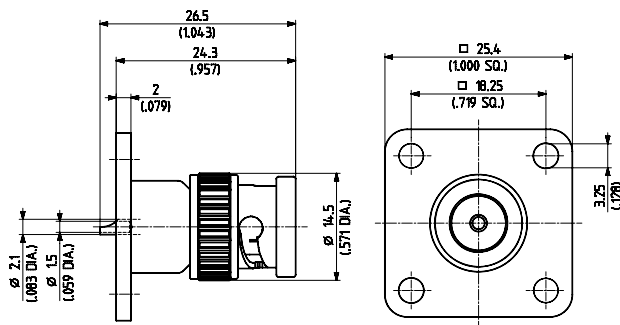
Receptacles, plugs (male)

- Panel mounted



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes
13_BNC-50-0-1/133_NE	22543470	single	ML 6	mounting also possible with screws ISO M 2.5

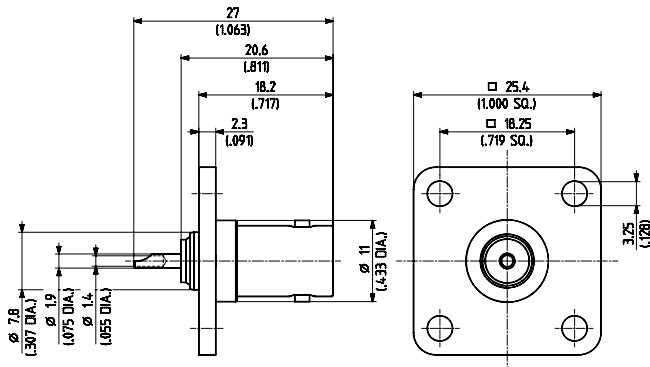
- Panel mounted



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes
13_BNC-50-0-2/133_NE	22540160	single	ML 5	suitable for Sucobox applications, see page 558

Receptacles, jacks (female)

- Panel mounted

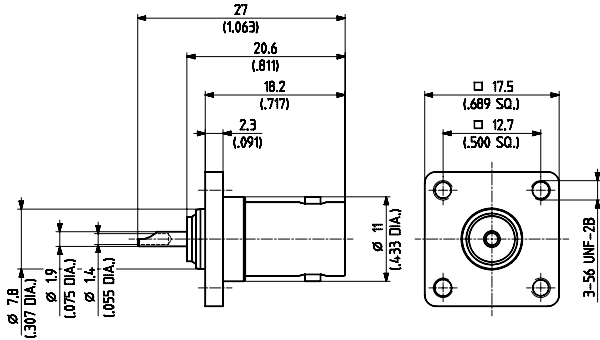


HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes
23_BNC-50-0-2/133_NE	22540333	single	ML 5	suitable for Sucobox applications, see page 558

Series BNC 50 Ω – receptacles with solder end

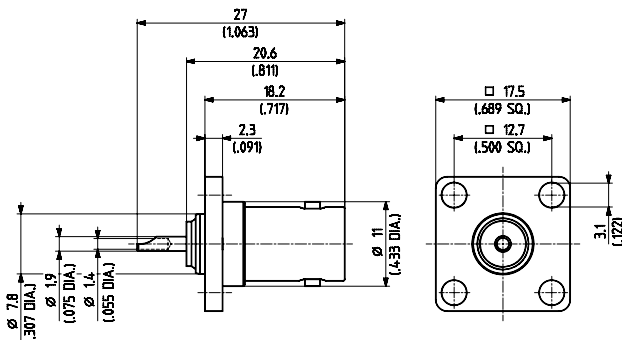
Receptacles, jacks (female)

- Panel mounted



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes
23_BNC-50-0-12/133_NE	22540349	single	ML 6	mounting also possible with screws ISO M 2.5

- Panel mounted

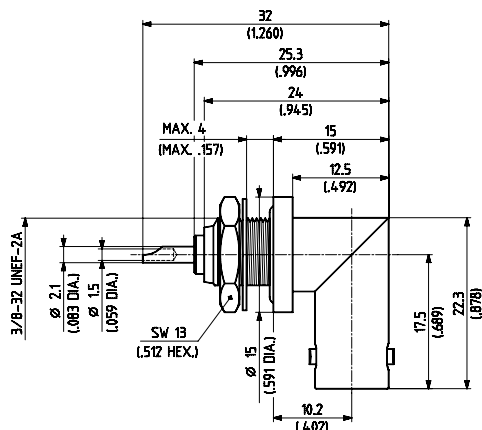


HUBER+SUHNER type	Item no.	Packaging	Mounting hole
23_BNC-50-0-16/133_NE	22540355	single	ML 6

Series BNC 50 Ω – receptacles with solder end

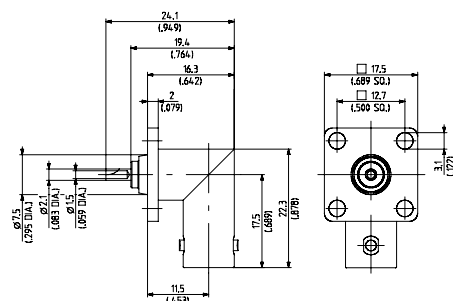
Right angle receptacles, jack (female)

- Bulkhead mounted
- With panel seal
- Insulating washers see page 556



HUBER+SUHNER type	Item no.	Packaging	Mounting hole
27_BNC-50-0-1/133_NE	22540492	single	ML 2

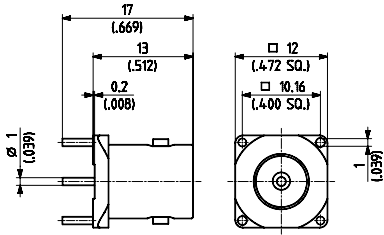
- Panel mounted



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes
28_BNC-50-0-2/133_NE	22540500	single	ML 6	fastening hole d = 3.1 mm/0.12 in

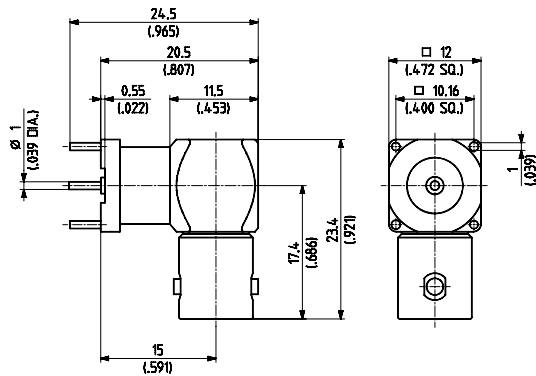
Series BNC 50 Ω – PCB connectors

Straight PCB jacks (female)



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes
82_BNC-50-0-1/133_NE	22645779	single	ML 49	plating body: SUCOPLATE®
82_BNC-50-0-1/133_NH	22543974	bulk 100 pcs.		
82_BNC-50-0-1/111_NH	23012124	bulk 100 pcs.		plating body: SUCOPRO® gold plating

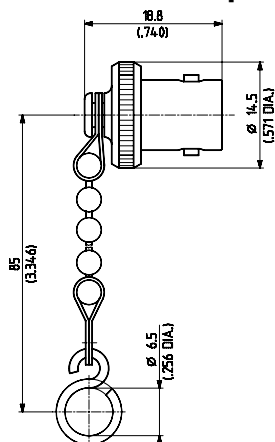
Right angle PCB jacks (female)



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes
85_BNC-50-0-1/133_NE	22540736	single	ML 49	plating body: SUCOPLATE®

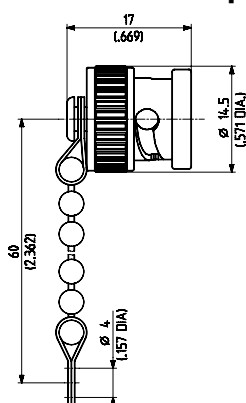
Series BNC 50 Ω – protective caps and shorts

Protective cap for plugs (male)



HUBER+SUHNER type	Item no.	Packaging	Notes
61_BNC-0-0-1/-33_-E	22540660	single	with chain and loop

Protective caps for jacks (female)



HUBER+SUHNER type	Item no.	Packaging	Notes
62_BNC-0-0-1/-33_-E	22540666	single	protective cap with chain
64_BNC-50-0-1/133_NE	22540681		short circuit with chain

Protective caps for jacks (female)

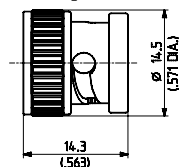
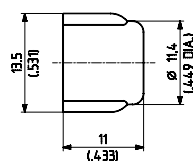


Fig. 1

Fig. 2

HUBER+SUHNER type	Item no.	Packaging	Fig.	Notes
62_BNC-0-0-2/---_H	22540667	bulk 100 pcs.	1	made of plastic
62_BNC-0-0-3/-33_-E	22540669	single	2	

Series BNC 75 Ω – coaxial miniature connectors

Description

HUBER+SUHNER BNC 75 Ω featuring a two stud bayonet coupling mechanism which is particularly useful for frequently coupled and uncoupled RF connections. At frequencies up to 1 GHz the small impedance deviation is negligible for most applications.

Compatibility

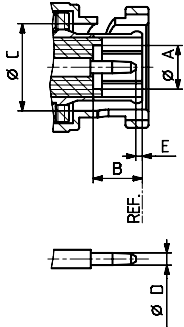
75 Ω BNC connectors and 50 Ω BNC connectors are intermateable without any restrictions.

Contents

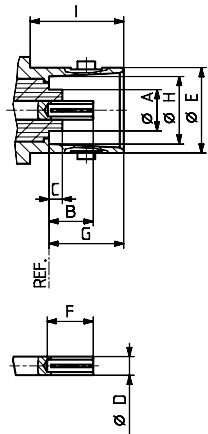
Description	343
Compatibility	343
Interface dimensions in mm/inches	343
Technical data	344
Cable connectors	345
Receptacles with solder end	349
PCB connectors	351
Protective caps and shorts	352

Interface dimensions (mm/inches)

Plug (male)



Jack (female)



	Plug		Jack	
	min.	max.	min.	max.
A	4.83/0.190	4.97/0.196	–	4.72/0.186
B	5.28/0.208	5.79/0.228	4.72/0.186	5.23/0.206
C	9.78/0.385	9.91/0.390	1.50/0.059 nom.	
D	1.32/0.052	1.37/0.054	2.10/0.827 nom.	
E	0.08/0.003	1.02/0.040	9.60/0.378	9.70/0.382
F	–	4.95/0.195	–	–
G	–	8.35/0.328	8.48/0.334	–
H	–	–	8.10/0.319	8.15/0.321
I	–	–	10.60/0.417	–

Interface dimensions conformable to the standards:

International: IEC 61169-8

Series BNC 75 Ω – technical data

Electrical data	Requirements
Impedance	75 Ω
Frequency range	DC to 1 GHz
Dielectric withstanding voltage (at sea level)	1.5 kV rms, 50 Hz (depending on cable)
Working voltage (at sea level)	500 V rms, 50 Hz (depending on cable)
Insulation resistance	≥ 5 · 10 ⁵ MΩ
Contact resistance	
· Centre contact	≤ 1.5 mΩ
· Outer contact	≤ 1 mΩ
RF leakage (measured at 1 GHz)	≥ 55 dB

Mechanical data	Requirements
Coupling nut torque	7 to 28 Ncm/0.6 to 2.5 in lbs
Coupling nut retention force	≥ 450 N/101.2 lbs
Contact captivation	≥ 27 N/6.1 lbs
Cable retention force ¹⁾	see pages 32 – 41
Durability (matings)	≥ 500

Environmental data	Requirements
Temperature range	–65 to +165 °C/–85 to +329 °F
Climatic category	IEC → 55/155/21
Thermal shock	MIL-STD-202, method 107, condition B
Moisture resistance	MIL-STD-202, method 106
Corrosion	saltspray test acc. to MIL-STD-202, method 101, condition B
Vibration	MIL-STD-202, method 204, condition B
Shock	MIL-STD-202, method 213, condition G

Material data		
Connector parts	Material	Plating
Bodies	brass	SUCOPLATE®/SUCOPRO® gold plating
Pin contacts	brass	gold/SUCOPRO® gold plating
Socket contacts	copper-beryllium alloy copper alloy	gold/SUCOPRO® gold plating
Crimp ferrules	copper/brass	SUCOPLATE®
Insulators	PTFE or PFA	
Gaskets	silicone rubber	

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

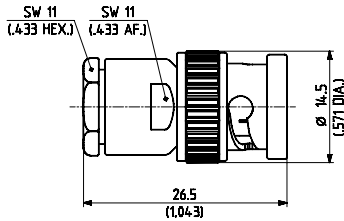
¹⁾ Value considers maximum load of the cables without irreversible variations of specifications.

Series BNC 75 Ω – cable connectors

Straight cable plugs (male)

For flexible cables

- Cable entry clamp
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
11_BNC-75-2-1/133_NE	22543768	U5 (RG_179_B/U, ENVIROFLEX_179)	single	3005
11_BNC-75-4-3/133_NE	22540758	U6 (RG_59_B/U, RADOX_RF_59)		

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554

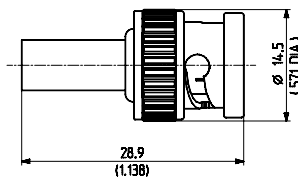
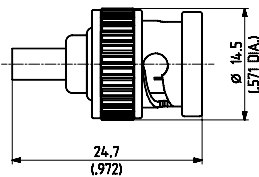


Fig. 1

Fig. 2

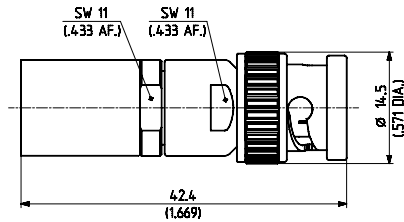
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Fig.
11_BNC-75-2-15/133_NE	22641685	U5 (RG_179_B/U, ENVIROFLEX_179)	single	9068	1 A	1
11_BNC-75-2-15/133_NH	22644586		bulk 100 pcs.			
11_BNC-75-3-8/133_NE	22540707	U12 (G_03233)	single	3015	2 B	2
11_BNC-75-3-9/133_NE	22540709	U14 (G_03213_D)	single			
11_BNC-75-4-4/133_NE	22540761	U16 (RG_59_B/U, RADOX_RF_59)	single			
11_BNC-75-4-4/133_NH	22544846		bulk 100 pcs.			
11_BNC-75-4-6/133_NE	22540765	U18 (G_04133_D)	single	3015	2 C	2
11_BNC-75-4-6/133_NH	22540766		bulk 100 pcs.			
11_BNC-75-4-30/133_NE	22544636	U17 (S_04233)	single	3015	2 C	2

Series BNC 75 Ω – cable connectors

Straight cable plugs (male)

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
11_BNC-75-7-5/133_NE	22540811	U34 (RG_11_A/U)	single	9120	2D
11_BNC-75-7-6/133_NE	22543960	U36 (G_07273_D)			

Right angle cable plugs (male)

For flexible cables

- Cable entry crimp
- Centre contact soldered
- Taper sleeves see page 554

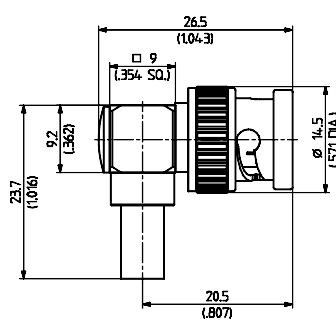
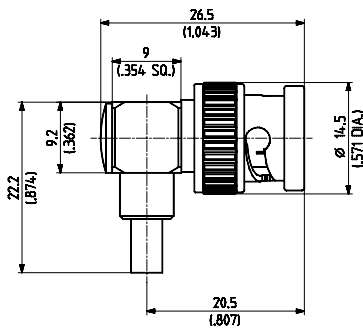


Fig. 1

Fig. 2

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Fig.
16_BNC-75-2-3/133_NE	22540820	U5 (RG_179_B/U, ENVIROFLEX_179)	single	3079	A	1
16_BNC-75-4-4/133_NE	22540840	U16 (RG_59_B/U, RADOX_RF_59)		3058	C	2

Series BNC 75 Ω – cable connectors

Straight cable jacks (female)

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554

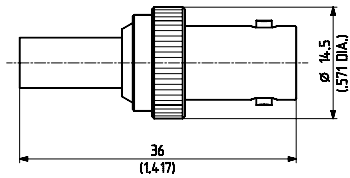


Fig. 1

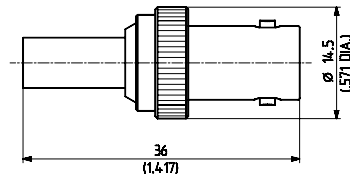


Fig. 2

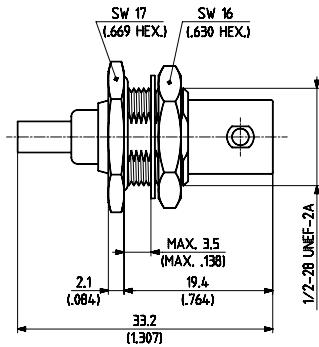


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Fig.
21_BNC-75-2-5/133_NE	22641780	U5 (RG_179_B/U, ENVIROFLEX_179)	single	9068	1A	1
21_BNC-75-4-4/133_NE	22540872	U16 (RG_59_B/U, RADOX_RF_59)	single	3015	2 C	2

Straight bulkhead cable jacks (female)

For flexible cables

- HUBER+SUHNER full crimp
- With panel seal
- Insulating washers see page 556
- Taper sleeves see page 554



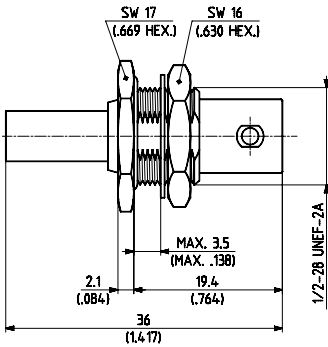
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert
24_BNC-75-2-6/133_NE	22641786	U5 (RG_179_B/U, ENVIROFLEX_179)	single	9068	ML 4	1A
24_BNC-75-2-6/133_NH	22644569	U5 (RG_179_B/U, ENVIROFLEX_179)	bulk 100 pcs.	9068	ML 4	1A

Series BNC 75 Ω – cable connectors

Straight bulkhead cable jacks (female)

For flexible cables

- HUBER+SUHNER full crimp
- With panel seal
- Insulating washers see page 556
- Taper sleeves see page 554



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert
24_BNC-75-4-3/133_NE	22540930	U16 (RG_59_B/U, RADOX_RF_59)	single	3015	ML 4	2 C

Straight panel cable jacks (female)

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554

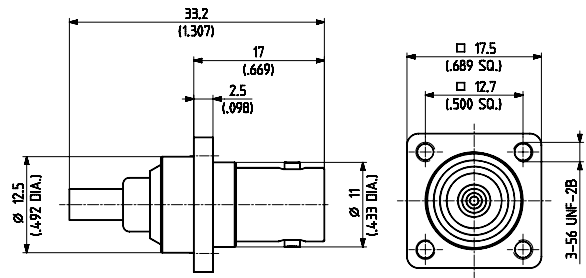
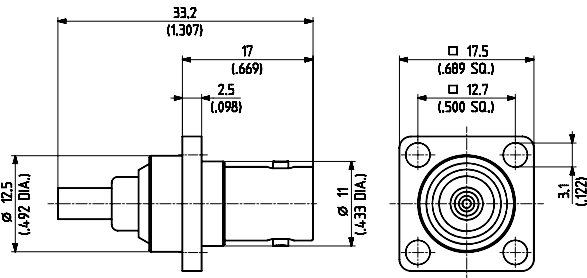


Fig. 1

Fig. 2

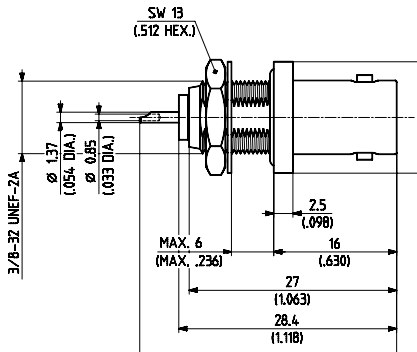
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Fig.
25_BNC-75-2-7/133_NE	22641790	U5 (RG_179_B/U, ENVIROFLEX_179)	single	9068	1 A	1
25_BNC-75-2-8/133_NE	22641791					2 ¹⁾

¹⁾ mounting also possible with screws ISO M 2.5

Series BNC 75 Ω – receptacles with solder end

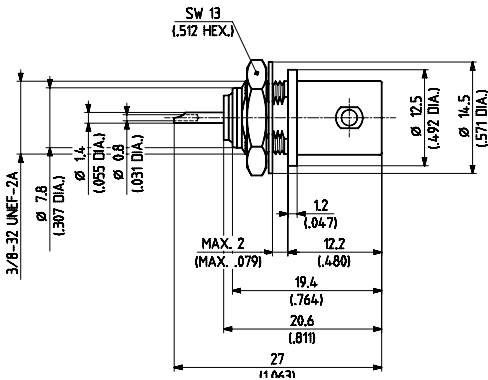
Receptacles, jacks (female)

- Bulkhead mounted
- With panel seal
- Solder tags see page 557
- Insulating washers see page 556



HUBER+SUHNER type	Item no.	Packaging	Mounting hole
22_BNC-75-0-1/133_NE	22540883	single	ML 1

- Bulkhead mounted
- Solder tags see page 557
- Insulating washers see page 556

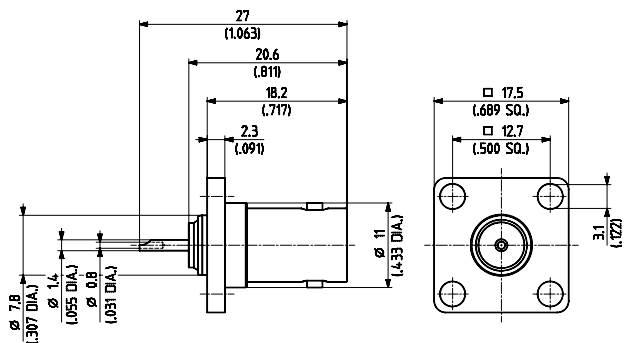


HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes
22_BNC-75-0-4/133_NE	22540889	single	ML 2	without panel seal

Series BNC 75 Ω – receptacles with solder end

Receptacles, jacks (female)

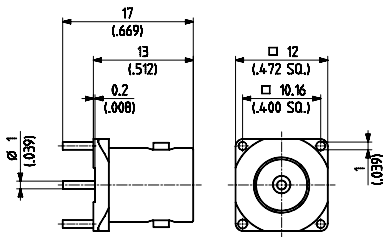
- Panel mounted



HUBER+SUHNER type	Item no.	Packaging	Mounting hole
23_BNC-75-0-10/133_NE	22540906	single	ML 6

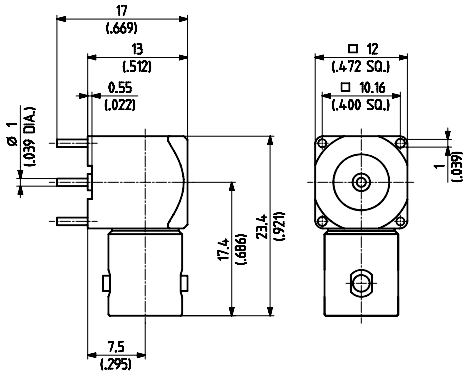
Series BNC 75 Ω – PCB connectors

Straight PCB jacks (female)



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Plating body
82_BNC-75-0-2/122_NE	22643586	single	ML 49	nickel
82_BNC-75-0-2/122_NH	22646624	bulk 100 pcs.		

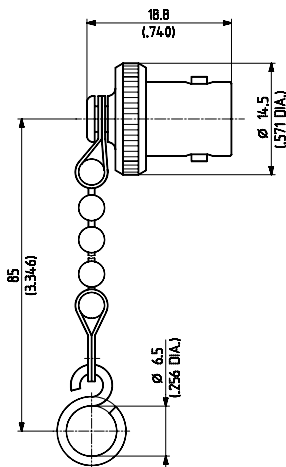
Right angle PCB jacks (female)



HUBER+SUHNER type	Item no.	Packaging	Mounting hole
85_BNC-75-0-1/133_NE	22641623	single	ML 49

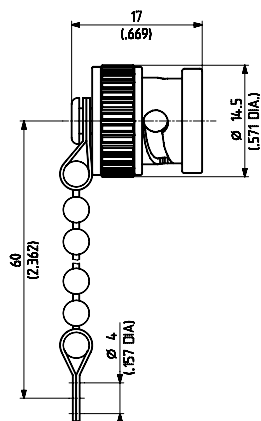
Series BNC 75 Ω – protective caps and shorts

Protective cap for plugs (male)



HUBER+SUHNER type	Item no.	Packaging	Notes
61_BNC-0-0-1/-33_-E	22540660	single	with chain and loop

Protective cap for jacks (female)



HUBER+SUHNER type	Item no.	Packaging	Notes
62_BNC-0-0-1/-33_-E	22540666	single	with chain

Series BNC 75 Ω – protective caps and shorts

Protective caps for jacks (female)

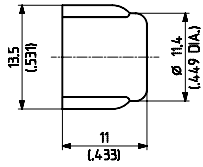


Fig. 1

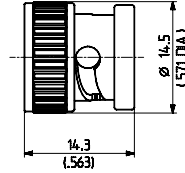
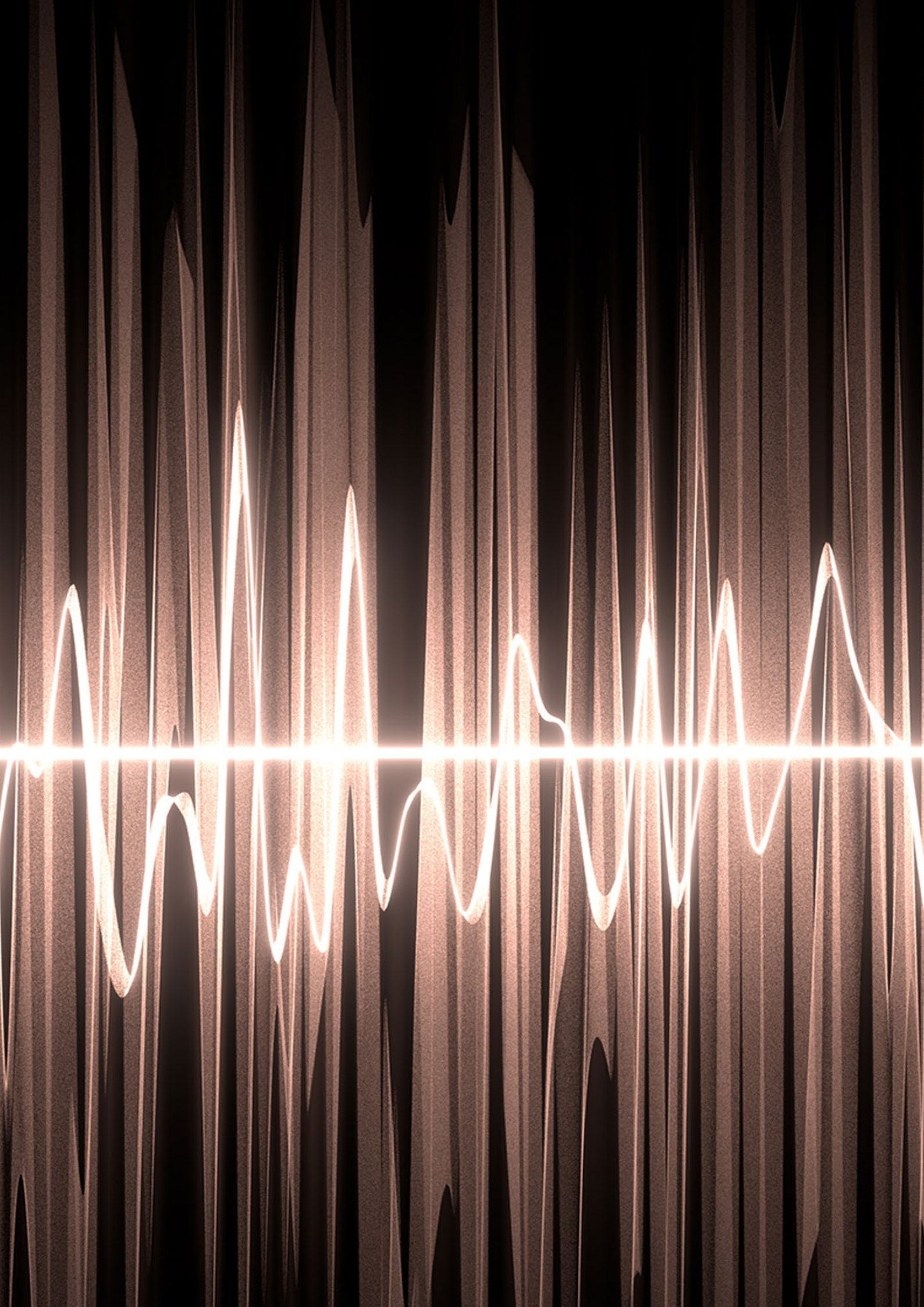


Fig. 2



HUBER+SUHNER type	Item no.	Packaging	Fig.	Notes
62_BNC-0-0-2/--_H	22540667	bulk 100 pcs.	1	made of plastic
62_BNC-0-0-3/-33_E	22540669	single	2	



Series BNC "real" 75 Ω connectors

Description

"Real" 75 Ω BNC connectors are suitable for applications up to 3 GHz, contrary to the conventional 75 Ω BNC connector types, which are applicable up to 1 GHz only. With our HUBER+SUHNER full crimp technique, they can be assembled quick and easy to all convenient cable types. Thanks to good electrical properties they are suitable for different applications, such as broadcast, telecommunication, etc.

Content

Description	355
Compatibility	355
Properties	355
Benefits	355
Technical data	357
Cable connectors	358

Compatibility

Mechanically they are mateable with all conventional BNC connectors (50 Ω and 75 Ω).

Properties

- True 75 Ω impedance
- DC to 3 GHz
- Good return loss properties

Benefits

- Fast and easy mounting (HUBER+SUHNER full crimp)
- Intermateable with standard BNC 50 Ω and BNC 75 Ω connectors



Series BNC "real" 75 Ω – technical data

Electrical data	Requirements
Impedance	75 Ω
Frequency range	DC to 3 GHz
Return loss	see table below
Dielectric withstanding voltage (at sea level)	1.5 kV rms, 50 Hz (depending on cable)
Working voltage (at sea level)	500 V rms, 50 Hz (depending on cable)
Insulation resistance	≥ 5 · 10 ³ MΩ
Contact resistance · Centre conductor · Outer conductor	≤ 1.5 mΩ ≤ 1.0 mΩ

Connector type	Typical RL (dB) values			Cable
	1 GHz	2 GHz	3 GHz	
Straight cable plugs (11_BNC-75-..)	30	28	24	Draka 0.6/2.8
	30	28	24	Draka 0.8/3.7 AF
	30	28	–	G_04233_D ¹⁾
	30	28	24	Draka 1.0/4.8 AF
Right angle cable plug (16_BNC-75-..)	28	21	–	G_04233_D ¹⁾
Straight bulkhead cable jacks (24_BNC-75-..)	35	24	24	Draka 0.8/3.7 AF
	30	25	–	G_04233_D ¹⁾
	35	26	24	Draka 1.0/4.8 AF

Mechanical data	Requirements
Coupling nut torque	7 to 28 Ncm/0.6 to 2.5 in lbs
Coupling nut retention force	≥ 450 N/101.2 lbs
Contact captivation	≥ 27 N/6.1 lbs
Durability (matings)	500

Environmental data	Requirements
Temperature range	–65 to +165 °C/–85 to +329 °F
Climatic category IEC	55/155/21
Thermal shock	MIL-STD-202, method 107, condition B
Moisture resistance	MIL-STD-202, method 106
Corrosion	Saltspray test acc. to MIL-STD-202, method 101, condition B
Vibration	MIL-STD-202, method 204, condition B
Shock	MIL-STD-202, method 213, condition G

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

¹⁾ For applications up to 2 GHz

Series BNC "real" 75 Ω – technical data

Material data		
Connector part	Material	Plating
Bodies	brass/spring bronze	SUCOPLATE®
Pin contacts	brass	gold/SUCOPRO® gold plating
Socket contacts	copper-beryllium alloy	gold/SUCOPRO® gold plating
Crimp ferrules	copper	SUCOPLATE®
Insulators	PTFE or PFA	
Gaskets	silicon rubber	

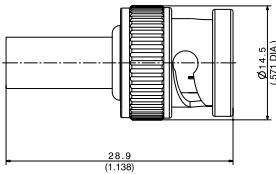
Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Series BNC "real" 75 Ω – cable connectors

Straight cable plugs (male)

For flexible cables

- Cable entry clamp
- HUBER+SUHNER full crimp



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert ¹⁾
11_BNC-75-3-38/133_NE	84070521	Draka 0.6/2.8	single	0000270344	76_Z-0-3-26
11_BNC-75-4-40/133_NE	84112535	U18 (G_04133_D)		0000270231	76_Z-0-4-24

¹⁾ Suitable for the large HUBER+SUHNER crimping tool

Series BNC "real" 75 Ω – cable connectors

Straight bulkhead cable jacks (female)

For flexible cables

- HUBER+SUHNER full crimp
- Mounting hole ML 4
- Panel thickness max. 3.5 mm

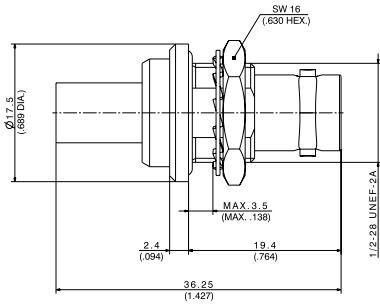


Fig. 1

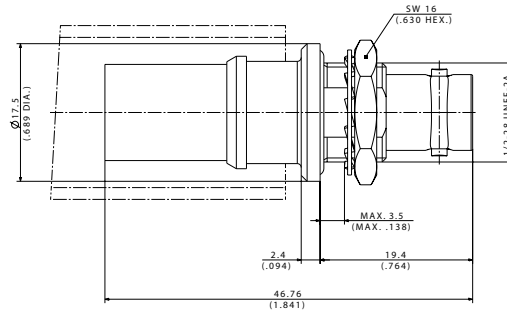
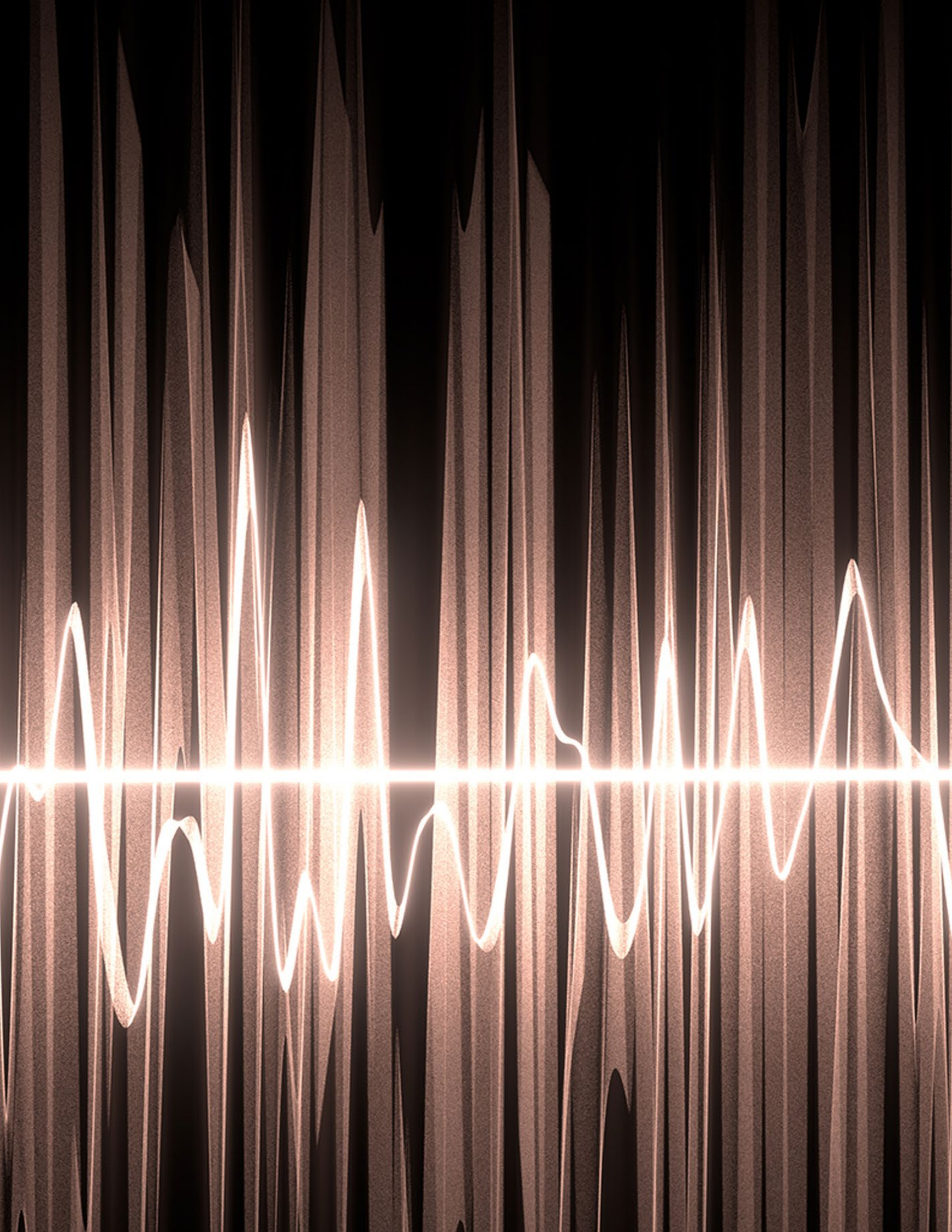


Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert ¹⁾	Fig.
24_BNC-75-4-18/133_NE	84135127	Draka 0.8/3.7 AF	single	0000365601	76_Z-0-4-24	1
24_BNC-75-7-5/133_NE	85025799	X33 (SPUMA_400-FR-75)		0000468773	76_Z-0-7-1	2

¹⁾ Suitable for the large HUBER+SUHNER crimping tool



Series TNC 50 Ω – coaxial miniature connectors

Description

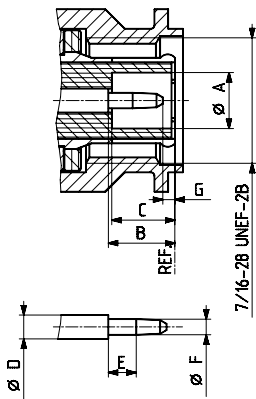
HUBER+SUHNER TNC connectors are threaded RF connectors applicable from DC up to 11 GHz. The threaded coupling mechanism improves control over the interface dimensions and allows them to be used under a higher environmental load than BNC, especially under a high vibration load.

Compatibility

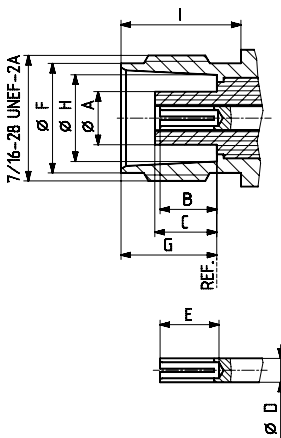
50 Ω TNC connectors and 75 Ω TNC connectors are intermateable without restrictions.

Interface dimensions (mm/inches)

Plug (male)



Jack (female)



Content

Description	361
Compatibility	361
Interface dimensions in mm/inches	361
Technical data	362
Cable connectors	363
Receptacles with solder end	372
Protective caps and shorts	375

	Plug		Jack	
	min.	max.	min.	max.
A	4.83/0.190	–	–	4.72/0.186
B	5.33/0.210	5.84/0.230	4.72/0.186	5.23/0.206
C	5.28/0.208	5.79/0.228	4.78/0.188	5.28/0.208
D	2.06/0.081	2.21/0.087	2.06/0.081	2.21/0.087
E	1.98/0.078	–	4.95/0.195	–
F	1.32/0.052	1.37/0.054	9.60/0.378	9.70/0.382
G	0.08/0.003	–	8.31/0.327	8.51/0.335
H	–	–	8.10/0.319	8.15/0.321
I	–	–	10.52/0.414	–

Interface dimensions conformable to the standards:

International:	IEC 60169-17
Europe:	CECC 22 200
USA:	MIL-PRF-39012
	TNC-Interface MIL-STD-348/313

Series TNC 50 Ω – technical data

Electrical data	Requirements
Impedance	50 Ω
Frequency range	DC to 11 GHz
Dielectric withstanding voltage (at sea level)	1.5 kV rms, 50 Hz (depending on cable)
Working voltage (at sea level) · Unmated	500 V rms, 50 Hz (depending on cable)
Insulation resistance	≥ 5 · 10 ⁵ MΩ
Contact resistance · Centre contact · Outer contact	≤ 1.5 mΩ ≤ 1 mΩ
RF leakage (between 2 and 3 GHz)	≥ 60 dB

Mechanical data	Requirements
Coupling nut torque · Recommended	46 to 69 Ncm/4.1 to 6.1 in lbs
Coupling nut retention force	≥ 450 N/101.2 lbs
Contact captivation	≥ 27 N/6.1 lbs
Cable retention force ¹⁾	see pages 32 – 41
Durability (matings)	≥ 500

Environmental data	Requirements
Temperature range	-65 to +165 °C/-85 to +329 °F
Climatic category	IEC → 55/155/21
Thermal shock	MIL-STD-202, method 107, condition B
Moisture resistance	MIL-STD-202, method 106
Corrosion	saltspray test acc. to MIL-STD-202, method 101, condition B
Vibration	MIL-STD-202, method 204, condition B
Shock	MIL-STD-202, method 213, condition G

Material data		
Connector parts	Material	Plating
Bodies	brass	SUCOPLATE®
Pin contacts	brass	gold/SUCOPRO® gold plating
Socket contacts	copper beryllium alloy copper alloy	gold/SUCOPRO® gold plating
Crimp ferrules	copper/brass	SUCOPLATE®
Insulators	PTFE or PFA	
Gaskets	silicone rubber	

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

¹⁾ Value considers maximum load of the cables without irreversible variations of specifications.
Cable groups see page 32

Assembly tools see page 565

Mounting holes/PCB layouts see page 591

Series TNC 50 Ω – cable connectors

Straight cable plugs (male)

For semi-rigid cables

- Cable entry soldered
- Centre contact soldered

1 security holes Ø 1/.039 DIA

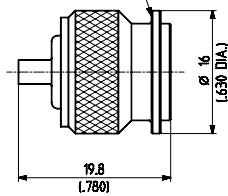


Fig. 1

3 security holes Ø 1/.039 DIA

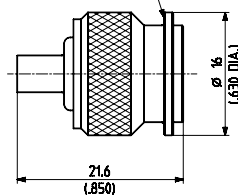


Fig. 2

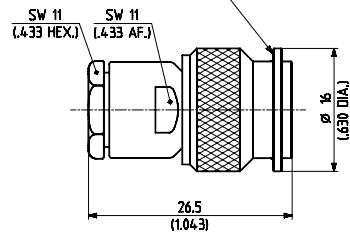


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Fig.	Notes
11_TNC-50-2-20/103_NE ¹⁾	22642519	Y3, Y11, Y16 (SR_86)	single	9100	1	
11_TNC-50-3-29/103_NE ¹⁾ 11_TNC-50-3-29/113_NE ¹⁾	22641997 22544841	Y5, Y12 (SR_141)		9106	2	outer contact silver outer contact gold

For flexible cables

- Cable entry clamp
- Centre contact soldered

3 security holes Ø 1/.039 DIA.



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
11_TNC-50-2-1/133_NE	22640783	U2 (RG_316_/U, ENVIROFLEX_316)	single	3005
11_TNC-50-3-5/133_NE	22640798	U7, U9, U11 (RG_58_C/U, ENVIROFLEX_B58)		3005
11_TNC-50-3-6/133_NE ¹⁾	22543475	U7, U9, U11 (RG_58_C/U, ENVIROFLEX_B58)		3004

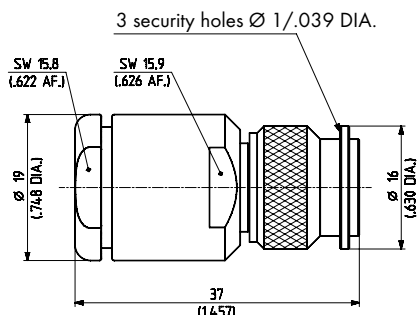
¹⁾ Centre contact NOT captivated

Series TNC 50 Ω – cable connectors

Straight cable plugs (male)

For flexible cables

- Cable entry clamp
- Centre contact soldered

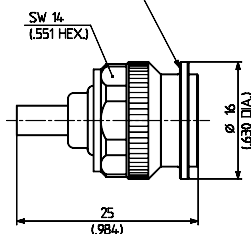


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
11_TNC-50-7-2/133_NE	22640466	U29 (RG_213_/U, RADOX_RF_213) U32 (RG_214_/U, ENVIROFLEX_B214)	single	3008

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554

3 security holes Ø 1/.039 DIA.



3 security holes Ø 1/.039 DIA.

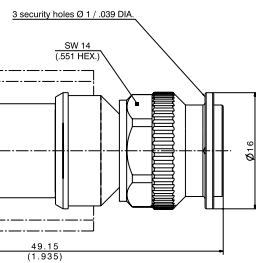
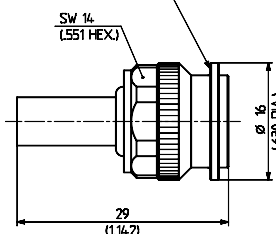


Fig. 1

Fig. 2

Fig. 3

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Fig.
11_TNC-50-2-112/133_NE	23001710	U2 (RG_316_/U, ENVIROFLEX_316)	single	27215	1 A	1
11_TNC-50-2-113/133_NE	23001711	U4 (K_02252_D, ENVIROFLEX_316_D)	single			
11_TNC-50-3-115/133_NE 11_TNC-50-3-115/133_NH	23001712 23001713	U9, U39 (RG_223_/U, ENVIROFLEX_B223)	single bulk 100 pcs.	3015	2 B	2
11_TNC-50-3-116/133_NE 11_TNC-50-3-116/133_NH	23001714 23001715	U7 (RG_58_C/U, ENVIROFLEX_B58)	single bulk 100 pcs.			
11_TNC-50-3-117/133_NE	23010015	U11, U41 (RG_400_/U, ENVIROFLEX_400)	single			
11_TNC-50-7-18/133_NE	84077868	U30, X32 (SPUMA_400, SPUMA_400-FR-01, SPUMA_400-RS-FR)	single	0000184567	4 D	3

Series TNC 50 Ω – cable connectors

Straight cable plugs (male)

For flexible cables

- Cable entry crimp
- Centre contact plugged

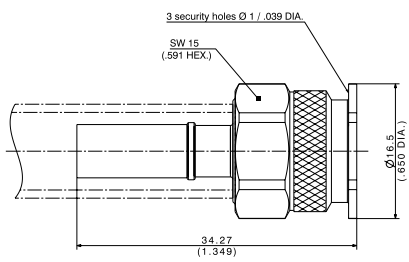


Fig. 1

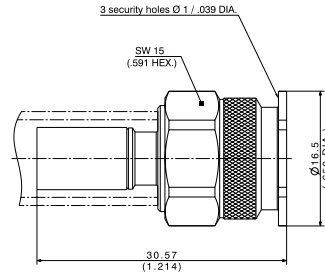


Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Fig.
11_TNC-50-3-120/133_NE	84010745	X27 (SPUMA_195, SPUMA_195-FR-01)	single	0000417754	B	1
11_TNC-50-4-77/133_NE	85010169	X28 (SPUMA_240, SPUMA_240-FR-01)		0000416857	C	2

Series TNC 50 Ω – cable connectors

Right angle cable plugs (male)

For flexible cables

- Cable entry clamp
- Centre contact soldered

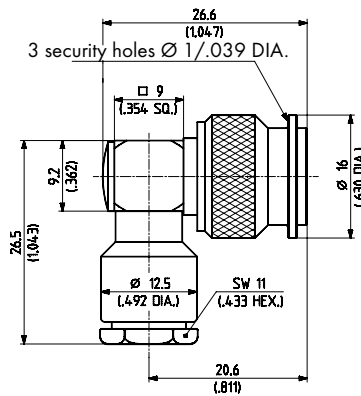


Fig. 1

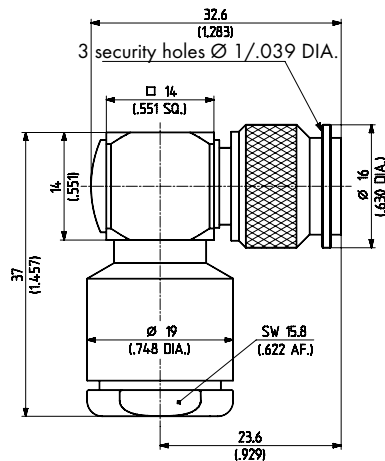


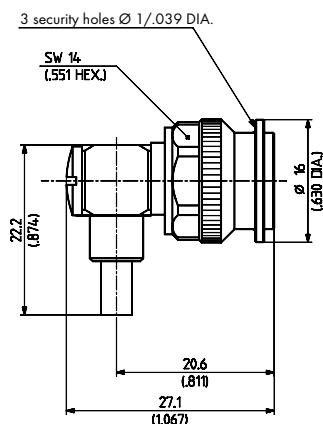
Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Fig.
16_TNC-50-3-28/133_NE	84012481	U7, U9, U11 (RG 58_C/U, ENVIROFLEX_B58)	single	3024	1
16_TNC-50-7-4/133_NE	22651587	U29 (RG_213_/U, RADOX_RF_213) U32 (RG 214_/U, ENVIROFLEX_B214)	single	3003	2

For flexible cables

- Cable entry crimp
- Centre contact soldered
- Taper sleeves see page 554



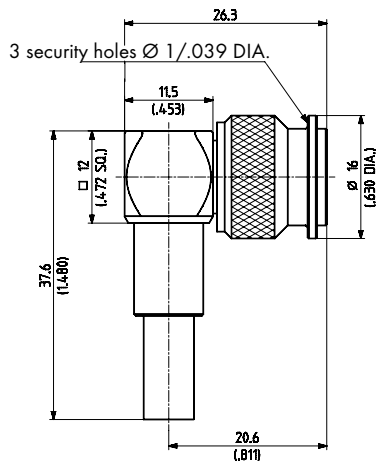
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
16_TNC-50-2-119/133_NE	23010087	U2 (RG_316_/U, ENVIROFLEX_316)	single	27216	A
16_TNC-50-2-7/133_NE	23001716	U4 (K_02252_D, ENVIROFLEX_316_D)			

Series TNC 50 Ω – cable connectors

Right angle cable plugs (male)

For flexible cables

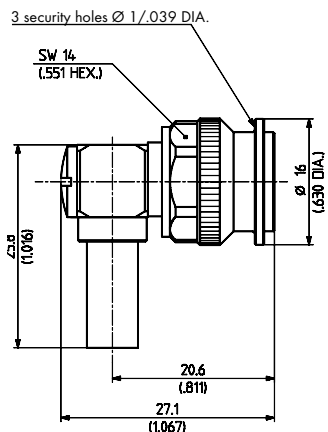
- HUBER+SUHNER full crimp
- Taper sleeves see page 554



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
16_TNC-50-3-13/133_NE	22640492	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	0000335265	2 B
16_TNC-50-3-18/133_NE	22543606	U9, U39 (RG_223_/U, ENVIROFLEX_B223)			

For flexible cables

- Cable entry crimp
- Centre contact soldered
- Taper sleeves see page 554



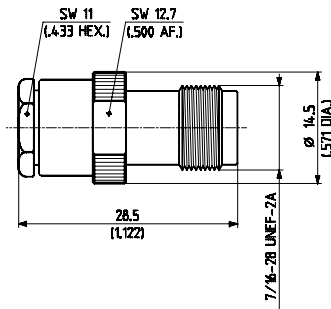
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
16_TNC-50-3-111/133_NE	23001717	U9 (RG_223_/U, ENVIROFLEX_B223)	single	27218	B
16_TNC-50-3-112/133_NE	23010115	U7 (RG_58_C/U, ENVIROFLEX_B58)	single		

Series TNC 50 Ω – cable connectors

Straight cable jacks (female)

For flexible cables

- Cable entry clamp
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
21_TNC-50-2-2/133_NE	22640515	U2 (RG_316_/U, ENVIROFLEX_316)	single	3005
21_TNC-50-3-4/133_NE	22640523	U7, U9 (RG_58_C/U, ENVIROFLEX_B58)		

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554

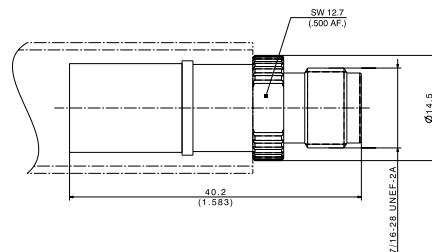
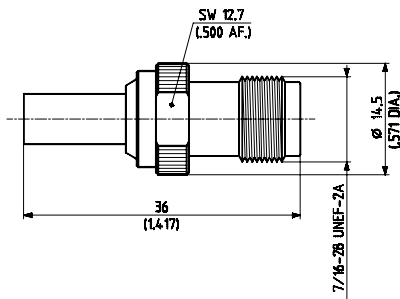


Fig. 1

Fig. 2

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Fig.
21_TNC-50-3-31/133_NE	84016544	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	0000231215	2 B	1
21_TNC-50-3-32/133_NE	84016601	U9, U39 (RG_223_/U, ENVIROFLEX_B223)		0000231453		
21_TNC-50-7-1/133_NE	84128527	U30, X32 (SPUMA_400, SPUMA_400-FR-01, SPUMA_400-RS-FR)	single	0000345941	4 D	2

Series TNC 50 Ω – cable connectors

Straight bulkhead cable jacks (female)

For semi-rigid cables

- Cable entry soldered
- With panel seal
- Insulating washers see page 556

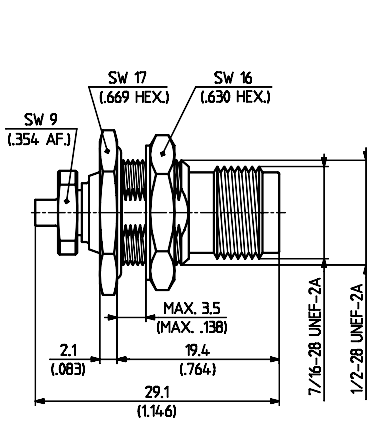


Fig. 1

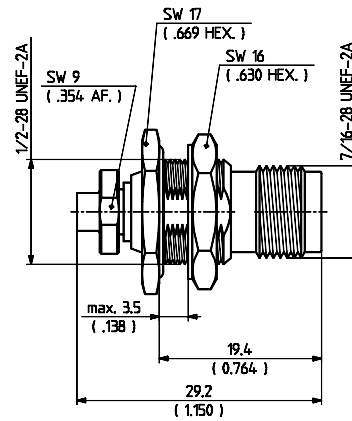


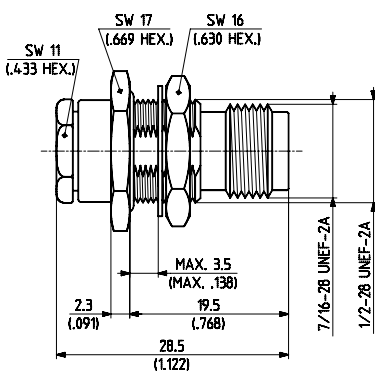
Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Fig.
24_TNC-50-2-31/133_NE ¹⁾	23001721	Y3, Y11 (SR_86)	single	27269	ML 4	1
24_TNC-50-3-30/133_NH ¹⁾	23001723	Y5, Y12 (SR_141)	bulk 100 pcs.	27220		2

For flexible cables

- Cable entry clamp
- Centre contact soldered
- With panel seal
- Insulating washers see page 556



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole
24_TNC-50-2-1/133_NE	22543398	U2 (RG_316_/U, ENVIROFLEX_316)	single	3005	ML 4

¹⁾ Centre contact NOT captivated.

Series TNC 50 Ω – cable connectors

Straight bulkhead cable jacks (female)

For flexible cables

- HUBER+SUHNER full crimp
- With panel seal
- Taper sleeves see page 554
- Insulating washers see page 556

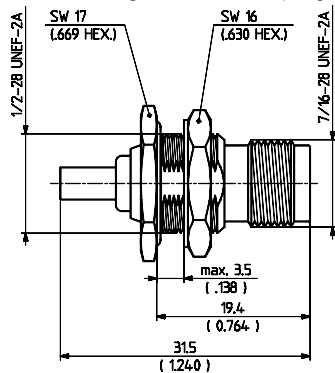


Fig. 1

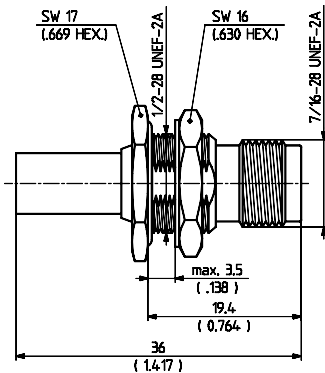


Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert	Fig.
24_TNC-50-2-27/133_NE	23001719	U2 (RG_316_/U, ENVIROFLEX_316)	single	9068	ML 4	1 A	1
24_TNC-50-2-29/133_NH	23001720	U4 (K_02252_D, ENVIROFLEX_316_D)	bulk 100 pcs.				
24_TNC-50-3-21/133_NE	23001722	U9 (RG_223_/U, ENVIROFLEX_B223)	single	27221	ML 4	2 B	2
24_TNC-50-3-23/133_NE	23010150	U7 (RG_58_C/U, ENVIROFLEX_B58)	single				

For flexible cables

- Cable entry crimp
- Center contact plugged
- With panel seal
- Taper sleeves see page 554
- Insulating washers see page 556

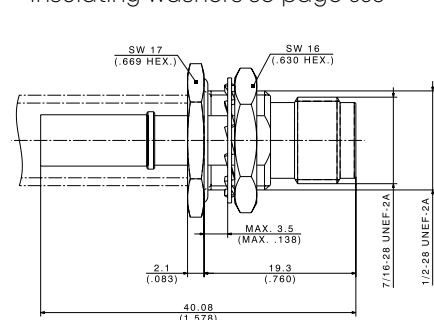


Fig. 1

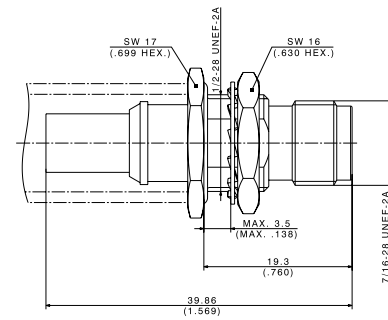


Fig. 2



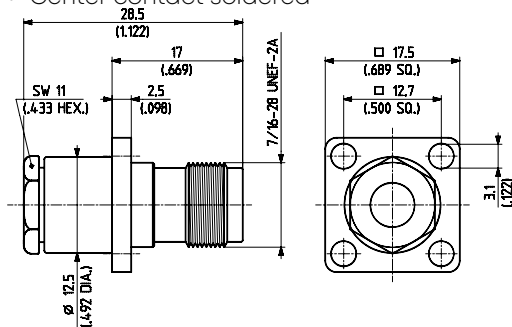
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert	Fig.
24_TNC-50-3-54/133_NE	84010762	X27 (SPUMA_195, SPUMA_195-FR-01)	single	0000417644	ML 4	B	1
24_TNC-50-4-77/133_NE	85010236	X28 (SPUMA_240, SPUMA_240-FR-01)		0000416856	ML 4	C	2

Series TNC 50 Ω – cable connectors

Straight panel cable jacks (female)

For flexible cables

- Cable entry clamp
- Center contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole
25_TNC-50-2-1/133_NE	22640578	U2 (RG_316_/U, ENVIROFLEX_316)	single	3005	ML 8
25_TNC-50-3-9/133_NE	22643707	U7, U9 (RG_58_C/U, ENVIROFLEX_B58)			

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554

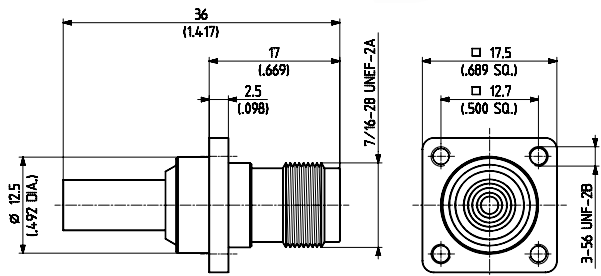
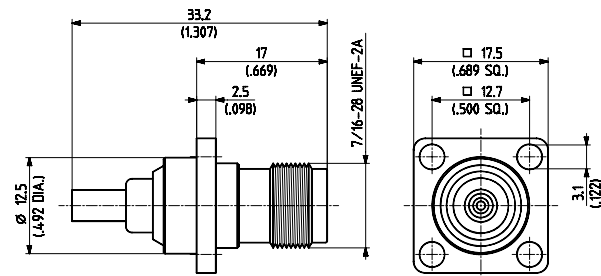


Fig. 1

Fig. 2

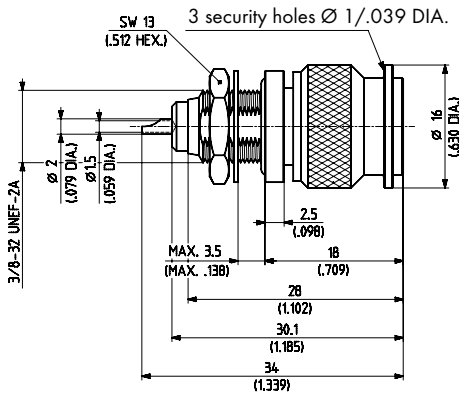
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Mounting hole	Crimp insert	Fig.
25_TNC-50-2-19/133_NE	84016723	U2 (RG_316_/U, ENVIROFLEX_316)	single	ML 8	1 A	1
25_TNC-50-3-19/133_NE	84016722	U7 (RG_58_C/U, ENVIROFLEX_B58)			2 B	2 ¹⁾

¹⁾ Mounting also possible with screws ISO M 2.5 –

Series TNC 50 Ω – receptacles with solder end

Receptacles, plugs (male)

- Bulkhead mounted
- With panel seal
- Insulating washers see page 556
- Solder tags see page 557



HUBER+SUHNER type	Item no.	Packaging	Mounting hole
12_TNC-50-0-1/133_NE	22640467	single	ML 2

Receptacles, jacks (female)

- Bulkhead mounted
- Insulating washers see page 556
- Solder tags see page 557

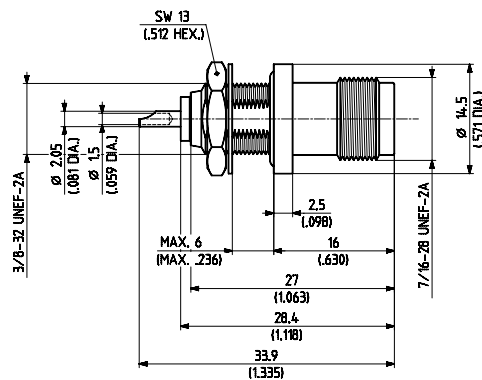


Fig. 1

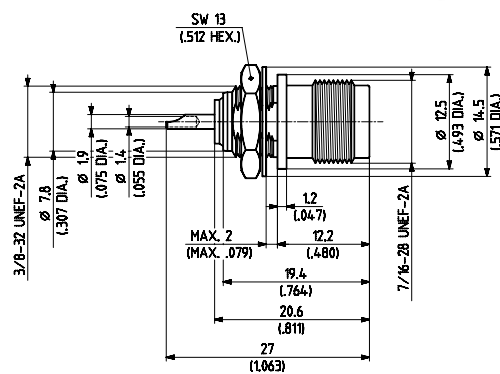
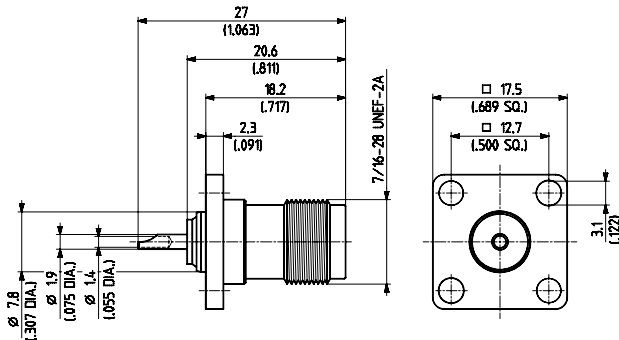


Fig. 2

HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Fig.	Notes
22_TNC-50-0-1/133_NE	22640537	single	ML 1	1	with panel seal
22_TNC-50-0-2/133_NE	22640539		ML 2	2	

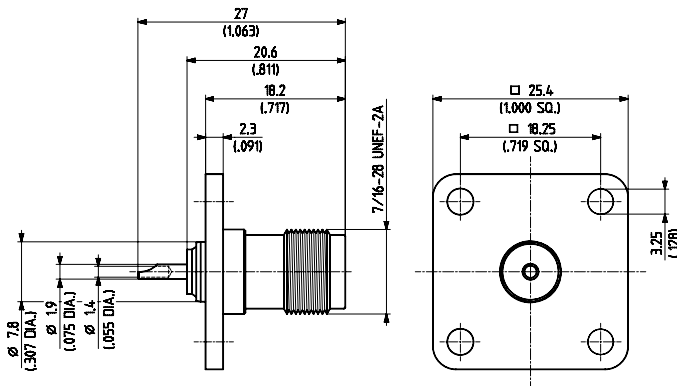
Series TNC 50 Ω – receptacles with solder end

- Panel mounted



HUBER+SUHNER type	Item no.	Packaging	Mounting hole
23_TNC-50-0-2/133_NE	22640549	single	ML 6
23_TNC-50-0-2/133_NH	22644322	bulk 100 pcs.	

- Panel mounted

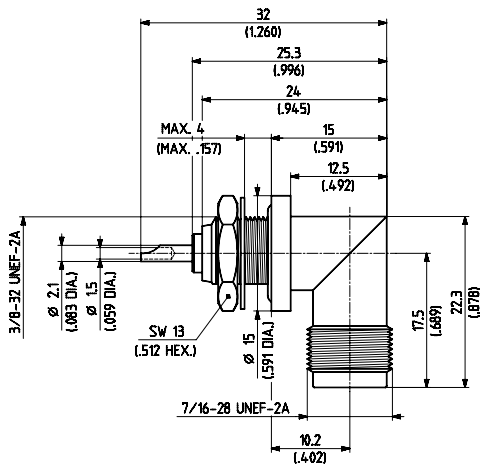


HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes
23_TNC-50-0-6/133_NE	22640551	single	ML 5	suitable for Sucobox applications, see page 558

Series TNC 50 Ω – receptacles with solder end

Right angle receptacle, jack (female)

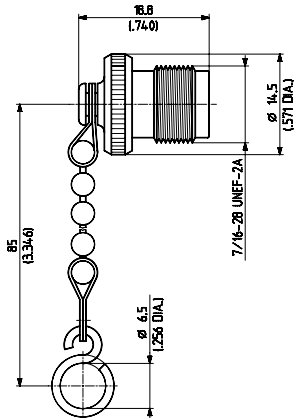
- Bulkhead mounted
- With panel seal
- Insulating washers see page 556
- Solder tags see page 557



HUBER+SUHNER type	Item no.	Packaging	Mounting hole
27_TNC-50-0-1/133 NE	22543405	single	ML 2

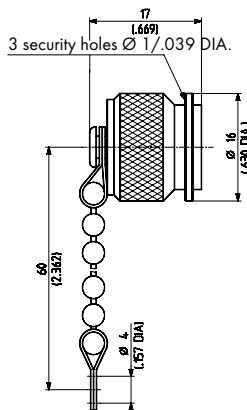
Series TNC 50 Ω – protective caps and shorts

Protective cap for plugs

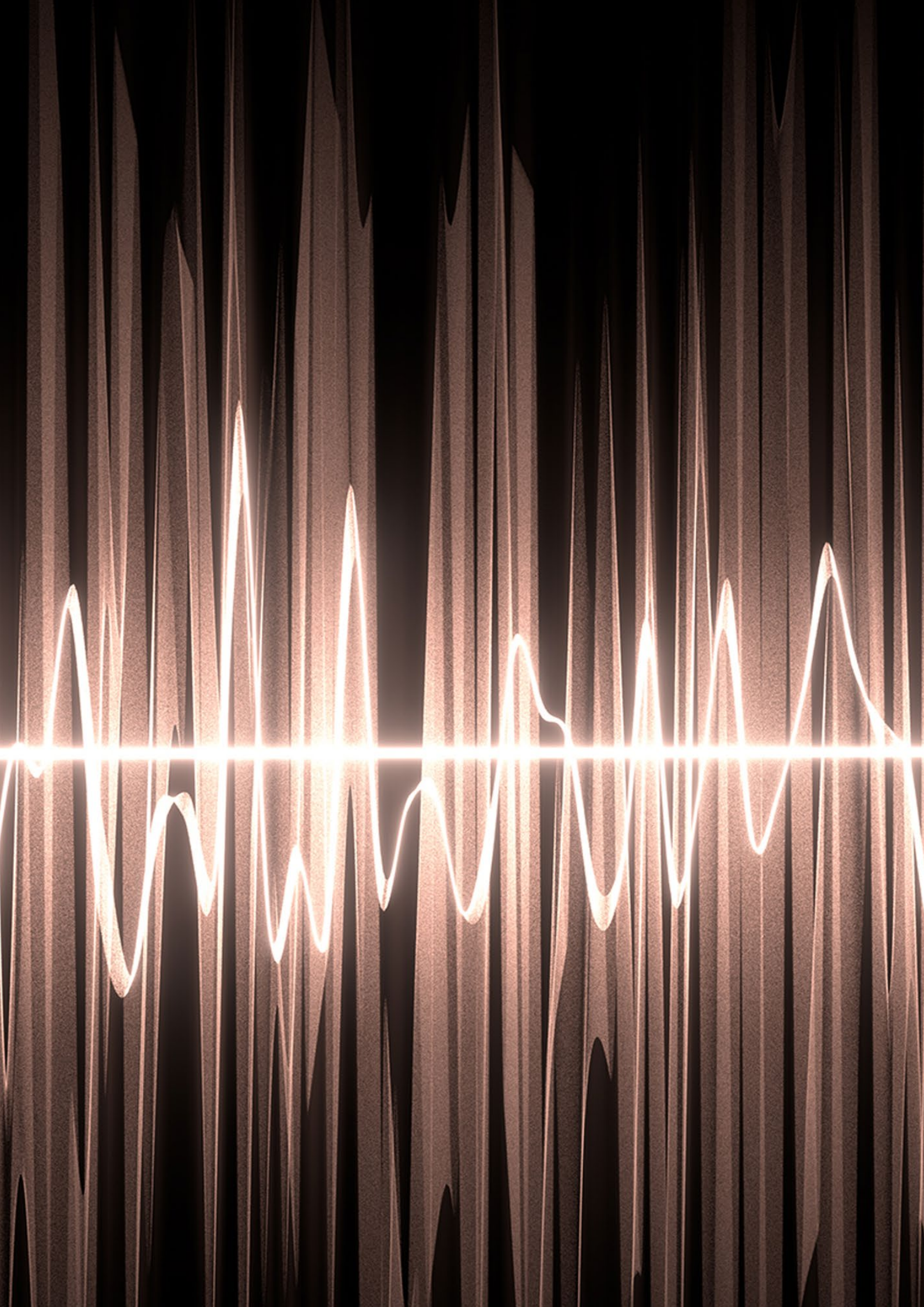


HUBER+SUHNER type	Item no.	Packaging	Notes
61_TNC-0-0-1/-33_-E	22640661	single	with chain

Protective cap for jacks



HUBER+SUHNER type	Item no.	Packaging	Notes
62_TNC-0-0-1/-33_-E	22640665	single	with chain



Series TNC 75 Ω – coaxial miniature connectors

Description

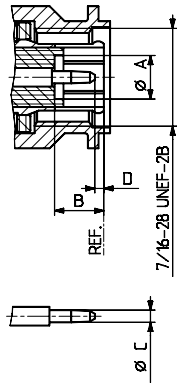
Within the internationally standardised TNC mating face dimensions a perfect 75 Ω characteristic impedance cannot be realised. However, at frequencies up to 1 GHz the small impedance deviation is negligible for practical applications. The threaded coupling mechanism allows them to be used under higher environmental load than BNC.

Compatibility

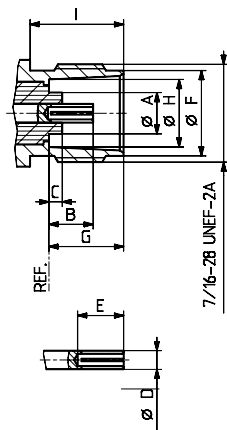
75 Ω TNC connectors and 50 Ω TNC connectors are intermateable without restrictions.

Interface dimensions (mm/inches)

Plug (male)



Jack (female)



Content

Description	377
Compatibility	377
Interface dimensions in mm/inches	377
Technical data	378
Cable connectors	379
Protective caps	381

	Plug		Jack	
	min.	max.	min.	max.
A	4.83/0.190	4.97/0.196	–	4.72/0.186
B	5.28/0.208	5.79/0.228	4.72/0.186	5.23/0.206
C	1.32/0.052	1.37/0.054	1.50 /0.059 nom.	
D	0.08/0.003	1.02/0.040	2.10/0.827 nom.	
E	–	–	4.95/0.195	–
F	–	–	9.60/0.378	9.70/0.382
G	–	–	8.35/0.328	8.48/0.334
H	–	–	8.10/0.319	8.15/0.321
I	–	–	10.60/0.417	–

Interface dimensions conformable to the standards:

Based on IEC 60169-17 and IEC 60169-8, annex A

Series TNC 75 Ω – technical data

Electrical data	Requirements
Impedance	75 Ω
Frequency range	DC to 1 GHz
Dielectric withstanding voltage (at sea level)	1.5 kV rms, 50 Hz (depending on cable)
Working voltage (at sea level) · Unmated	500 V rms, 50 Hz (depending on cable)
Insulation resistance	≥ 5 · 10 ⁵ MΩ
Contact resistance · Centre contact · Outer contact	≤ 1.5 mΩ ≤ 1 mΩ
RF leakage (measured at 1 GHz)	≥ 60 dB

Mechanical data	Requirements
Coupling nut torque · Recommended	46 to 69 Ncm/4.1 to 6.1 in lbs
Coupling nut retention force	≥ 450 N/101.2 lbs
Contact captivation	≥ 27 N/6.1 lbs
Cable retention force ¹⁾	see pages 32 – 41
Durability (matings)	≥ 500

Environmental data	Requirements
Temperature range	-65 to +165 °C/-85 to +329 °F
Climatic category	IEC → 55/155/21
Thermal shock	MIL-STD-202, method 107, condition B
Moisture resistance	MIL-STD-202, method 106
Corrosion	saltspray test acc. to MIL-STD-202, method 101, condition B
Vibration	MIL-STD-202, method 204, condition B
Shock	MIL-STD-202, method 213, condition G

Material data		
Connector parts	Material	Plating
Bodies	brass	SUCOPLATE®
Pin contacts	brass	gold/SUCOPRO® gold plating
Socket contacts	copper(-beryllium) alloy copper alloy	gold/SUCOPRO® gold plating
Crimp ferrules	copper/brass	SUCOPLATE®
Insulators, standard version	PTFE or PFA	
Gaskets	silicone rubber	

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

¹⁾ Value considers maximum load of the cables without irreversible variations of specifications.
Cable groups see page 32

Assembly tools see page 565

Mounting holes/PCB layouts see page 591

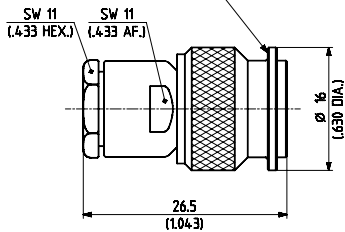
Series TNC 75 Ω – cable connectors

Straight cable plugs (male)

For flexible cables

- Cable entry clamp
- Centre contact soldered

3 security holes $\varnothing 1/.039$ DIA.

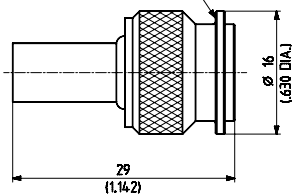


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
11_TNC-75-4-2/133_NE	22543477	U16 (RG_59_B/U, RADOX_RF_59)	single	3005

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554

3 security holes $\varnothing 1/.039$ DIA.



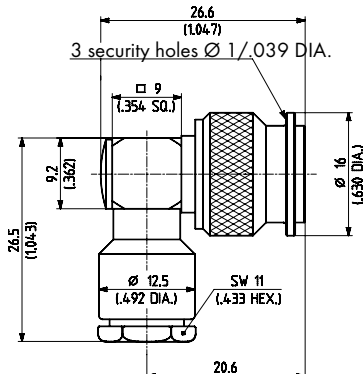
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
11_TNC-75-4-4/133_NE	22543478	U16 (RG_59_B/U, RADOX_RF_59)	single	3015	2 C
11_TNC-75-4-30/133_NE	22642503	U17 (S_04233)			

Series TNC 75 Ω – cable connectors

Right angle cable plugs (male)

For flexible cables

- Cable entry clamp
- Centre contact soldered

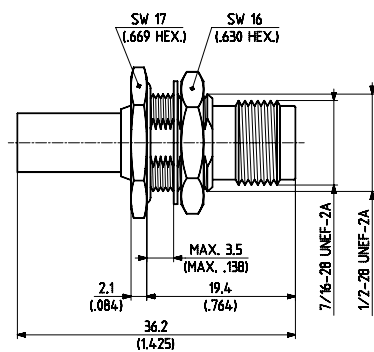


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
16_TNC-75-4-2/133_NE	22641402	U16 (RG_59_B/U, RADOX_RF_59)	single	3024

Straight bulkhead cable jacks (female)

For flexible cables

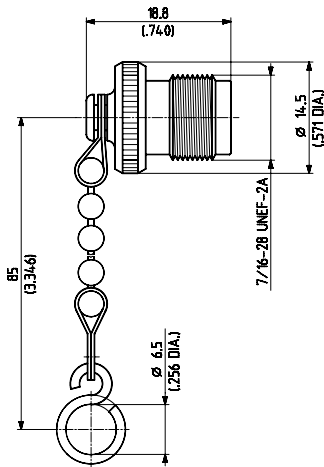
- HUBER+SUHNER full crimp
- With panel seal
- Taper sleeves see page 554
- Insulating washers see page 556



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert
24_TNC-75-4-8/133_NE	22544140	U16 (RG_59_B/U, RADOX_RF_59)	single	3015	ML 4	2 C

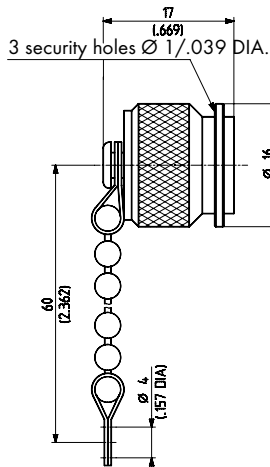
Series TNC 75 Ω – protective caps

Protective cap for plugs

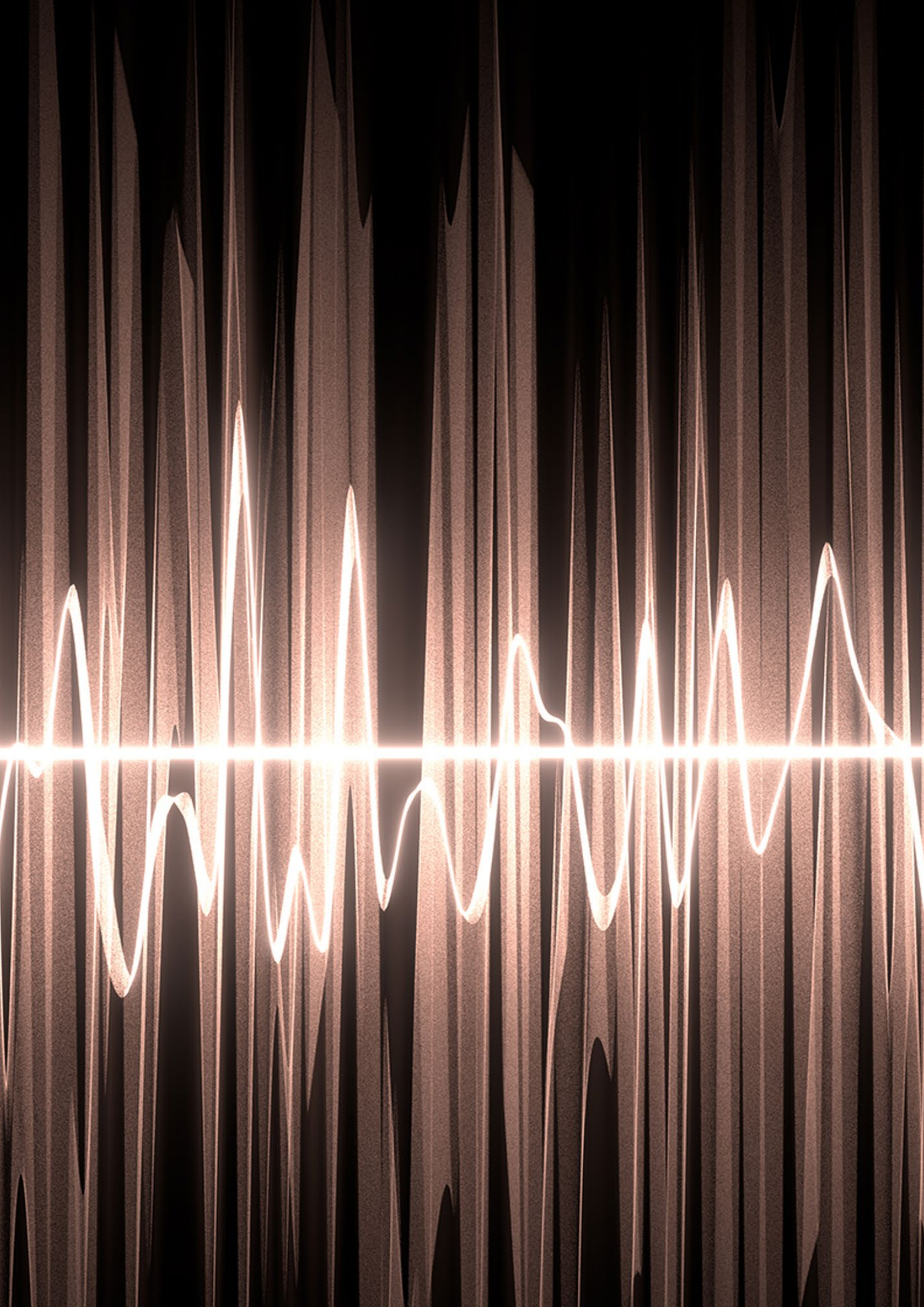


HUBER+SUHNER type	Item no.	Packaging	Notes
61_TNC-0-0-1/-33_-E	22640661	single	with chain

Protective cap for jacks



HUBER+SUHNER type	Item no.	Packaging	Notes
62_TNC-0-0-1/-33_-E	22640665	single	with chain



Series SHV – high voltage connectors

Description

HUBER+SUHNER SHV (Safe High Voltage) connectors provide more secure handling: centre contacts are well recessed to prevent shock hazards in unmated condition. When mating a connector pair the outer conductor contact is made prior to the inner conductor contacts.

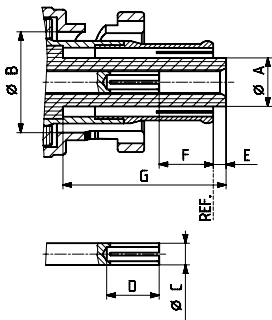
SHV connectors are suitable for all high voltage applications up to 5 kV DC or 3.5 kV rms. These connectors are typically used in nuclear instruments or test and measurement equipment. Voltages are valid for both, the mated and the unmated condition.

Content

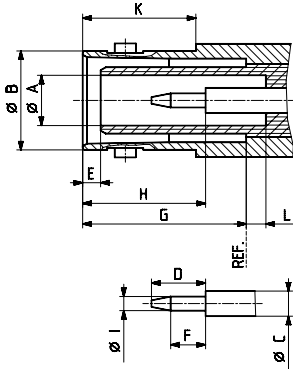
Description	383
Interface dimensions in mm/inches	383
Technical data	384
Cable connectors	385
Receptacles with solder end	387

Interface dimensions (mm/inches)

Plug (male)



Jack (female)



	Plug		Jack	
	min.	max.	min.	max.
A	4.57/0.180	4.72/0.186	4.83/0.190	4.98/0.196
B	9.78/0.385	9.91/0.390	9.60/0.378	9.70/0.382
C	2.06/0.081	–	2.06/0.081	–
D	5.44/0.214	–	5.26/0.207	5.44/0.214
E	1.17/0.046	1.63/0.064	1.55/0.061	1.98/0.078
F	4.42/0.174	–	3.30/0.130	–
G	15.90/0.626	16.10/0.634	15.90/0.626	16.00/0.630
H	–	–	11.59/0.456	12.70/0.500
I	–	–	1.32/0.052	1.37/0.054
K	–	–	10.85/0.427	–
L	–	–	1.63/0.064	2.18/0.086

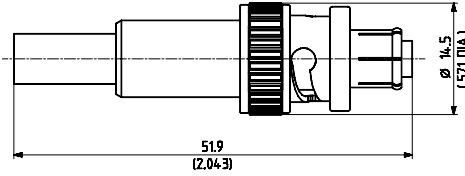
Interface dimensions conformable to the standards:

International: IEC 60498, NIM ND-545
 USA: MIL-STD-348/314
 ANSI N 24.4

Series SHV – cable connectors

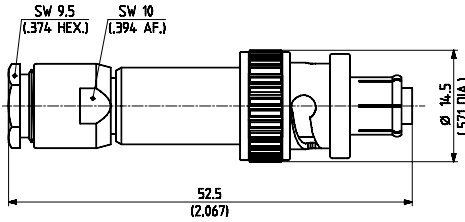
Straight cable plugs (male)

- HUBER+SUHNER full crimp
- Taper sleeves see page 554



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
11_SHV-50-3-1/133_NE	22541987	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	3092	2 B
11_SHV-50-4-1/133_NE	22541992	U16 (RG_59_B/U, RADOX_RF_59)			2 C

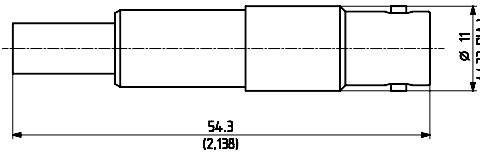
- Cable entry clamp
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
11_SHV-50-3-10/133_NE	22541990	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	3094
11_SHV-50-4-10/133_NE	22541996	U16 (RG_59_B/U, RADOX_RF_59)		

Straight cable jacks (female)

- HUBER+SUHNER full crimp
- Taper sleeves see page 554

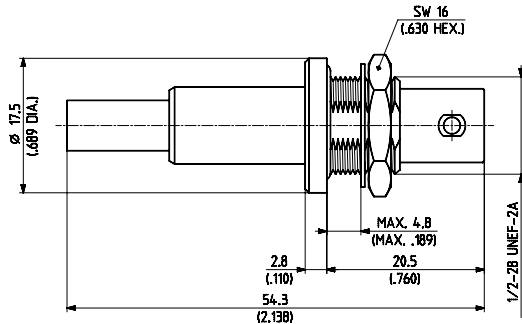


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
21_SHV-50-3-1/133_NE	22541998	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	3092	2 B
21_SHV-50-4-1/133_NE	22542001	U16 (RG_59_B/U, RADOX_RF_59)			2 C

Series SHV – cable connectors

Straight bulkhead cable jacks (female)

- HUBER+SUHNER full crimp
- With panel seal
- Taper sleeves see page 554

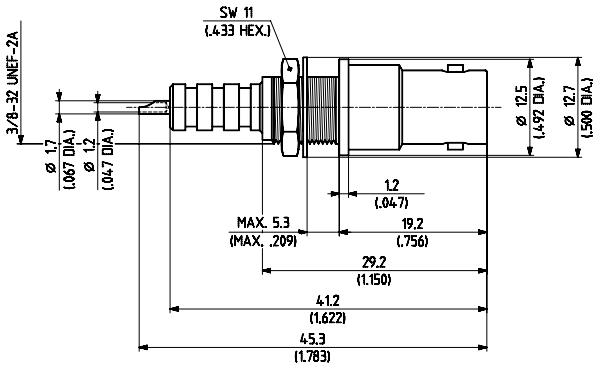


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert
24_SHV-50-3-1/133_NE	22641281	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	3092	ML 4	2 B
24_SHV-50-4-1/133_NE	22544592	U16 (RG_59_B/U, RADOX_RF_59)				2 C

Series SHV – receptacles with solder end

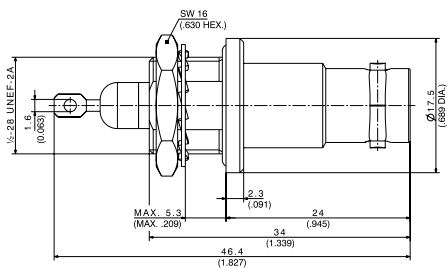
Receptacles, jacks (female)

- Bulkhead mounted
- Without panel seal



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Insulator	Notes
22_SHV-50-0-2/133_NE	22544054	single	ML 2	PTFE	
22_SHV-50-0-6/133_NE	22542007			polystyrol	radiation resistant

- Bulkhead mounted
- Hermetically sealed



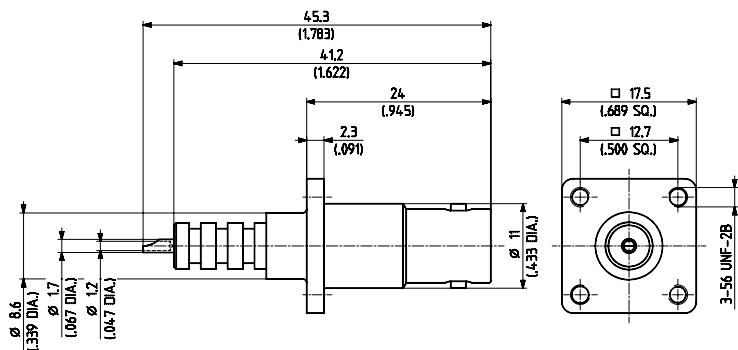
HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Plating body	Notes
22_SHV-50-0-3/100_NE ¹⁾	22543968	single	ML 4	silver	leak rate 10 ⁻⁶ Torr l/s (atm cc/s)

¹⁾ RoHS compliant alternative on request

Series SHV – receptacles with solder end

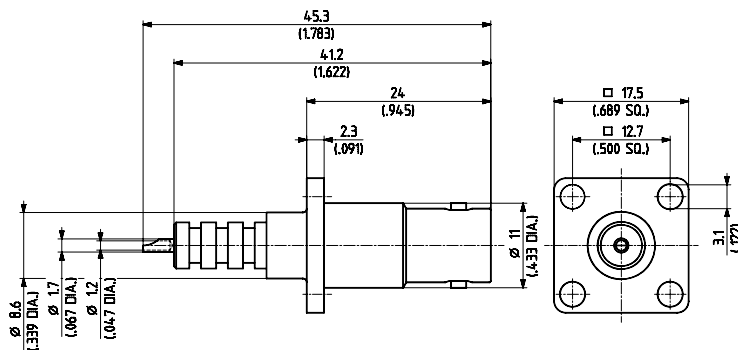
Receptacles, jacks (female)

- Panel mounted



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes
23_SHV-50-0-1/133_NE	22542008	single	ML106	mounting also possible with screws ISO M 2.5

- Panel mounted



HUBER+SUHNER type	Item no.	Packaging	Mounting hole
23_SHV-50-0-2/133_NE	22542010	single	ML106

Series MHV (H4) – high voltage connectors

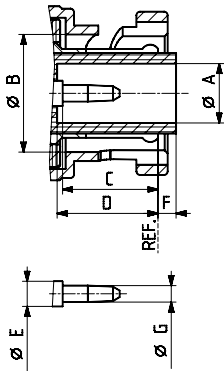
Description

HUBER+SUHNER MHV (Miniature High Voltage) are coaxial miniature high voltage connectors with 5 kV rms test voltage (mated pairs). The MHV connectors have a working voltage up to 1.6 kV rms in mated condition and are suitable for applications up to 300 MHz. MHV connectors are of similar design to BNC connectors but the insulators protrude over the outer contacts to give a degree of contact-voltage proof when unmated.

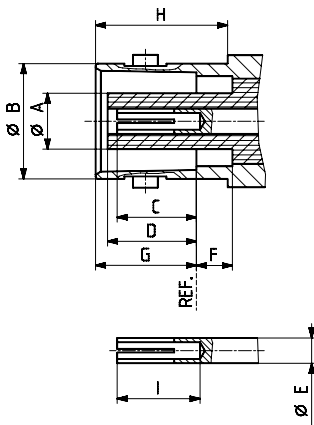
However, if a high degree of protection in the unmated condition is required, use of series SHV is recommended.

Interface dimensions (mm/inches)

Plug (male)



Jack (female)



Content

Description	389
Interface dimensions in mm/inches	389
Technical data	390
Cable connectors	391
Receptacles with solder end	392

	Plug		Jack	
	min.	max.	min.	max.
A	4.83/0.190	–	–	4.72/0.186
B	9.78/0.385	9.91/0.390	9.60/0.378	9.70/0.382
C	7.18/0.283	–	–	7.11/0.280
D	8.10/0.319	–	–	8.05/0.317
E	–	2.31/0.091	2.06/0.081	2.31/0.091
F	–	2.18/0.086	2.18/0.086	–
G	1.32/0.052	1.37/0.054	8.31/0.327	8.51/0.335
H	–	–	10.52/0.414	–
I	–	–	6.86/0.270	–

Series MHV – technical data

Electrical data	Requirements
Impedance	50 Ω
Frequency range	DC to 300 MHz
Dielectric withstanding voltage (at sea level)	5.0 kV rms, 50 Hz (depending on cable)
Working voltage (at sea level)	1.6 kV rms, 50 Hz (depending on cable)
Insulation resistance	$\geq 5 \text{ G}\Omega$
Contact resistance	
· Centre contact	$\leq 2 \text{ m}\Omega$
· Outer contact	$\leq 1 \text{ m}\Omega$
Corona extinction voltage (at 21 000 m)	$\geq 300 \text{ V rms}$, 50 Hz (depending on cable)
Current rating, continuous	$\leq 10 \text{ A}$

Mechanical data	Requirements
Coupling nut torque	7 to 28 Ncm/0.6 to 2.5 in lbs
Coupling nut retention force	$\geq 450 \text{ N}$ /101.2 lbs
Contact captivation	$\geq 15 \text{ N}$ /6.1 lbs
Cable retention force ¹⁾	see pages 32 – 41
Durability (matings)	≥ 500

Environmental data	Test conditions
Temperature range	-65 to +165 °C/-85 to +329 °F
Climatic category	IEC → 55/155/21
Thermal shock	MIL-STD-202, method 107, condition B
Moisture resistance	MIL-STD-202, method 106
Corrosion	saltspray test acc. to MIL-STD-202, method 101, condition B
Vibration	MIL-STD-202, method 204, condition B

Material data		
Connector parts	Material	Plating
Bodies	brass	SUCOPLATE®
Pin contacts	brass	gold
Socket contacts	copper-beryllium alloy	gold
Crimp ferrules	copper	SUCOPLATE®
Insulators	PTFE or PFA	

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

¹⁾ Value considers maximum load of the cables without irreversible variations of specifications.
Cable groups see page 32

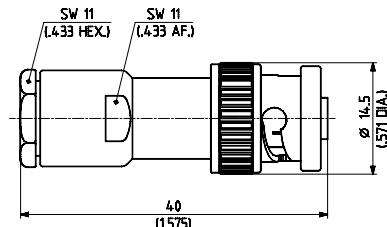
Assembly tools see page 565

Mounting holes/PCB layouts see page 591

Series MHV – cable connectors

Straight cable plugs (male)

- Cable entry clamp
- Center contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
11_H4-50-3-1/133_NE ¹⁾	22541732	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	3012
11_H4-50-4-1/133_NE ¹⁾	22541742	U16 (RG_59_B/U, RADOX_RF_59)		

- Cable entry crimp
- Taper sleeves see page 554

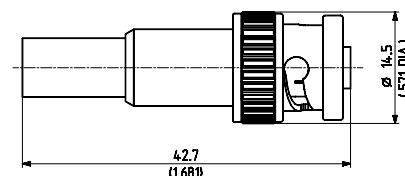
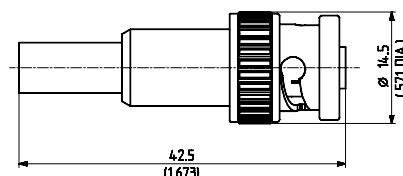


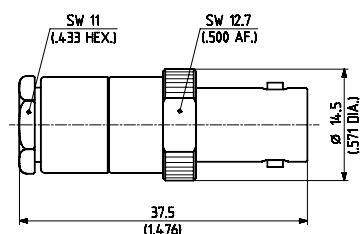
Fig. 1

Fig. 2

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Fig.
11_H4-50-3-3/133_NE ¹⁾	22541737	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	3078	B	1
11_H4-50-4-4/133_NE ¹⁾	22543809	U16 (RG_59_B/U, RADOX_RF_59)			C	2

Straight cable jacks (female)

- Cable entry clamp
- Center contact soldered



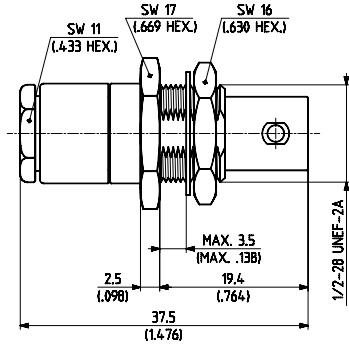
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction
21_H4-50-3-1/133_NE ¹⁾	22541756	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	3012

¹⁾ Centre contact NOT captivated

Series MHV – cable connectors

Straight bulkhead cable jacks (female)

- Cable entry clamp
- Center contact soldered
- With panel seal



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole
24_H4-50-3-1/133_NE ¹⁾	22541784	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	3012	ML 4

Series MHV – receptacles with solder end

Receptacles, jacks (female)

- Bulkhead mounted
- With panel seal

HUBER+SUHNER type	Item no.	Packaging	Mounting hole
<p>Technical drawing of a receptacle with solder end showing dimensions and part numbers. The drawing includes the following dimensions and specifications:</p> <ul style="list-style-type: none"> SW 13 (5.12 HEX.) ∅ 2.05 (∅ .081 DIA.) ∅ 1.5 (∅ .059 DIA.) MAX. 6.5 (MAX. .256) 2.5 (.098) 16 (.630) 27 (1.063) 35.9 (1.413) 41.8 (1.646) 14.5 (∅ .571 DIA.) 3/8-32 UNEF-2A 	22652095	single	ML 1

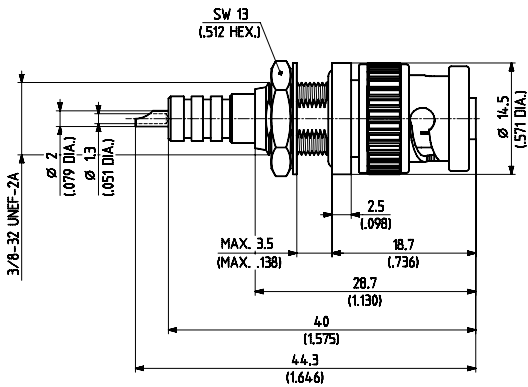


¹⁾ VCentre contact NOT captivated

Series MHV – receptacles with solder end

Receptacles, plugs (male)

- Bulkhead mounted



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes
12_H4-50-0-1/133_NE	22543467	single	ML 2	with panel seal

Flange mount, jacks (female)

- Panel mounted

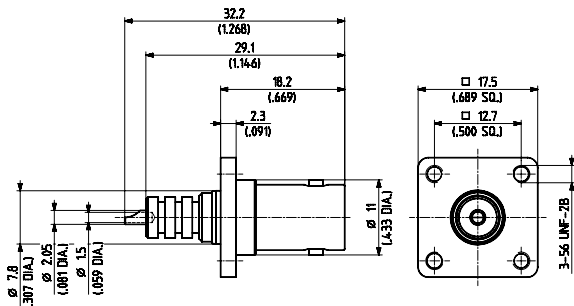
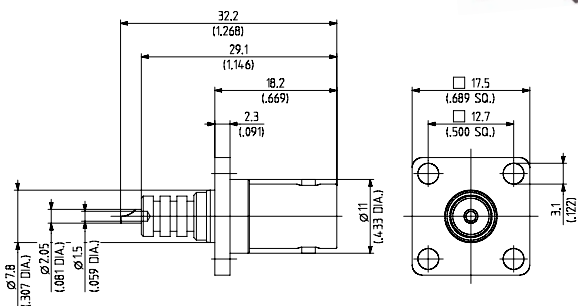
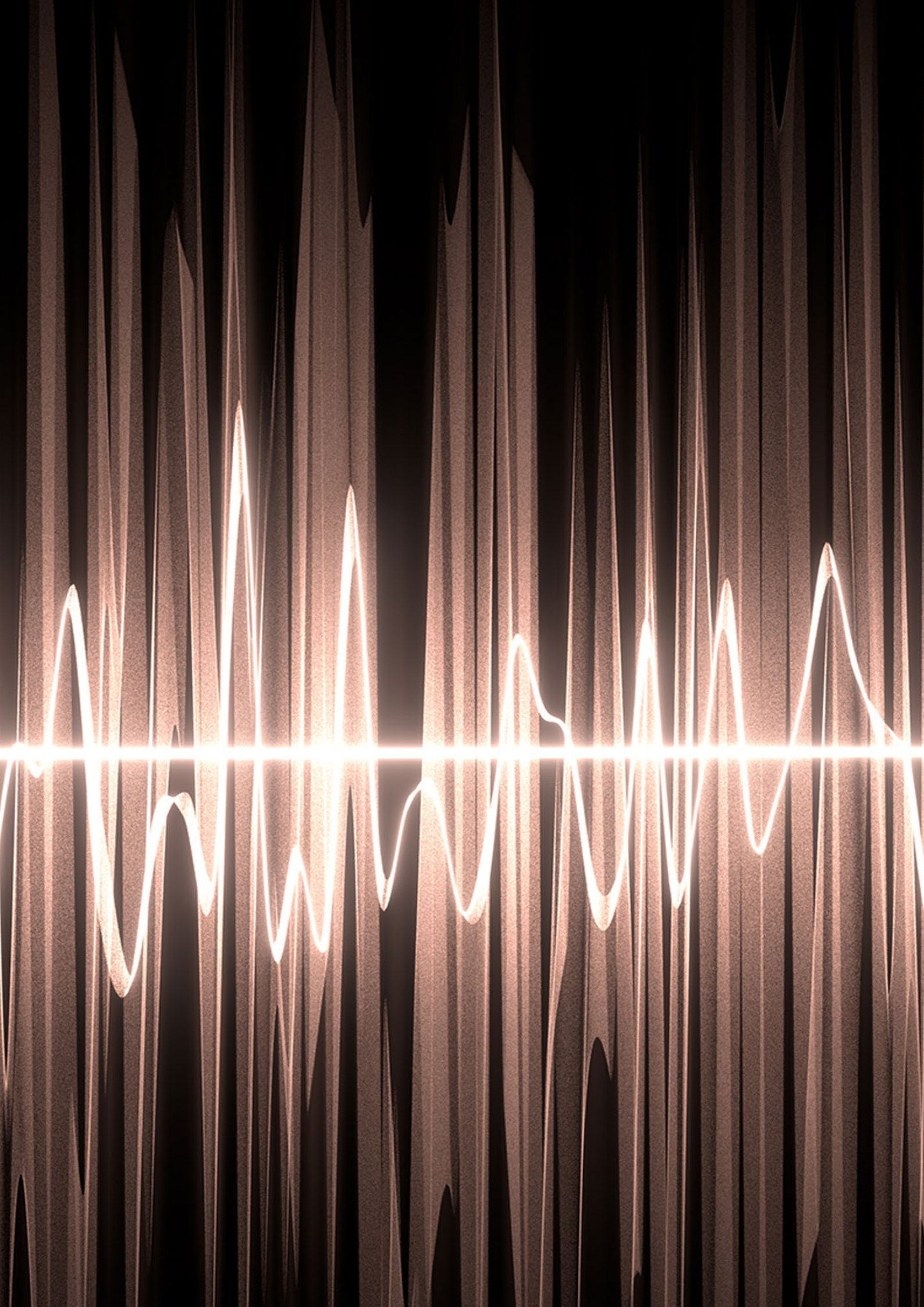


Fig. 1

Fig. 2



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Notes	Fig.
23_H4-50-0-7/133_NE	22541776	single	ML 6	mounting also possible with screws ISO M 2.5	1
23_H4-50-0-8/133_NE	22541779				2



Series N 50 Ω – coaxial connectors

Description

HUBER+SUHNER N connectors are available with 50 Ω and 75 Ω impedance. The frequency range extends to 18 GHz, depending on the connector and cable type. The screw-type coupling mechanism provides a sturdy and reliable connection.

HUBER+SUHNER N connectors are available for flexible cables, for semi-rigid cables and for corrugated copper tube cables.

Cable entries: clamp, crimp and solder types available, as well as HUBER+SUHNER Quick-Fit for corrugated copper tube cables.

Compatibility

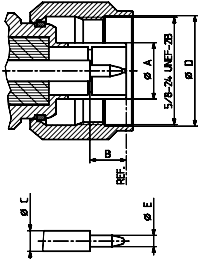
Inner conductors of N 75 Ω connectors have a smaller diameter than those of the 50 Ω version. Therefore 50 Ω and 75 Ω connectors must not be mated with each other.

Content

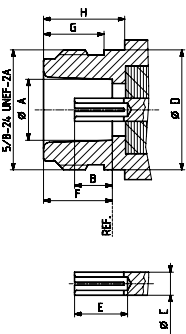
Description	395
Compatibility	395
Interface dimensions in mm/inches	395
Technical data	396
Cable connectors	399
Receptacles with solder end	418
Stripline launchers	422
Protective caps	423

Interface dimensions (mm/inches)

Plug (male)



Jack (female)



	Plug		Jack	
	min.	max.	min.	max.
A	–	8.38/0.330	8.03/0.316	8.13/0.320
B	5.33/0.210	5.84/0.230	4.75/0.187	5.26/0.207
C	–	3.15/0.124	–	3.15/0.124
D	16.00/0.630	–	–	15.93/0.627
E	1.60/0.063	1.68/0.066	5.33/0.210	–
F	–	–	9.04/0.356	9.19/0.362
G	–	–	6.76/0.266	–
H	–	–	10.72/0.422	–

Interface dimensions conformable to the standards:

International: IEC 61169-16
 Europe: CECC 22 210
 USA: MIL-STD-348/304

IP rating (interface, mated) IP68

Series N 50 Ω – technical data

Electrical data	Requirements
Impedance	50 Ω
Frequency range · Flexible cables · Semi-rigid cables	DC to 11 GHz DC to 18 GHz
Dielectric withstanding voltage (at sea level)	2.5 kV rms, 50 Hz
Working voltage (at sea level)	≤ 1.0 kV rms, 50 Hz
Insulation resistance	≥ 5 · 10 ⁵ MΩ
Contact resistance · Centre contact · Outer contact	≤ 1.0 mΩ ≤ 1.0 mΩ
RF leakage (between 2 and 3 GHz)	≥ 90 dB
VSWR	see table below

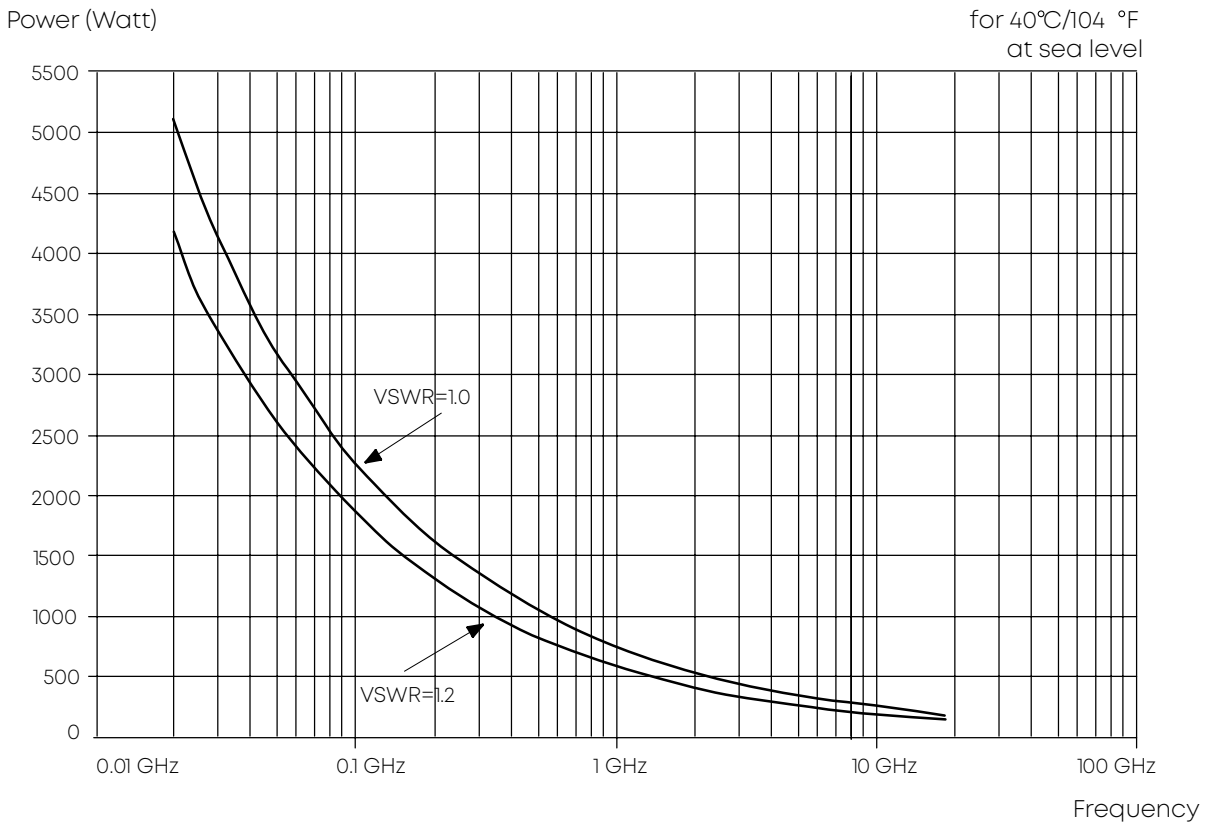
Typical VSWR ¹⁾	Frequency range					Cable group
	1 GHz	2.5 GHz	5 GHz	12.4 GHz	18 GHz	
Straight connectors	1.04	1.05	1.08			M6
	1.03	1.04	1.06	1.12		Y5, Y12
	1.03	1.04	1.05	1.07	1.09	Y5, Y12
	1.03	1.04	1.05	1.08	1.12	Y7
	1.05	1.09	1.17			U7, U9
	1.04	1.06	1.12			U28, U29, U32, U33
	1.03	1.05	1.14			S24
Right angle connectors	1.03	1.05	1.10			S39
	1.04	1.05	1.08			M6
	1.04	1.05	1.06	1.12		Y5, Y12
	1.05	1.10	1.20			U7, U9
	1.08	1.10	1.12			U28, U29, U32, U33

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

¹⁾ Values which can be achieved when connectors are perfectly fixed onto cable.

Series N 50 Ω – technical data

Admissible power of N connectors



Mechanical data	Requirements
Coupling nut torque · Recommended	0.68 to 1.13 Nm/6.0 to 10.0 in lbs
Coupling nut retention force	≥ 450 N/101.2 lbs
Contact captivation	≥ 28 N/6.3 lbs
Cable retention force ¹⁾	see pages 32 – 41
Durability (matings)	≥ 500

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

¹⁾ Value considers maximum load of the cables without irreversible variations of specifications.

Series N 50 Ω – technical data

Environmental data	Requirements
Temperature range	–65 to +165 °C/–85 to +329 °F
Climatic category	IEC → 55/155/21
Thermal shock	MIL-STD-202, method 107, condition B
Moisture resistance	MIL-STD-202, method 106
Corrosion	saltspray test acc. to MIL-STD-202, method 101, condition B
Vibration	MIL-STD-202, method 204, condition B
Shock	MIL-STD-202, method 213, condition G

Material data		
Connector parts	Material	Plating
Bodies	brass	SUCOPLATE®
Pin contacts	brass	gold/SUCOPRO® gold plating
Outer contact, slotted	spring bronze	SUCOPLATE®
Female contacts	copper beryllium alloy, spring bronze	gold/SUCOPRO® gold plating
Crimp ferrules	copper	SUCOPLATE®
Insulators, standard version	PTFE or PFA	
Gaskets	silicone rubber	

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Series N 50 Ω – cable connectors

Straight cable plugs (male)

For semi-rigid cables

- Cable entry soldered
- Centre contact soldered

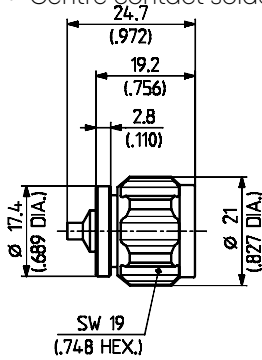


Fig. 1

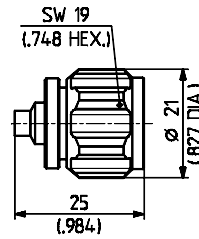


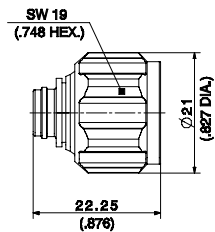
Fig. 2



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Weight	Fig.
11_N-50-2-15/113_UE	22660315	Y3, Y11, Y16 (SR_86)	single	3095	25.6 g/0.90 oz.	1
11_N-50-3-13/113_NE	22542083	Y5, Y12, Y17 (SR_141)			29.0 g/1.02 oz.	2

For Sucoform cables

- Cable entry soldered
- Centre contact soldered



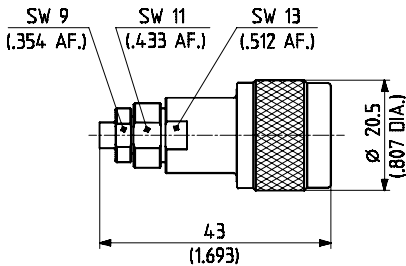
HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Weight	Fig.
11_N-50-5-18/103_NH	84008445	Y7, Y13, Y14 (SUCOFORM_250-01)	bulk 100 pcs.	0000215552	21.9 g/0.77 oz.	1

Series N 50 Ω – cable connectors

Straight cable plugs (male)

For semi-rigid cables

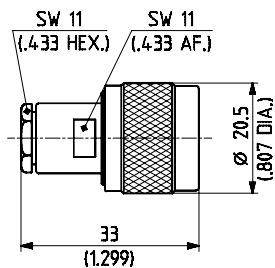
- Cable entry soldered
- Centre contact plugged-in
- Frequency range: DC to 18 GHz



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Weight
11_N-50-3-51/133_NE	22543919	Y5, 12 (SR_141)	single	9006	43.0 g/1.51 oz. ¹⁾

For flexible cables

- Cable entry clamp
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Weight
11_N-50-2-1/133_NE	22544030	U2 (RG_316_/U, ENVIROFLEX_316)	single	3017	38.0 g/1.33 oz.
11_N-50-2-2/133_NE	22643807	U4 (K_02252_D, ENVIROFLEX_316_D)			38.0 g/1.33 oz.
11_N-50-3-5/133_NE	22542073	U7, U9, U11, X25 (RG_58_C/U, ENVIROFLEX_B58)			36.0 g/1.26 oz.

¹⁾ Stainless steel

Series N 50 Ω – cable connectors

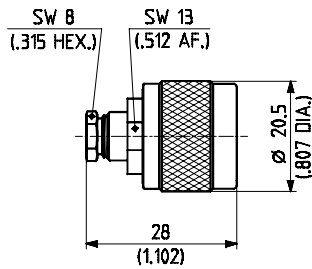
Straight cable plugs (male)

Precision connector – low VSWR

For flexible cables

- Cable entry clamp
- Centre contact soldered
- VSWR:

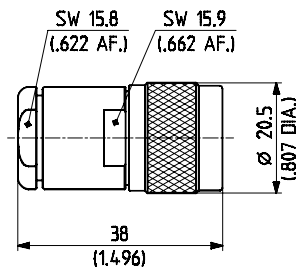
DC to 4 GHz	4 to 10 GHz	10 to 12.4 GHz
≤ 1.10	≤ 1.20	≤ 1.25



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Weight
11_N-50-3-54/133_NE	22642009	U9, U11, X25 (RG_223_/U, ENVIROFLEX_B223)	single	9099	32.0 g/1.12 oz.

For flexible cables

- Cable entry clamp
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Weight
11_N-50-7-5/133_NE ¹⁾	22542117	U29, U32, X11 (RG_214_/U, ENVIROFLEX_B214)	single	3007	51.0 g/1.79 oz.
11_N-50-7-6/133_NE	22542120			3008	51.0 g/1.79 oz.
11_N-50-7-82/133_NE ²⁾	84081597	U30 (SPUMA_400, SPUMA_400-FR-01)		253737	55.0 g/1.94 oz.

¹⁾ Centre contact NOT captivated

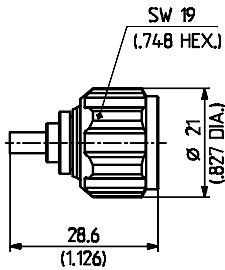
²⁾ Centre contact plugged

Series N 50 Ω – cable connectors

Straight cable plugs (male)

For flexible cables

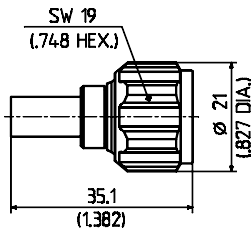
- HUBER+SUHNER full crimp
- Taper sleeves see page 554



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight
11_N-50-2-11/133_NH	22658813	U2 (RG_316_/U, ENVIROFLEX_316_D)	bulk 100 pcs.	9068	1 A	26.5 g/0.93 oz.
11_N-50-2-16/133_NE	23014128	U4 (K_02252_D, ENVIROFLEX_316_D)	single			25.4 g/0.89 oz.

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight
11_N-50-3-28/133_NE	22642842	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	3015	2 B	23.0 g/0.81 oz.
11_N-50-3-29/133_NE	22642843	U9, U39 (RG_223_/U, ENVIROFLEX_B223)	single	3015	2 B	23.0 g/0.81 oz.
11_N-50-3-31/133_NE	22648829	U11, U41 (RG_400_/U, ENVIROFLEX_400)	single	3015	2 B	28.0 g/0.98 oz.
11_N-50-3-31/133_NH	22650658		bulk 100 pcs.			
11_N-50-4-63/133_NE	22652069	S16 (SX_04172_B-60)	single	3015	2 C	27.3 g/0.96 oz.

Series N 50 Ω – cable connectors

Straight cable plugs (male)

For flexible cables

- Cable entry crimp
- Centre contact plugged-in
- Taper sleeves see page 554

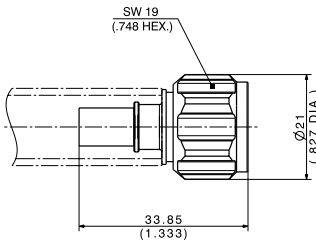


Fig. 1

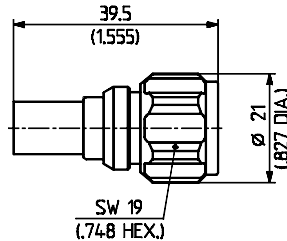


Fig. 2

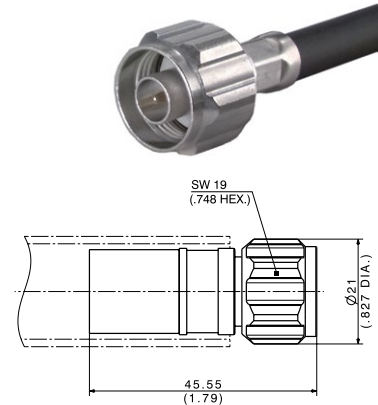


Fig. 3

HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight	Fig.
11_N-50-4-11/133_NH	84110 888	X28 (SPUMA_240, SPUMA_240-FR-01)	bulk 100 pcs.	291824	6.50	24.3 g/0.86 oz.	1
11_N-50-6-10/133_NH	22660330	S24 (S_06162_D-03)	bulk 100 pcs.	270891	8.65	29.5 g/1.03 oz.	2
11_N-50-12-20/033_-E	85009711	X29 (SPUMA_600)	single	420913	14.5	39.0 g/1.37 oz.	3

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554

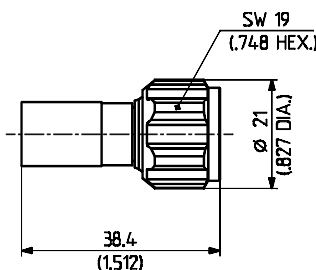


Fig. 1

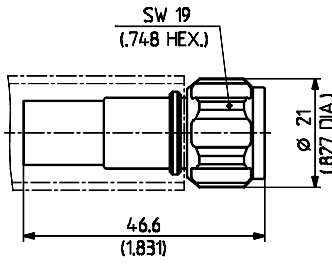


Fig. 2



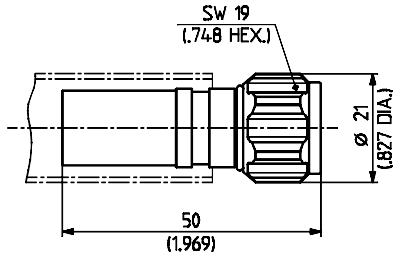
HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight	Fig.
11_N-50-7-43/133_NE	22642844	U29, U42 (RG_213_/U, RADOX_RF_213)	single	3061	3 D	28.0 g/0.98 oz.	1
11_N-50-7-44/133_NE	22642845	U32, U43 (RG_214_/U, ENVIROFLEX_B214)		3061	3 D	28.0 g/0.98 oz.	1
11_N-50-7-49/133_NE	22652111	S32 (S_07262_BD)		9067	4 D	40.0 g/1.40 oz.	2
11_N-50-7-61/133_NE	22651793	U33 (RG_393_/U, ENVIROFLEX_393)		27070	2.5 D	28.5 g/1.00 oz.	1
11_N-50-7-69/133_NE	22660143	U30, X32 (SPUMA_400 -FR-01, SPUMA_400-RS-FR)		311731	4 D	35.0 g/1.23 oz.	2

Series N 50 Ω – cable connectors

Straight cable plugs (male)

For flexible cables

- Cable entry crimp
- Centre contact plugged-in
- Degree of protection IP67

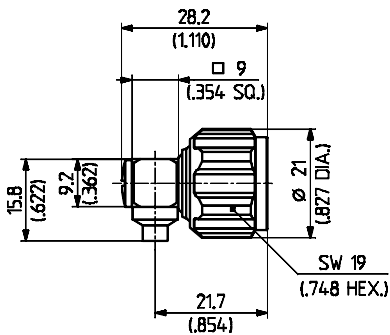


HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight
11_N-50-10-5/103_UV	23002543	S39 (S_10162_B-11)	bulk 20 pcs.	27356	12.4	37.8 g/1.32 oz.

Right angle cable plugs (male)

For semi-rigid cables

- Cable entry soldered
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Weight
16_N-50-3-15/133_NE	22648832	Y5, Y12, Y17 (SR_141)	single	9200	29.1 g/1.02 oz.

Series N 50 Ω – cable connectors

Right angle cable plugs (male)

For flexible cables

- Cable entry clamp
- Centre contact soldered

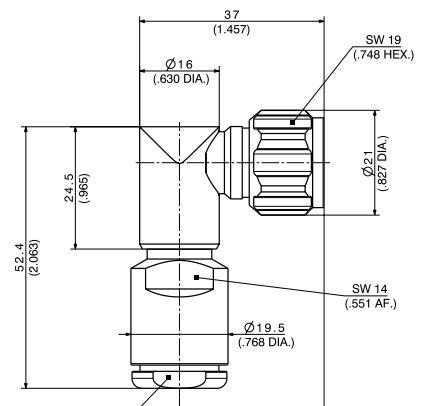
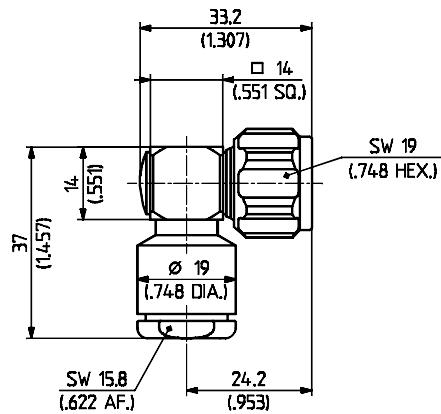
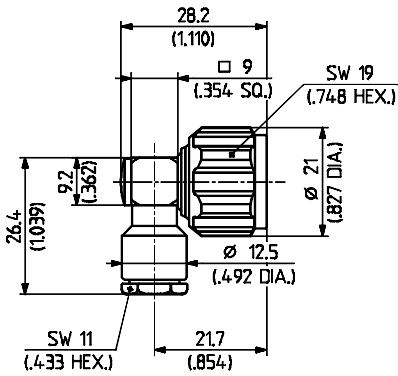


Fig. 1

Fig. 2

Fig. 3

HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Weight	Fig.
16_N-50-3-103/133_NE	22651610	U7, U9, U11 (RG_223_/U, ENVIROFLEX_B223)	single	27060	37.0 g/1.30 oz.	1
16_N-50-7-26/133_NE	22650825	U29, U32 (RG_214_/U, ENVIROFLEX_B214)		27121	65.0 g/2.28 oz.	2
16_N-50-7-50/133_NE ¹⁾	84082125	U30 (SPUMA_400, SPUMA_400-FR-01)		253737	87.0 g/3.07 oz.	3

¹⁾ Centre contact plugged

Series N 50 Ω – cable connectors

Right angle cable plugs (male)

For flexible cables

- Cable entry crimp
- Centre contact soldered
- Taper sleeves see page 554

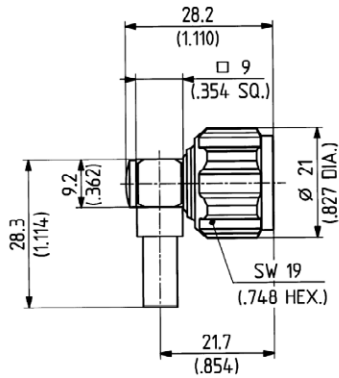


Fig. 1

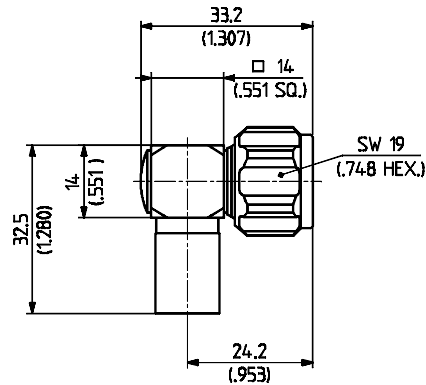


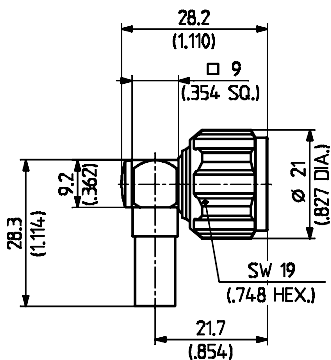
Fig. 2



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight	Fig.
16_N-50-3-26/133_NE	22642846	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	3058	B	27.0 g/0.95 oz.	1
16_N-50-3-27/133_NE 16_N-50-3-27/133_NH	22642847 22650168	U9, U11, U39 (RG_223_/U, ENVIROFLEX_B223)	single bulk 100 pcs.	3058	B	27.0 g/0.95 oz.	1
16_N-50-7-30/133_NE	22642848	U29 (RG_213_/U, RADOX_RF_213)	single	3076	D	42.0 g/1.47 oz.	2
16_N-50-7-31/133_NE	22642849	U32 (RG_214_/U, ENVIROFLEX_B214)		3076	D	42.0 g/1.47 oz.	2

For flexible cables

- Cable entry crimp
- Centre contact soldered
- Taper sleeves see page 554



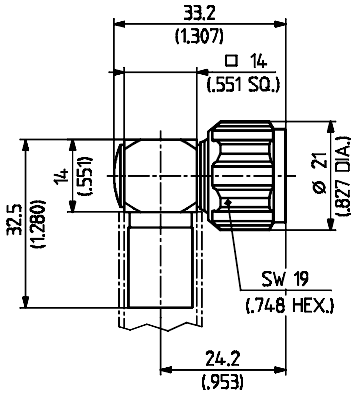
HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight
16_N-50-4-14/133_NE	23015067	S16 (S_04262_D-09)	single	3058	C	31.7 g/1.11 oz.

Series N 50 Ω – cable connectors

Right angle cable plugs (male)

For flexible cables

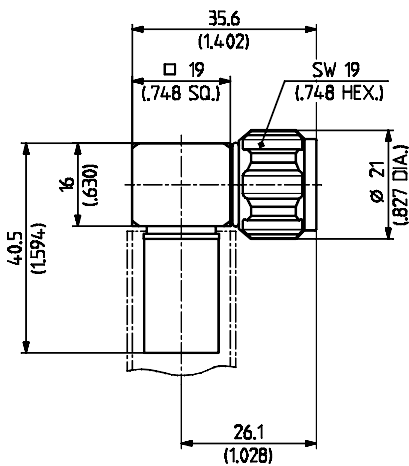
- Cable entry crimp
- Centre contact soldered
- Taper sleeves see page 554



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight
16_N-50-7-22/133_NE	22651794	S32 (S_07262_BD)	single	9094	D	50.0 g/1.75 oz.

For flexible cables

- Cable entry crimp
- Centre contact soldered
- Degree of protection IP67
- Taper sleeves see page 554



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight
16_N-50-10-1/103_UV	23002552	S39 (S_10162_B-11)	bulk 20 pcs.	27357	12.4	50.0 g/1.75 oz. ¹⁾

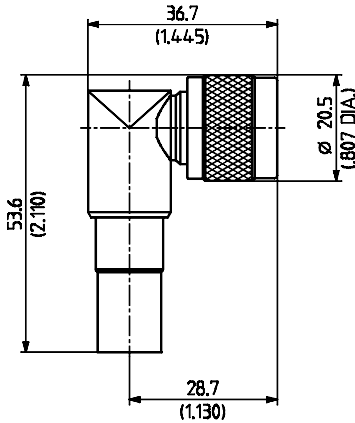
¹⁾ Centre contact not nickel underplated

Series N 50 Ω – cable connectors

Right angle cable plugs (male)

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554

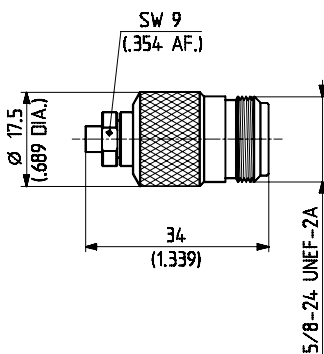


HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight
16_N-50-7-28/133_NE	22652040	U33 (RG_393_/U, ENVIROFLEX_B393)	single	27064	4 D	63.6 g/2.23 oz.
16_N-50-7-29/133_NE	22651494	U29, U42 (RG_213_/U, RADOX_RF_213)		9009	3 D	65.0 g/2.28 oz.
16_N-50-7-36/133_NE	22651495	U32, U43 (RG_214_/U, ENVIROFLEX_B214)		9009	3 D	66.0 g/2.31 oz.

Straight cable jacks (female)

For semi-rigid cables

- Cable entry soldered
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Frequency range (GHz)	Weight
21_N-50-2-14/133_NE ¹⁾	22642666	Y3, Y11, Y16 (SR_86)	single	9073	DC to 18	38.0 g/1.33 oz.
21_N-50-3-11/133_NE ¹⁾	22543921	Y5, Y12, Y17 (SR_141)		9005	DC to 18	38.0 g/1.33 oz.

¹⁾ Centre contact not nickel underplated

Series N 50 Ω – cable connectors

Straight cable jacks (female)

For flexible cables

- Cable entry clamp
- Centre contact soldered

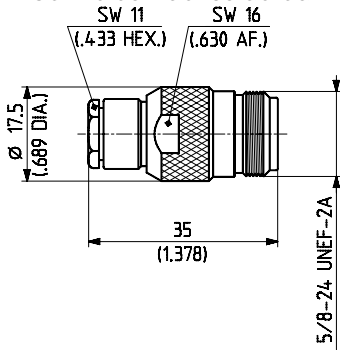


Fig. 1

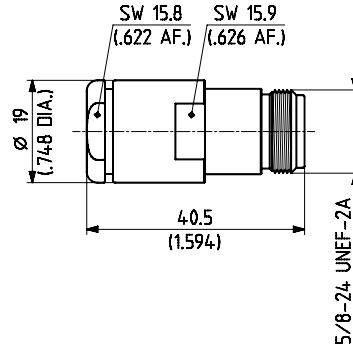


Fig. 2



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Weight	Fig.
21_N-50-3-5/133_NE	22543504	U7, U9, U11 (RG_223_/U, ENVIROFLEX_B223)	single	3017	38.0 g/1.33 oz.	1
21_N-50-7-8/133_NE	22542254	U29, U32, X11 (RG_213_/U, RADOX_RF_213)		3008	50.0 g/1.75 oz.	2

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554

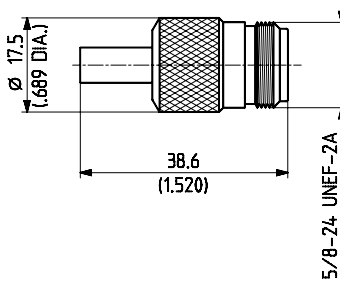


Fig. 1

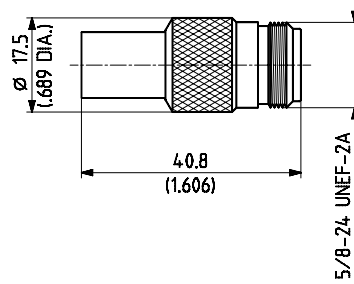


Fig. 2

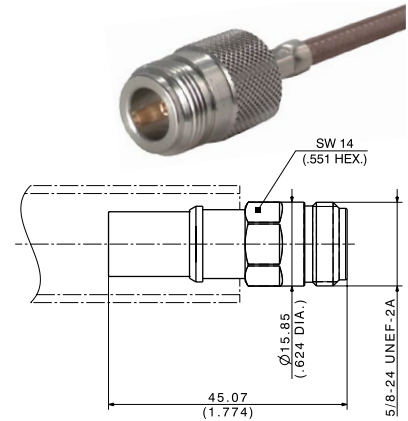


Fig. 3

HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight	Fig.
21_N-50-3-7/133_NE	22542229	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	3063	2 B	36.0 g/1.26 oz.	1
21_N-50-3-8/133_NE	22542231	U9, U39 (RG_223_/U, ENVIROFLEX_B223)		3063	2 B	36.0 g/1.26 oz.	1
21_N-50-3-12/133_NE	22651795	U11, U41 (RG_400_/U, ENVIROFLEX_400)		3063	2 B	35.0 g/1.23 oz.	1
21_N-50-7-13/133_NE	22542257	U29, U42 (RG_213_/U, RADOX_RF_213)		3061	3 D	38.0 g/1.33 oz.	2
21_N-50-7-14/133_NE	22542258	U32, U43 (RG_214_/U, ENVIROFLEX_B214)		3061	3 D	37.0 g/1.30 oz.	2
21_N-50-7-32/133_NE	84119763	U30, X32 (SPUMA_400, SPUMA_400-FR-01, SPUMA_400-RS-FR)		344575	4 D	31.5 g/1.11 oz.	3

Cable groups see page 32

Assembly tools see page 563

Mounting holes/PCB layouts see page 591

Series N 50 Ω – cable connectors

For flexible cables

- Cable entry crimp
- Centre contact plugged-in
- Degree of protection IP67

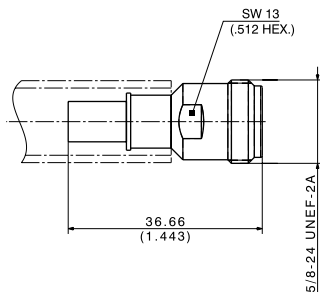


Fig. 1

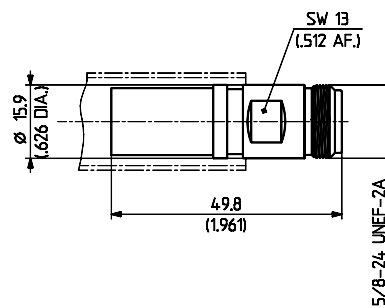


Fig. 2

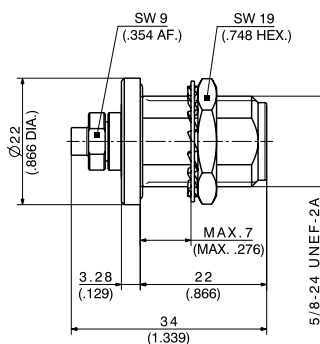


HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight	Fig.
21_N-50-4-6/133_NH	84110983	S28 (SPUMA_240)	bulk 100 pcs.	291867	6.5	22.8 g/0.8 oz.	1
21_N-50-10-1/133_UF ¹⁾	23003072	S39 (S_10162_B-11)	bulk 50 pcs.	27356	12.4	38.1 g/1.33 oz.	2

Straight bulkhead cable jacks (female)

For semi-rigid cables

- Cable entry soldered
- Centre contact soldered
- Mounting hole ML 12
- With panel seal
- Insulating washers see page 556



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Frequency range (GHz)	Weight
24_N-50-2-14/133_NE	22544637	Y3, Y11, Y16 (SR_86)	single	9073	DC to 12.4	39.0 g/1.37 oz.
24_N-50-3-14/133_NE	22542300	Y5, Y12, Y17 (SR_141)		9005	DC to 12.4	39.0 g/1.37 oz.

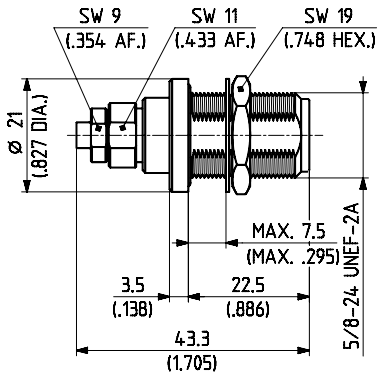
¹⁾ Centre contact not nickel underplated

Series N 50 Ω – cable connectors

Straight cable jacks (female)

For semi-rigid cables

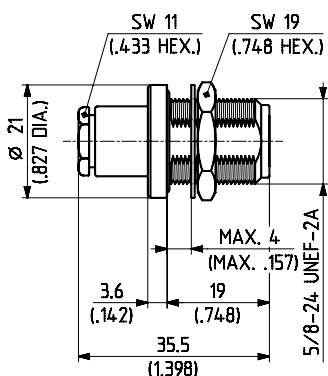
- Cable entry soldered
- Centre contact plugged-in
- Body material: stainless steel
- Mounting hole ML 12
- With panel seal
- Insulating washers see page 556



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Frequency range (GHz)	Weight
24_N-50-3-51/19-_NE	22642344	Y5, Y12 (SR_141)	single	9006	DC to 18	45.0 g/1.58 oz.

For flexible cables

- Cable entry clamp
- Centre contact soldered
- With panel seal
- Insulating washers see page 556



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Mounting hole	Weight
24_N-50-2-1/133_NE	22641239	U2 (RG_316_/U, ENVIROFLEX_316)	single	9150	ML 12	42.0 g/1.47 oz.

Series N 50 Ω – cable connectors

Straight bulkhead cable jacks (female)

For flexible cables

- Cable entry clamp
- Centre contact soldered
- With panel seal
- Insulating washers see page 556

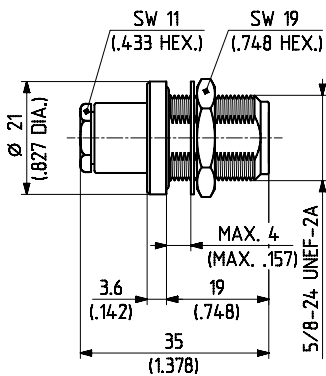


Fig. 1

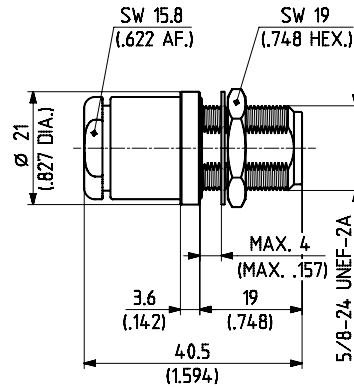


Fig. 2



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Mounting hole	Weight	Fig.
24_N-50-3-10/133_NE	22542295	U7, U9, U11 (RG_58_C/U, ENVIROFLEX_B58)	single	9150	ML 12	41.0 g/1.44 oz.	1
24_N-50-7-8/133_NE	22542323	U29, U32 (RG_214_/U, ENVIROFLEX_B214)		3008	ML 12	53.0 g/1.86 oz.	2

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554
- Insulating washers see page 556
- Mounting hole ML 12

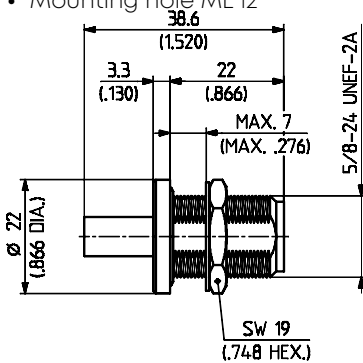


Fig. 1

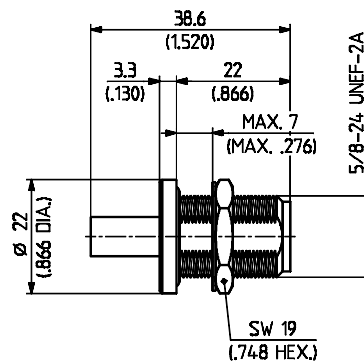


Fig. 2



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight	Fig.
24_N-50-2-4/133_NE	22650170	U2 (RG_316_/U, ENVIROFLEX_316)	single	9068	1 A	35.2 g/1.23 oz.	1
24_N-50-2-117/133_NE	22660124	U4 (K_02252_D, ENVIROFLEX_316_D)		9068	1 A	36.1 g/1.26 oz.	1
24_N-50-4-17/133_UE	22651789	S16 (S_04262_D-09)		3063	2 C	37.3 g/1.31 oz.	2 ¹⁾

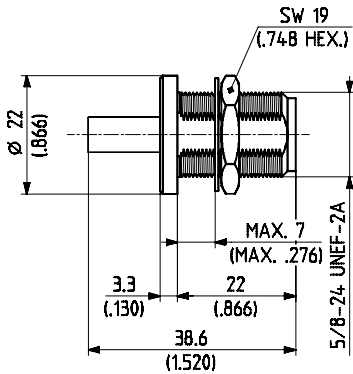
* Has to be crimped with large crimp tool or table press! Centre contact not nickel underplated

Series N 50 Ω – cable connectors

Straight bulkhead cable jacks (female)

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554
- Insulating washers see page 556
- Mounting hole ML 12

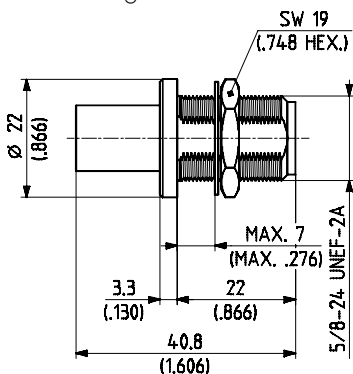


HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight
24_N-50-3-11/133_NE	22542296	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	3063	2 B	38.0 g/1.33 oz. *
24_N-50-3-12/133_NE	22542297	U9 (RG_223_/U, ENVIROFLEX_B223)				

* Has to be crimped with large crimp tool or table press!

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554
- Insulating washers see page 556
- Mounting hole ML 12



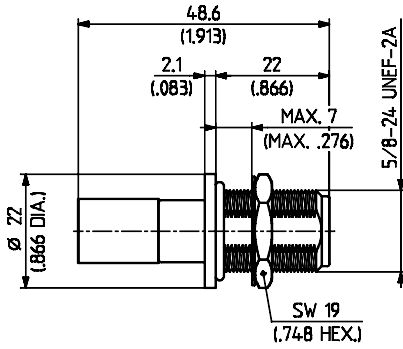
HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight
24_N-50-7-14/133_NE	22542326	U29, U42 (RG_213_/U, RADOX_RF_213)	single	3061	3 D	40.0 g/1.40 oz.
24_N-50-7-15/133_NE	22542327	U32 (RG_214_/U, ENVIROFLEX_B214)				

Series N 50 Ω – cable connectors

Straight bulkhead cable jacks (female)

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554
- Insulating washers see page 556
- Mounting hole ML 12



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight
24_N-50-7-24/133_NE	22649912	U33 (RG_393_/U, ENVIROFLEX_393)	single	27064	4 D	39.3 g/1.38 oz.

Series N 50 Ω – cable connectors

Straight panel cable jacks (female)

For semi-rigid cables

- Cable entry soldered
- Centre contact soldered
- Mounting hole ML 14

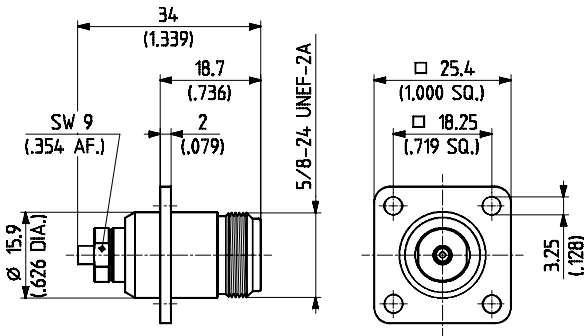


Fig. 1

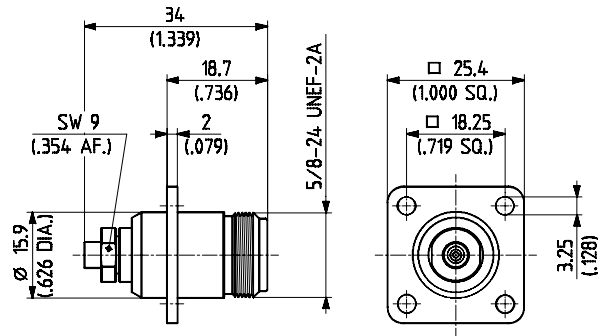
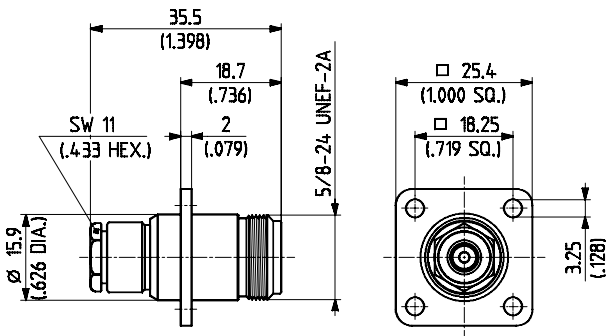


Fig. 2

HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Frequency range (GHz)	Weight	Fig.
25_N-50-2-14/133_NE ¹⁾	22641303	Y3, Y11, Y16 (SR_86)	single	9073	DC to 12.4	42 g/1.47 oz.	1
25_N-50-3-9/133_NE ¹⁾	22543952	Y5, Y12, Y17 (SR_141)		9005			2

For flexible cables



- Cable entry clamp
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Mounting hole	Weight
25_N-50-2-2/133_NE	22542332	U2 (RG_316_U, ENVIROFLEX_316)	single	3017	ML 14	45.0 g/1.58 oz.
25_N-50-3-4/133_NE	22542342	U7, U9, U11 (RG_58_C/U, ENVIROFLEX_B58)				44.0 g/1.54 oz.

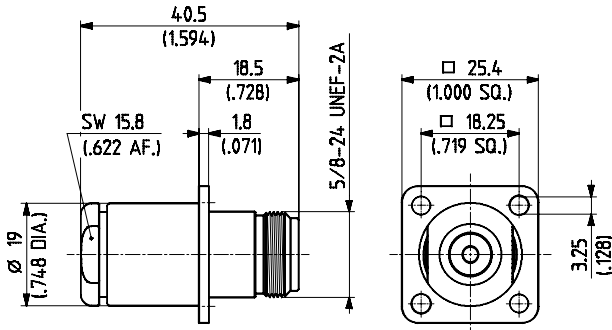
¹⁾ Centre contact NOT captivated

Series N 50 Ω – cable connectors

Straight panel cable jacks (female)

For flexible cables

- Cable entry clamp
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Mounting hole	Weight
25_N-50-7-8/133_NE	22542366	U29, U32 (RG_214_/U, ENVIROFLEX_B214)	single	3008	ML 18	55.0 g/1.93 oz.

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554
- Mounting hole ML 14

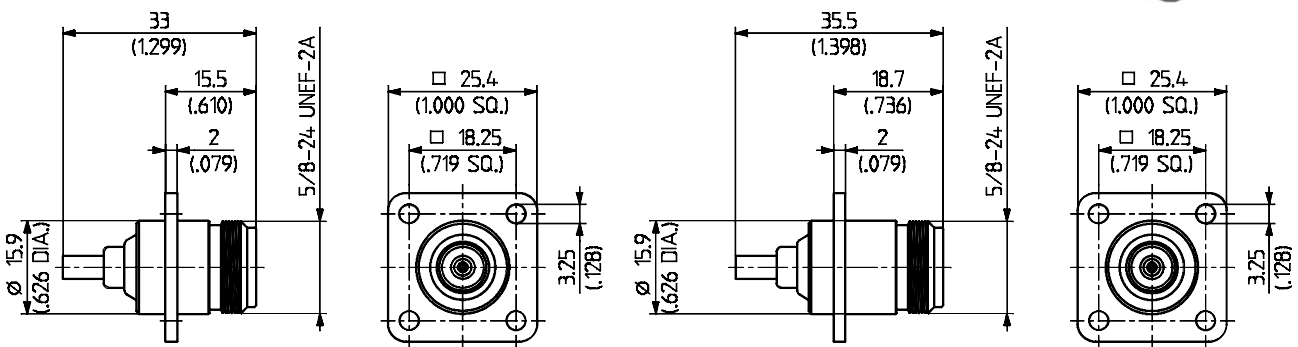


Fig. 1

Fig. 2

HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight	Fig.
25_N-50-2-9/133_NE	22651072	U2 (RG_316_/U, ENVIROFLEX_316)	single	9068	1 A	34.5 g/1.21 oz.	1
25_N-50-2-10/133_NE	22651054	U4 (K_02252_D, ENVIROFLEX_316_D)				38.6 g/1.35 oz.	2

Series N 50 Ω – cable connectors

Straight panel cable jacks (female)

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554
- Mounting hole ML 14

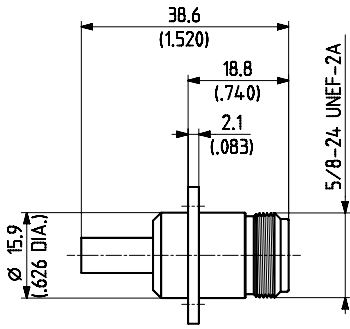


Fig. 1

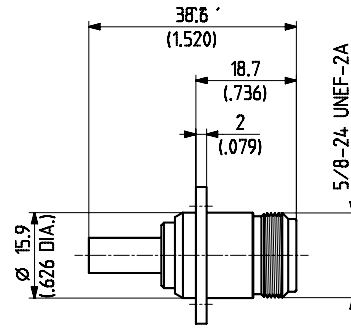
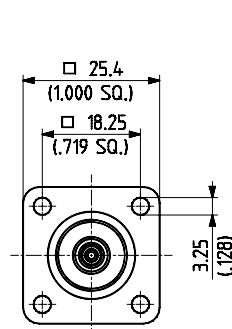
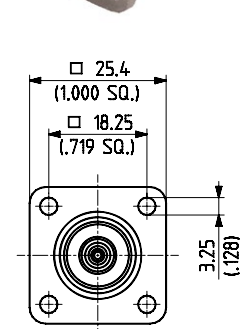


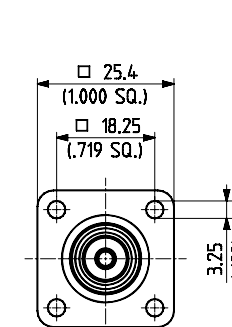
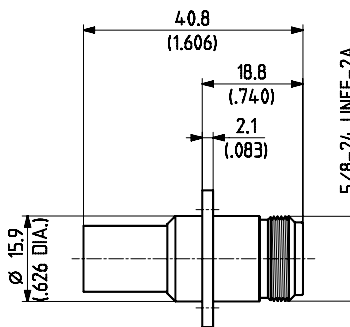
Fig. 2



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight	Fig.
25_N-50-3-6/133_NE	22542346	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	3063	2 B	39.0 g/1.37 oz.	1
25_N-50-3-7/133_NE	22542348	U9 (RG_223_/U, ENVIROFLEX_B223)				39.0 g/1.37 oz.	1
25_N-50-3-20/133_NE	22649913	U11 (RG_400_/U, ENVIROFLEX_400)				37.0 g/1.30 oz.	2

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554
- Mounting hole ML 14

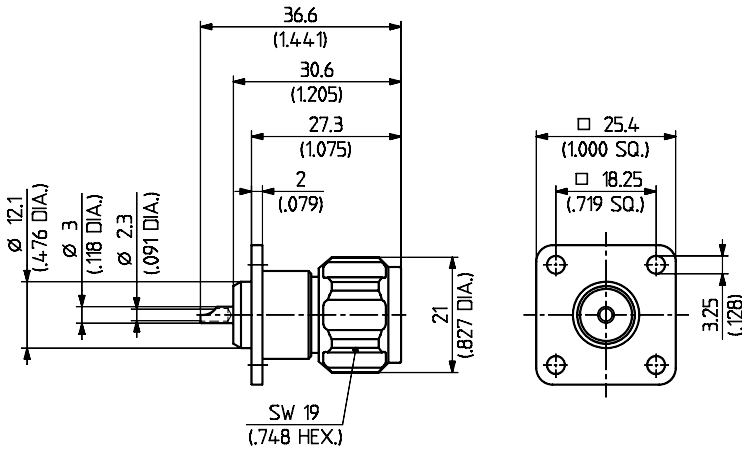


HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight
25_N-50-7-13/133_NE	22542369	U29 (RG_213_/U, RADOX_RF_213)	single	3061	3 D	42.0 g/1.47 oz.
25_N-50-7-14/133_NE	22542370	U32 (RG_214_/U, ENVIROFLEX_B214)				

Series N 50 Ω – receptacles with solder end

Receptacles, plug (male)

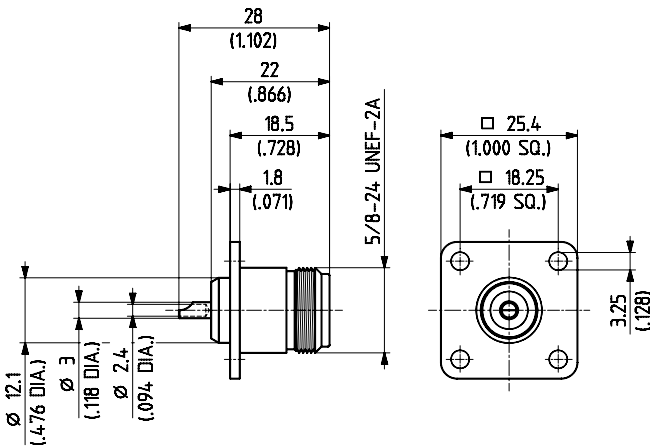
- Panel mounted



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Weight
13_N-50-0-1/133_NE	22542173	single	ML 16	46.0 g/1.61 oz.

Receptacles, jacks (female)

- Panel mounted

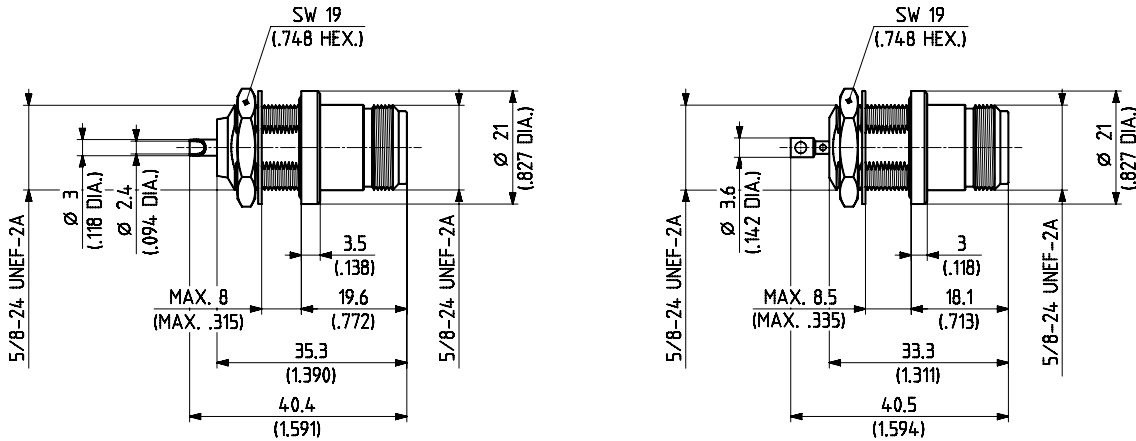


HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Weight
23_N-50-0-1/133_NE	22542272	single	ML 17	31.0 g/1.09 oz.

Series N 50 Ω – receptacles with solder end

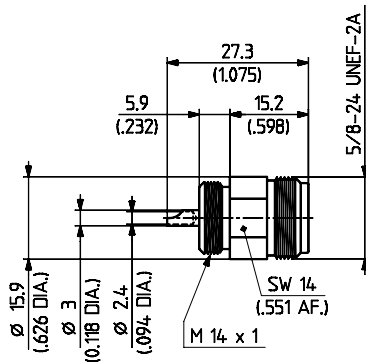
Receptacles, jacks (female)

- Bulkhead mounted
- Solder tags see page 557
- With panel seal
- Insulating washers see page 556



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Weight	Notes	Fig.
22_N-50-0-2/133_NE	22542265	single	ML12	47.0 g/1.65 oz.		1
22_N-50-0-3/133_NE	22644425				hermetically sealed leak rate $\leq 10^{-6}$ Torr l/s (atm cc/s) ¹⁾	2

- Bulkhead mounted



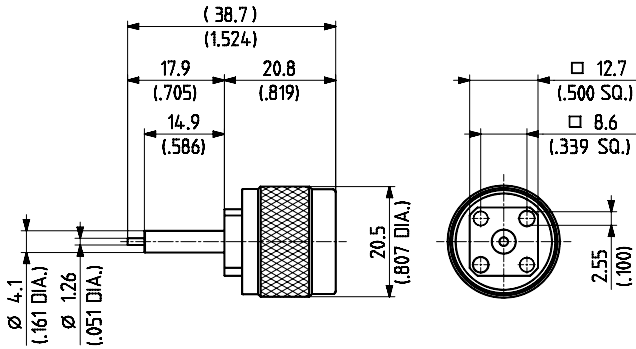
HUBER+SUHNER type	Item no.	Packaging	Weight	Notes
22_N-50-0-23/133_NF	22651448	bulk 50 pcs.	20.8 g/0.73 oz.	without nut and washer (direct screw into panel, thread M 14 × 1)

¹⁾ RoHs compliant – alternative on request

Series N 50 Ω – receptacles with solder end

Receptacles, plugs (male)

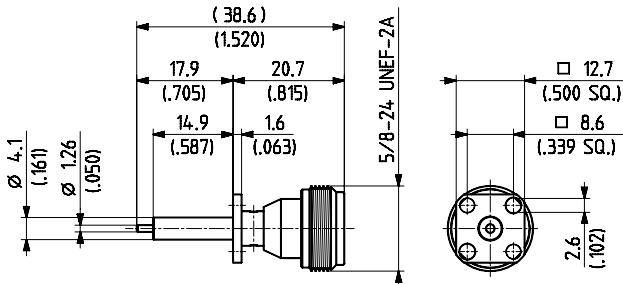
- Panel mounted
- Extended dielectric



HUBER+SUHNER type	Item no.	Packaging	Weight	Notes
13_N-50-0-30/133_NE	22642831	single	30.0 g/1.05 oz.	SMA flange size

Receptacles, jacks (female)

- Panel mounted
- Extended dielectric

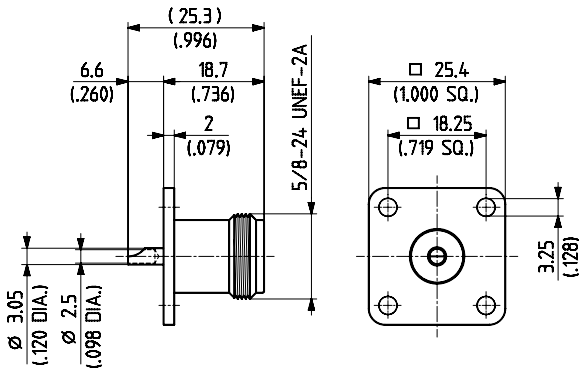


HUBER+SUHNER type	Item no.	Packaging	Weight	Notes
23_N-50-0-30/133_NE	22642835	single	14.0 g/0.49 oz.	SMA flange size

Series N 50 Ω – receptacles with solder end

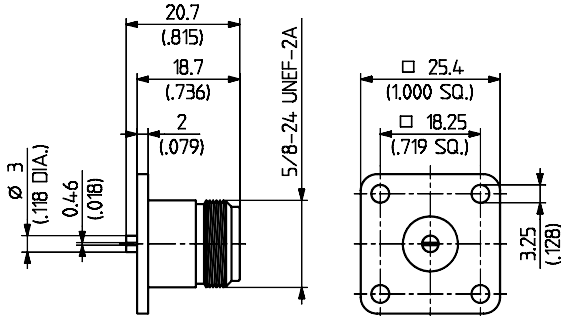
Receptacles, jacks (female)

- Panel mounted
- Solder pot terminal
- Flush dielectric



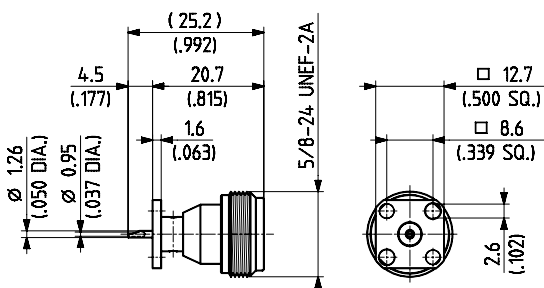
HUBER+SUHNER type	Item no.	Packaging	Weight
23_N-50-0-23/133_NE	22544751	single	24.0 g/0.84 oz.

- End of centre pin slotted
- Panel mounted
- Flush dielectric



HUBER+SUHNER type	Item no.	Packaging	Weight
23_N-50-0-69/133_NX	22648797	bulk 150 pcs.	27.9 g/0.89 oz.

- Panel mounted
- Solder pot terminal
- Flush dielectric

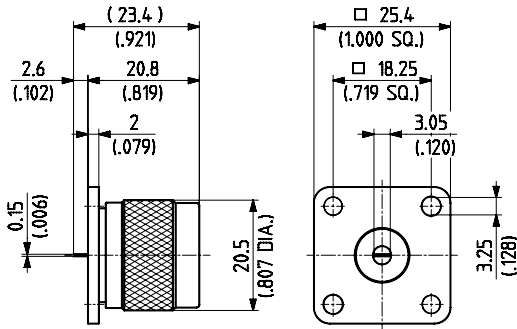


HUBER+SUHNER type	Item no.	Packaging	Weight	Notes
23_N-50-0-31/133_NE	22642836	single	13.6 g/0.48 oz.	SMA flange size

Series N 50 Ω – stripline launchers

Receptacles, plugs (male)

- Panel mounted
- Tab contact
- Flush dielectric



HUBER+SUHNER type	Item no.	Packaging	Weight
13_N-50-0-33/133_NE	22642834	single	36.0 g/1.26 oz.

Receptacles, jacks (female)

- Panel mounted
- Tab contact
- Flush dielectric

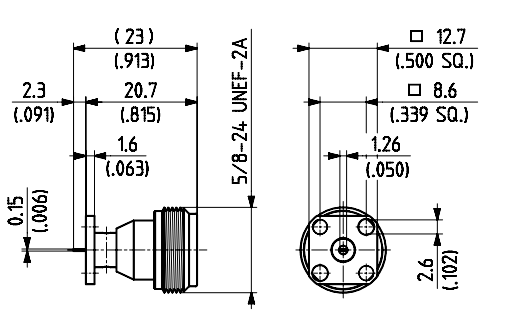


Fig. 1

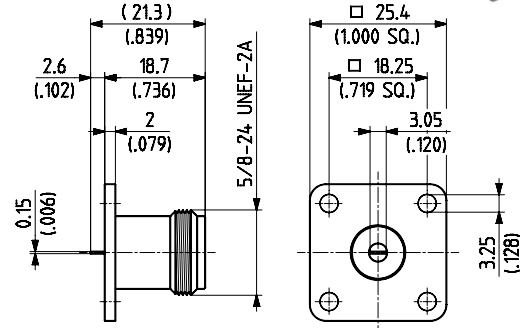


Fig. 2



HUBER+SUHNER type	Item no.	Packaging	Weight	Notes	Fig.
23_N-50-0-16/133_NE	22641166	single	13.5 g/0.47 oz.	SMA flange size	1
23_N-50-0-33/133_NE	22642837		24.5 g/0.86 oz.		2

Series N 50 Ω – protective caps

- Suitable for N 50 Ω and N 75 Ω
- With chain

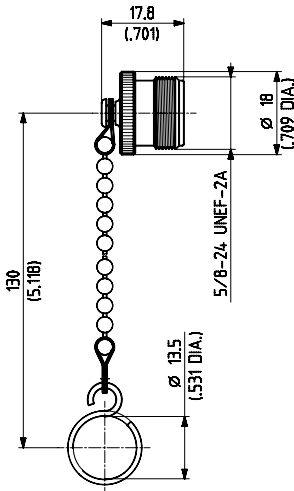


Fig. 1

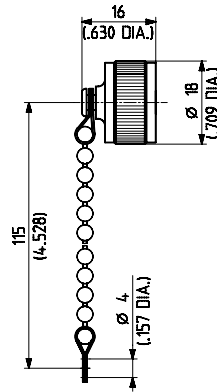
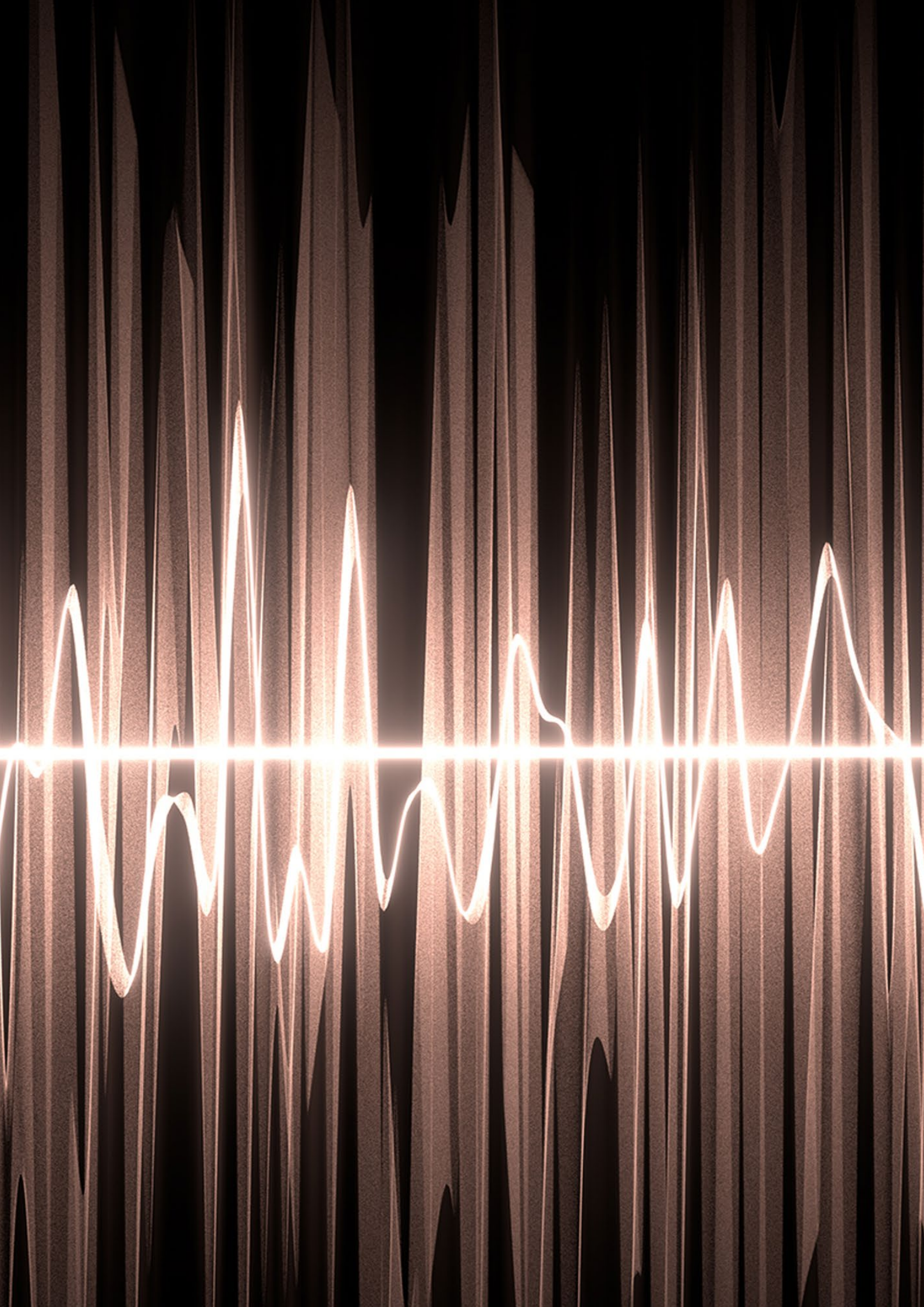


Fig. 2



HUBER+SUHNER type	Item no.	Packaging	Weight	Notes	Fig.
61_N-0-0-1/--3_-E	22542452	single	16.0 g/0.56 oz.	for plugs	1
62_N-0-0-1/--3_-E	22543433		15.0 g/0.53 oz.	for jacks	2



Series N 75 Ω – coaxial connectors

Description

HUBER+SUHNER N connectors are available with 50 Ω and 75 Ω impedance. The screw-type coupling mechanism provides a sturdy and reliable connection.

Compatibility

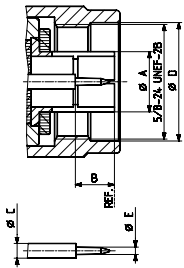
Center conductors of N 75 Ω connectors have a smaller diameter than those of the 50 Ω version. Therefore 50 Ω and 75 Ω connectors must not be mated with each other.

Content

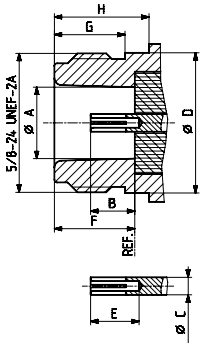
Description	425
Compatibility	425
Interface dimensions in mm/inches	425
Technical data	426
Cable connectors	427
Receptacles with solder end	429

Interface dimensions (mm/inches)

Plug (male)



Jack (female)



	Plug		Jack	
	min.	max.	min.	max.
A	–	8.38/0.330	8.03/0.316	8.13/0.320
B	5.33/0.210	5.84/0.230	4.75/0.187	5.26/0.207
C	–	2.00/0.079	–	2.00/0.079
D	16.00/0.630	–	–	15.93/0.627
E	1.00/0.039	1.05/0.041	5.33/0.210	–
F	–	–	9.04/0.356	9.19/0.362
G	–	–	6.76/0.266	–
H	–	–	10.72/0.422	–

IP rating (interface, mated) IP68

Series N 75 Ω – technical data

Electrical data	Requirements
Impedance	75 Ω
Frequency range	DC – 1.5 GHz
Dielectric withstanding voltage (at sea level)	2.5 kV rms, 50 Hz
Working voltage (at sea level)	≤ 1.0 kV rms, 50 Hz
Insulation resistance	≥ 5 · 10 ⁵ MΩ
Contact resistance · Centre contact · Outer contact	≤ 1.0 mΩ ≤ 1.0 mΩ
RF leakage (measured at 1 GHz)	≥ 90 dB

Mechanical data	Requirements
Coupling nut torque · Recommended	0.68 to 1.13 Nm/6.0 to 10.0 in lbs
Coupling nut retention force	≥ 450 N/101.2 lbs
Contact captivation	≥ 28 N/6.3 lbs
Cable retention force ¹⁾	see pages 32 – 41
Durability (matings)	≥ 500

Environmental data	Requirements
Temperature range	–65 to +165 °C/–85 to +329 °F
Climatic category	IEC → 55/155/21
Thermal shock	MIL-STD-202, method 107, condition B
Moisture resistance	MIL-STD-202, method 106
Corrosion	saltspray test acc. to MIL-STD-202, method 101, condition B
Vibration	MIL-STD-202, method 204, condition B
Shock	MIL-STD-202, method 213, condition G

Material data		
Connector parts	Material	Plating
Bodies	brass	SUCOPLATE®
Pin contacts	brass	gold/SUCOPRO® gold plating
Outer contact, slotted	spring bronze	SUCOPLATE®
Female contacts	copper-beryllium alloy spring bronze	gold/SUCOPRO® gold plating
Crimp ferrules	copper	SUCOPLATE®
Insulators, standard version	PTFE or PFA	
Gaskets	silicone rubber	

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

¹⁾ Value considers maximum load of the cables without irreversible variations of specifications.

Series N 75 Ω – cable connectors

Straight cable plugs (male)

For flexible cables

- Cable entry clamp
- Centre contact soldered

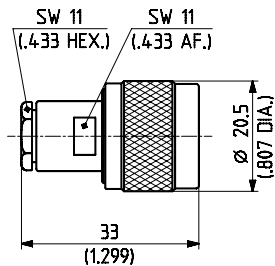


Fig. 1

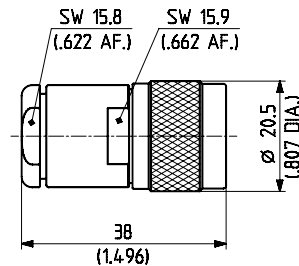


Fig. 2



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Weight	Fig.
11_N-75-4-3/133_NE	22542467	U16 (RG_59_B/U, RADOX_RF_59)	single	27042	34.0 g/1.19 oz	1
11_N-75-4-6/133_NE	22542475	U18 (G_04133_D)		27042	34.0 g/1.19 oz	1
11_N-75-7-4/133_NE	22542497	U34, U36 (G_07273_D)		3008	48.0 g/1.68 oz.	2

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554

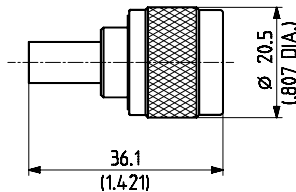


Fig. 1

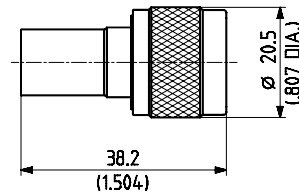


Fig. 2



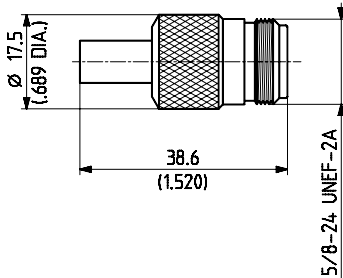
HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight	Fig.
11_N-75-4-8/133_NE	22542477	U16 (RG_59_B/U, RADOX_RF_59)	single	3063	2 C	30.0 g/1.05 oz.	1
11_N-75-4-9/133_NE	22542478	U18 (G_04133_D)		3063	2 C	30.0 g/1.05 oz.	1
11_N-75-7-16/133_NE	22542511	U34 (RG_11_A/U)		3061	2 D	32.0 g/1.12 oz.	2
11_N-75-7-18/133_NE	22542512	U36 (G_07273_D)		3061	2 D	32.0 g/1.12 oz.	2

Series N 75 Ω – cable connectors

Straight cable jacks (female)

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554

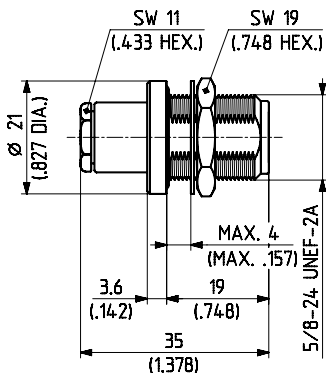


HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight
21_N-75-4-8/133_NE	22640810	U16 (RG_59_B/U, RADOX_RF_59)	single	3063	2 C	34.0 g/1.19 oz.

Straight bulkhead cable jacks (female)

For flexible cables

- Cable entry clamp
- Centre contact soldered
- With panel seal
- Insulating washers see page 556

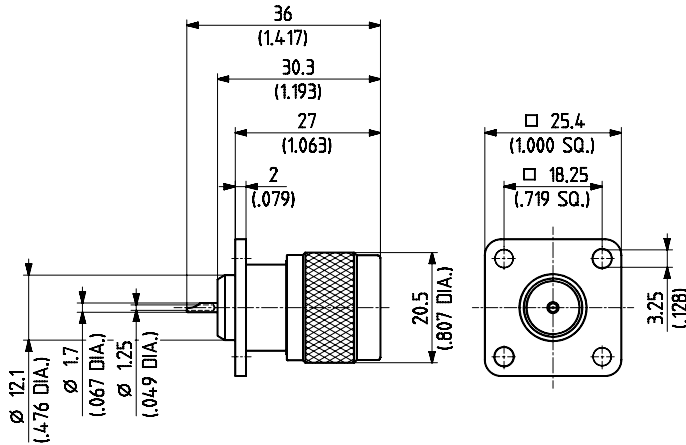


HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Mounting hole	Weight
24_N-75-4-2/133_NE	22543628	U16 (RG_59_B/U, RADOX_RF_59)	single	27042	ML 12	40.0 g/1.40 oz.

Series N 75 Ω – receptacles with solder end

Flange mount, plug (male)

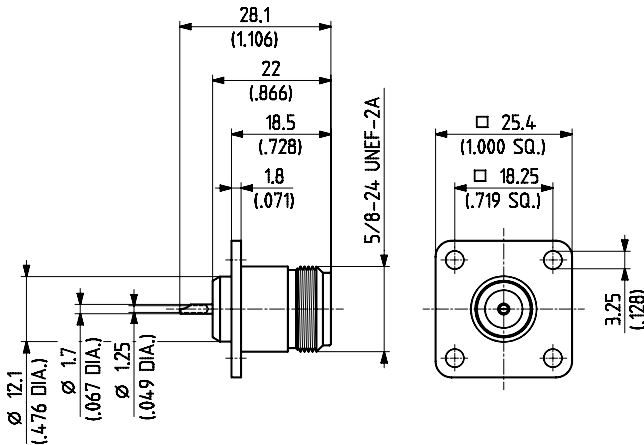
- Panel mounted



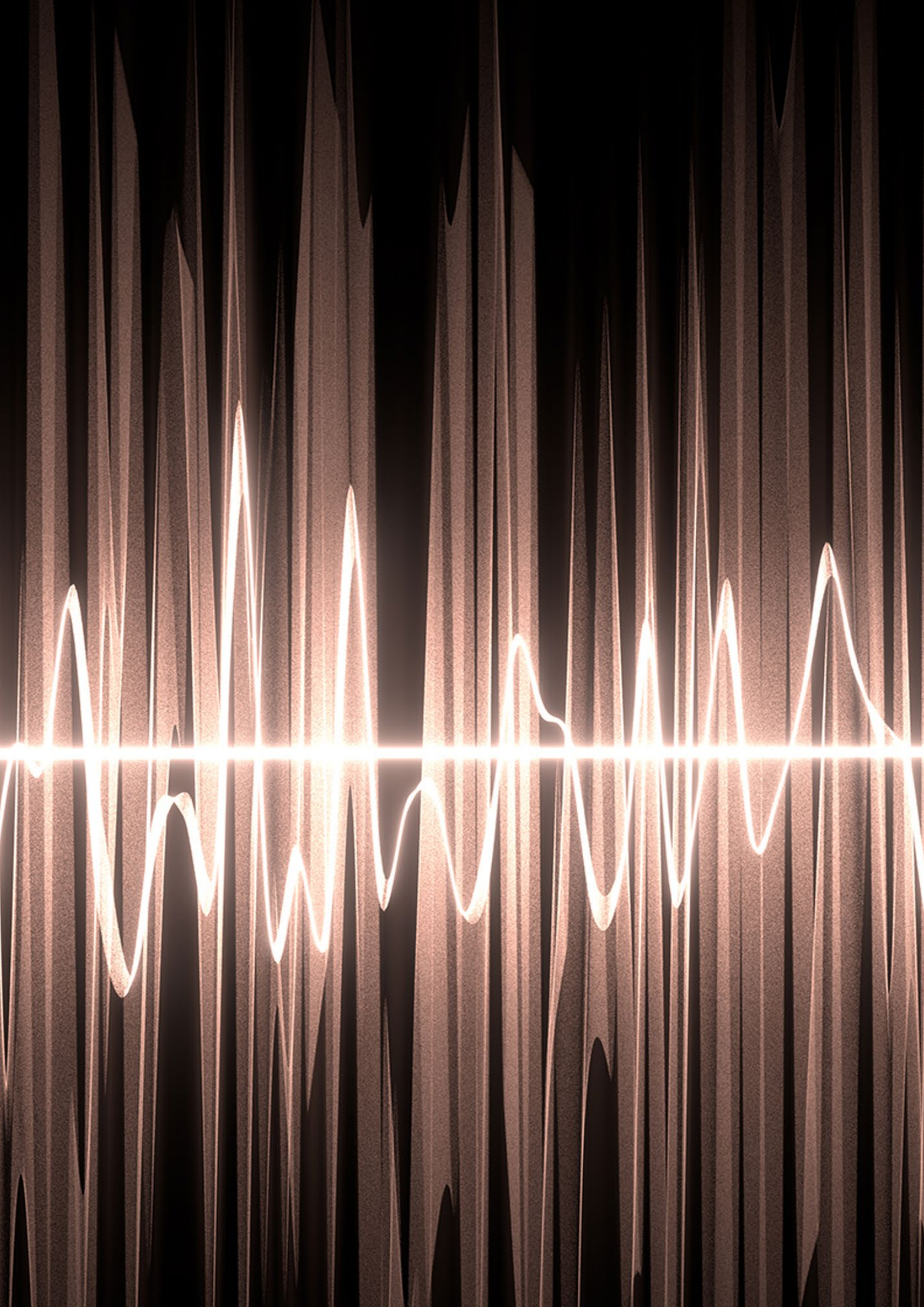
HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Weight
13_N-75-0-1/133_NE	22542522	single	ML 16	45.0 g/1.58 oz.

Flange mount, jack (female)

- Panel mounted



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Weight
23_N-75-0-1/133_NE	22542575	single	ML 17	30.0 g/1.05 oz.



Series 4.3-10

Description

HUBER+SUHNER 4.3-10 connectors offer very low PIM performance together with weight and compactness advantages. A key feature of this connector is the separation of the electrical and mechanical plane, which results in a lower coupling torque and the possibility of offering the connector with screw, handscrew and quick-lock design, thus simplifying the installation effort and offering for all mechanisms a very high and reliable electrical performance independently from the torque applied.

Applications

Superior electrical and mechanical features of 4.3-10 make it an ideal interface for base stations, distributed antenna systems (DAS), in-building architecture and small cell applications.

Features

- Radial contact
- Compact size (25.4 mm flange)
- 40 % lower weight than 7/16
- Multiple coupling options
- Ease of installation
- Protection of electrical contact points

Content

Description	431
Applications	431
Features	431
Benefits	431
Technical data	432
Admissible RF power	433
Cable connectors	434
Receptacles	437
Protective caps	438
4.3-10 Plus	439
Calibration with precision adapters	440

Benefits

- Excellent PIM and RL independent of torque
- Space saving
- Lightweight antennas and radios
- Flexible installation
- Lower cost of ownership
- No performance degradation due to infield damages



Series 4.3-10 – technical data

The 4.3-10 interface dimensions conform to the international standards IEC 61169-54.

Electrical data		IEC 61169-1
Nominal impedance		50 Ω
Frequency range		up to 12 GHz
Reflection factor (interface only)	9.2.1.	0.015 max. DC to 4 GHz (RL \geq 36 dB) 0.025 max. 4 – 6 GHz (RL \geq 32 dB)
Centre and outer contact resistance	9.2.3.	initial \leq 1.0 m Ω after conditioning \leq 1.5 m Ω
Insulation resistance	9.2.5.	initial \geq 5 G Ω after conditioning \geq 200 M Ω
Proof voltage at sea level r.m.s. values at 40 Hz to 60 Hz	9.2.6.	2500 V
Screening effectiveness Torque/screw type Hand screw and quick-lock	9.2.8.	DC to 6 GHz: \geq 120 dB DC to 3 GHz: \geq 90 dB; 3 to 6 GHz: \geq 70 dB
Intermodulation 2 \times 20 W 2 \times 40 W	IEC 62037-3	-166 dBc (0.4 to 4 GHz) -160 dBc (0.4 to 4 GHz)

Mechanical data		IEC 61169-1
Mechanical operations/matings	9.3.15	> 100 operations
Centre contact captivation (axial force)	9.3.5.	30 N
Coupling torque (screw)	9.3.6.	5 Nm
Engagement force (quick-lock)	9.3.6.	typ. 100 N
Separation force (quick-lock)	9.3.6.	typ. 80 N
Coupling mechanism retention force (quick-lock)	9.3.11.	\geq 450 N
Vibration	9.3.3.	100 m/s ² , 10 g acceleration, 2 – 200 Hz
Shock	9.3.14.	981 m/s ² , 100 g acceleration, ½ sin 6 ms

Environmental data		IEC 61169-1
Temperature range		-55 to +90 °C
Climatic category ¹⁾		40/85/21
Sealing	IEC 60529	IP68 2.5 bar, 1 h, 25 °C
Salt mist	9.4.6.	duration of spraying 48 h (720 h on request)
High temperature endurance	9.6.	250 h at 85 °C

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

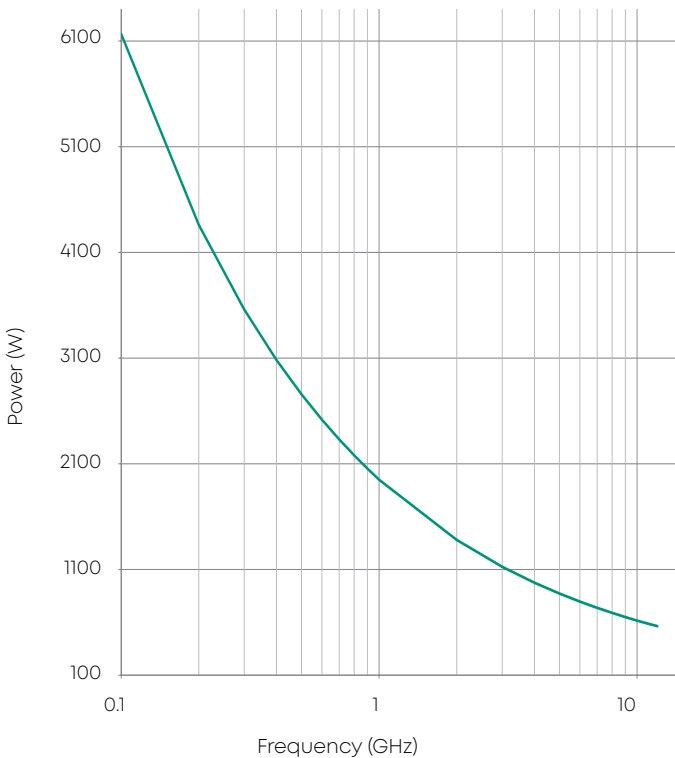
¹⁾ For certain connectors the upper temperature limit is restricted by the cable characteristics. Reference should be made to the relevant cable specification.

Series 4.3-10 – admissible RF power

The maximum temperature usually occurs on the connector inner conductor. When connectors are employed in a coaxial cable assembly, the connector should have a center conductor diameter that is equal to or larger than the cable center conductor diameter in order to maximise the power handling of the assembly.

The curves are the results of a typical application and are simulation results. Curves may vary depending on the connector. For specific questions please ask our offices.

$T_{amb} = 25\text{ °C/sea level}$
 $VSWR = 1.0$



Material data		
Connector parts	Material	Plating
Bodies	brass	SUCOPLATE®, Tin-Nickel , silver, Nickel-Phosphorus
Outer contact	spring bronze	silver
Insulators	PTFE	
Centre contact	CuBe/spring bronze, brass	silver
Gaskets	MVQ	
Coupling nut	brass	SUCOPLATE®

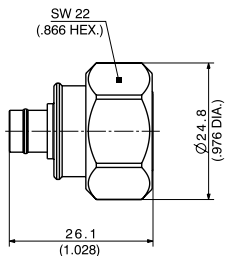
Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Series 4.3-10 – cable connectors

Straight cable plugs (male)

For semi-rigid, Sucoform and Multiflex cables

- Cable entry soldered
- Centre contact soldered

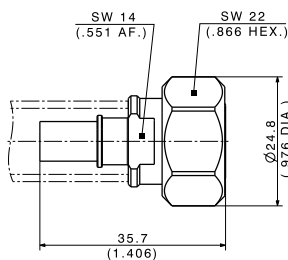


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging
11_4310-50-3-X2/033_-H	85089256	Y12 (SUCOFORM_141_Cu)	bulk 100 pcs.

X: torque

Flexible cable

- Center contact plugged
- Outer contact: Crimped



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging
11_4310-50-4-X1/033_-H	85078855	X28 (Spuma_240, LMR240)	bulk

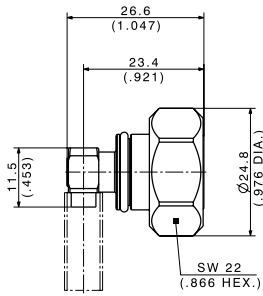
X: torque

Series 4.3-10 – cable connectors

Right angle cable plugs (male)

For semi-rigid cables, Sucoform and Multiflex cables

- Cable entry soldered
- Centre contact soldered



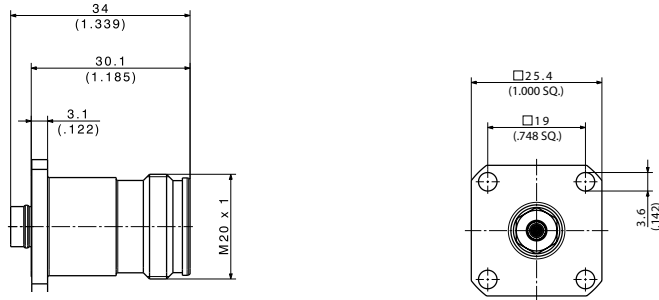
HUBER+SUHNER type	Item no.	Cable group (example)	Packaging
16_4310-50-3-X1/003_-H X: torque	85064160	Y12 (SUCOFORM_141)	

Series 4.3-10 – cable connectors

Straight cable jacks (female)

For semi-rigid cables, Sucoform and Multiflex cables

- Cable entry soldered
- Centre contact soldered

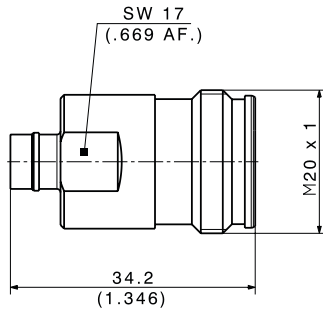


Flange size

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Notes	Fig.
25_4310-50-3-6/003_-Y	85116109	Y5, Y12 (Sucoform/EZ 141)	tray	for cable type 0.141	1

For semi-rigid, Sucoform and Multiflex cables

- Cable entry soldered
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Fig.
21_4310-50-3-1/003_-Y	85068552	Y12 (SUCOFORM_141_Cu)	tray 50 pcs.	1

Series 4.3-10 – receptacles

Straight panel receptacle (jack)

With coaxial end

- 4 hole, 1 inch flange

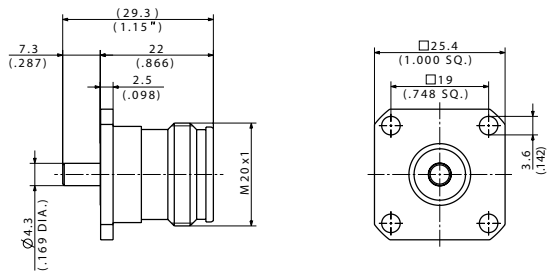


Fig. 1

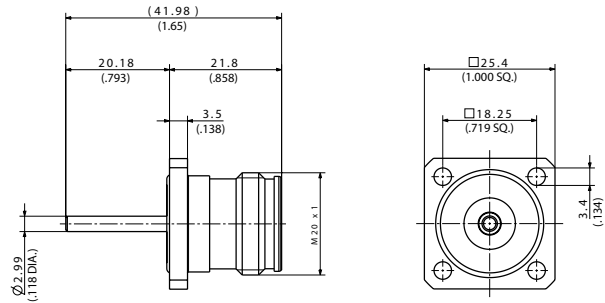


Fig. 2

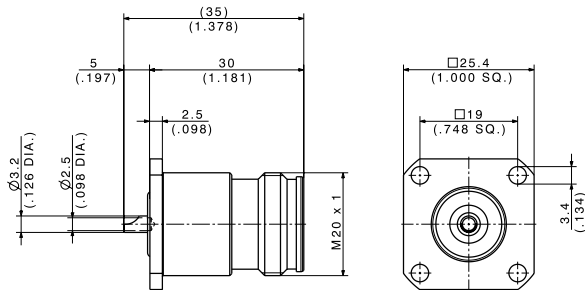


Fig. 3



Connectors

HUBER+SUHNER type	Item no.	Packaging	Notes	Fig.
23_4310-50-0-2/003_-Y	85020599	tray 60 pcs		1
23_4310-50-0-5/003_-Y	85021011	tray 60 pcs	with panel seal	2
23_4310-50-0-5/003_-E	85020470	single		
23_4310-50-0-16/003_-Y	85064166	tray 50 pcs		3

Series 4.3-10 – protective caps

Protective cap for 4.3-10 female (jack) interface

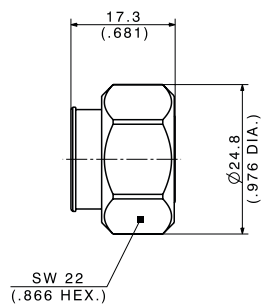
- Economical design
- Snap on silicon material design



HUBER+SUHNER type	Item no.	Packaging	Notes
62_4310-0-0-1/---_H	85092602	each	Ingress Protection IP X8

Protective cap for 4.3-10 jack

- Water protection, IP68



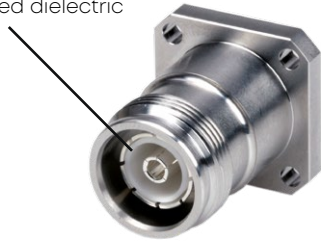
HUBER+SUHNER type	Item no.	Packaging	Notes
62_4310-0-0-X3/-33_-E X: torque	85083632	each	4.3-10 torque type

4.3-10 Plus

Eliminating the 4.1-9.5 mating problem

- Patented solution, US 9,831,619 B2
- IEC compatible design
- Extended dielectric prevents damage from 4.1-9.5 (mini-Din) male connectors
- Antenna and filter connectors per customer requests

Extended dielectric



4.3-10 plus



4.3-10

Comparison between 4.3-10 plus and 4.3-10 standard interface.

HUBER+SUHNER type	Item no.	Packaging	Fig.
23_4310-U50-0-58/003_-Y	85105910	tray packaging	1

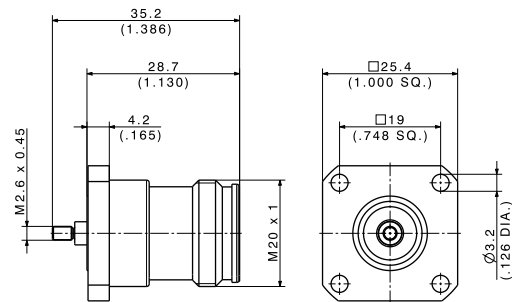


Fig. 1

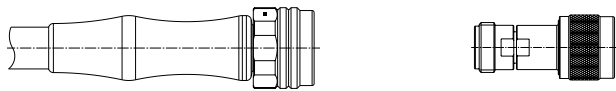
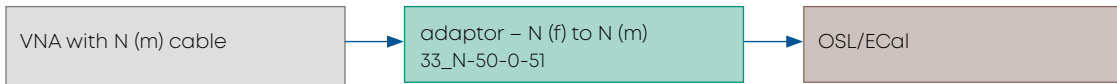
Series 4.3-10 – calibration with precision adaptors (swapping method)

For return loss/VSWR measurements of 4.3-10 connectors, HUBER+SUHNER recommends the following calibration method. Depending on the 4.3-10 side (male or female) or ports on the test leads, different configurations are possible. Four different configurations with PC3.5 calibration kits or precision N calibration kits are listed below:

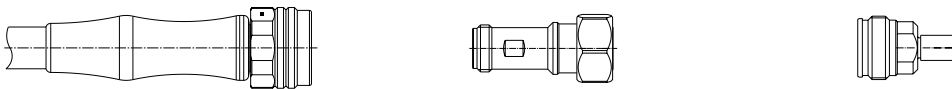
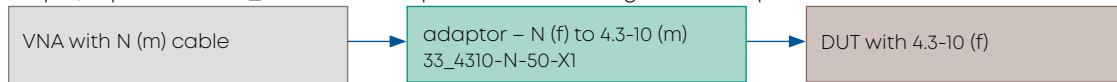
Configuration 1

DUT type: 4.3-10 female, test port/cable: N male

Step 1, calibrate with precision adaptor



Step 2, replace the 33_N-50-0-51 adaptor with matching 4.3-10 adaptor and connect with DUT



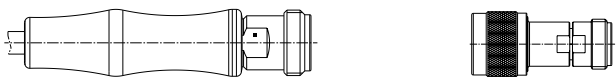
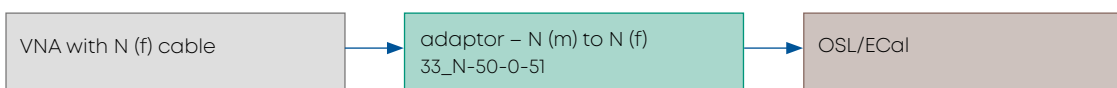
Note:

For VNA measurement cable with PC 3.5 (m) instead of N (m), replace the 33_N-50-51 adaptor with matching 33_PC35-50-0-2 for calibration and 33_4310-PC35-50-X1 for measurement.

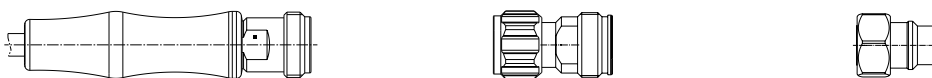
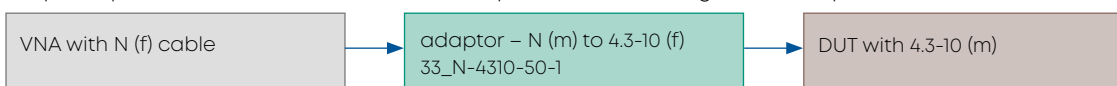
Configuration 2

DUT type: 4.3-10 male; test port/cable: N female

Step 1, calibrate with measuring adaptor



Step 2, replace the 33_N-50-0-51/193 NE adaptor with matching 4.3-10 adaptor and connect with DUT



Note:

For VNA measurement cable with PC 3.5 (f) instead of N (f), replace the 33_N-50-51 adaptor with matching 33_PC35-50-0-2 for calibration and 33_PC35-4310-50-1 for measurement.

Series 7/16 – coaxial connectors

Description

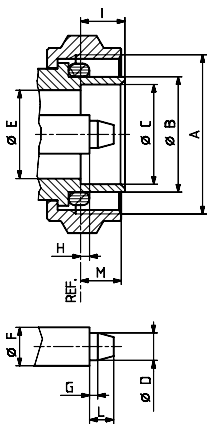
HUBER+SUHNER 7/16 connectors are mechanically very rugged coaxial connectors with screw lock. They have a characteristic impedance of 50 Ω and are applicable with excellent electrical properties up to 7.5 GHz. Transmission of medium to high power with radio transmitters and low PIM transmission of received signals such as in mobile phone base stations are typical applications.

Content

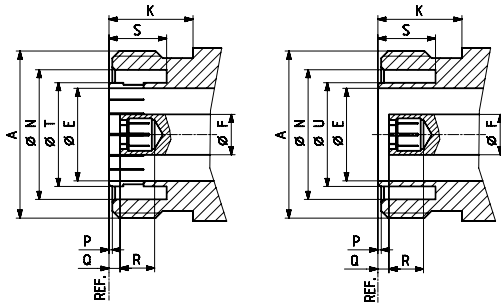
Description	441
Interface dimensions in mm/inches	441
Technical data	442
Cable connectors	445
Combination system	453
Receptacles with solder end	456
Protective cap	457

Interface dimensions (mm/inches)

Plug (male)



Jack (female)



	Plug		Jack	
	min.	max.	min.	max.
A	M29 × 1.5		M29 × 1.5	
B	20.60/0.811	21.40/0.843	–	–
C	18.03/0.710	18.21/0.717	–	–
D	4.96/0.195	5.04/0.198	–	–
E	15.85/0.624	16.25/0.640	15.85/0.624	16.25/0.640
F	7.00/0.276 nom.		7.00/0.276 nom.	
G	1.40/0.055	1.60/0.063	–	–
H	1.47/0.058	1.77/0.070	–	–
I	7.00/0.276	8.00/0.315	–	–
K	–	–	10.00/0.394	–
L	–	4.50/0.177	–	–
M	7.00/0.276	9.00/0.354	–	–
N	–	–	22.10/0.870	22.90/0.902
P	–	–	0.50/0.020	0.70/0.028
Q	–	–	1.77/0.070	2.07/0.082
R	–	–	5.00/0.197	–
S	–	–	8.10/0.319	–
T	–	–	–	18.50/0.728 ¹⁾
U	–	–	–	18.50/0.709

Interface dimensions conformable to the standards:

International	IEC 61169-4
Europe	CECC 22 190
Germany	DIN 47223

Degree of protection (interface, mated) IP68

¹⁾ Prior to slotting

Series 7/16 – technical data

Electrical data	Requirements
Impedance	50 Ω
Frequency range	DC to 7.5 GHz combination types: DC to 1 GHz
Dielectric withstanding voltage (at sea level) Combination system	4.0 kV rms, 50 Hz 2.5 kV rms, 50 Hz
Working voltage (at sea level) Combination system	≤ 2.5 kV rms, 50 Hz ≤ 1.0 kV rms, 50 Hz
Insulation resistance	$\geq 10^4$ M Ω
Contact resistance Centre contact Outer contact	≤ 0.4 m Ω ≤ 1.5 m Ω
RF-leakage (at 1 GHz)	≥ 110 dB
VSWR	see table below

Typical VSWR ¹⁾	Frequency range			Cable group
	1 GHz	2.5 GHz	5 GHz	
Straight connectors	1.04	1.05	1.12	M5, M7
	1.05	1.07	1.10	U29, U32
	1.03	1.05	1.10	S39
Right angle connectors	1.04	1.05	1.12	M5; M7

Other connections and cables on request.

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

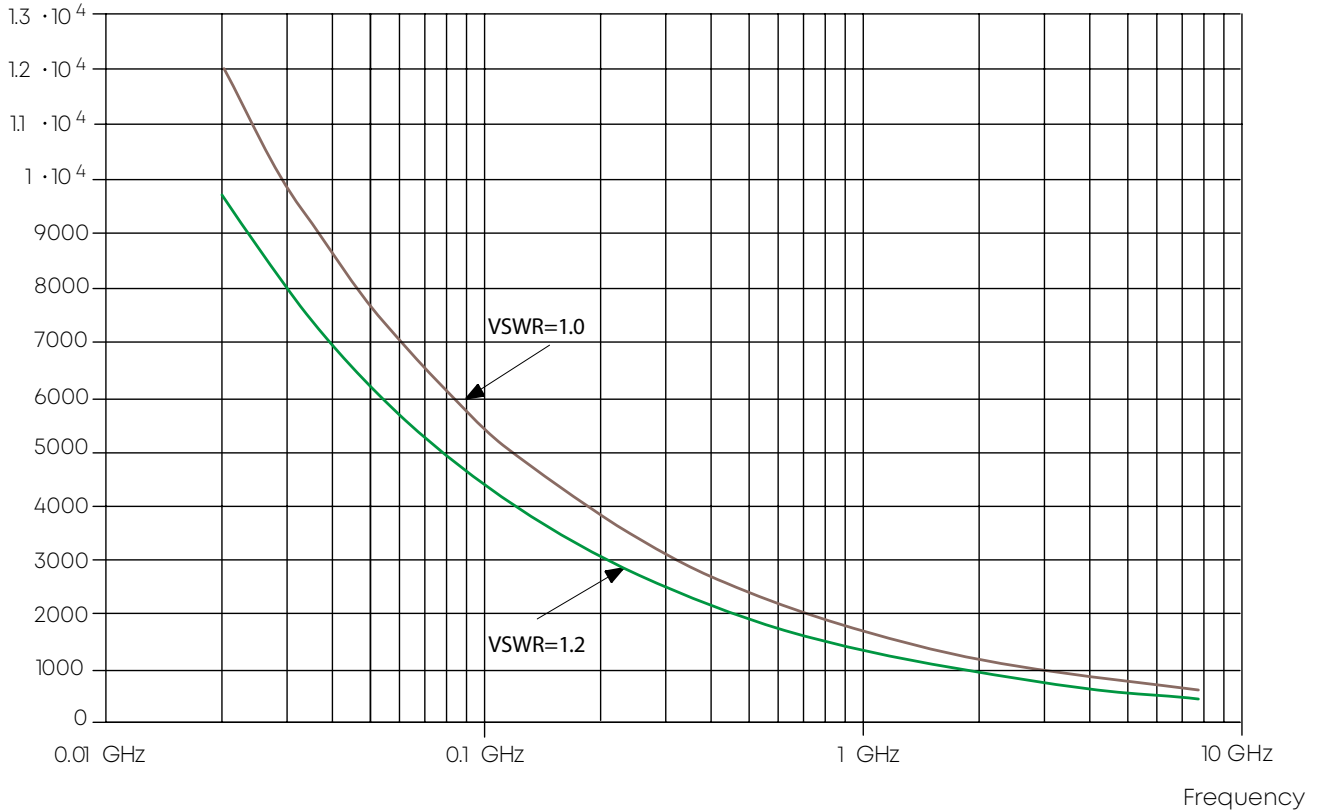
¹⁾ Values which can be achieved when connectors are perfectly fixed onto cable.

Series 7/16 – technical data

Admissible power of 7/16 connectors

Power (Watt)

for 40 °C/104 °F
at sea level



Mechanical data	Requirements
Coupling nut torque · Recommended	25 to 30 Nm/221 to 260 in lbs
Coupling nut retention force	≥ 1000 N/225.0 lbs
Contact captivation	≥ 200 N/45.0 lbs
Cable retention force ¹⁾	see pages 32 – 41
Durability (matings)	≥ 500

Environmental data	CECC 22190 test conditions	Equivalent MIL test conditions
Temperature range		-65 to +165 °C/-85 to +329 °F
Climatic category	4.6.5 → 55/155/56	
Corrosion (mated connectors)	4.6.10 → IEC 68-2-11 Ka	saltspray test acc. to MIL-STD-202, method 101, condition B
Vibration	4.6.3 → IEC 68-2-6 Fc	

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

¹⁾ Value considers maximum load of the cables without irreversible variations of specifications.

Series 7/16 – technical data

Material data		
Connector parts	Material	Plating
Bodies	brass	SUCOPLATE®
Pin contacts	brass	silver
Outer contact, jacks Socket contact	spring bronze	silver
Crimp ferrules	copper	SUCOPLATE®
Insulators, standard version	PTFE or PFA	
Gaskets	silicone rubber	

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Series 7/16 – cable connectors

Straight cable plugs (male)

For Sucoform cables

- Cable entry soldered
- Centre contact soldered

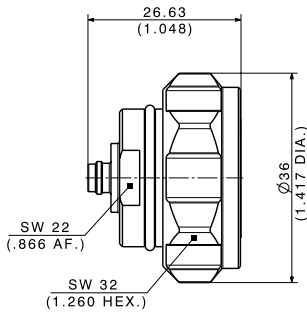


Fig. 1

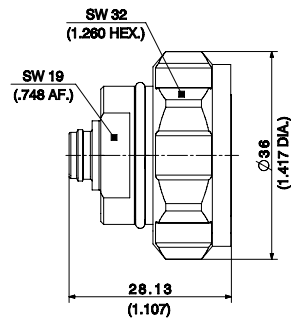


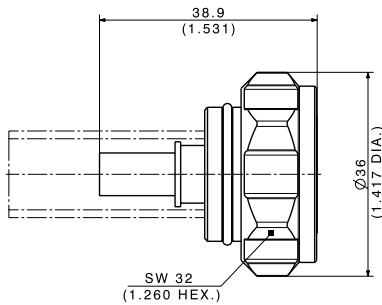
Fig. 2



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Weight	Fig.
11_716-50-3-3/003_-Y	23031257	Y12 (SUCOFORM_141)	bulk 30 pcs.	196279	82.8 g/2.92 oz.	1
11_716-50-5-6/003_-Y	84008435	Y14 (SUCOFORM_250-01)	bulk 10 pcs.	215393	75.0 g/2.65 oz.	2

For flexible cables

- Cable entry crimp
- Centre contact plugged-in
- Degree of protection IP67



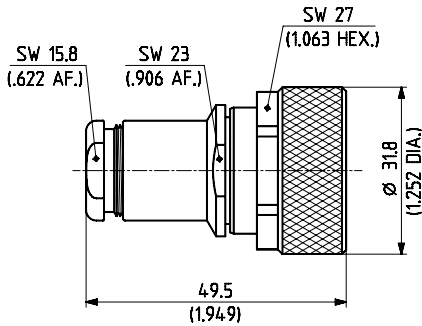
HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Weight
11_716-50-4-5/033_-Y	84098543	X9, X28 (SX_04172_B-60, SPUMA_240, SPUMA_240-FR-01)	tray 20 pcs.	327739	74.47 g/2.62 oz.

Series 7/16 – cable connectors

Straight cable plugs (male)

For flexible cables

- Cable entry HUBER+SUHNER pressure-sleeve
- Centre contact soldered



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Weight
11_716-50-7-3/003_-E	22544075	U29 (RG_213_/U, RADOX_RF_213)	single	9018	105.0 g/3.68 oz.
11_716-50-7-4/003_-E	22544076	U32 (RG_214_/U, ENVIROFLEX_B214)			100.0 g/3.50 oz.

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554

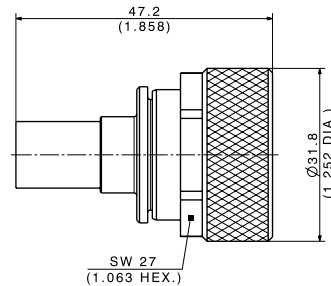
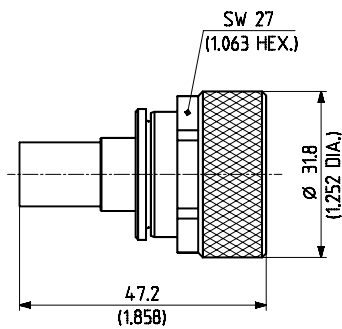


Fig. 1

Fig. 2



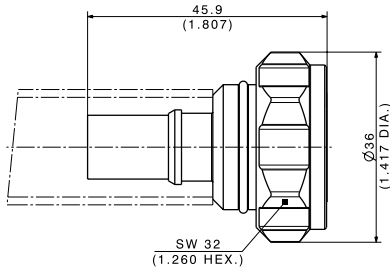
HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight	Fig.
11_716-50-7-1/003_-E	22544073	U29 (RG_213_/U, RADOX_RF_213)	single	9017	3 D	85.0 g/2.98 oz.	1
11_716-50-7-2/003_-E	22544074	U32 (RG_214_/U, ENVIROFLEX_B214)				85.0 g/2.98 oz.	1
11_716-50-7-18/003_-E	22651493	U33 (RG_393_/U, ENVIROFLEX_393)				87.65 g/3.09 oz.	2

Series 7/16 – cable connectors

Straight cable plugs (male)

For flexible cables

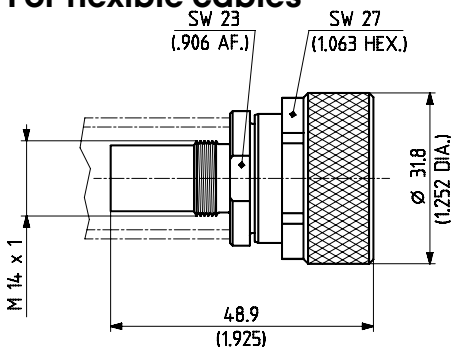
- Cable entry crimp



- Centre contact plugged-in
- Degree of protection IP67

HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight
11_716-50-7-31/033_-Y	85010777	U30 (SPUMA_400, SPUMA_400-FR-01)	tray 10 pcs.	418807	D	89.5 g/3.16 oz.

For flexible cables



- Cable entry crimp
- Centre contact soldered

HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight
11_716-50-7-14/003_-E	22646908	S32 (S_07262_BD)	single	27003	D	91.0 g/3.19 oz. ¹⁾

¹⁾ Type available with additional sealing ferrule (IP67)

Series 7/16 – cable connectors

Straight cable plugs (male)

For flexible cables

- Cable entry crimp
- Centre contact plugged-in
- Degree of protection IP67

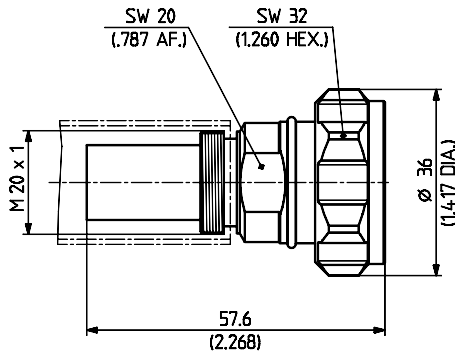


Fig. 1

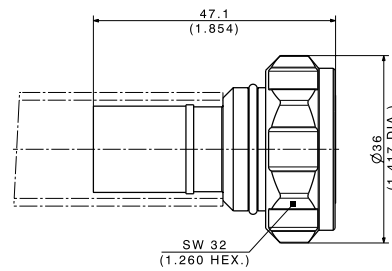


Fig. 2



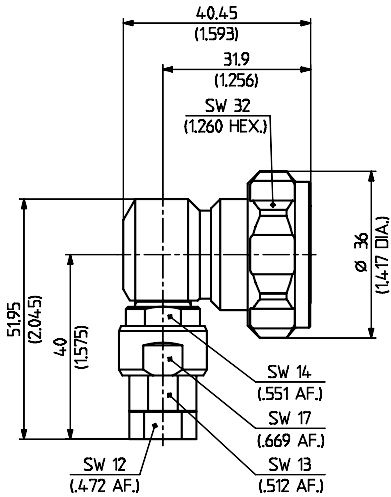
HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight	Fig.
11_716-50-10-3/003_-Z	23002520	S39 (S_10162_B-11)	bulk 10 pcs.	27354	12.4	100.0 g/3.52 oz.	1
11_716-50-12-8/033_-Y	85018507	X29 (SPUMA_600)		444947	14.5	46.5 g/1.64 oz.	2

Series 7/16 – cable connectors

Right angle cable plugs (male)

For corrugated cables

- Cable entry clamp
- Centre contact soldered
- Degree of protection IP68



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight
16_716-50-5-2/003_-Z	23016774	M5 (SUCOFEED_1/4_HF)	bulk 10 pcs.	273569	12.4	150.0 g/5.25 oz.

Series 7/16 – cable connectors

Right angle cable plugs (male)

For flexible cables

- Cable entry crimp
- Centre contact soldered

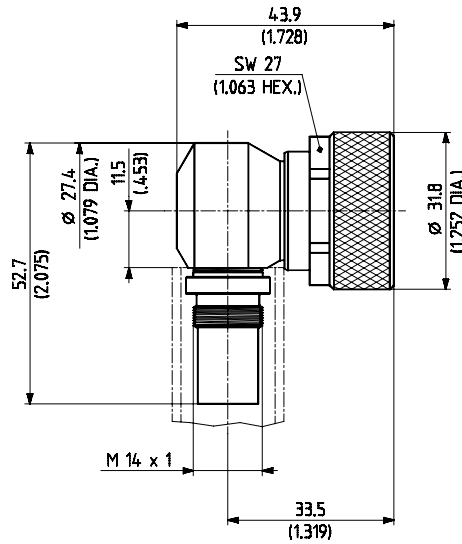
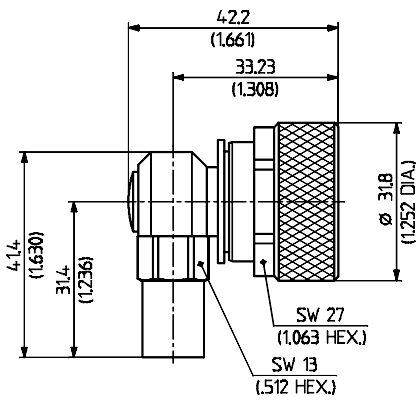


Fig. 1

Fig. 2

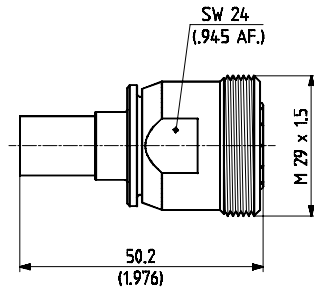
HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight	Fig.
16_716-50-7-10/003_-E	22658839	U33 (RG_393_/U, ENVIROFLEX_393) U32 (RG_214_/U, ENVIROFLEX_B214)	single	9087	D	103.0 g/3.61 oz.	1
16_716-50-7-11/003_-E	22649421	S32 (S_07262_BD)		9094		154.0 g/5.39 oz.	2 ¹⁾

¹⁾ Types available with additional sealing ferrule (IP67)

Series 7/16 – cable connectors

For flexible cables

- HUBER+SUHNER full crimp
- Taper sleeves see page 554



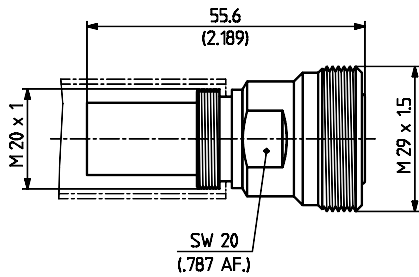
HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight
21_716-50-7-1/003_-E	22544092	U29 (RG_213_/U, RADOX_RF_213)	single	9017	3 D	90.0 g/3.15 oz.
21_716-50-7-2/003_-E	22544093	U32 (RG_214_/U, ENVIROFLEX_B214)				

Series 7/16 – cable connectors

Straight cable jacks (female)

For flexible cables

- Cable entry crimp
- Centre contact plugged-in
- Degree of protection IP67



HUBER+SUHNER type	Item no.	Cable group	Packaging	Assembly instruction	Crimp insert	Weight
21_716-50-10-1/003_-Z	23002535	S39 (S_10162_B-11)	bulk 10 pcs.	27354	12.4	85.0 g/2.99 oz.

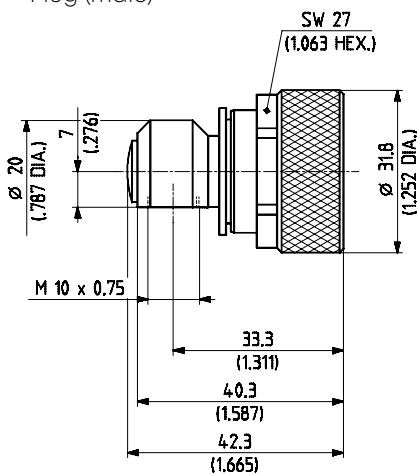
Series 7/16 – combination system

The HUBER+SUHNER 7/16 combination system enables efficient, lowcost and flexible stocking of 7/16 cable connectors. The 11 basic parts can be combined to obtain 48 different cable connector types for almost all coaxial cables with 2.95 mm (0.116 in.), 4.7 mm (0.185 in.) or 7.25 mm (0.285 in.) dielectric diameter. The cable entries are available with both crimp type or pressure-sleeve (no special tools) cable attachment.

Centre conductors are soldered. All cable entries can be used together with any of the combi-heads. Taper sleeves can be supplied for the crimp type cable entries. Straight or right angle configurations are possible with the same sub-assemblies. All types have 50 Ω impedance and are suitable for frequencies up to 1 GHz. The working voltage is limited to 1.0 kV rms.

Combi-heads

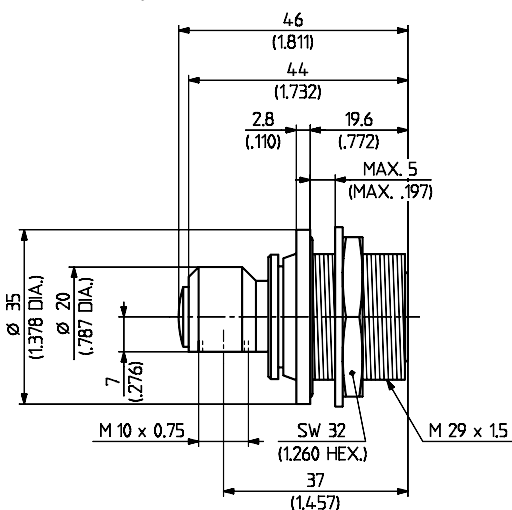
- Plug (male)



Connectors

HUBER+SUHNER type	Item no.	Packaging	Weight	Notes
11_716-50-0-2/003_-E	22641432	single	100.0 g/3.50 oz.	cable entries see following pages

- Bulkhead jack (female)

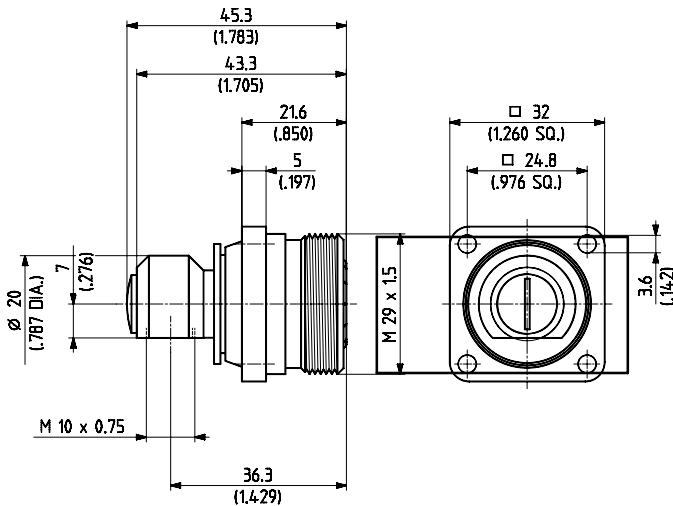


HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Weight	Notes
24_716-50-0-1/003_-E	22650517	single	ML 110	126.0 g/4.44 oz.	cable entries see following pages

Series 7/16 – combination system

Combi-heads

- Panel jack (female)



HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Weight	Notes
25_716-50-0-2/003_-E	22641434	single	ML 27	124.0 g/4.34 oz.	cable entries see below

Cable entries (for use with all combi-heads)

- Cable entry crimp
- Taper sleeves see page 554

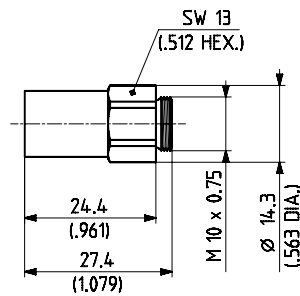
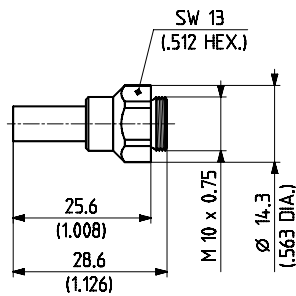


Fig. 1

Fig. 2

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Fig.
71_Z-0-3-22/-33_-E	22641436	U9 (RG_223_/U, ENVIROFLEX_B223)	single	9084	B	1
71_Z-0-7-21/-33_-E	22641440	U29 (RG_213_/U, RADOX_RF_213)		9087	D	2
71_Z-0-7-22/-33_-E	22641441	U32 (RG_214_/U, ENVIROFLEX_B214)				

Series 7/16 – combination system

Cable entries (for use with all combi-heads)

- Cable entry pressure-sleeve

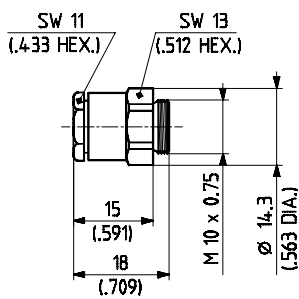


Fig. 1

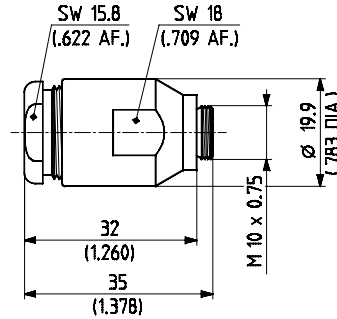


Fig. 2

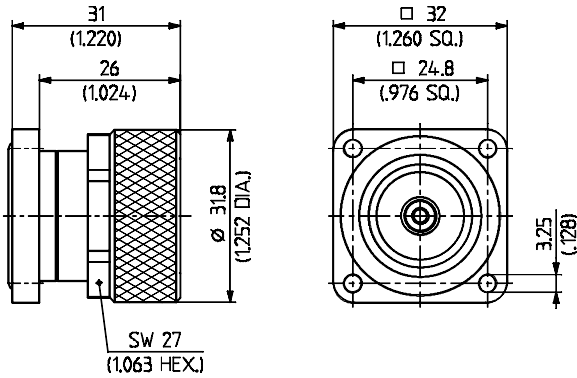


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Fig.
71_Z-0-3-24/-33_-E	22641438	U7, U9 (RG_58_C/U, ENVIROFLEX_B58)	single	9085	1
71_Z-0-7-24/-33_-E	22641443	U32 (RG_214_/U, ENVIROFLEX_B214)		9088	2

Series 7/16 – receptacles with solder end

Receptacle, plug (male)

- Panel mounted
- Flange with O-ring
- Centre contact captivated for torque



HUBER+SUHNER type	Item no.	Packaging	Weight	Notes
13_716-50-0-4/003_-V	22658959	bulk 20 pcs.	98.0 g/6.00 oz.	centre conductor with threaded stud M3

Receptacles, jacks (female)

- Panel mounted

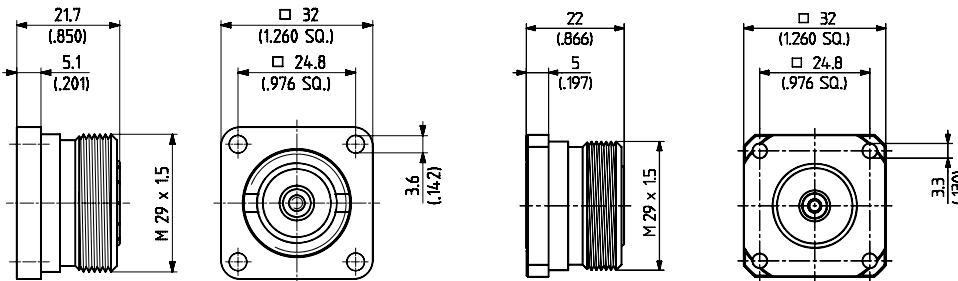


Fig. 1

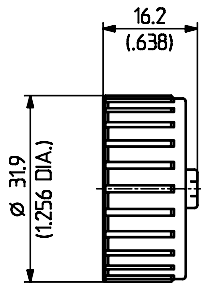
Fig. 2



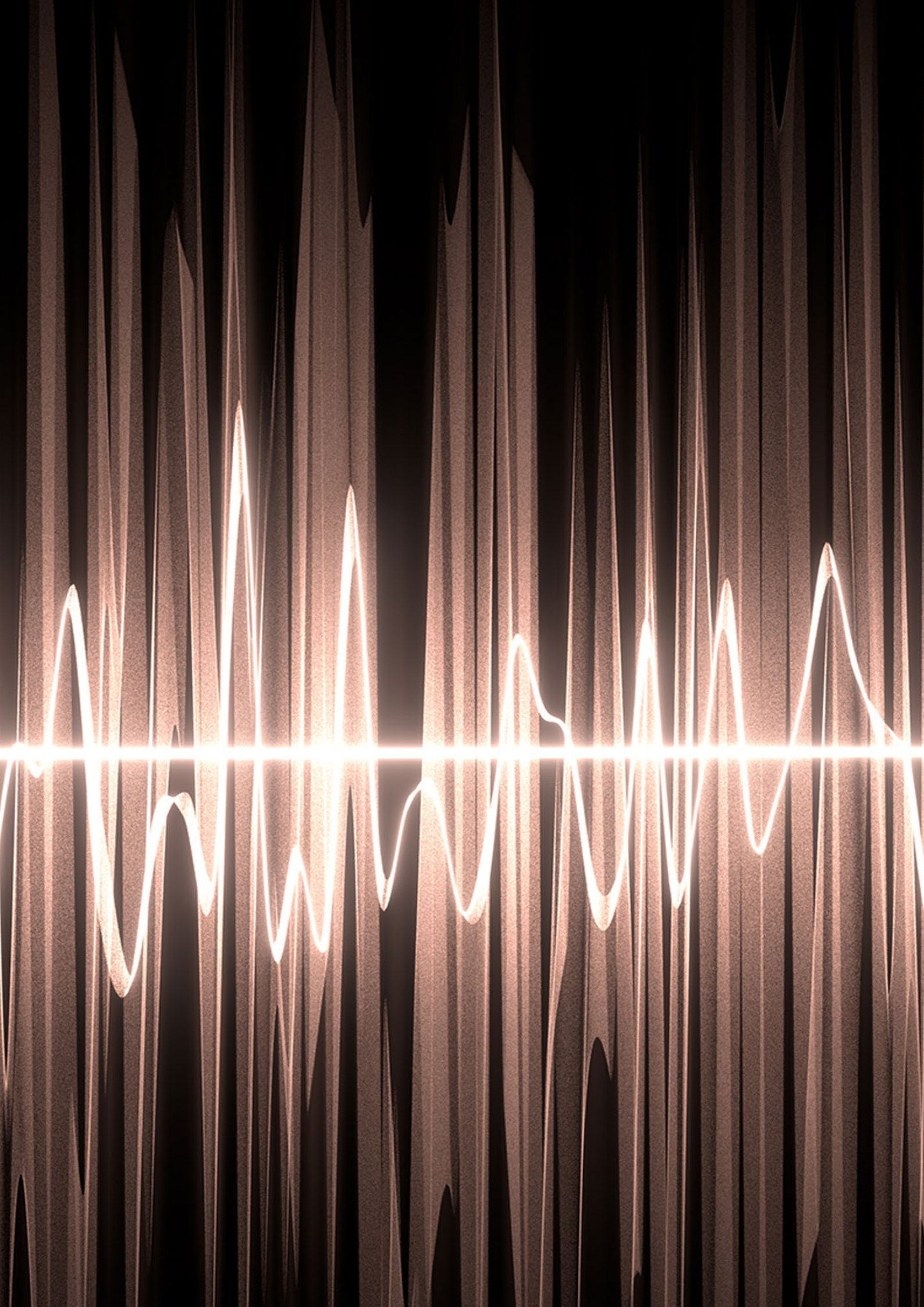
HUBER+SUHNER type	Item no.	Packaging	Mounting hole	Weight	Notes	Fig.
23_716-50-0-1/003_-E	22544102	single	ML 27	75.0 g/2.65 oz.	centre conductor with threaded stud M3	1
23_716-50-0-57/003_-V	23015661	bulk 20 pcs.		80.0 g/2.80 oz.		2

Series 7/16 – protective cap

- Protective cap for jack
- Made of plastic



HUBER+SUHNER type	Item no.	Packaging	Notes
62_716-0-0-4/---_H	23005877	bulk 100 pcs.	water protection according to IP68



Series Quick-Fit plus – field terminated coaxial connectors

Description

Thanks to their one-piece design, the new Quick-Fit plus connectors eliminate loose parts such as O-rings and washers. This allows extremely easy and fast assembling and removes the need for additional steps such as the application of grease on sealings. The innovative cable entry design allows the connectors to be mounted using standard wrenches, eliminating the need for expensive tools or calibrated torque wrenches.

Clean cable preparing process

To achieve best performance of a field terminated connector, the cable-preparing process of a corrugated cable is as important as the use of a reliable connector system. Minor mistakes in the cable preparing can cause significant performance issues such as bad PIM or water ingress into the system. The unique all-in-one assembly tool allows the installer to prepare the cable through a fully controlled process, eliminating operator errors and resulting in perfect cable preparation with no swarf or burrs. This perfectly designed cable preparation process, along with the one-piece connector design, removes the risk of passive intermodulation caused by connectors in the overall system or network.

Key characteristics

- Extraordinary PIM stability
- Fast and easy cable preparing process
- Reliable «one click/positive stop» connector assembling
- One piece connector design
- Multi-brand cable compatibility
- High quality materials and platings

Content

Description	459
Application	459
Key characteristics	459
Benefits	459
Technical data connectors	460
Connector portfolio	461
MaxTool	467
Preparing tools	468
Spare parts	469

Benefits

- Very low level of interference with adjacent channels
- Stable system performance over time
- Quick and easy connector assembling
- Simplified logistics and easy on-site handling
- Wide-ranging of applications
- Reliable, also in harsh environments



Series Quick-Fit plus – technical data connectors

General data	
Cable size/type	corrugated ½" annular
Interfaces	N, 4.1/9.5 ¹⁾ , 4.3-10, 7/16, NEX10

¹⁾ on request

Electrical data (typical)	
Impedance	50 Ω
Frequency range	DC to 6 GHz
Return loss (gated measurement)	straight version: ≥ 30 dB up to 3.7 GHz right angle version: ≥ 28 dB up to 3.7 GHz
Passive intermodulation ²⁾	typical -160 dBc, minimum -155 dBc

²⁾ Carrier to 3rd order intermodulation product ratio with 2 x 20 W (43 dBm) carrier power

Mechanical data (typical)	
Durability	≥ 100 matings
Recommended coupling nut torque	4.3-10: ≥ 5 Nm/3.61 ft lb, IEC 61169-1 NEX10: ≥ 5 Nm

Environmental data (typical)	
Temperature range (connector only)	-55 to +85 °C/-67 to 185 °F
IP rating	IP68 (according to IEC 60529)

Material data (main parts)	Material	Plating
Cable entry	brass	SUCOPLATE*
Connector head	brass	SUCOPLATE*
Outer contact	brass	SUCOPLATE*
Centre contact	brass/CuBe	silver
Insulators	PTFE/PEI	
Gaskets	silicon	

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Series Quick-Fit plus – connector portfolio N

Cable compatibility

- Type a: HUBER+SUHNER Sucofeed_1/2, _1/2_LW, _1/2_FR, _1/2_PW
- Type b: RFS CELLFLEX LCF-50JFN, ICA12-50JPL, ICA12-50JPLW, ICA12-50JPLLW
- Type c: ANDREW/COMMSCOPE LDF4-50A
- Type d: ANDREW/COMMSCOPE HL4RPV-50
- Type e: ANDREW/COMMSCOPE AL4RPV-50

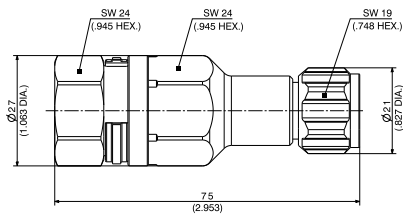


Fig. 1

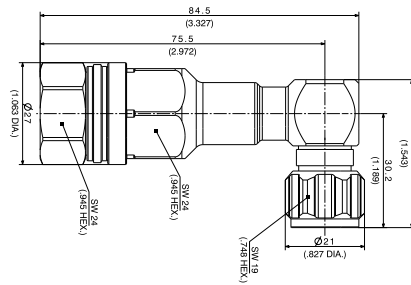


Fig. 2

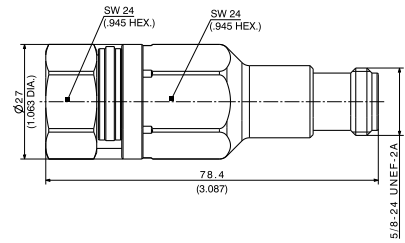


Fig. 3

Connector style	Type description	Item number	Assembly instruction	Cable type	Blade unit for tool 74_Z-0-12-18	Fig.
N male straight	11_N-50-12-60	85074817	DOC-0000736630, DOC-0000799919	a, b, c	green, 74_Z-0-12-21, 85068959	1
N male right angle	16_N-50-12-60	85074824		a, b, c	green, 74_Z-0-12-21, 85068959	2
N female straight	21_N-50-12-60	85074835		a, b, c	green, 74_Z-0-12-21, 85068959	3
N male straight	11_N-50-12-61	85074818		d	yellow, 74_Z-0-12-20, 85069095	1
N male right angle	16_N-50-12-61	85074825		d	yellow, 74_Z-0-12-20, 85069095	2
N female straight	21_N-50-12-61	85074836		d	yellow, 74_Z-0-12-20, 85069095	3
N male right angle	11_N-50-12-62	85091142		e	green, 74_Z-0-12-21, 85068959	1
N male right angle	16_N-50-12-62	85092145		e	green, 74_Z-0-12-21, 85068959	2
N female straight	21_N-50-12-62	85092237		e	green, 74_Z-0-12-21, 85068959	3

Series Quick-Fit plus – connector portfolio 4.3-10 screw

Cable compatibility

- Type a: HUBER+SUHNER Sucofeed_1/2, _1/2_LW, _1/2_FR, _1/2_PW
- Type b: RFS CELLFLEX LCF-50JFN, ICA12-50JPL, ICA12-50JPLW, ICA12-50JPLLW
- Type c: ANDREW/COMMSCOPE LDF4-50A
- Type d: ANDREW/COMMSCOPE HL4RPV-50
- Type e: ANDREW/COMMSCOPE AL4RPV-50

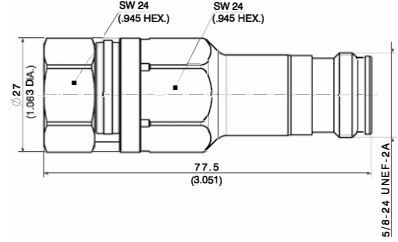
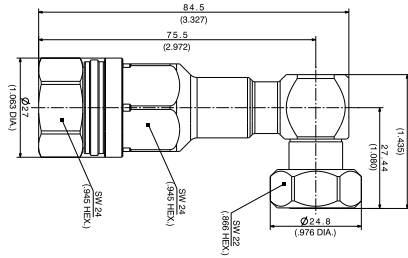
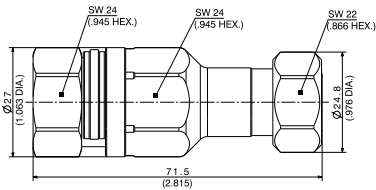


Fig. 1

Fig. 2

Fig. 3

Connector style	Type description	Item number	Assembly instruction	Cable type	Blade unit for tool 74_Z-0-12-18	Fig.
4.3-10 male straight	11_4310-50-12-X60	85067026	DOC-0000736630, DOC-0000799919	a, b, c	green, 74_Z-0-12-21, 85068959	1
4.3-10 male right angle	16_4310-50-12-X60	85067267		a, b, c	green, 74_Z-0-12-21, 85068959	2
4.3-10 female straight	21_4310-50-12-60	85067226 (fits all locking mechanisms)		a, b, c	green, 74_Z-0-12-21, 85068959	3
4.3-10 male straight	11_4310-50-12-X61	85067072		d	yellow, 74_Z-0-12-20, 85069095	1
4.3-10 male right angle	16_4310-50-12-X61	85067268		d	yellow, 74_Z-0-12-20, 85069095	2
4.3-10 female straight	21_4310-50-12-61	85067228 (fits all locking mechanisms)		d	yellow, 74_Z-0-12-20, 85069095	3
4.3-10 male straight	11_4310-50-12-X62	85086308		e	green, 74_Z-0-12-21, 85068959	1
4.3-10 male right angle	16_4310-50-12-X62	85092655		e	green, 74_Z-0-12-21, 85068959	2
4.3-10 female straight	21_4310-50-12-62	85092653		e	green, 74_Z-0-12-21, 85068959	3

Series Quick-Fit plus – connector portfolio 4.3-10 hand screw

Cable compatibility

- Type a: HUBER+SUHNER Sucofeed_1/2, _1/2_LW, _1/2_FR, _1/2_PW
- Type b: RFS CELLFLEX LCF-50JFN, ICA12-50JPL, ICA12-50JPLW, ICA12-50JPLLW
- Type c: ANDREW/COMMSCOPE LDF4-50A
- Type d: ANDREW/COMMSCOPE HL4RPV-50

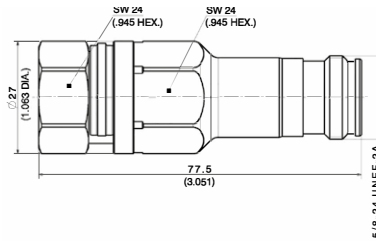
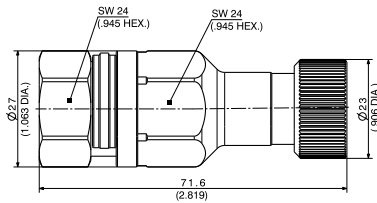


Fig. 1

Fig. 2

Connector style	Type description	Item number	Assembly instruction	Cable type	Blade unit for tool 74_Z-0-12-18	Fig.
4.3-10 male straight	11_4310-50-12-Y60	85074839	DOC-0000736630, DOC-0000799919	a, b, c	green, 74_Z-0-12-21, 85068959	1
4.3-10 female straight	21_4310-50-12-60	85067226 (fits all locking mechanisms)		a, b, c	green, 74_Z-0-12-21, 85068959	2
4.3-10 male straight	11_4310-50-12-Y61	85074840		d	yellow, 74_Z-0-12-20, 85069095	1
4.3-10 female straight	21_4310-50-12-61	85067228 (fits all locking mechanisms)		d	yellow, 74_Z-0-12-20, 85069095	2

Series Quick-Fit plus – connector portfolio 4.3-10 push-pull

Cable compatibility

- Type a: HUBER+SUHNER Sucofeed_1/2, _1/2_LW, _1/2_FR, _1/2_PW
- Type b: RFS CELLFLEX LCF-50JFN, ICA12-50JPL, ICA12-50JPLW, ICA12-50JPLLW
- Type c: ANDREW/COMMSCOPE LDF4-50A
- Type d: ANDREW/COMMSCOPE HL4RPV-50

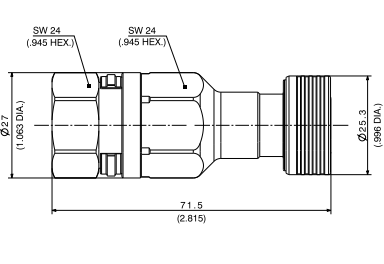


Fig. 1

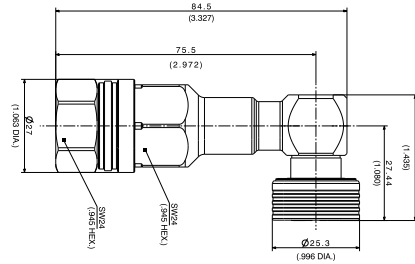


Fig. 2

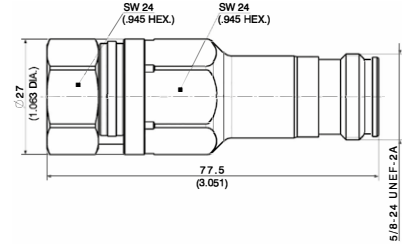


Fig. 3

Connector style	Type description	Item number	Assembly instruction	Cable type	Blade unit for tool 74_Z-0-12-18	Fig.
4.3-10 male right angle	16_4310-50-12-Z60	85074830	DOC-0000736630, DOC-0000799919	a, b, c	green, 74_Z-0-12-21, 85068959	2
4.3-10 female straight	21_4310-50-12-60	85067226 (fits all locking mechanisms)		a, b, c	green, 74_Z-0-12-21, 85068959	3
4.3-10 male straight	11_4310-50-12-Z61	85074829		d	yellow, 74_Z-0-12-20, 85069095	1
4.3-10 female straight	21_4310-50-12-61	85067228 (fits all locking mechanisms)		c	yellow, 74_Z-0-12-20, 85069095	3
4.3-10 female straight	21_4310-50-12-61	85067228 (fits all locking mechanisms)		d	yellow, 74_Z-0-12-20, 85069095	2

Series Quick-Fit plus – connector portfolio NEX10

Cable compatibility

- Type a: HUBER+SUHNER Sucofeed_1/2, _1/2_LW, _1/2_FR, _1/2_PW
- Type b: RFS CELLFLEX LCF-50JFN, ICA12-50JPL, ICA12-50JPLW, ICA12-50JPLLW
- Type c: ANDREW/COMMSCOPE LDF4-50A
- Type d: ANDREW/COMMSCOPE HL4RPV-50
- Type e: ANDREW/COMMSCOPE AL4RPV-50

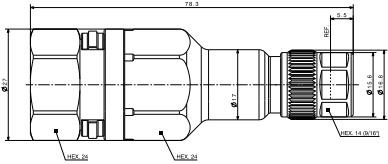


Fig. 1

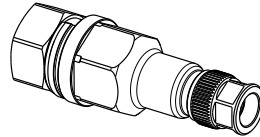


Fig. 2

Connector style	Type description	Item number	Assembly instruction	Cable type	Blade unit for tool 74_Z-0-12-18	Fig.
NEX10 male straight	11_NEX10-50-12-X60	85154617	DOC-0000736630, DOC-0000799919	a, b, c	green, 74_Z-0-12-21, 85068959	1
NEX10 male straight	11_NEX10-50-12-X62	85154913		e	yellow, 74_Z-0-12-20, 85069095	1

Series Quick-Fit plus – connector portfolio 7/16

Cable compatibility

- Type a: HUBER+SUHNER Sucofeed_1/2, _1/2_LW, _1/2_FR, _1/2_PW
- Type b: RFS CELLFLEX LCF-50JFN, ICA12-50JPL, ICA12-50JPLW, ICA12-50JPLLW
- Type c: ANDREW/COMMSCOPE LDF4-50A
- Type d: ANDREW/COMMSCOPE HL4RPV-50
- Type e: ANDREW/COMMSCOPE AL4RPV-50

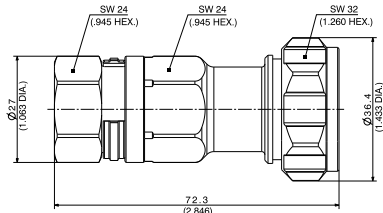


Fig. 1

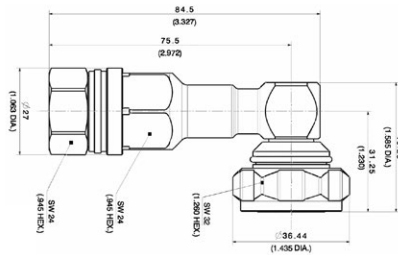


Fig. 2

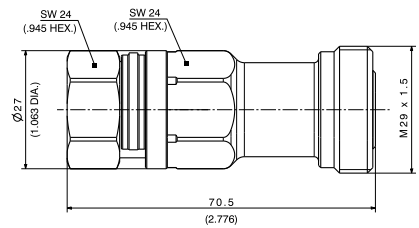


Fig. 3

Connector style	Type description	Item number	Assembly instruction	Cable type	Blade unit for tool 74_Z-0-12-18	Fig.
7/16 male straight	11_716-50-12-60	85074815	DOC-0000736630, DOC-0000799919	a, b, c	green, 74_Z-0-12-21, 85068959	1
7/16 male right angle	16_716-50-12-60	85074821		a, b, c	green, 74_Z-0-12-21, 85068959	2
7/16 female straight	21_716-50-12-60	85074832		a, b, c	green, 74_Z-0-12-21, 85068959	3
7/16 female straight	21_716-50-12-61	85074833		d	yellow, 74_Z-0-12-20, 85069095	3
7/16 female straight	21_716-50-12-62	85092603		e	green, 74_Z-0-12-21, 85068959	3

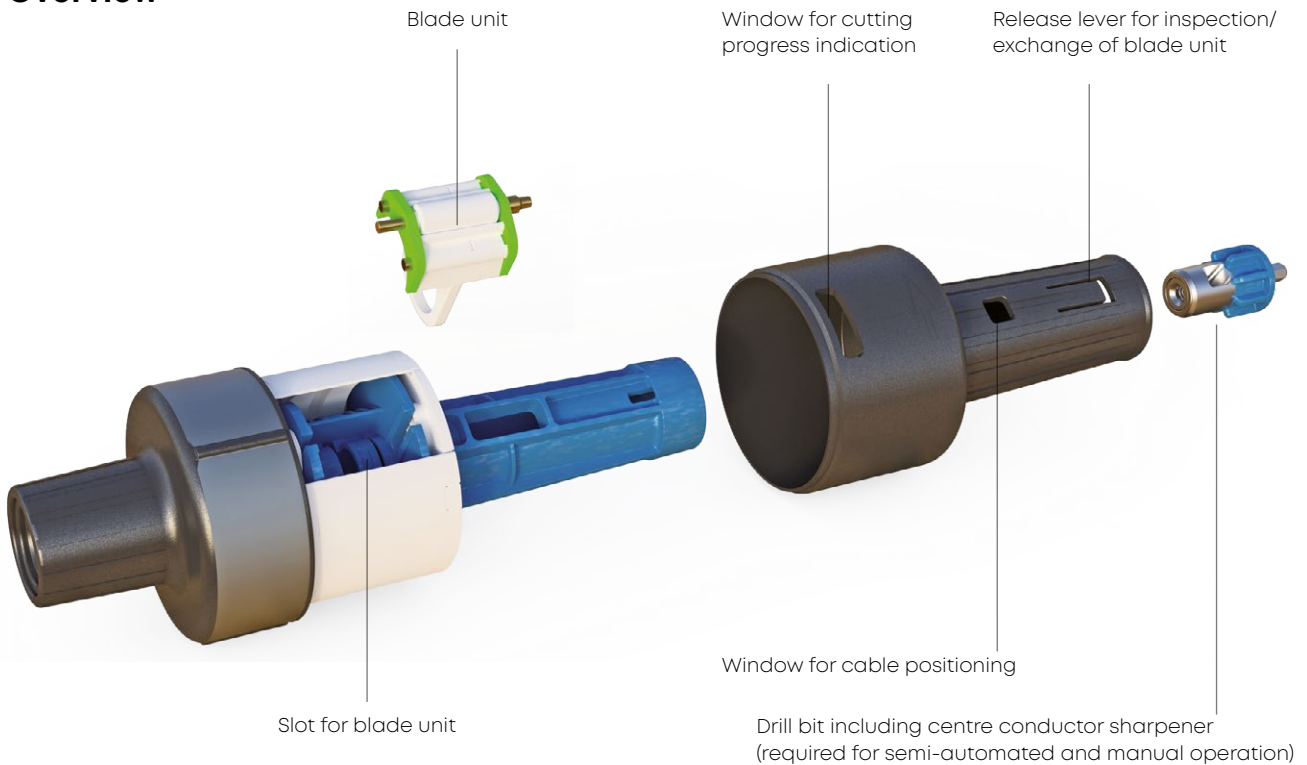
Series Quick-Fit plus – MaxTool

All-in-one cable preparing tool

- Fully controlled/zero defect cable preparing
- Perfect cutting process – no swarf – no PIM
- Easy-to-handle – easy-to-carry
- Ergonomic design
- Semi-automated and manual operation



Overview



Series Quick-Fit plus – preparing tools



Fig. 1



Fig. 2

Tools	Content	Type description	Item number	Instructions	Fig.
Starter kit	Cable preparing tool Drill bit/sharpener Blade unit (gn. yl) Jacket/diel. removers Fixed wrenches Screw driver Holster	74_Z-0-12-19	85069097	DOC-0000736630, DOC-0000799919, DOC-0000721673	1
Preparing tool	Cable preparing tool Drill bit/sharpener Blade unit (gn. yl) Jacket/diel. removers	74_Z-0-12-18	85066880		2

Series Quick-Fit plus – spare parts

Fig. 1.



Fig. 2.



Fig. 3



Fig. 4



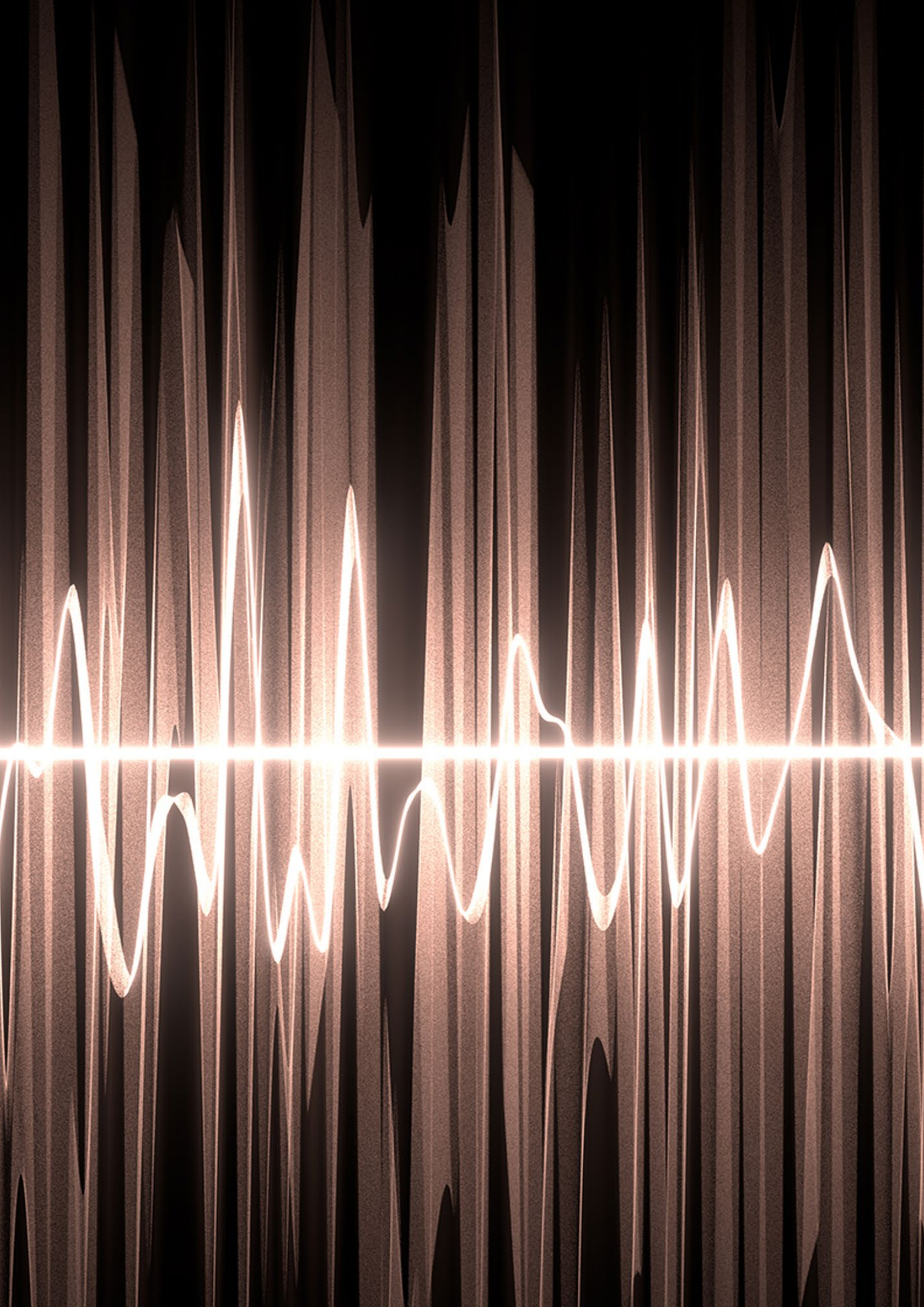
Fig. 5



Fig. 6



Tools	Note	Cable compatibility	Type description	Item number	Instructions	Fig.
Box including blade unit green and remover	2 blade units and 2 removers per box	View Page 7, 8, 9, 10, 11,12	74_Z-0-12-21	85068959	DOC-0000736630, DOC-0000799919, DOC-0000721673	1
Box including blade unit yellow and remover	2 blade units and 2 removers per box	ANDREW/COMM-SCOPE HL4RPV-50	74_Z-0-12-20	85069095		2
Drill bit/centre conductor sharpener	1 pce per packet	n/a	74_Z-0-12-23	85069100		3
Jacket/dielectric remover (plenum cables only)	5 pcs per packet	n/a	74_Z-0-12-22	85069099		4
Jacket/dielectric remover "nutcracker"	3 pcs per packet	n/a	74_Z-0-12-24	85089069		5
Holster including belt	without content	n/a	74_Z-0-0-637	85069101		6



Series Quick-Fit – field terminated coaxial connectors

General description

HUBER+SUHNER Quick-Fit connectors are worldwide approved N, 4.3-10 and 7/16 connectors for foam dielectric corrugated copper tube cables. They offer a greatly simplified and economic approach to cable preparation and assembly. The product line meets the requirements of multi-carrier, high-channel-count transceivers such as base stations of today's mobile communication infrastructure networks.

Application

- Rugged connectors for easy outdoor and indoor (DAS) termination of corrugated feeder and jumper cables
- Meeting also the special requirements of BTS and small cell applications

Features

- Excellent RF performance
- Low, stable and reproducible PIM (Passive Intermodulation Product), typically -165 dBc
- Safe assembly process, in-field termination with reproducible electrical performance
- Quick and easy assembly, 2 main connector parts, 4 steps in less than 4 minutes
- High IP rating, IP68
- Multi-brand, multi-design and multi-material cable compatibility
- Backward compatibility
- Reusability

Benefits

- Easy field installation
- Time saving
- Simplified logistics
- Low cost of ownership
- Support quality of a proven connector house
- Compatible for copper and aluminium cables

Content

Description	471
Application	471
Features	471
Benefits	471
Technical data	472
Cable connectors – preparing tools	474



Series Quick-Fit – technical data

General data	
Cable size/type	corrugated 1/2" annular, 1/2" helical, 7/8" annular, 1 1/4" annular, 1 5/8" annular
Interfaces	N, 4.3-10, 7/16

Electrical data (typical)	
Impedance	50 Ω
Frequency range (interface only)	N: DC to 11 GHz 4.3-10: DC to 12 GHz 7/16: DC to 7.5 GHz
Passive intermodulation ¹⁾	better than -155 dBc

¹⁾ Carrier to 3rd order intermodulation product ratio with 2 x 20 W (43 dBm) carrier power

Mechanical data (typical)	
Durability	≥ 100 matings
Recommended coupling nut torque	N: 0.68 to 1.13 Nm/0.49 to 0.82 ft lb, IEC 61169-16 4.3-10: ≥ 5 Nm/3.61 ft lb, IEC 61169-1 7/16: 25 to 30 Nm/18.05 to 21.66 ft lb, IEC 61169-4

Environmental data (typical)	
Temperature range (connector only)	-40 to +85 °C/-40 to +185 °F
IP rating	IP68 (according to IEC 60529)

Material data (main parts)	Material	Plating
Cable entry	brass	SUCOPLATE*
Connector head	brass	SUCOPLATE*
Outer contact	brass	SUCOPLATE*
Centre contact	spring bronze/brass	silver
Insulators	PTFE or PFA	
Gaskets	rubber	

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

Series Quick-Fit – connector portfolio

For cable size 1/2" _HF; 1/2" _HF_FR and 1/2" _HF_FR_UL

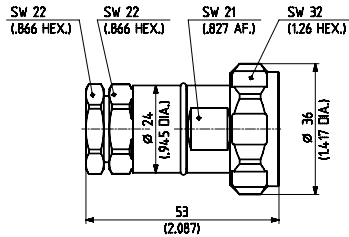


Fig. 1

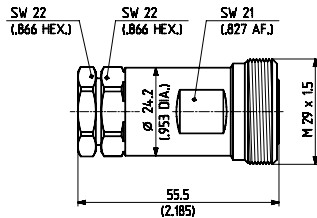


Fig. 3

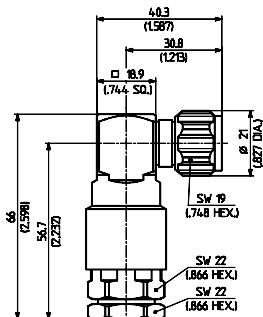


Fig. 5

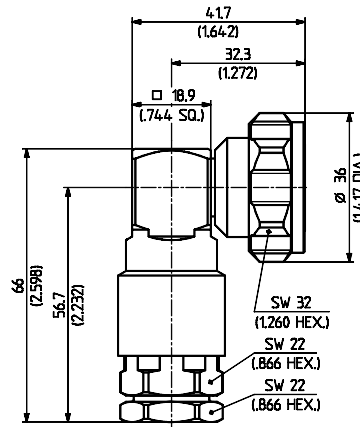


Fig. 2

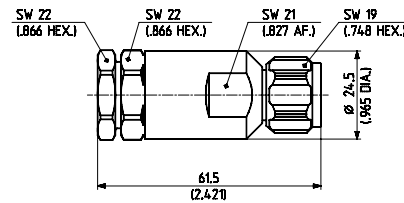


Fig. 4

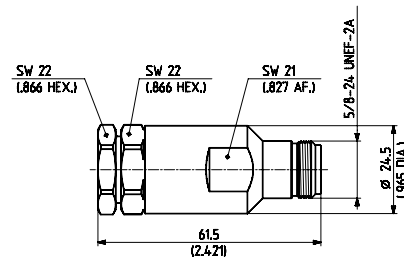


Fig. 6

Type no.	Connector style	Item no.	Assembly instruction	Fig.
11_716-50-9-9	DIN 7/16 male	22660309	DOC-0000179418	1
16_716-50-9-5	DIN 7/16 male right angle	23007298		2
21_716-50-9-9	DIN 7/16 female	22660310		3
11_N-50-9-9	N male	22660311		4
16_N-50-9-6	N male right angle	23007299		5
21_N-50-9-9	N female	22660312		6

Cable compatibility list on request

Series Quick-Fit – preparing tools

For cable size 1/2" _HF; 1/2" _HF_FR and 1/2" _HF_FR_UL



Fig. 1



Fig. 2

Tools	Type description	Item number	Fig.
Stripping tool	74_Z-0-9-15	23001006	1
Stripping tool, guillotine	74_Z-0-9-100	85073086	2
Blade jacket for 74_Z-0-9-15	74_Z-0-0-346	23000936	
Triangle knife for 74_Z-0-9-15	74_Z-0-0-348	23000938	
Blade copper tube for 74_Z-0-9-15	74_Z-0-0-349	23001008	

Series Quick-Fit – connector portfolio

For cable size 1/2"; 1/2"_FR and 1/2"_FR_UL

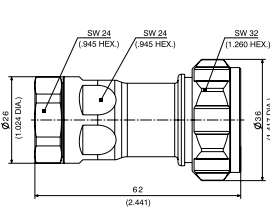


Fig. 1

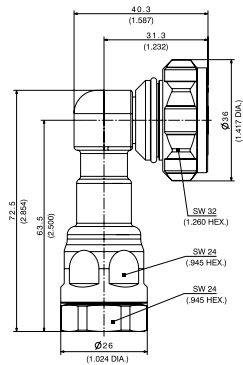


Fig. 2

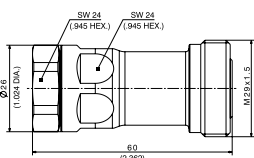


Fig. 3

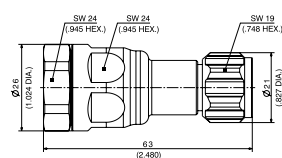


Fig. 4

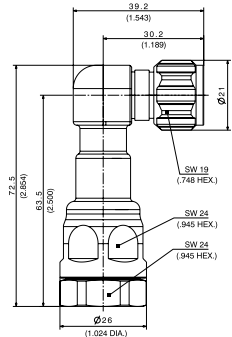


Fig. 5

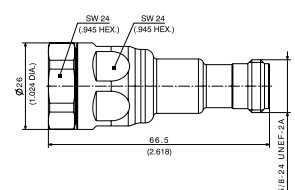


Fig. 6

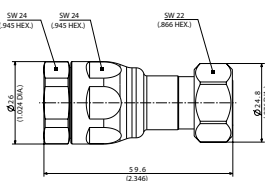


Fig. 7

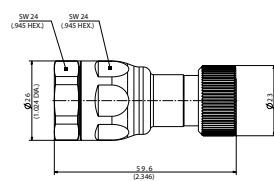


Fig. 8

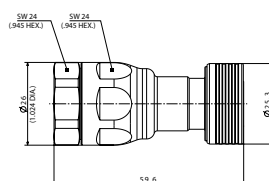


Fig. 9

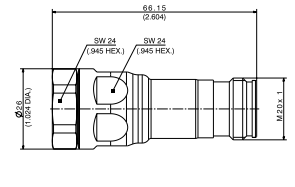


Fig. 10

Type no.	Connector style	Item no.	Assembly instruction	Fig.
11_716-50-12-50/033_-E	DIN 7/16 male	84201175	DOC-0000386367	1
16_716-50-12-50/033_-E	DIN 7/16 male right angle	84201179		2
21_716-50-12-50/033_-E	DIN 7/16 female	84201177		3
11_N-50-12-50/033_-E	N male	84201169		4
16_N-50-12-50/033_-E	N male right angle	84201181		5
21_N-50-12-50/033_-E	N female	84201173		6
11_4310-50-12-X2/003_-E	4.3-10 male, screw	85020537		7
11_4310-50-12-Y2/003_-E	4.3-10 male, hand screw	85021551		8
11_4310-50-12-Z2/003_-E	4.3-10 male, quick-lock	85021552		9
21_4310-50-12-1/033_-E	4.3-10 female	85029736		10

Cable compatibility list on request.

Series Quick-Fit – preparing tools

For cable size 1/2", 1/2"_FR and 1/2"_FR_UL



Fig. 1



Fig. 2

Tools	Type description	Item number	Fig.
Stripping tool	74_Z-0-12-25	85091563	1
Flaring tool	74_Z-0-12-8	85006446	2
Blade jacket for 74_Z-0-12-25	74_Z-0-0-346	23000936	
Triangle knife for 74_Z-0-12-25	74_Z-0-0-348	23000938	
Blade copper tube for 74_Z-0-12-25	74_Z-0-0-655	85093583	

Series Quick-Fit – connector portfolio

For cable size 7/8"; 7/8"_FR; 7/8"_LA; 7/8"_LA_FR and 7/8"_HF

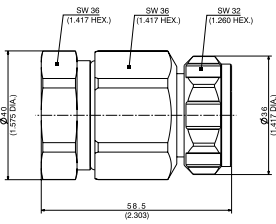


Fig. 1

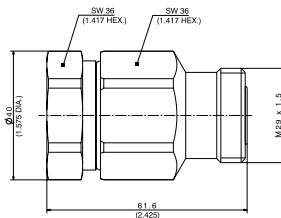


Fig. 2

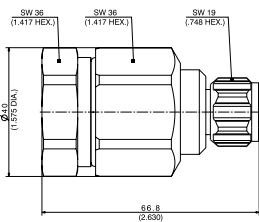


Fig. 3

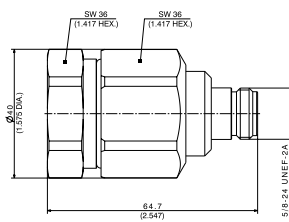


Fig. 4

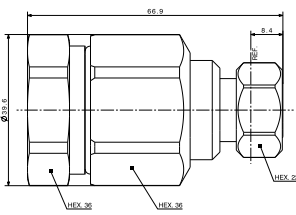


Fig. 5

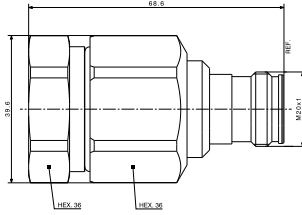


Fig. 6

Type no.	Connector style	Item no.	Assembly instruction	Fig.
11_716-50-23-44	DIN 7/16 male	84069135	DOC-0000295365	1
21_716-50-23-44	DIN 7/16 female	84069194		2
11_N-50-23-43	N male	84124063		3
21_N-50-23-43	N female	84124062		4
11_4310-50-23-X1/033_-E	4,3-10 male	85076926		5
21_4310-50-23-1/003_-E	4,3-10 female	85076927		6

Cable compatibility list on request

Series Quick-Fit – preparing tools

For cable size 7/8"; 7/8" _FR; 7/8" _LA; 7/8" _LA_FR and 7/8" _HF



Fig. 1



Fig. 2



Fig. 3

Tools	Type description	Item number	Fig.
Stripping tool (STD, FR, HF)	74_Z-0-23-21	85002265	1
Stripping tool (LA, LA_FR)	74_Z-0-23-22	84147229	2
Stripping tool, guillotine, all cable types	74_Z-0-23-100	84133924	3
Blade copper tube, dielectric, centre conductor for 74_Z-0-23-21/22	74_Z-0-0-297	22650531	
Blade jacket for 74_Z-0-23-21/22	74_Z-0-0-355	23008264	
Counter sink	74_Z-0-0-415	22652206	

Series Quick-Fit – connector portfolio

For cable size 1_1/4" and 1_1/4"_FR

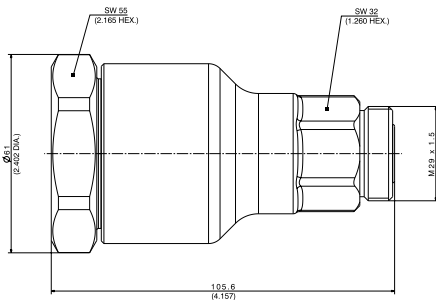


Fig. 1

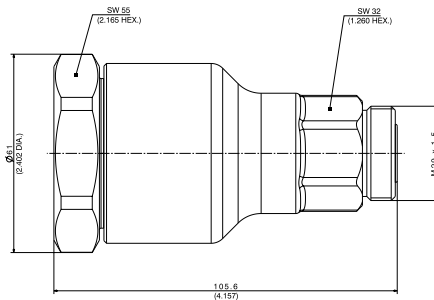


Fig. 2



Type no.	Connector style	Item no.	Assembly instruction	Fig.
11_716-50-32-4	DIN 7/16 male	84116088	DOC-0000341341	1
21_716-50-32-4	DIN 7/16 female	84116150		2

Cable compatibility list on request

For cable size 1_5/8" and 1_5/8"_LA

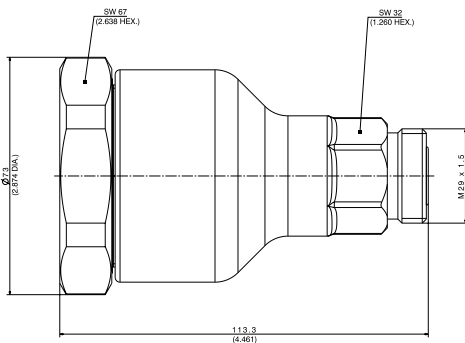


Fig. 1

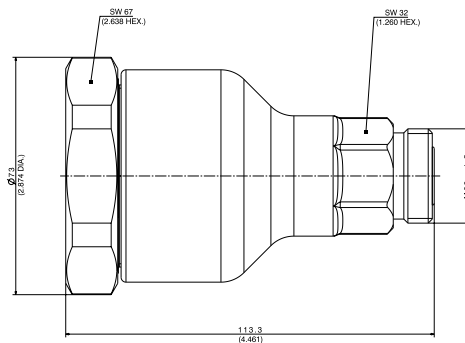


Fig. 2



Type no.	Connector style	Item no.	Assembly instruction	Fig.
11_716-50-42-4	DIN 7/16 male	84079343	DOC-0000299051	1
21_716-50-42-4	DIN 7/16 female	84079305		2

Cable compatibility list on request

Series Quick-Fit – preparing tools

For cable size 1 ¼" and 1 ¼"_FR



Fig. 1



Fig. 2

Tools	Type description	Item number	Fig.
Stripping tool (jacket only!)	74_Z-0-32-14	23010533	1
Flaring tool	74_Z-0-32-15	84120843	2
Blade jacket for 74_Z-0-32-14	74_Z-0-0-355	23008264	

For cable size 1 5/8" and 1 5/8"_LA



Fig. 1



Fig. 2

Tools	Type description	Item number	Fig.
Stripping tool (jacket only!)	74_Z-0-42-14	23010534	1
Flaring tool	74_Z-0-42-15	84085074	2
Blade jacket for 74_Z-0-42-14	74_Z-0-0-356	23010537	

Reverse polarity connectors

Description

According UL FCC (part 15.203) regulations, wireless radio equipment with removable antenna must not have a standardised interface. This to avoid the connection of antenna equipment which is not WLAN approved.

An established solution are the so called reverse polarity connectors. That means, the male connector is fitted with female centre contact and insulator, whereas the female side is fitted with male centre contact and insulator. For identification of reverse connectors the letter R (for reverse) is used in the type description. Example: 1L_TNC-R50-3-42.

Content

Description	481
Reverse polarity connectors TNC	482
Reverse polarity connectors SMA	484
Reverse polarity connectors – adaptors	487



Reverse polarity connectors TNC

Straight cable plugs (reverse)

For flexible cables

- Cable attachment: HUBER+SUHNER full crimp

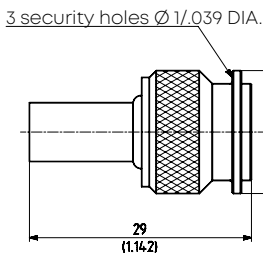


Fig. 1

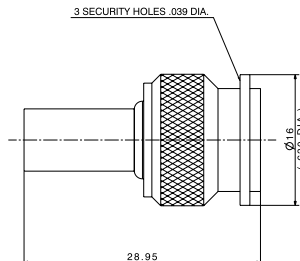


Fig. 2

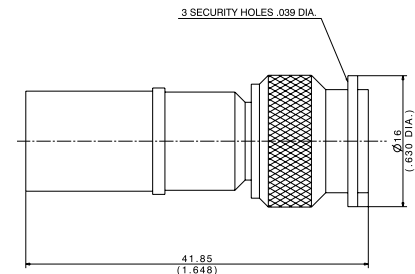


Fig. 3

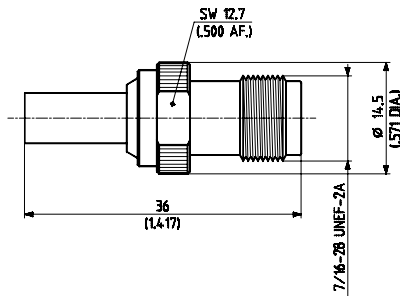


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Fig.
11_TNC-R50-3-42/133_NE	22658965	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	3015	2 B	1
11_TNC-R50-3-43/133_NE	22659046	U9, U39 (RG_223_/U, ENVIROFLEX_B223)		3015	2 B	1
11_TNC-R50-4-76/133_NE	84031534	X28 (SPUMA_240)		0000246324	2 C	2
11_TNC-R50-7-13/133_NE	84031806	U30 (SPUMA_400)		27288	4 D	3

Straight cable jacks (reverse)

For flexible cables

- Cable attachment: HUBER+SUHNER full crimp



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
21_TNC-R50-3-14/133_NE	23003716	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	27221	2 B

Reverse polarity connectors TNC

Straight bulkhead cable jacks (reverse)

For flexible cables

- Cable attachment: HUBER+SUHNER full crimp
- With panel seal
- Mounting hole ML 4

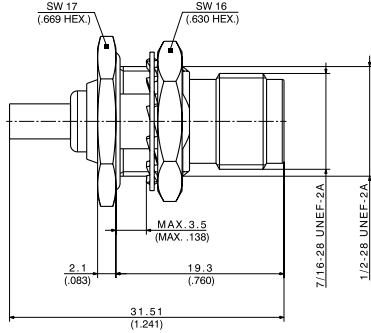


Fig. 1

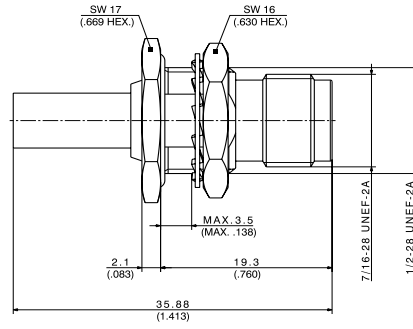


Fig. 2

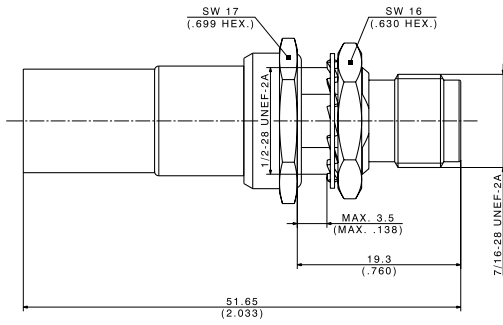


Fig. 3

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Fig.
24_TNC-R50-2-44/133_NE	84064623	U2 (RG_316_/U, ENVIROFLEX_316)	single	0000179123	1 A	1
24_TNC-R50-4-60/133_NE	84032154	X28 (SPUMA_240)		0000246324	2 C	2
24_TNC-R50-7-4/133_NE	84032531	U30 (SPUMA_400)		27288	4 D	3

Reverse polarity connectors SMA

Straight cable plugs (reverse)

For flexible cables

- Cable attachment: centre contact soldered/outer contact crimp

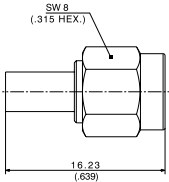


Fig. 1

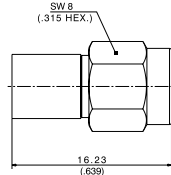


Fig. 2

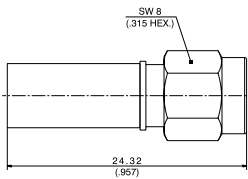


Fig. 3

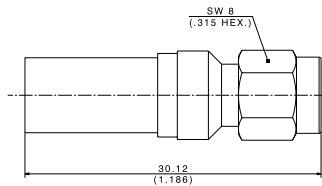


Fig. 4

HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Fig.
11_SMA-R50-2-113/133_NE ¹⁾	84130701	U4 (K_02252_D, ENVIROFLEX_316_D)	single	0000360393	A	1
11_SMA-R50-3-238/133_NE ¹⁾	84130704	U9, U11, U41 (RG_223_/U, ENVIROFLEX_B223)	single	0000360525	B	2
11_SMA-R50-3-48/133_NE ¹⁾	22658747	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	M27192	B	3
11_SMA-R50-4-97/133_NH ¹⁾	84027004	S16, X9, X28, X34 (SX_04172_B-60, SPUMA_240, SPUMA_240-FR-01, SPUMA_240-RS-FR)	bulk 100 pcs.	0000241878	C	4

¹⁾ Use torque wrench 74_Z-0-0-79

Reverse polarity connectors SMA

Right angle cable plugs (reverse)

For flexible cables

- Cable attachment: centre contact soldered/outer contact crimp

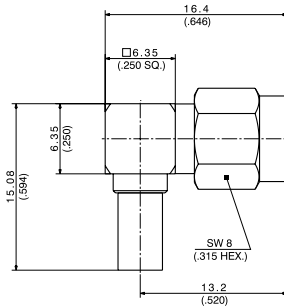


Fig. 1

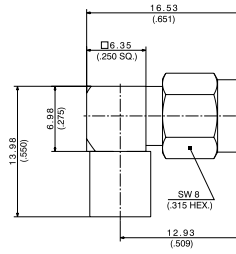


Fig. 2



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert	Fig.
16_SMA-R50-2-149/133_NH ¹⁾	23039493	U2 (RG_316_/U)	bulk 100 pcs.	27543	A	1
16_SMA-R50-3-16/133_NE ¹⁾	84130713	U9, U11, U41 (RG_223_/U)	single	0000368978	B	2

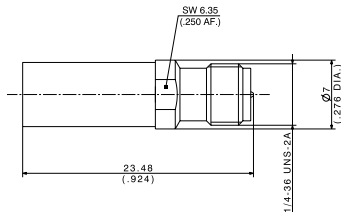
¹⁾ Use torque wrench 74_Z-0-0-79

Reverse polarity connectors SMA

Straight cable jacks (reverse)

For flexible cables

- Cable attachment: centre contact soldered/outer contact crimp

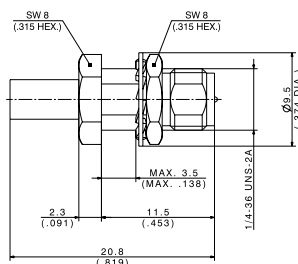


HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Crimp insert
21_SMA-R50-3-51/133_NE	84032514	U7 (RG_58_C/U, ENVIROFLEX_B58)	single	0000246751	B

Straight bulkhead cable jacks (reverse)

For flexible cables

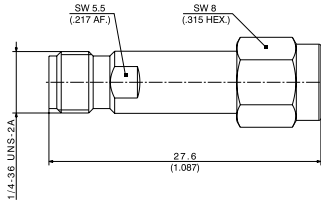
- Cable attachment: centre contact soldered/outer contact crimp
- With panel seal



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Assembly instruction	Mounting hole	Crimp insert
24_SMA-R50-2-51/133_NE	23011465	U2 (RG_316_/U, ENVIROFLEX_316)	single	0000292354	ML 35	A

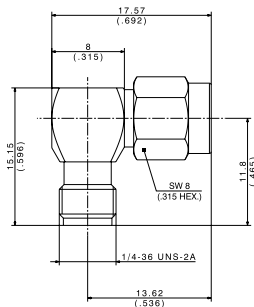
Reverse polarity connectors – adaptors

- Straight
- Plug (reverse) to jack (standard)

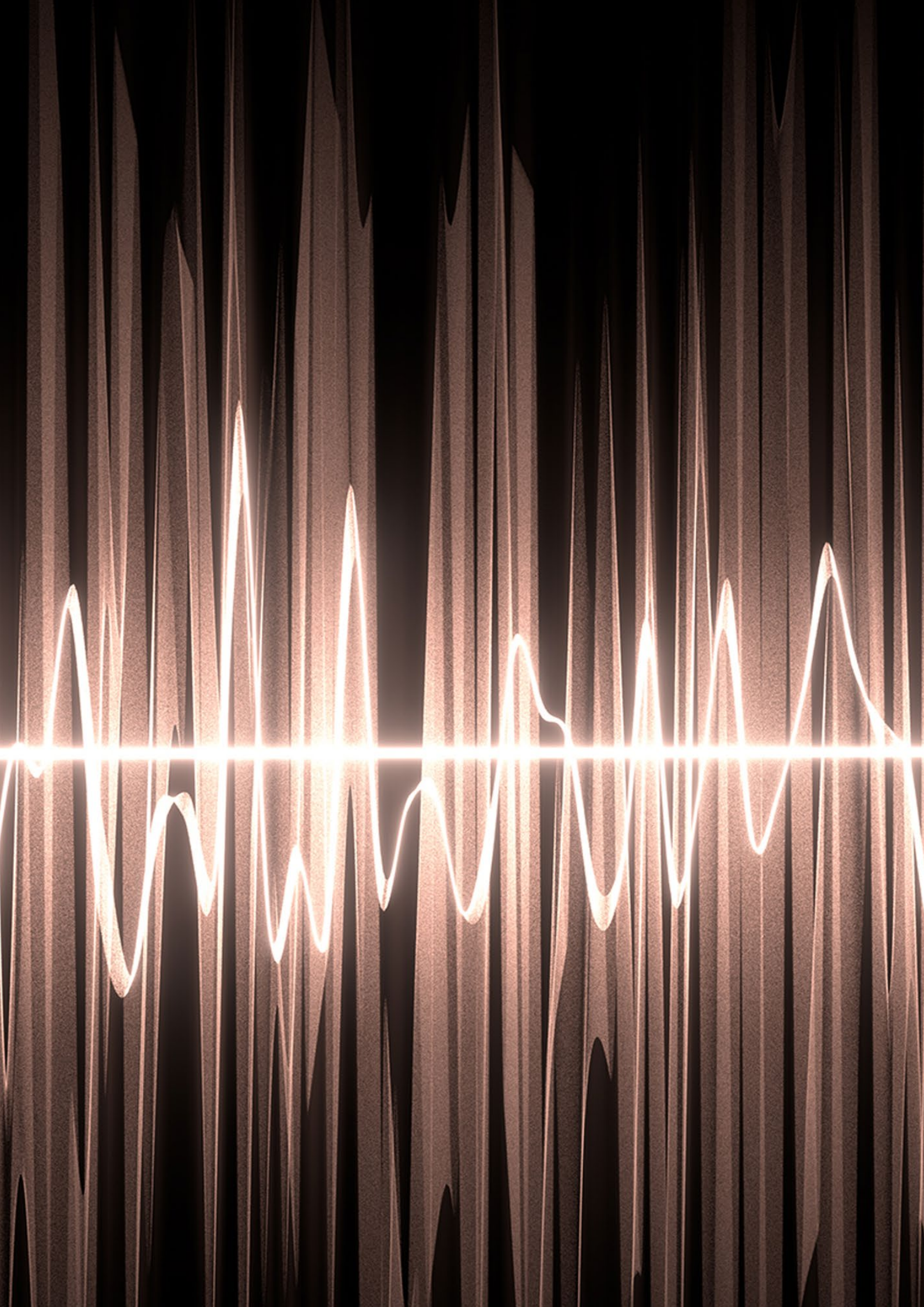


HUBER+SUHNER type	Item no.	Packaging	Side 1 (male)	Side 2 (female)
33_SMA-R50-0-5/111_NE	23003618	single	SMA reverse	SMA standard

- Angle
- Plug (reverse) to jack (standard)



HUBER+SUHNER type	Item no.	Packaging	Side 1 (male)	Side 2 (female)
53_SMA-R50-0-3/111_NE	23029833	single	SMA reverse	SMA standard



Precision multicoax lines (MXPM, MXP)

Description

The HUBER+SUHNER MXPM and MXP connector lines are the perfect fit in a world where performance, speed and density matter.

Both lines are excellent solutions for bench-top testing, system testing as well as for internal cabling in automated test equipment.

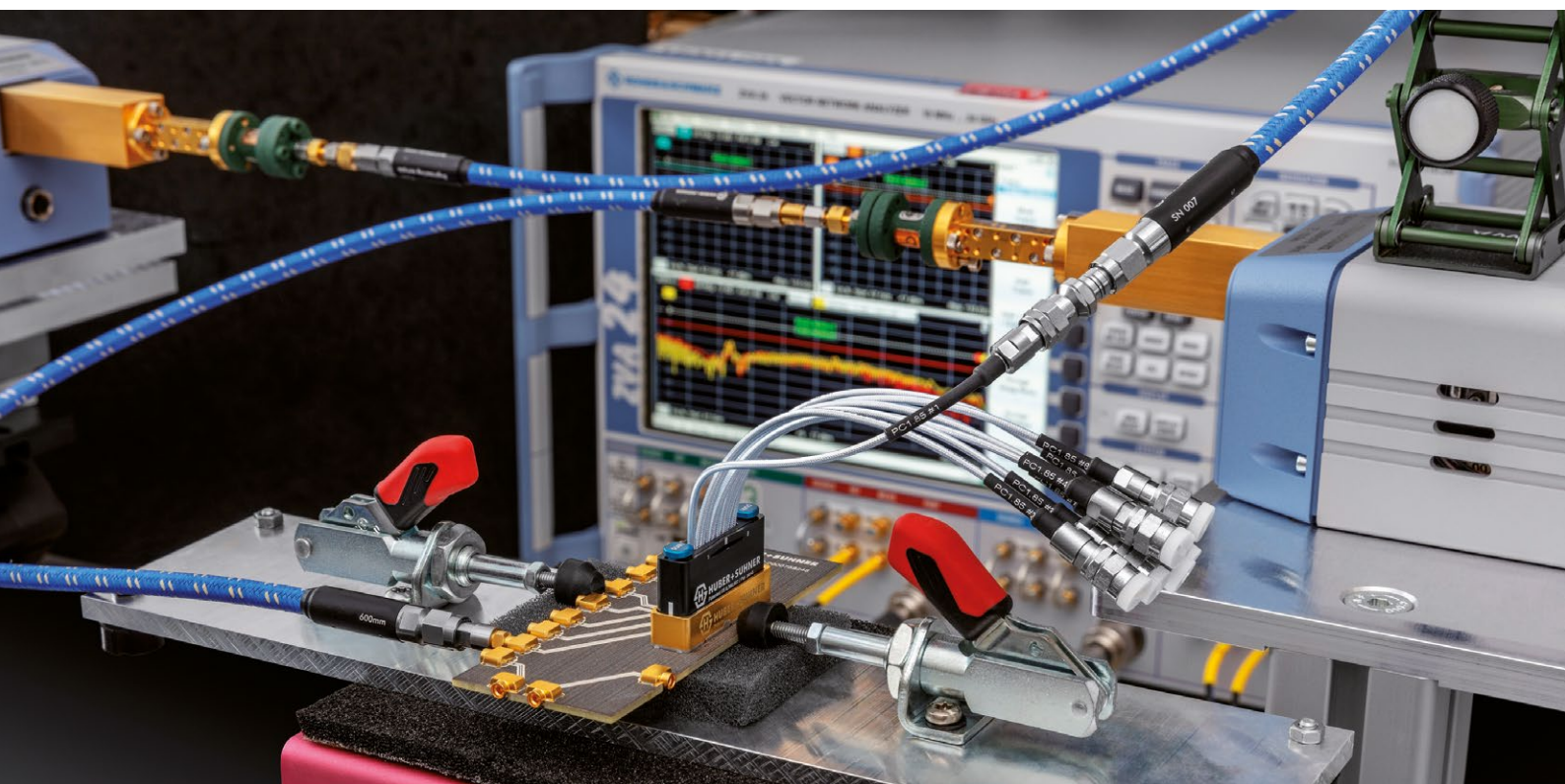
The entire MXPM and MXP assembly assortment comes with the highly flexible and ultra-stable Multiflex cable as a standard.

- MXPM90 and MXPM70 are pioneering multicoax solutions that support up to 90 GHz, respectively up to 70 GHz. By offering a high density pitch (2.54 mm, 0.1 inch), the MXPM line guarantees a satisfying experience with its user-friendly magnet mount connection, making performance and reliability affordable.
- MXP50 – is the perfect multicoax solution for high-level testing up to 50 GHz. MXP50, MXP40 and MXP18 come with a 4 mm (0.157 inch) pitch centre-to-centre and a convenient slide-on mounting. MXP50 is mechanically compatible with MXP18 and MXP40.
- MXP40 – the state-of-the-art multicoax solution for testing up to 40 GHz. MXP40 is mechanically compatible with MXP18 and MXP50.
- MXP18 – best value for money. MXP18 allows accurate testing up to 18 GHz. MXP18 is mechanically compatible with MXP40 and MXP50.

Content

Description	489
MXPM90/70 – 90 GHz/70 GHz multicoax solution	490
MXPM90 – technical Data	491
MXPM90 – breakouts to PC 1.0	492
MXPM90 – Jumpers	494
MXPM70 – technical data	496
MXPM70 – breakouts to PC 1.85	497
MXPM – PCB sockets	499
MXP50 – 50 GHz multicoax solution	501
MXP50 – technical data	502
MXP50 – breakout to PC 2.4	503
MXP50 – breakout to MMPX	505
MXP50 – jumper	506
MXP50 – loop back	508
MXP – board-to-board adapter	508
MXP50 – PCB connectors	509
MXP40 – 40 GHz multicoax solution	510
MXP40 – technical data	511
MXP40 – breakout to SK	512
MXP40 – PCB connectors	514
MXP18 – 18 GHz multicoax solution	515
MXP18 – technical data	516
MXP18 – breakout to SMA	517

Interface dimensions conformable to the standards:
HUBER+SUHNER proprietary interface standard



MXPM90/70 – 90 GHz/70 GHz multicoax solution

Features

- Operating range at up to 90 GHz
- Broadband characteristic
- 2.54 mm (0.1 in.) pitch centre-to-centre
- Standard phase matching down to +/- 1 ps
- Magnetic locking mechanism
- Automatic interface protection
- Cost-efficient PCB structure
- Highly flexible and ultra-stable Multiflex cable

Benefits

- **Pioneering design**

The pioneering and advantageous design allows ultra-precise and highly repeatable

- S-parameter measurements of up to 90 GHz with minimal impedance variation at the PCB transition

- **Data analysis of up to 224 Gbps and beyond**

The broadband return loss and insertion loss characteristics over the entire bandwidth and the tight phase matching of the single assemblies guarantee best in class signal integrity for data analysis of up to 224 Gbps and beyond.

- **Shortest traces on board**

The ultra-compact design with its 2.54 mm (0.1 in.) pitch centre-to-centre makes MXPM as closely positioned as possible to the DUT/chip to keep traces short and losses low

- **Fail-safe connecting mechanism**

The integrated magnetic locking mechanism prevents inappropriately mated counterparts and ensures that the electrical connecting reference is defined as exactly as possible at any time

- **Interface protection in disconnected condition**

The automatic interface protection safeguards every single channel from mechanical damage when disconnected.

- **Reduced expenses for PCB architecture**

The cost-efficient PCB structure protects expensive and sensitive PCB material, eliminates imprecise and rough surfaces and greatly reduces architecture expenses, especially since there is no mandatory requirement for hard-gold plating.

Range of standard products (1×8 and 2×8 ganged systems)

- 1x8 and 2x8 straight PCB supports (semi-SMD)
- 1x8 and 2x8 breakout assemblies MXPM-to-PC 1.0 (90 GHz) or MXPM-to-PC 1.85 (70 GHz)
- 1x8 and 2x8 jumper assemblies MXPM-to-MXPM (90 GHz)
- Customised assemblies on request

MXPM90 – technical data

Electrical data (typical)	Testing condition	Performance
Impedance		50 Ω
Interface frequency max.		90 GHz
Return loss	gated measurement: cable connector/ PCB transition PCB: Neltec NY9217ST/NX9240BP cable: Multiflex 53-02	≥ 20 dB up to 50 GHz ≥ 15 dB up to 90 GHz
Insertion loss		according Multiflex 53-02
Phase match single assemblies		+/- 1 ps

Mechanical data (typical)	Testing condition	Performance
Number of matings		≥ 500
Pitch centre-to-centre		2.54 mm (0.1 in.)

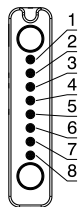
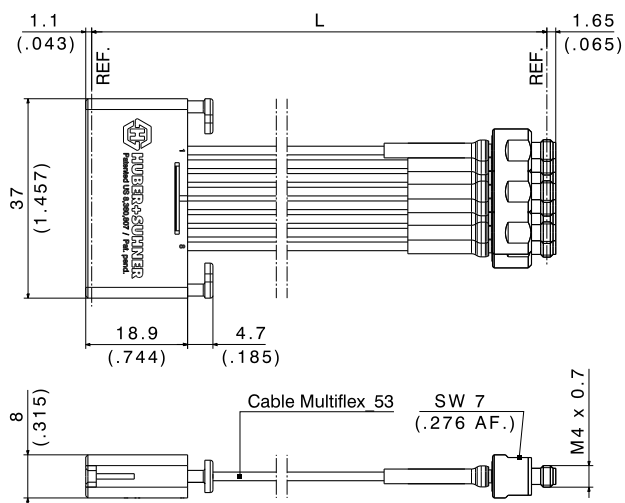
Environmental data (typical)	Testing condition	Performance
Temperature range		0 °C ... +85 °C/32 °F ... 185 °F
2011/65/EU (RoHS)		compliant
2006/1907/EC (REACH)		compliant

Material data cable connector	Material	Surface plating
Centre contact	copper beryllium alloy	SUCOPRO gold plating
Outer contact	copper beryllium alloy	SUCOPRO gold plating
Body	aluminium	black/blue anodised
Isolator	PEEK	n/a
Other parts	neodym (magnets)	n/a

Material data PCB socket	Material	Surface plating
Body	brass	SUCOPRO gold plating
Outer contact	brass	SUCOPRO gold plating
Other parts	stainless steel	n/a

MXPM90 – breakouts to PC 1.0

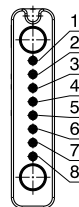
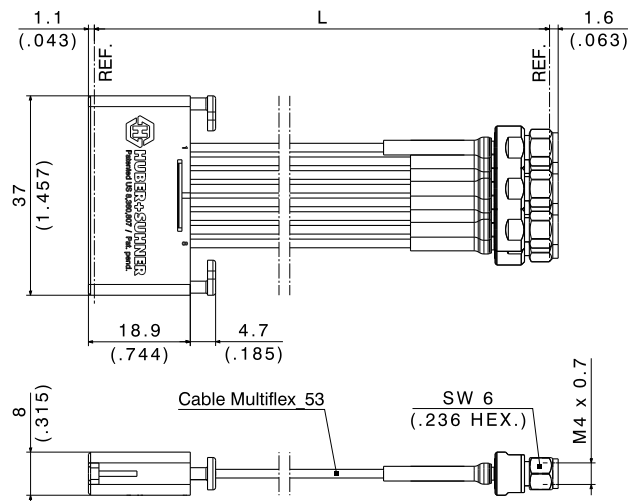
- 1x8 ganged versions
- Breakouts to female PC 1.0



Ordering information

Type 1x8 ganged	Item number	Length	Notes
MF53/1x8A_11MXPM/21PC1/102	85147064	102 mm (4 in.)	Single channels numbered
MF53/1x8A_11MXPM/21PC1/152	85147065	152 mm (6 in.)	

- 1x8 ganged versions
- Breakouts to male PC 1.0

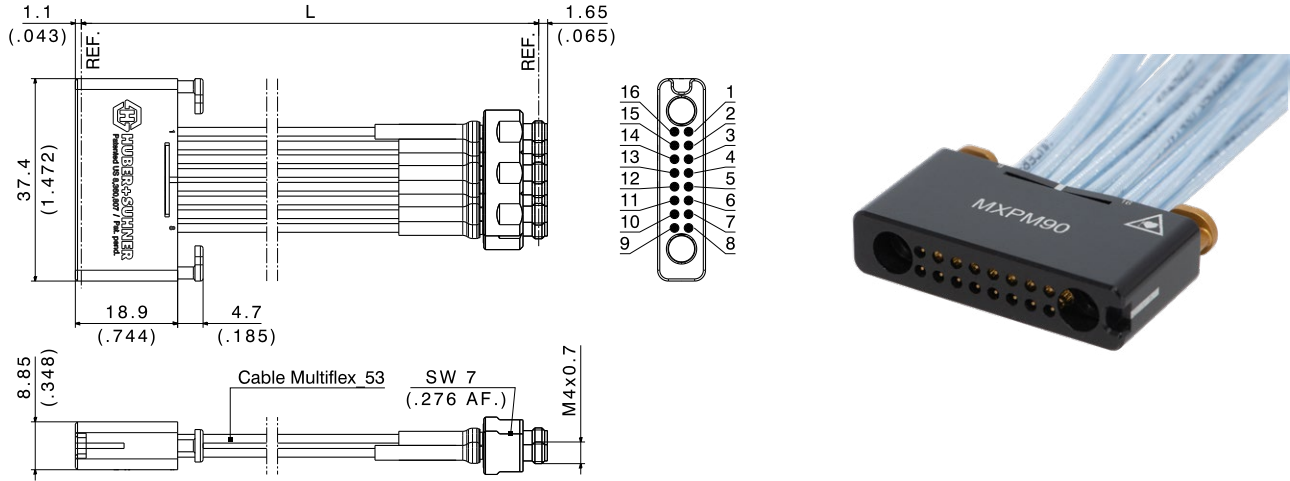


Ordering information

Type 1x8 ganged	Item number	Length	Notes
MF53/1x8A_11MXPM/21PC1/102	85147056	102 mm (4 in.)	Single channels numbered
MF53/1x8A_11MXPM/21PC1/152	85147062	152 mm (6 in.)	

MXPM90 – breakouts to PC 1.0

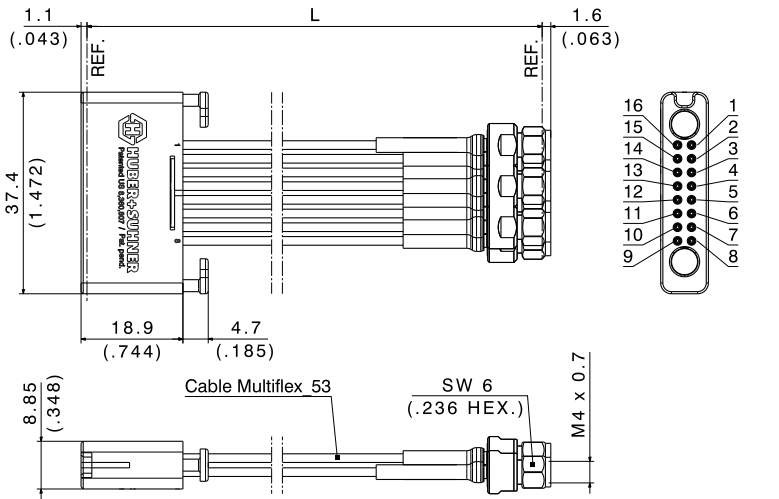
- 2x8 ganged versions
- Breakouts to female PC 1.0



Ordering information

Type 2x8 ganged	Item number	Length	Notes
MF53/2x8A_11MXPM/21PC1/102	85147071	102 mm (4 in.)	Single channels numbered
MF53/2x8A_11MXPM/21PC1/152	85147072	152 mm (6 in.)	

- 2x8 ganged versions
- Breakouts to male PC 1.0

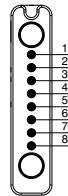
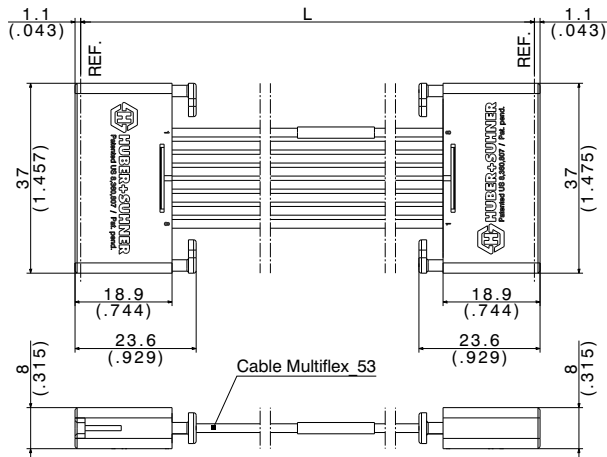


Ordering information

Type 2x8 ganged	Item number	Length	Notes
MF53/2x8A_11MXPM/11PC1/102	85147067	102 mm (4 in.)	Single channels numbered
MF53/2x8A_11MXPM/11PC1/152	85147069	152 mm (6 in.)	

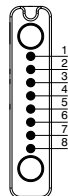
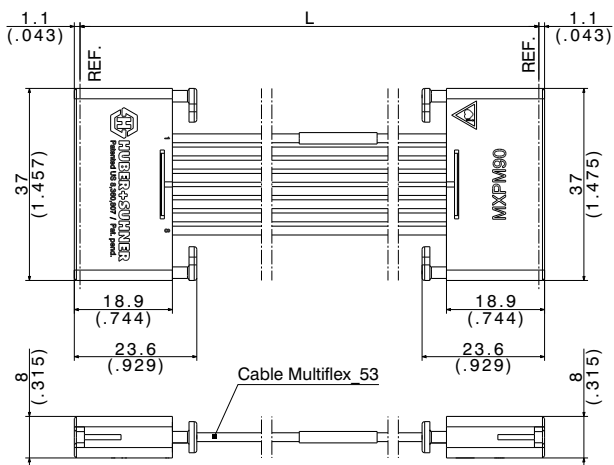
MXPM90 – Jumpers

- 1x8 ganged versions
- Pin map: 1-to-8 or 1-to-1



Ordering information

Type 1x8 ganged	Item number	Length	Characteristics
MF53/1x8A_11MXPM/11MXPM/152	85101230	152 mm (6 in.)	Pin map: 1-to-8
MF53/1x8A_11MXPM/11MXPM/305	85107418	305 mm (12 in.)	

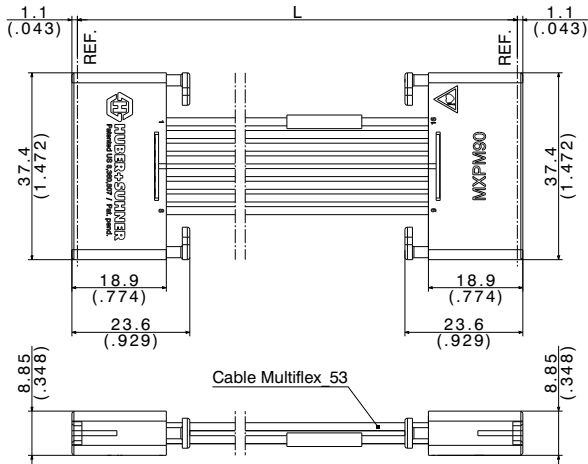


Ordering information

Type 1x8 ganged	Item number	Length	Characteristics
MF53/1x8A_11MXPM/11MXPM/152_1	85107423	152 mm (6 in.)	Pin map: 1-to-1
MF53/1x8A_11MXPM/11MXPM/305_1	85107424	305 mm (12 in.)	

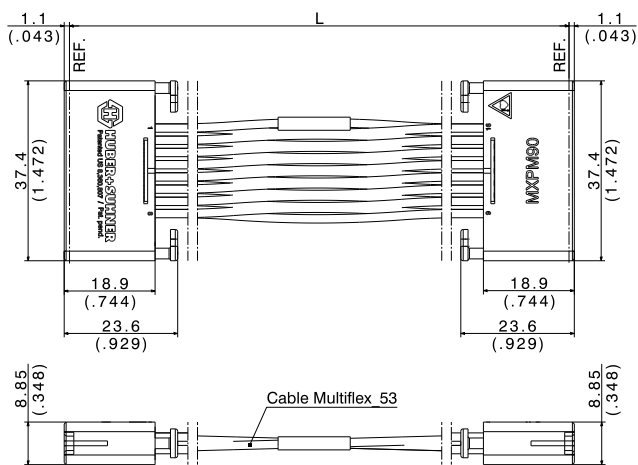
MXPM90 – Jumpers

- 2x8 ganged versions
- Pin map: 1-to-16 or 1-to-1



Ordering information

Type 2x8 ganged	Item number	Length	Characteristics
MF53/2x8A_11MXPM/11MXPM/152	85107419	152 mm (6 in.)	Pin map: 1-to-16
MF53/2x8A_11MXPM/11MXPM/305	85107420	305 mm (12 in.)	



Ordering information

Type 2x8 ganged	Item number	Length	Characteristics
MF53/2x8A_11MXPM/11MXPM/152_1	85107421	152 mm (6 in.)	Pin map: 1-to-1
MF53/2x8A_11MXPM/11MXPM/305_1	85107422	305 mm (12 in.)	

MXPM70 – technical data

Electrical data (typical)	Testing condition	Performance
Impedance		50 Ω
Interface frequency max.		70 GHz
Return loss	Gated measurement: cable connector/ PCB transition PCB: Rogers RO3003 Cable: Multiflex 53-02	≥ 20 dB up to 50 GHz ≥ 17 dB up to 70 GHz
Insertion loss		according Multiflex 53-02
Phase match single assemblies		+/- 1 ps

Mechanical data (typical)	Testing condition	Performance
Number of matings		≥ 500
Pitch centre-to-centre		2.54 mm (0.1 in.)

Environmental data (typical)	Testing condition	Performance
Temperature range		0 °C ... +85 °C/32 °F ... 185 °F
2011/65/EU (RoHS)		compliant
2006/1907/EC (REACH)		compliant

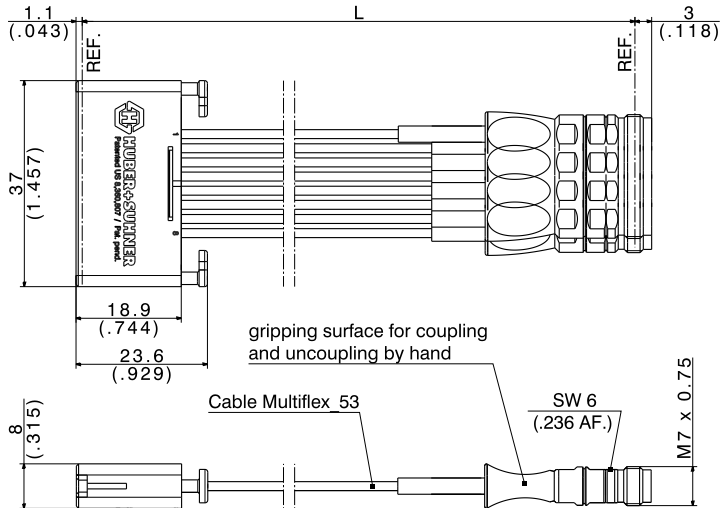
Material data cable connector	Material	Surface plating
Centre contact	copper beryllium alloy	SUCOPRO gold plating
Outer contact	copper beryllium alloy	SUCOPRO gold plating
Body	aluminium	black/blue anodised
Isolator	PEEK	n/a
Other parts	neodym (magnets)	n/a

Material data PCB socket	Material	Surface plating
Body	brass	SUCOPRO gold plating
Outer contact	brass	SUCOPRO gold plating
Other parts	stainless steel	n/a

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

MXPM70 – breakouts to PC 1.85

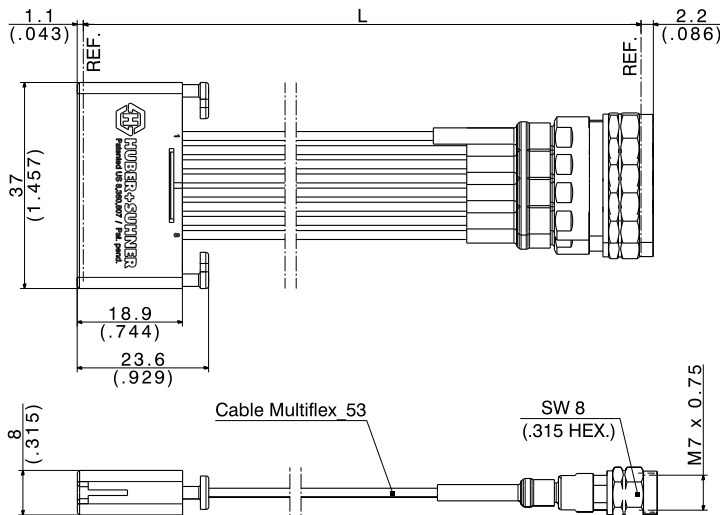
- 1x8 ganged versions
- Breakouts to female PC 1.



Ordering information

Type 1x8 ganged	Item number	Length	Characteristics
MF53/1x8A_11MXPM/21PC185_e/152	85098172	152 mm (6 in.)	Single channels numbered with ergo grip on PC 1.85
MF53/1x8A_11MXPM/21PC185_e/305	85113861	305 mm (12 in.)	

- 1x8 ganged versions
- Breakouts to male PC 1.85

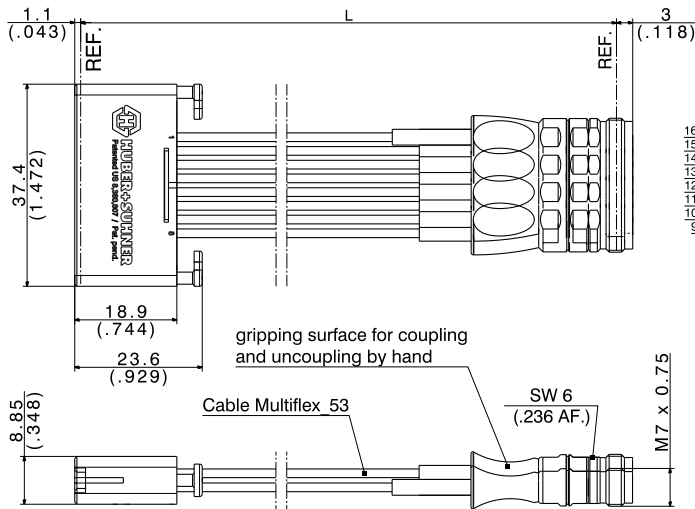


Ordering information

Type 1x8 ganged	Item number	Length	Characteristics
MF53/1x8A_11MXPM/11PC185/152	85085482	152 mm (6 in.)	Single channels numbered
MF53/1x8A_11MXPM/11PC185/305	85120286	305 mm (12 in.)	

MXPM70 – breakouts to PC 1.85

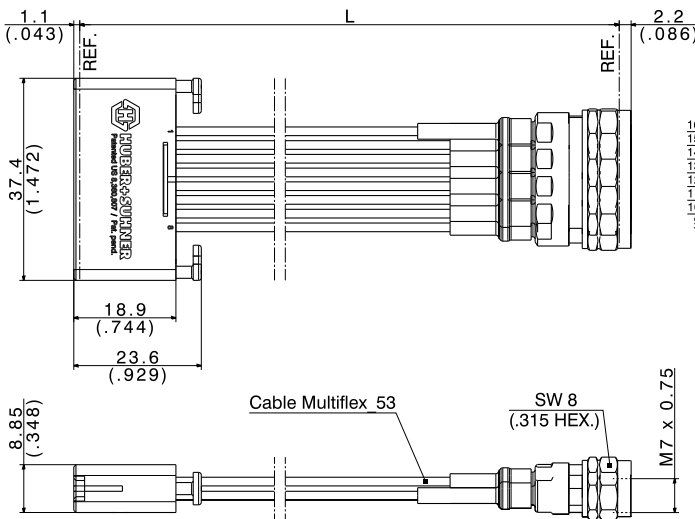
- 2x8 ganged versions
- Breakouts to female PC 1.85



Ordering information

Type 2x8 ganged	Item number	Length	Notes
MF53/2x8A_11MXPM/21PC185_e/152	85096261	152 mm (6 in.)	Single channels numbered with ergo grip on PC 1.85
MF53/2x8A_11MXPM/21PC185_e/305	85111452	305 mm (12 in.)	

- 2x8 ganged versions
- Breakouts to male PC 1.85

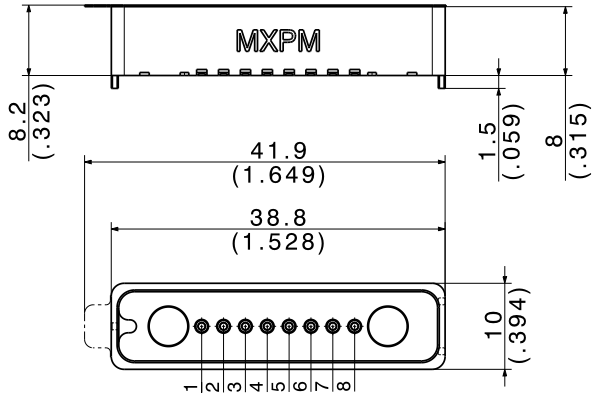


Ordering information

Type 2x8 ganged	Item number	Length	Notes
MF53/2x8A_11MXPM/11PC185/152	85091160	152 mm (6 in.)	Single channels numbered
MF53/2x8A_11MXPM/11PC185/305	85102802	305 mm (12 in.)	

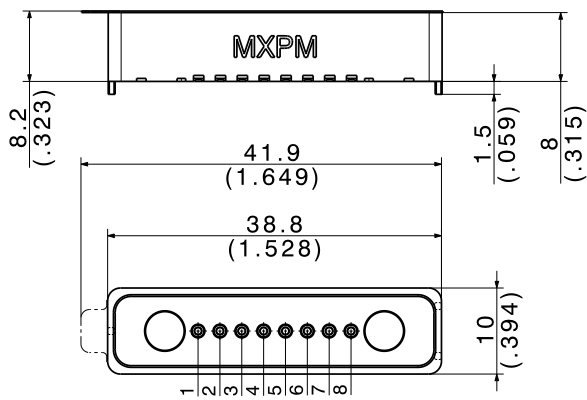
MXPM – PCB sockets

- 1x8 ganged versions
- Compatible with MXPM70 and MXPM90 assemblies
- Via-in-pad capable
- Semi-SMD technology – guide pins for better mechanical stability of solder joint



Ordering information

Type 2x8 ganged	Item number	Packaging	Characteristics
1x8A_82_MXPM-S50-0-1/-11_NE	85091041	single	asymmetric design (keyed)
1x8A_82_MXPM-S50-0-1/-11_NM	85104380	tape + reel 100	

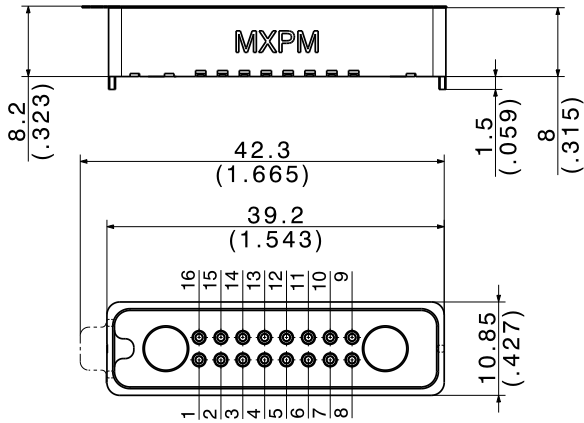


Ordering information

Type 2x8 ganged	Item number	Packaging	Characteristics
1x8A_82_MXPM-S50-0-2/-11_NE	85085226	single	asymmetric design (keyed)
1x8A_82_MXPM-S50-0-2/-11_NM	85104409	tape + reel 100	

MXPM – PCB sockets

- 2x8 ganged versions
- Compatible with MXPM70 and MXPM90 assemblies
- Via-in-pad capable
- Semi-SMD technology – guide pins for better mechanical stability of solder joint



Ordering information

Type 2x8 ganged	Item number	Packaging	Characteristics
2x8A_82_MXPM-S50-0-1/-11_NE	85091060	single	asymmetric design (keyed)
2x8A_82_MXPM-S50-0-1/-11_NM	85104412	tape + reel 100	

MXP50 – 50 GHz multicoax solution

Features

- Operating range at up to 50 GHz
- Broadband characteristic
- 4 mm (0.157 in.) pitch centre-to-centre
- Standard phase matching down to +/- 2 ps
- Slide-on mounting – no threading
- Highly flexible and ultra-stable Multiflex cable

Benefits

• Testing at a high level

The broadband characteristic and the true 50 GHz coaxial-to-PCB transition allows testing of the latest generations of semiconductor standards.

• Space saving

As a result of the dense interface pitch, the PCB connectors takes up less space on PCBs in comparison to single interfaces. This is advantageous, as expensive high-performance board material is essential for good signal integrity at high frequencies/data rates.

• Short transmission lines

The compact design of the entire system allows it to be positioned directly adjacent to the DUT/chip. This helps to keep the transmission lines on the board short and the losses low.

• Reliable push-on mating

Thanks to the robust slide-on interface design, assemblies can be replugged quickly and easily, while guaranteeing stable electrical values even after numerous mating cycles.

Range of standard products (1×8 and 2×8 ganged systems)

- 1×8 and 2×8 straight PCB supports (semi-SMD)
- 1×8 and 2×8 breakout assemblies MXP-to-PC 2.4
- 1×8 and 2×8 jumper assemblies MXP-to-MXP
- Loop back assembly
- 2×8 MXP-to-MXP board-to-board adapter
- Customised assemblies on request

MXP50 – technical data

Electrical data (typical)	Testing condition	Performance
Impedance		50 Ω
Interface frequency max.		50 GHz
Return loss	gated measurement: cable connector/ PCB transition PCB: Rogers RO3003 cable: Multiflex 53-02	≥ 20 dB up to 22.5 GHz ≥ 15 dB up to 50 GHz
Insertion loss		according Multiflex 53-02
Phase match		+/- 2 ps

Mechanical data (typical)	Testing condition	Requirements
Mating force (per single channel)		max. 3.4 N (typical 1.1 N)
Demating force (per single channel)		max. 3.4 N (typical 1.1 N)
Number of matings	MIL-PRF-39012, paragraph 4.7.12	≥ 500
Pitch centre-to-centre		4 mm (0.157 in.)

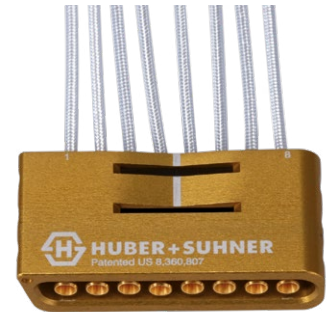
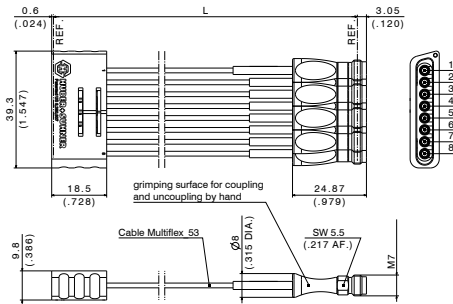
Environmental data (typical)	Testing condition	Requirements
Temperature range		-55 °C ... 85 °C / -67 °F ... 185 °F
Thermal aging (mated condition)	IEC 60068-2-2, test B	120 °C/260 h
Change of temperature	IEC 60068-2-14, test na	assembly: -55 °C ... 85 °C / -67 °F ... 185 °F PCB: -55 °C ... 85 °C / -67 °F ... 185 °F
Vibration	IEC 60068-2-6	on request
Mechanical shock (transport)	MIL-STD-202, method 213, condition I	100 g/6 ms
Damp heat steady state	IEC 60068-2-78, test ca	40 °C (104 °F)/humidity 93%/96 h
2011/65/EU (RoHS)		compliant
2006/1907/EC (REACH)		compliant

Material data cable connector	Material	Coating
Center contact	copper beryllium	SUCOPRO® gold plating
Outer contact	brass	SUCOPRO® gold plating
Body	aluminium	gold anodised
Insulator	PEEK	n/a

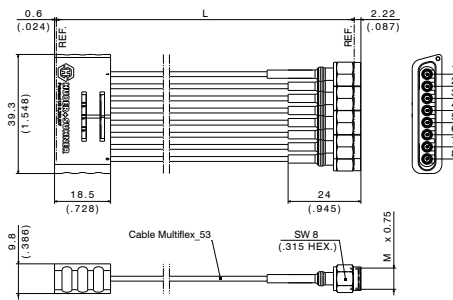
Material data PCB connector	Material	Coating
Center contact	copper beryllium	SUCOPRO® gold plating
Outer contact	BZ4	SUCOPRO® gold plating
Body	brass	SUCOPRO® gold plating
Insulator	PEEK	n/a

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

MXP50 – breakout to PC 2.4

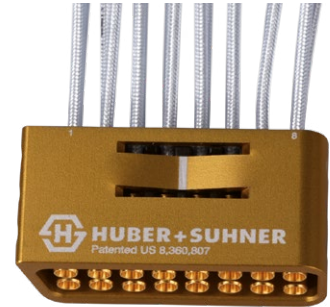
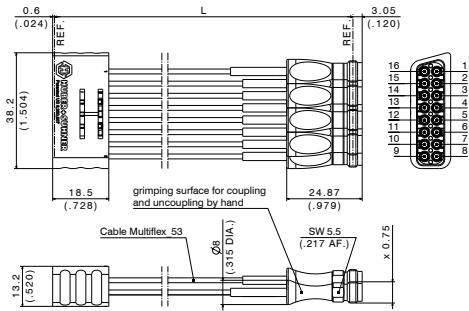


Type 1×8 ganged	Item no.	Length	Notes
MF53/1×8A_21MXP/21PC24_erg/152	85024118	152 mm (6")	single channels numbered with ergo grip on PC 2.4 side
MF53/1×8A_21MXP/21PC24_erg/229	85024116	229 mm (9")	
MF53/1×8A_21MXP/21PC24_erg/305	85024113	305 mm (12")	

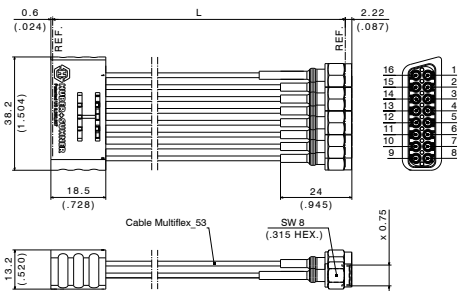


Type 1×8 ganged	Item no.	Length	Notes
MF53/1×8A_21MXP/11PC24/152	85025933	152 mm (6")	single channels numbered
MF53/1×8A_21MXP/11PC24/229	85025934	229 mm (9")	
MF53/1×8A_21MXP/11PC24/305	85025935	305 mm (12")	

MXP50 – breakout to PC 2.4

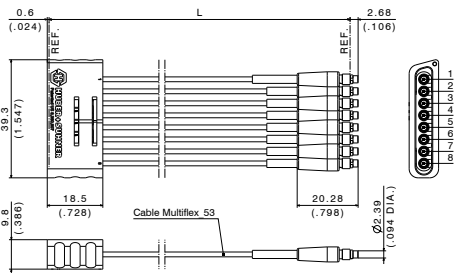


Type 2×8 ganged	Item no.	Length	Notes
MF53/2×8A_21MXP/21PC24_erg/152	85023135	152 mm (6")	single channels numbered with ergo grip on PC 2.4 side
MF53/2×8A_21MXP/21PC24_erg/229	85023167	229 mm (9")	
MF53/2×8A_21MXP/21PC24_erg/305	85023168	305 mm (12")	

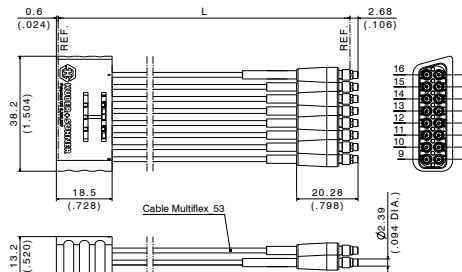


Type 2×8 ganged	Item no.	Length	Notes
MF53/2×8A_21MXP/11PC24/152	85025930	152 mm (6")	single channels numbered
MF53/2×8A_21MXP/11PC24/229	85025932	229 mm (9")	
MF53/2×8A_21MXP/11PC24/305	85025931	305 mm (12")	

MXP50 – breakout to MMPX

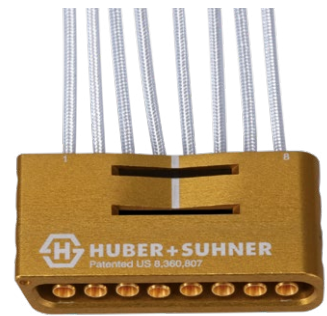
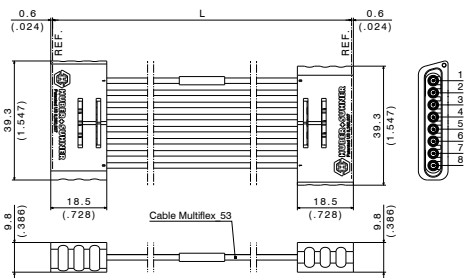


Type 1x8 ganged	Item no.	Length	Notes
MF53/1x8A_21MXP/11MMPX/152	85021537	152 mm (6")	single channels numbered
MF53/1x8A_21MXP/11MMPX/229	85018173	229 mm (9")	
MF53/1x8A_21MXP/11MMPX/305	85025640	305 mm (12")	
MF53/1x8A_21MXP/11MMPX/610	85025641	610 mm (24")	

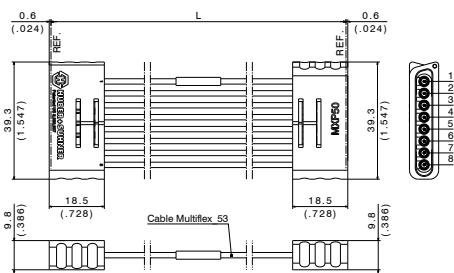


Type 2x8 ganged	Item no.	Length	Notes
MF53/2x8A_21MXP/11MMPX/152	85025642	152 mm (6")	single channels numbered
MF53/2x8A_21MXP/11MMPX/229	85024572	229 mm (9")	
MF53/2x8A_21MXP/11MMPX/305	85025643	305 mm (12")	
MF53/2x8A_21MXP/11MMPX/610	85006750	610 mm (24")	

MXP50 – jumper

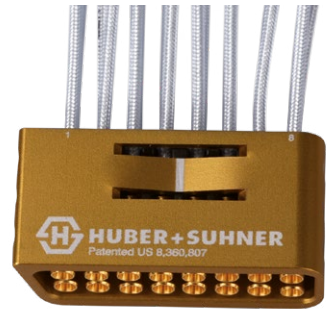
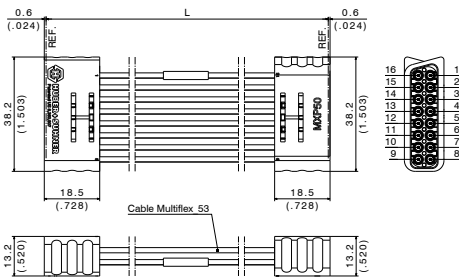


Type 1×8 ganged	Item no.	Length	Notes
MF53/1×8A_21MXP/21MXP/152	84129711	152 mm (6")	pin map: 1 to 8
MF53/1×8A_21MXP/21MXP/229	85009276	229 mm (9")	
MF53/1×8A_21MXP/21MXP/305	84099960	305 mm (12")	
MF53/1×8A_21MXP/21MXP/610	84100060	610 mm (24")	

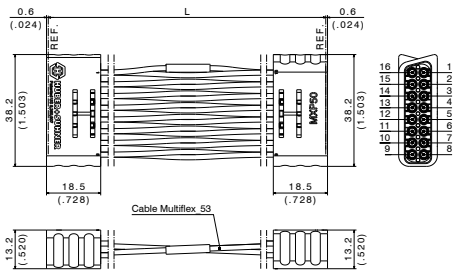


Type 1×8 ganged	Item no.	Length	Notes
MF53/1×8A_21MXP/21MXP/152_1	84129722	152 mm (6")	pin map: 1 to 1
MF53/1×8A_21MXP/21MXP/229_1	85009284	229 mm (9")	
MF53/1×8A_21MXP/21MXP/305_1	84099634	305 mm (12")	
MF53/1×8A_21MXP/21MXP/610_1	84099914	610 mm (24")	

MXP50 – jumper



Type 2×8 ganged	Item no.	Length	Notes
MF53/2×8A_21MXP/21MXP/152	85009288	152 mm (6")	pin map: 1 to 16
MF53/2×8A_21MXP/21MXP/229	85009287	229 mm (9")	
MF53/2×8A_21MXP/21MXP/305	84099955	305 mm (12")	
MF53/2×8A_21MXP/21MXP/457	84131766	457 mm (18")	
MF53/2×8A_21MXP/21MXP/610	84099957	610 mm (24")	

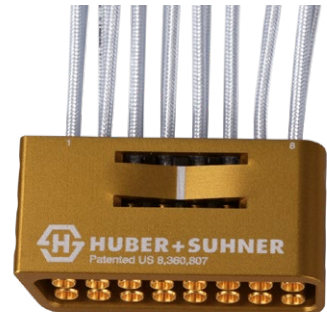
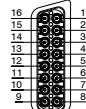
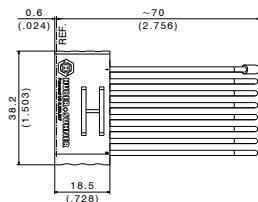
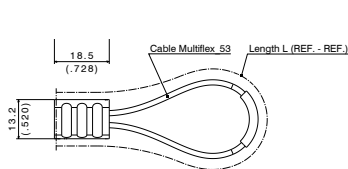


Type 2×8 ganged	Item no.	Length	Notes
MF53/2×8A_21MXP/21MXP/152_1	84116942	152 mm (6")	pin map: 1 to 1
MF53/2×8A_21MXP/21MXP/229_1	85009289	229 mm (9")	
MF53/2×8A_21MXP/21MXP/305_1	84099487	305 mm (12")	
MF53/2×8A_21MXP/21MXP/457_1	84150019	457 mm (18")	
MF53/2×8A_21MXP/21MXP/610_1	84099511	610 mm (24")	

MXP50 – loop back

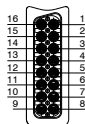
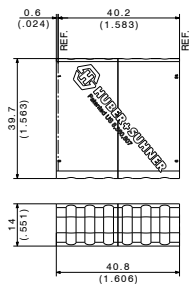
Typical application

Channel bridging



Type 2×8 ganged	Item no.	Length	Notes
MF53/2×8A_21MXP/152	84095097	152 mm (6")	loop back configuration pin map: 1 to 16

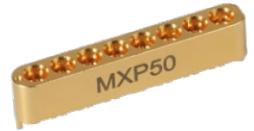
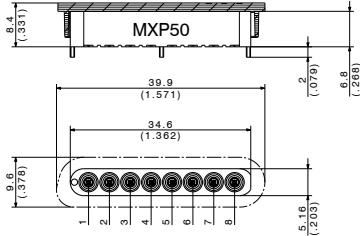
MXP – board-to-board adapter



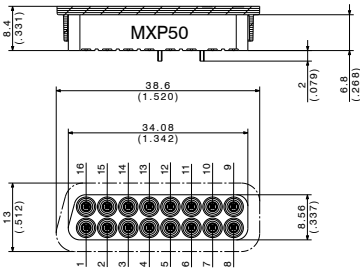
Type 2×8 ganged	Item no.	Height	Notes
2×8A_31_MXP-50-0-1	85022967	40 mm	limited misalignment tolerance

MXP50 – PCB connectors

- 1×8 and 2×8 ganged versions
- Via-in-pad capable
- Semi-SMD technology – guide pins for better mechanical stability of solder joint



Type 1×8 ganged	Item no.	Packaging	Notes
1×8A_81_MXP-S50-0-3/111_NE	85022694	tape	symmetric design (non keyed)



Type 2×8 ganged	Item no.	Packaging	Notes
2×8A_81_MXP-S50-0-4/111_NE	85023106	tape	assymmetric design (keyed) optimised grounding pin layout for differential pair routing

MXP40 – 40 GHz multicoax solution

Features

- Operating range at up to 40 GHz
- Broadband characteristic
- 4 mm (0.157 in.) pitch centre-to-centre
- Standard phase matching down to +/- 2 ps
- Slide-on mounting – no threading
- Highly flexible and ultra-stable Multiflex cable

Benefits

• State-of-the-art-testing

The broadband characteristic and the true 40 GHz coaxial-to-PCB transition allows testing of most of the existing semiconductor standards.

• Space saving

As a result of the dense interface pitch, the PCB connector take up less space on PCBs in comparison to single interfaces. This is advantageous, as expensive high-performance board material is essential for good signal integrity at high frequencies/data rates.

• Short transmission lines

The compact design of the entire system allows it to be positioned directly adjacent to the DUT/chip. This helps to keep the transmission lines on the board short and the losses low.

• Reliable push-on mating

Thanks to the robust slide-on interface design, assemblies can be replugged quickly and easily, while guaranteeing stable electrical values even after numerous mating cycles.

Range of standard products (1×8 and 2×8 ganged systems)

- 1×8 and 2×8 straight PCB supports (semi-SMD)
- 1×8 and 2×8 breakout assemblies MXP-to-SK (2.92 mm standard)
- Customised assemblies on request

MXP40 – technical data

Electrical data (typical)	Testing condition	Performance
Impedance		50 Ω
Interface frequency max.		40 GHz
Return loss	gated measurement: cable connector/ PCB transition PCB: Rogers RO3003 cable: Multiflex 53-02	≥ 20 dB up to 22.5 GHz ≥ 12 dB up to 40 GHz
Insertion loss		according Multiflex 53-02
Phase match		+/- 2 ps

Mechanical data (typical)	Testing condition	Requirements
Mating force (per single channel)		max. 3.4 N (typical 1.1 N)
Demating force (per single channel)		max. 3.4 N (typical 1.1 N)
Number of matings	MIL-PRF-39012, paragraph 4.712	≥ 500
Pitch centre-to-centre		4 mm (0.157 in.)

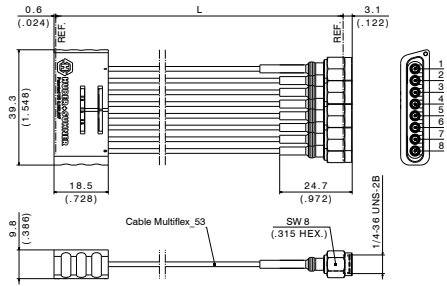
Environmental data (typical)	Testing condition	Requirements
Temperature range		-55 °C ... 85 °C / -67 °F ... 185 °F
Thermal aging (mated condition)	IEC 60068-2-2, test B	120 °C/260 h
Change of temperature	IEC 60068-2-14, test na	assembly: -55°C ... 85°C / -67°F ... 185 °F PCB: -55°C ... 85°C / -67°F ... 185 °F
Vibration	IEC 60068-2-6	on request
Mechanical shock (transport)	MIL-STD-202, method 213, condition I	100 g/6 ms
Damp heat steady state	IEC 60068-2-78, test ca	40 °C (104 °F)/humidity 93%/96 h
2011/65/EU (RoHS)		compliant
2006/1907/EC (REACH)		compliant

Material data cable connector	Material	Coating
Center contact	copper beryllium	SUCOPRO® gold plating
Outer contact	brass	SUCOPRO® gold plating
Body	aluminium	black anodised
Insulator	PEEK	n/a

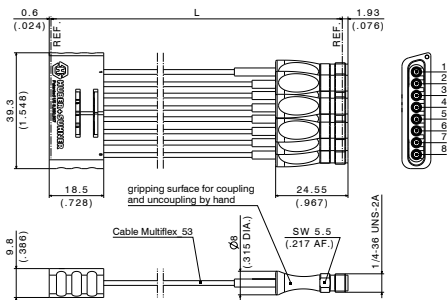
Material data PCB connector	Material	Coating
Center contact	copper beryllium	SUCOPRO® gold plating
Outer contact	BZ4	SUCOPRO® gold plating
Body	brass	SUCOPRO® gold plating
Insulator	PEEK	n/a

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

MXP40 – breakout to SK

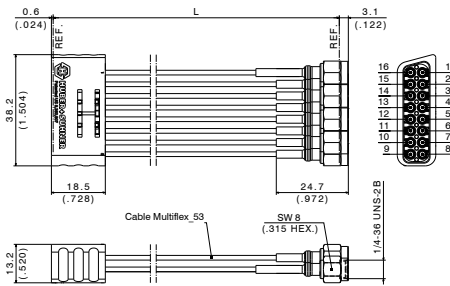


Type 1×8 ganged	Item no.	Length	Notes
MF53/1×8A_21MXP/11SK/152	84097196	152 mm (6")	single channels numbered
MF53/1×8A_21MXP/11SK/229	84099600	229 mm (9")	
MF53/1×8A_21MXP/11SK/305	84099607	305 mm (12")	
MF53/1×8A_21MXP/11SK/610	84123646	610 mm (24")	

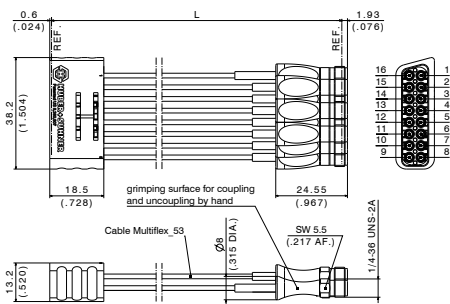


Type 1×8 ganged	Item no.	Length	Notes
MF53/1×8A_21MXP/21SK_ergo/152	84093980	152 mm (6")	single channels numbered with ergo grip on SK (2.92 mm standard) side
MF53/1×8A_21MXP/21SK_ergo/229	84098899	229 mm (9")	
MF53/1×8A_21MXP/21SK_ergo/305	84098900	305 mm (12")	
MF53/1×8A_21MXP/21SK_ergo/610	85009273	610 mm (24")	

MXP40 – breakout to SK



Type 2×8 ganged	Item no.	Length	Notes
MF53/2×8A_21MXP/11SK/152	84088950	152 mm (6")	single channels numbered
MF53/2×8A_21MXP/11SK/229	84098901	229 mm (9")	
MF53/2×8A_21MXP/11SK/305	84088954	305 mm (12")	
MF53/2×8A_21MXP/11SK/610	84089090	610 mm (24")	

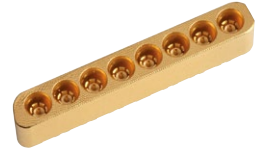
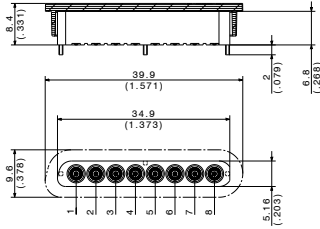


Type 2×8 ganged	Item no.	Length	Notes
MF53/2×8A_21MXP/21SK_ergo/152	84093901	152 mm (6")	single channels numbered with ergo grip on SK (2.92 mm standard) side
MF53/2×8A_21MXP/21SK_ergo/229	84098908	229 mm (9")	
MF53/2×8A_21MXP/21SK_ergo/305	84098902	305 mm (12")	
MF53/2×8A_21MXP/21SK_ergo/610	85009286	610 mm (24")	

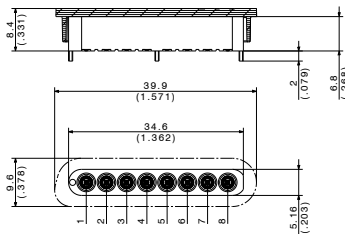
Connectors

MXP40 – PCB connectors

- 1×8 and 2×8 ganged versions
- Via-in-pad capable
- Semi-SMD technology – guide pins for better mechanical stability of solder joint



Type 1×8 ganged	Item no.	Packaging	Notes
1×8A_81_MXP-S50-0-1/111_NE	84091435	tape	asymmetric design (keyed)



Type 1×8 ganged	Item no.	Packaging	Notes
1×8A_81_MXP-S50-0-2/111_NE	84091436	tape	symmetric design (non keyed)

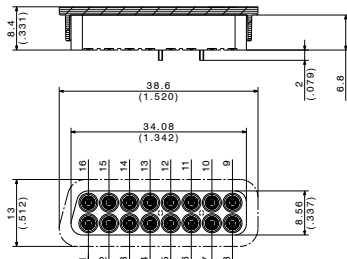
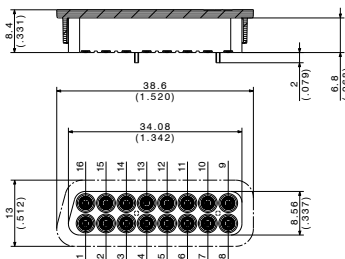


Fig. 1

Fig. 2

Type 2×8 ganged	Item no.	Packaging	Notes	Fig.
2×8A_81_MXP-S50-0-1/111_NE	84072058	tape	asymmetric design (keyed)	1
2×8A_81_MXP-S50-0-3/111_NE	85013397	tape	asymmetric design (keyed) optimised grounding pin layout for differential pair routing	2

MXP18 – 18 GHz multicoax solution

Features

- Operating range at up to 18 GHz
- Broadband characteristic
- 4 mm (0.157 in.) pitch centre-to-centre
- Standard phase matching down to +/- 2 ps
- Slide-on mounting – no threading
- Highly flexible and ultra-stable Multiflex cable

Benefits

- **Best value for money**

MXP18 allows accurate testing up to 18 GHz.

- **Space saving**

As a result of the dense interface pitch, the PCB connector take up less space on PCBs in comparison to single interfaces. This is advantageous, as expensive high-performance board material is essential for good signal integrity at high frequencies/data rates.

- **Short transmission lines**

The compact design of the entire system allows it to be positioned directly adjacent to the DUT/chip. This helps to keep the transmission lines on the board short and the losses low.

- **Reliable push-on mating**

Thanks to the robust slide-on interface design, assemblies can be replugged quickly and easily, while guaranteeing stable electrical values even after numerous mating cycles.

Range of standard products (1×8 and 2×8 ganged systems)

- 1×8 and 2×8 breakout assemblies MXP-to-SMA
- Customised assemblies on request

MXP18 – technical data

Electrical data (typical)	Testing condition	Performance
Impedance		50 Ω
Interface frequency max.		18 GHz
Return loss	gated measurement: cable connector/ PCB transition PCB: Rogers RO3003 cable: Multiflex 53-02	≥ 20 dB up to 18 GHz
Insertion loss		according Multiflex 53-02
Phase match		+/- 2 ps

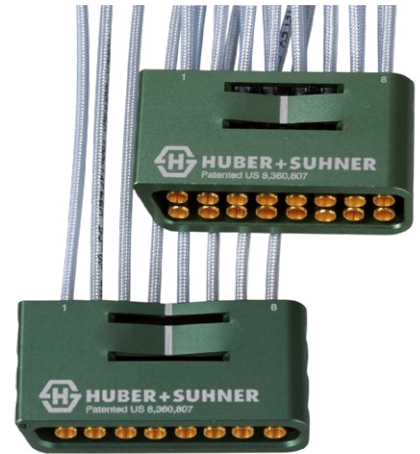
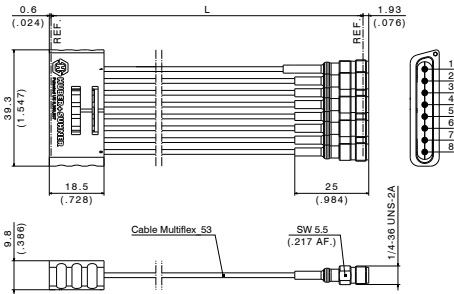
Mechanical data (typical)	Testing condition	Requirements
Mating force (per single channel)		max. 3.4 N (typical 1.1 N)
Demating force (per single channel)		max. 3.4 N (typical 1.1 N)
Number of matings	MIL-PRF-39012, paragraph 4.7.12	≥ 500
Pitch centre-to-centre		4 mm (0.157 in.)

Environmental data (typical)	Testing condition	Requirements
Temperature range		-55 °C ... 85 °C / -67 °F ... 185 °F
Thermal aging (mated condition)	IEC 60068-2-2, test B	120 °C/260 h
Change of temperature	IEC 60068-2-14, test na	assembly: -55 °C ... 85 °C / -67 °F ... 185 °F PCB: -55 °C ... 85 °C / -67 °F ... 185 °F
Vibration	IEC 60068-2-6	on request
Mechanical shock (transport)	MIL-STD-202, method 213, condition I	100 g/6 ms
Damp heat steady state	IEC 60068-2-78, test ca	40 °C (104 °F)/humidity 93%/96 h
2011/65/EU (RoHS)		compliant
2006/1907/EC (REACH)		compliant

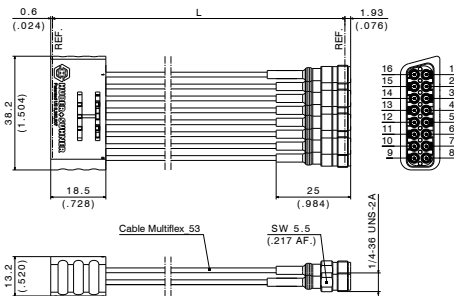
Material data cable connector	Material	Coating
Center contact	copper beryllium	SUCOPRO® gold plating
Outer contact	brass	SUCOPRO® gold plating
Body	aluminium	black anodised
Insulator	PEEK	n/a

Performance values are typical for the connector interface. Individual component or connector performance may vary depending on the connector design, attachment (e.g. cable, PCB) or application. For detailed specifications please refer to the specific data sheets on our website www.hubersuhner.com.

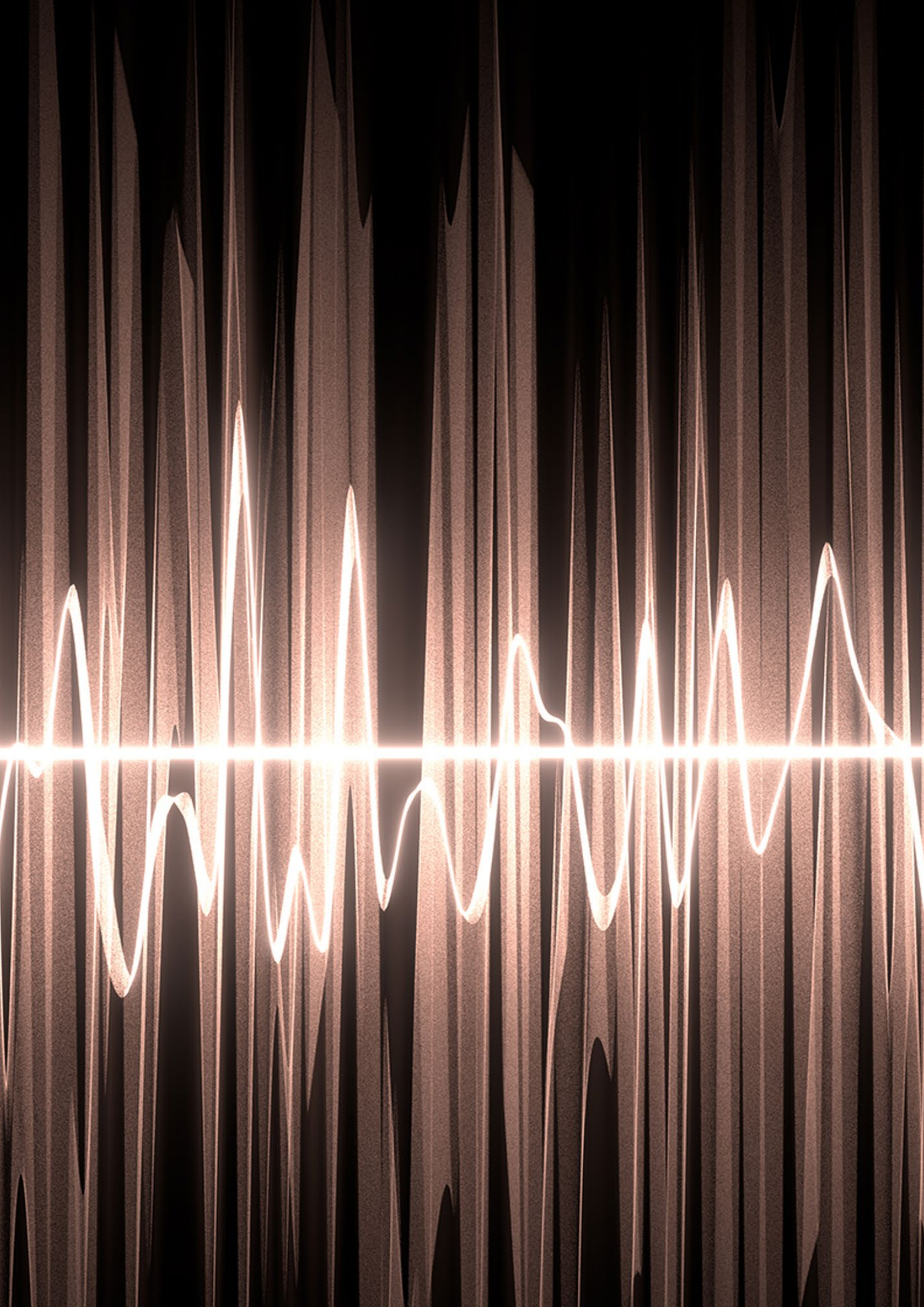
MXP18 – breakout to SMA



Type 1x8 ganged	Item no.	Length	Notes
MF53/1x8A_21MXP/21SMA/152	85014420	152 mm (6")	



Type 2x8 ganged	Item no.	Length	Notes
MF53/2x8A_21MXP/21SMA/152	85022735	152 mm (6")	



Adapters

HUBER+SUHNER is manufacturing a wide range of adapters in various configurations like within series or between series, straight or angled designs and some with panel mount features. They are classified according to their typical intended applications of which each require its specific properties. There are four major groups which are identified by means of a color code in this catalogue: standard, precision, low passive intermodulation (PIM) and quick-mate adapters.

Standard adapters

Features

- Wide range of different configurations
- Appropriate materials

Benefits

- Most common interfaces available
- Accurate transitions
- Effective and reliable interconnection solutions

Precision adapters

Features

- Precision interfaces
- Excellent electrical performance
- Premium base materials and platings

Benefits

- For precision laboratory measurements
- High repeatability and accuracy

PIM adapters

Features

- Outstanding low intermodulation performance
- Excellent electrical contacts
- Non-magnetic materials

Benefits

- High reliability
- Repeatable intermodulation measurements

Quick-mate adapters

Features

- Adapters with slide-on coupling mechanism
- High abrasion resistance thanks SUCOPRO® gold plating

Benefits

- Easy coupling and decoupling
- Fast and reliable measurements
- Longest lifetime

Adapter connector matching matrix

	AS12	AS16	BMA	BNC	MBX	MCX	MFBX	MMBX	MMCX	MMPX	N	NEX10	PC1.0	PC1.85	PC2.4	SK (2.92)	PC3.5
AS12																	17
AS16																	
BMA																	
BNC				94		96			99		101						
MBX																	
MCX				96		151					156						162
MFBX																	
MMBX																	
MMCX				99					229								
MMPX													256	257		259	
N				101		156					276	277			280		282
NEX10											277						303
PC1.0										256			319				
PC1.85										257				339			
PC2.4											280						
SK (2.92)										259					359	376	
PC3.5	17					162					282	303					393
PC7											283						394
QLA				109							284						
QMA											285						396
QN											286						
SMA		53	83	112	140	167	193	218	242		287						
SMB				113							288						
SMC				114							289						
SMP																385	
SMPM																386	
SMPM-T																387	
SSMA																	
TNC				119				225			294						
4.1/9.5											295						
4.3-10											296	317					407
7/16											297	318					
MQ4											529						
MQ5											530						

How to find an adapter

The interface pairing of an adapter can be found in the matrix above. The various interface services are listed in the first column and row. The matrix number is the intercept point of two interfaces (e.g. 25 for BNC to BNC). The matrix number can be found in the upper left corner of the detail adapters information in the following pages. The adapters are sorted by this matrix number in ascending order. Consequently all BNC to BNC adapters have the matrix number 25 and are in immediate succession. If the adapter consists of two different interfaces the matrix number can be found either by following the row and then the column or vice versa. For example row MCX and column BNC leads to 27 as well as row BNC and column MCX.

If there is no number in an intercept point there are no adapters for this connector pairing available.

Tracking examples

Interface pairing

matrix number

BNC to BNC

25

BNC to MCX and MCX to BNC

27

	BMA	BNC	MBX	MCX
BMA				
BNC		25		
MBX				
MCX				70

PC7	QLA	QMA	QN	SMA	SMB	SMC	SMP	SMPM	SMPM-T	SSMA	TNC	4.1/9.5	4.3-10	7/16	MQ4	MQ5	
				53													AS12
				83													AS16
				112	113	114					119						BMA
	109			140													BNC
				167													MBX
				193													MCX
				218							225						MFBX
				242													MMBX
																	MMCX
																	MMPX
	283	284	285	286	287	288	289				294	295	296	297	529	530	N
													317	318			NEX10
																	PC1.0
																	PC1.85
																	PC2.4
								385	386	387							SK (2.92)
	394		396	397									407				PC3.5
				412	413						420						PC7
		424															QLA
			438		440												QMA
	412																QN
	413		440		463	464				469	470						SMA
					464	474											SMB
							484										SMC
																	SMP
																	SMPM
																	SMPM-T
					469												SSMA
	420				470						519						TNC
																	4.1/9.5
														525			4.3-10
				462									525	527	528		7/16
																	MQ4
																	MQ5

Examples of detailed product information of specific adapters

- Header with colore code:
- Standard (grey)
- Precision (red)
- PIM (blue)
- Quick-mate (green)

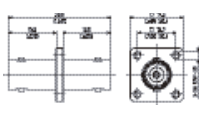
Details

- Interface series and gender
- Various characteristics
- Material/mechanical*
- VSWR

Matrix number and specific product ID

25	H+S type Item no.	37_BNC-75-0-V133_NE 22541045
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BNC jack (f) 2 x

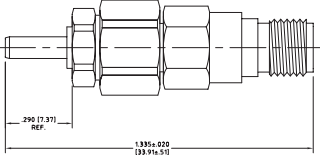


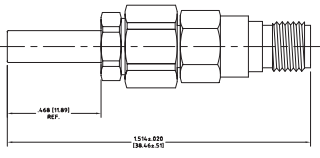
Material: brass/SUCO
Mounting hole: ML10
Flange: 4 threads

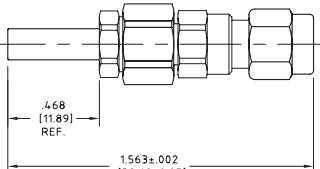
Notes

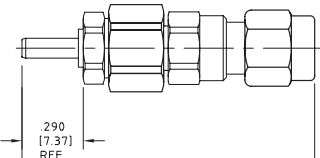
* Material and plating descriptions refer to the connector body or outer contact.
 Used abbreviations: ML mounting hole dimensions, see appendix
 SUCO SUCOPLATE® plating
 SUPR SUCOPRO®, gold plating
 CuBe copper beryllium alloy

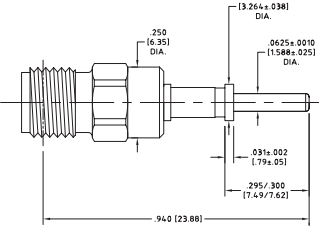
Adapters

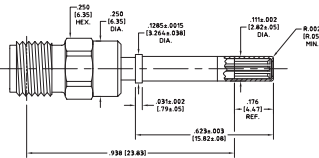
17	H+S type Item no.	29932-1 80320105
AS12 PC3.5	plug (m) jack (f)	
Material	brass/nickel stainless steel (passivated)	
VSWR	DC to 12.4 GHz	≤ 1.20

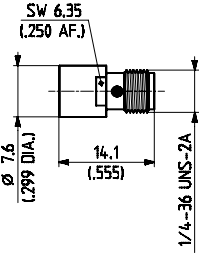
17	H+S type Item no.	29932-2 80320106
AS12 PC3.5	jack (f) jack (f)	
Material	brass/nickel stainless steel (passivated)	
VSWR	DC to 12.4 GHz	≤ 1.20

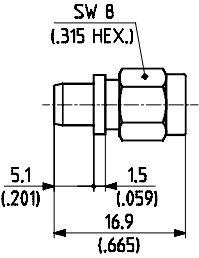
17	H+S type Item no.	29932-3 80360204
AS12 PC3.5	jack (f) plug (m)	
Material	brass/nickel stainless steel (passivated)	
VSWR	DC to 12.4 GHz	≤ 1.20

17	H+S type Item no.	29932-4 80360205
AS12 PC3.5	plug (m) plug (m)	
Material	brass/nickel stainless steel (passivated)	
VSWR	DC to 12.4 GHz	≤ 1.20

53	H+S type Item no.	29557-4 80318451
SMA AS16	jack (f) plug (m)	
Material	stainless steel (passivated) CuBe/gold	
VSWR	DC to 2 GHz	≤ 1.22

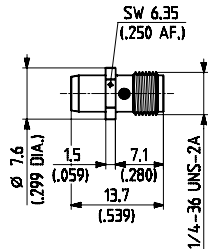
53	H+S type Item no.	29557-5 80318453
SMA AS16	jack (f) jack (f)	
Material	stainless steel (passivated) CuBe/gold	
VSWR	DC to 2 GHz	≤ 1.22

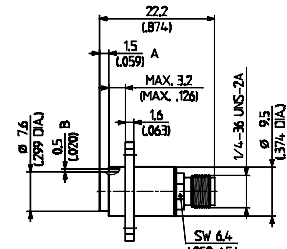
83	H+S type Item no.	31_BMA-SMA_50-1/1-9_UE 22645642
BMA SMA	jack (f) jack (f)	
Material	stainless steel	
VSWR	DC to 9 GHz 9 to 18 GHz	≤ 1.04 + 0.02 · f (GHz) ≤ 1.22

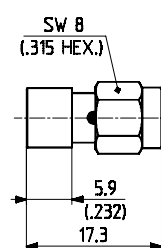
83	H+S type Item no.	32_BMA-SMA-50-1/199_UE 22645643
BMA SMA	plug (m) plug (m)	
Material	stainless steel	
VSWR	DC to 9 GHz 9 to 18 GHz	≤ 1.04 + 0.02 · f (GHz) ≤ 1.22

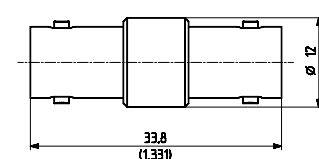
Introduction and general information on page 519 and 520/521.

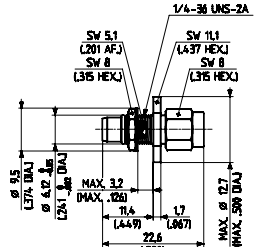
Adapters

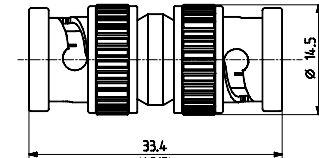
83	H+S type Item no.	33_BMA-SMA-50-1/199_UE 22645644
BMA SMA	plug (m) jack (f)	
Material	stainless steel	
VSWR	DC to 18 GHz	$\leq 1.06 + 0.009 \cdot f$ (GHz)

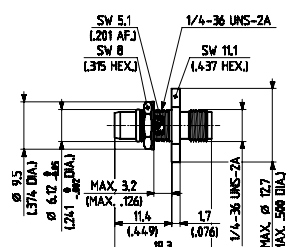
83	H+S type Item no.	37_BMA-SMA-50-1/1--_UE 22645649
BMA SMA	jack (f) jack (f)	
Material Mounting hole	stainless steel ML 58	
VSWR	DC to 9 GHz 9 to 18 GHz	$\leq 1.07 + 0.017 \cdot f$ (GHz) ≤ 1.22

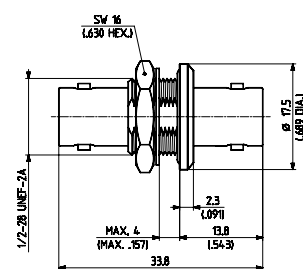
83	H+S type Item no.	33_SMA-BMA-50-1/1-9_UE 22645645
SMA BMA	plug (m) jack (f)	
Material	stainless steel	
VSWR	DC to 18 GHz	$\leq 1.06 + 0.009 \cdot f$ (GHz)

94	H+S type Item no.	31_BNC-50-0-1/133_NE 22540540
BNC	jack (f) 2 ×	
Material	brass/SUCO	
VSWR	DC to 4 GHz	$\leq 1.06 + 0.04 \cdot f$ (GHz)

83	H+S type Item no.	35_BMA-SMA-50-1/193_UE 22645647
BMA SMA	plug (m) plug (m)	
Material Mounting hole	stainless steel ML 56	
VSWR	DC to 18 GHz	$\leq 1.07 + 0.02 \cdot f$ (GHz)

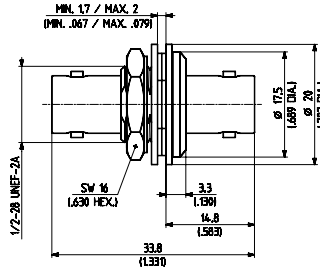
94	H+S type Item no.	32_BNC-50-0-1/133_NE 22540565
BNC	plug (m) 2 ×	
Material	brass/SUCO	
VSWR	DC to 4 GHz	$\leq 1.06 + 0.04 \cdot f$ (GHz)

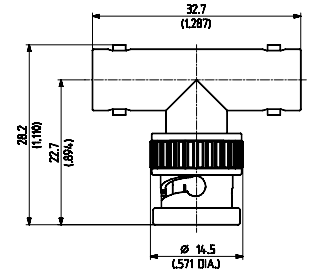
83	H+S type Item no.	36_BMA-SMA-50-1/199_UE 22645651
BMA SMA	plug (m) jack (f)	
Material Mounting hole	stainless steel ML 56	
VSWR	DC to 18 GHz	$\leq 1.03 + 0.015 \cdot f$ (GHz)

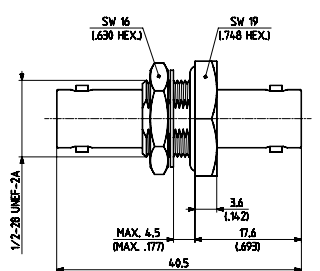
94	H+S type Item no.	34_BNC-50-0-1/133_NE 22540627
BNC	jack (f) 2 ×	
Material Mounting hole	brass/SUCO ML 4	
VSWR	DC to 1.5 GHz 1.5 to 4 GHz	≤ 1.04 $\leq 1.08 + 0.10 \cdot f$ (GHz)

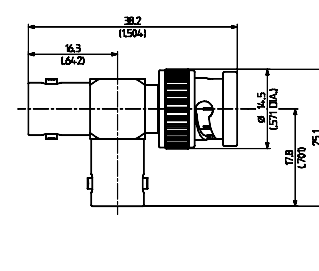
Introduction and general information on page 519 and 520/521.

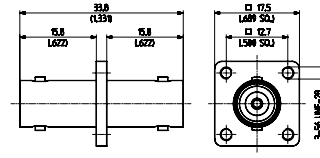
Adapters

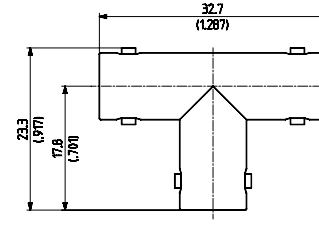
94	H+S type Item no.	34_BNC-50-0-2/133_NE 22540629
BNC	jack (f) 2 ×	
For insulated mounting		
Material	brass/SUCO	
Mounting hole	ML 22	
VSWR	DC to 1.5 GHz 1.5 to 4 GHz	≤ 1.04 ≤ 1.08 + 0.10 · f (GHz)

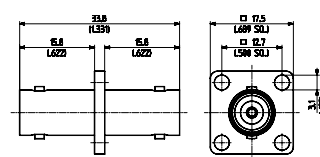
94	H+S type Item no.	43_BNC-50-0-1/133_NE 22540644
BNC	jack (f) 2 × plug (m) 1 ×	
Material	brass/SUCO	

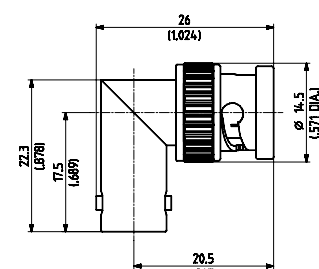
94	H+S type Item no.	34_BNC-50-0-6/100_NE 22540631
BNC	jack (f) 2 ×	
Hermetic sealed		
Material	CuBe/silver	
Mounting hole	ML 4	
VSWR	DC to 4 GHz	≤ 1.43

94	H+S type Item no.	45_BNC-50-0-2/133_NE 22652370
BNC	jack (f) 2 × plug (m) 1 ×	
Material	brass/SUCO	

94	H+S type Item no.	37_BNC-50-0-1/133_NE 22540635
BNC	jack (f) 2 ×	
Material	brass/SUCO	
Mounting hole	ML 10	
VSWR	DC to 4 GHz	≤ 1.06 + 0.04 · f (GHz)

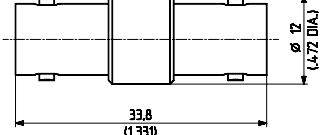
94	H+S type Item no.	46_BNC-50-0-1/133_NE 22540649
BNC	jack (f) 3 ×	
Material	brass/SUCO	

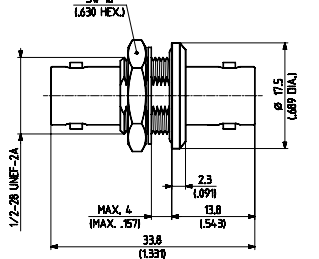
94	H+S type Item no.	37_BNC-50-0-2/133_NE 22540638
BNC	jack (f) 2 ×	
Material	brass/SUCO	
Mounting hole	ML 10	
VSWR	DC to 4 GHz	≤ 1.06 + 0.04 · f (GHz)

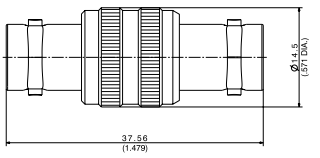
94	H+S type Item no.	53_BNC-50-0-1/133_NE 22540657
BNC	plug (m) 1 × jack (f) 1 ×	
Material	brass/SUCO	
VSWR	DC to 4 GHz	≤ 1.06 + 0.04 · f (GHz)

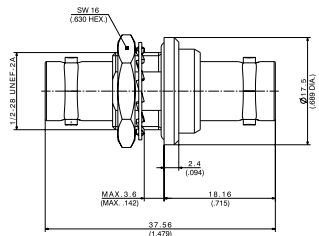
Introduction and general information on page 519 and 520/521.

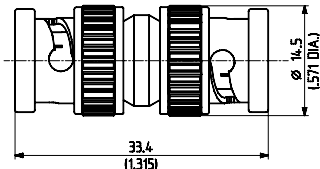
Adapters

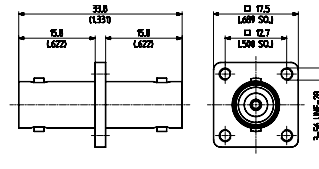
94	H+S type Item no.	31_BNC-75-0-1/133_NE 22541003
BNC	jack (f) 2 ×	
Material	brass/SUCO	

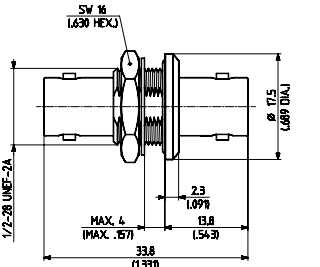
94	H+S type Item no.	34_BNC-75-0-2/133_NE 22541042
BNC	jack (f) 2 ×	
For insulated mounting		
Material	brass/SUCO	
Mounting hole	ML 22	

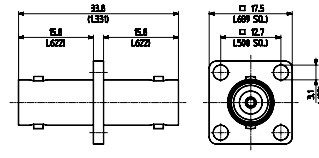
94	H+S type Item no.	31_BNC-75-0-2/133_NE 84119590
BNC	jack (f) 2 ×	
Material	brass/SUCO	

94	H+S type Item no.	34_BNC-75-0-5/133_NE 84095130
BNC	jack (f) 2 ×	
Material	brass/SUCO	
Mounting hole	ML 4	

94	H+S type Item no.	32_BNC-75-0-1/133_NE 22541016
BNC	plug (m) 2 ×	
Material	brass/SUCO	

94	H+S type Item no.	37_BNC-75-0-1/133_NE 22541045
BNC	jack (f) 2 ×	
Material	brass/SUCO	
Mounting hole	ML 10	
Flange	4 threads	

94	H+S type Item no.	34_BNC-75-0-1/133_NE 22541040
BNC	jack (f) 2 ×	
Material	brass/SUCO	
Mounting hole	ML 4	

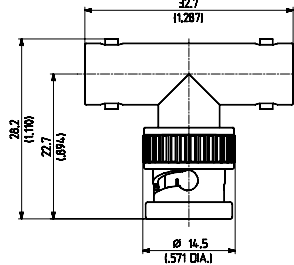
94	H+S type Item no.	37_BNC-75-0-2/133_NE 22541047
BNC	jack (f) 2 ×	
Material	brass/SUCO	
Mounting hole	ML 10	
Flange	4 holes	

Introduction and general information on page 519 and 520/521.

Adapters

94	H+S type	43_BNC-75-0-1/133_NE
	Item no.	22541049

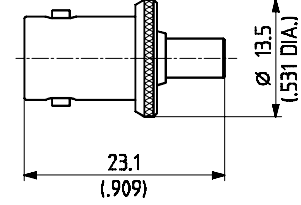
BNC jack (f) 2 ×
plug (m) 1 ×



Material brass/SUCO

96	H+S type	31_BNC-MCX-50-1/1--_UE
	Item no.	22543639

BNC jack (f)
MCX jack (f)

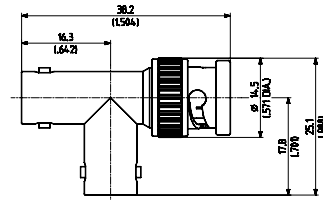


Material BNC brass/SUCO
MCX brass/gold

VSWR DC to 2 GHz $\leq 1.03 + 0.13 \cdot f$ (GHz)
2 to 4 GHz ≤ 1.29

94	H+S type	45_BNC-75-0-1/133_NE
	Item no.	22541050

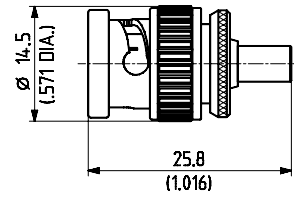
BNC jack (f) 2 ×
plug (m) 1 ×



Material brass/SUCO

96	H+S type	33_BNC-MCX-50-1/1--_UE
	Item no.	22543829

BNC plug (m)
MCX jack (f)

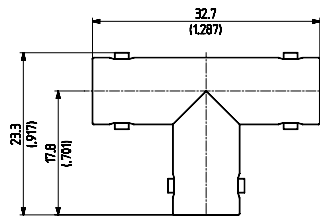


Material BNC brass/SUCO
MCX brass/gold

VSWR DC to 4 GHz ≤ 1.20

94	H+S type	46_BNC-75-0-1/133_NE
	Item no.	22541053

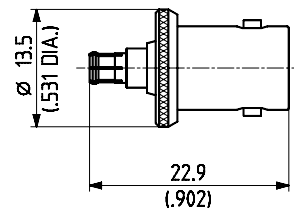
BNC jack (f) 3 ×



Material brass/SUCO

96	H+S type	33_MCX-BNC-50-1/1--_UE
	Item no.	22543585

MCX plug (m)
BNC jack (f)

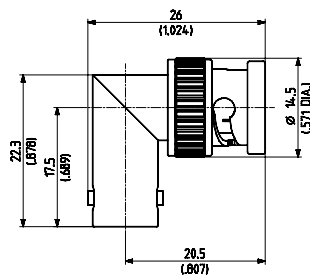


Material MCX CuBe/gold
BNC brass/SUCO

VSWR: DC to 1 GHz ≤ 1.04
1 to 4 GHz ≤ 1.29

94	H+S type	53_BNC-75-0-1/133_NE
	Item no.	22541055

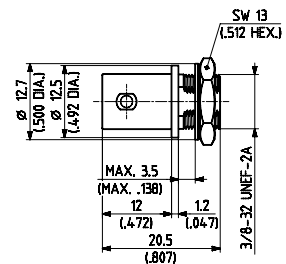
BNC plug (m)
jack (f)



Material brass/SUCO

96	H+S type	34_BNC-MCX-50-2/133_UE
	Item no.	22644912

BNC jack (f)
MCX jack (f)



Material brass/SUCO
Mounting hole ML 2

VSWR DC to 4 GHz $\leq 1.03 + 0.04 \cdot f$ (GHz)

Introduction and general information on page 519 and 520/521.

Adapters

99	H+S type Item no.	31_BNC-MMCX-50-1/1--_UE 22645963
BNC MMCX	jack (f) jack (f)	
Material	brass/SUCO brass/gold	
VSWR	DC to 4 GHz	$\leq 1.05 + 0.04 \cdot f \text{ (GHz)}$

101	H+S type Item no.	31_BNC-N-50-51/1--_UE 22544049
BNC N	jack (f) jack (f)	
Material	stainless steel	
VSWR	DC to 4 GHz	$\leq 1.05 + 0.01 \cdot f \text{ (GHz)}$

99	H+S type Item no.	33_BNC-MMCX-50-1/1--_NE 22652907
BNC MMCX	plug (m) jack (f)	
Material	brass/SUCO brass/gold	
VSWR	DC to 4 GHz	$\leq 1.03 + 0.05 \cdot f \text{ (GHz)}$

101	H+S type Item no.	32_BNC-N-50-1/133_UE 22540571
BNC N	plug (m) plug (m)	
Material	brass/SUCO	
VSWR	DC to 4 GHz	$\leq 1.06 + 0.4 \cdot f \text{ (GHz)}$

99	H+S type Item no.	33_MMCX-BNC-50-1/111_UE 22645966
MMCX BNC	plug (m) jack (f)	
Material	brass/gold brass/SUCO	
VSWR	DC to 4 GHz	$\leq 1.05 + 0.04 \cdot f \text{ (GHz)}$

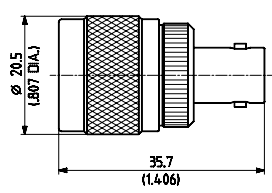
101	H+S type Item no.	32_BNC-N-50-51/1--_UE 22544051
BNC N	plug (m) plug (m)	
Material	stainless steel	
VSWR	DC to 4 GHz	$\leq 1.05 + 0.01 \cdot f \text{ (GHz)}$

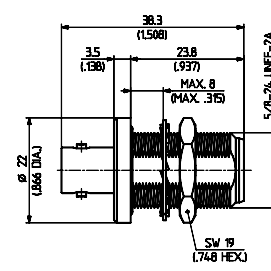
101	H+S type Item no.	31_BNC-N-50-1/133_UE 22540549
BNC N	jack (f) jack (f)	
Material	brass/SUCO	
VSWR	DC to 4 GHz	≤ 1.22

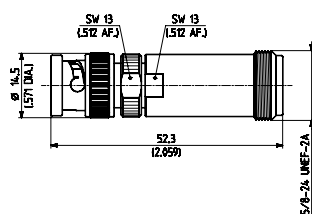
101	H+S type Item no.	33_BNC-N-50-1/133_NE 22540608
BNC N	plug (m) jack (f)	
Material	brass/SUCO	
VSWR	DC to 4 GHz	$\leq 1.04 + 0.025 \cdot f \text{ (GHz)}$

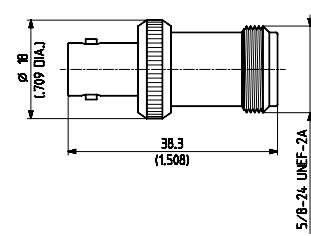
Introduction and general information on page 519 and 520/521.

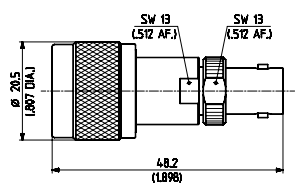
Adapters

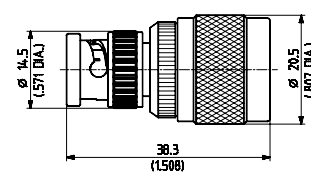
101	H+S type Item no.	33_N-BNC-50-1/133_UE 22542414
N BNC	plug (m) jack (f)	
Material	brass/SUCO	
VSWR	DC to 4 GHz	≤ 1.22

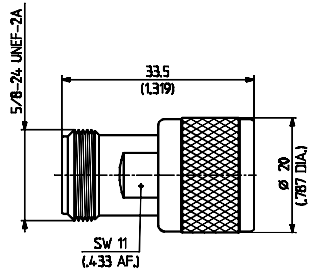
101	H+S type Item no.	34_BNC-N-50-1/133_UE 22651055
BNC N	jack (f) jack (f)	
Material Mounting hole	brass/SUCO ML 12	
VSWR	DC to 4 GHz	≤ 1.22

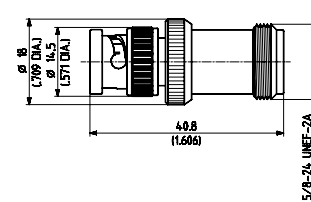
101	H+S type Item no.	33_BNC-N-50-51/---_UE 22544052
BNC N	plug (m) jack (f)	
Material	stainless steel	
VSWR	DC to 4 GHz	≤ 1.05 + 0.01 · f (GHz)

101	H+S type Item no.	31_BNC-N-75-1/133_UE 22543640
BNC N	jack (f) jack (f)	
Material	brass/SUCO	
VSWR	DC to 4 GHz	≤ 1.05 + 0.01 · f (GHz)

101	H+S type Item no.	33_N-BNC-50-51/1--_UE 22544050
N BNC	plug (m) jack (f)	
Material	stainless steel	
VSWR	DC to 4 GHz	≤ 1.05 + 0.01 · f (GHz)

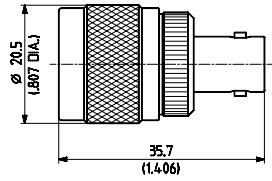
101	H+S type Item no.	32_BNC-N-75-1/133_UE 22541022
BNC N	plug (m) plug (m)	
Material	brass/SUCO	
VSWR	DC to 4 GHz	≤ 1.05 + 0.01 · f (GHz)

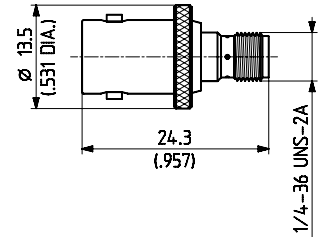
101	H+S type Item no.	33_BNC-N-Q50-4/133_NE 23003163
BNC N	plug (m) quick-mate jack (f)	
Material	brass/SUCO	
VSWR	DC to 4 GHz	≤ 1.07

101	H+S type Item no.	33_BNC-N-75-1/133_UE 22541034
BNC N	plug (m) jack (f)	
Material	brass/SUCO	
VSWR	DC to 4 GHz	≤ 1.07

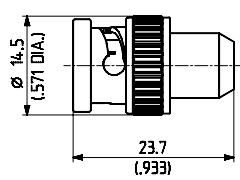
Introduction and general information on page 519 and 520/521.

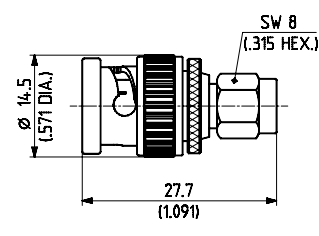
Adapters

101	H+S type Item no.	33_N-BNC-75-1/133_UE 22542622
N BNC	plug (m) jack (f)	
Material	brass/SUCO	

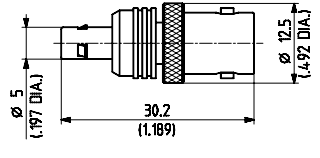
112	H+S type Item no.	31_BNC-SMA-50-1/1--_UE 22540551
BNC SMA	jack (f) jack (f)	
Material	brass/SUCO CuBe/gold	

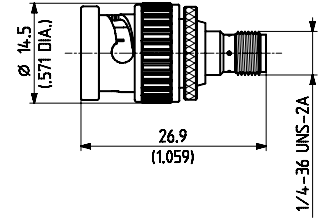
VSWR DC to 4 GHz $\leq 1.06 + 0.04 \cdot f$ (GHz)

109	H+S type Item no.	33_BNC-QLA-01-1/1--_NE 22540624
BNC QLA	plug (m) jack (f)	
Material	brass/SUCO brass/nickel	

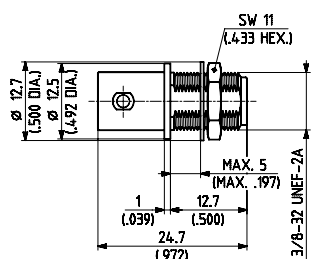
112	H+S type Item no.	32_BNC-SMA-50-1/1--_UE 22540572
BNC SMA	plug (m) plug (m)	
Material	brass/SUCO CuBe/gold	

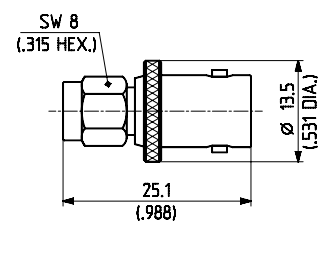
VSWR DC to 4 GHz $\leq 1.03 + 0.03 \cdot f$ (GHz)

109	H+S type Item no.	33_QLA-BNC-01-1/1--_NE 22640029
QLA BNC	plug (m) jack (f)	
Material	brass/nickel brass/SUCO	

112	H+S type Item no.	33_BNC-SMA-50-1/1--_UE 22540610
BNC SMA	plug (m) jack (f)	
Material	brass/SUCO CuBe/gold	

VSWR DC to 4 GHz $\leq 1.03 + 0.03 \cdot f$ (GHz)

109	H+S type Item no.	34_BNC-QLA-01-1/1--_UE 22640971
BNC QLA	jack (f) jack (f)	
Material	brass/SUCO	
Mounting hole	ML 2	

112	H+S type Item no.	33_SMA-BNC-50-1/1--_NE 22640153
SMA BNC	plug (m) jack (f)	
Material	CuBe/gold brass/SUCO	

VSWR DC to 4 GHz $\leq 1.05 - 0.037 \cdot f$ (GHz)

Introduction and general information on page 519 and 520/521.

Adapters

112	H+S type Item no.	34_BNC-SMA-50-2/1--_UE 22651028
BNC SMA	jack (f) jack (f)	
Material BNC SMA Mounting hole	brass/SUCO CuBe/gold ML 4	
VSWR	DC to 4 GHz	$\leq 1.06 - 0.03 \cdot f$ (GHz)

113	H+S type Item no.	34_BNC-SMB-50-1/133_NE 22659005
BNC SMB	jack (f) jack (f)	
Material Mounting hole	brass/SUCO ML 4	
VSWR	DC to 2 GHz 2 to 4 GHz:	≤ 1.065 ≤ 1.33

113	H+S type Item no.	31_BNC-SMB-50-2/1--_UE 22540553
BNC SMB	jack (f) jack (f)	
Material BNC SMB	brass/SUCO brass/gold	
VSWR	DC to 2 GHz 2 to 4 GHz:	$\leq 1.03 + 0.095 \cdot f$ (GHz) ≤ 1.22

114	H+S type Item no.	33_BNC-SMC-50-2/1--_NE 22540616
BNC SMC	plug (m) jack (f)	
Material BNC SMC	brass/SUCO brass/gold	
VSWR	DC to 4 GHz	≤ 1.22

113	H+S type Item no.	33_BNC-SMB-50-2/1--_UE 22540612
BNC SMB	plug (m) jack (f)	
Material BNC SMB	brass/SUCO brass/gold	
VSWR	DC to 4 GHz	$\leq 1.06 + 0.04 \cdot f$ (GHz)

114	H+S type Item no.	33_SMC-BNC-50-2/1--_NE 22640405
SMC BNC	plug (m) jack (f)	
Material SMC BNC	brass/gold brass/SUCO	
VSWR	DC to 2 GHz 2 to 4 GHz	$\leq 1.03 + 0.095 \cdot f$ (GHz) ≤ 1.22

113	H+S type Item no.	33_SMB-BNC-50-2/1--_UE 22640396
SMB BNC	plug (m) jack (f)	
Material SMB BNC	brass/gold brass/SUCO	
VSWR	DC to 4 GHz	$\leq 1.05 + 0.075 \cdot f$ (GHz)

119	H+S type Item no.	31_BNC-TNC-50-1/133_UE 22540559
BNC TNC	jack (f) jack (f)	
Material	brass/SUCO	
VSWR	DC to 4 GHz	≤ 1.22

Introduction and general information on page 519 and 520/521.

Adapters

119	H+S type Item no.	32_BNC-TNC-50-1/133_NE 22540582
BNC TNC	plug (m) plug (m)	
Material	brass/SUCO	
VSWR	DC to 4 GHz	≤ 1.22

140	H+S type Item no.	31_MBX-SMA-50-1/111_NE 84093625
MBX SMA	jack (f) jack (f)	
Material	brass/SUPR	
VSWR	DC to 6 GHz	≤ 1.083

119	H+S type Item no.	33_BNC-TNC-50-1/133_NE 22540614
BNC TNC	plug (m) jack (f)	
Material	brass/SUCO	
VSWR	DC to 4 GHz	≤ 1.22

140	H+S type Item no.	32_MBX-SMA-50-1/11-_NE 84093642
MBX SMA	plug (m) plug (m)	
Material	brass/SUPR	
VSWR	DC to 6 GHz	≤ 1.083

119	H+S type Item no.	33_TNC-BNC-50-1/133_NE 22640631
TNC BNC	plug (m) jack (f)	
Material	brass/SUCO	
VSWR	DC to 4 GHz	≤ 1.22

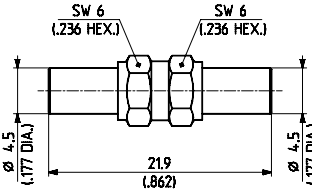
140t	H+S type Item no.	33_MBX-SMA-50-1/111_NE 84093656
MBX SMA	plug (m) jack (f)	
Material	brass/SUPR	
VSWR	DC to 6 GHz	≤ 1.083

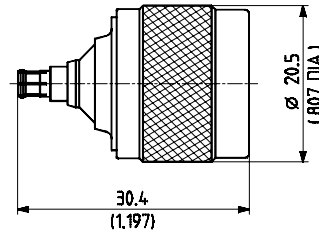
119	H+S type Item no.	37_BNC-TNC-50-1/133_UE 22540639
BNC TNC	jack (f) jack (f)	
Material Mounting hole	brass/SUCO ML 10	
VSWR	DC to 4 GHz	≤ 1.22

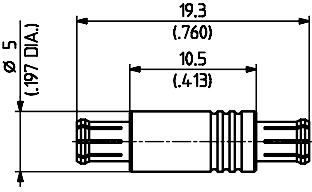
140	H+S type Item no.	33_SMA-MBX-50-1/11-_NE 84093662
SMA MBX	plug (m) jack (f)	
Material	brass/SUPR	
VSWR	DC to 6 GHz	≤ 1.083

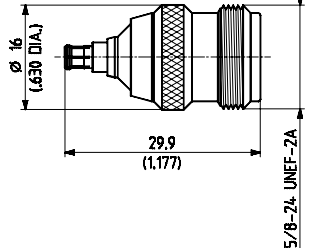
Introduction and general information on page 519 and 520/521.

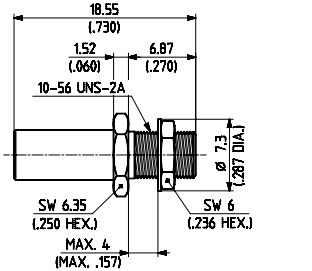
Adapters

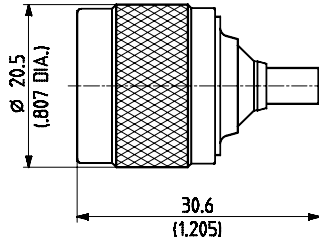
151	H+S type Item no.	31_MCX-50-0-1/111_NE 22543558
MCX	jack (f) 2 ×	
Material	brass/gold	
VSWR	DC to 1 GHz 1 to 6 GHz	≤ 1.05 ≤ 1.22

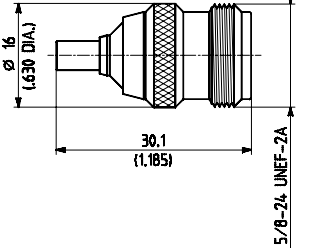
156	H+S type Item no.	32_MCX-N-50-1/1--_UE 22543584
MCX N	plug (m) plug (m)	
Material	MCX N	CuBe/gold brass/SUCO
VSWR	DC to 6 GHz	≤ 1.03 + 0.05 · f (GHz)

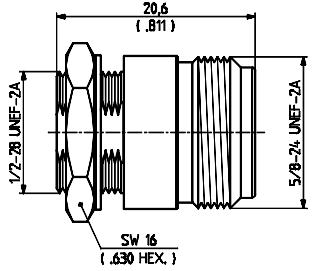
151	H+S type Item no.	32_MCX-50-0-3/111_NE 22653002
MCX	plug (m) 2 ×	
Material	brass/gold	
VSWR	DC to 1.5 GHz 1.5 to 6 GHz	≤ 1.06 ≤ 1.22

156	H+S type Item no.	33_MCX-N-50-1/1--_UE 22543586
MCX N	plug (m) jack (f)	
Material	MCX N	CuBe/gold brass/SUCO
VSWR	DC to 6 GHz	≤ 1.03 + 0.035 · f (GHz)

151	H+S type Item no.	34_MCX-50-0-2/111_NE 22649868
MCX	jack (f) 2 ×	
Material	brass/gold Mounting hole	ML 35
VSWR	DC to 1.5 GHz 1.5 to 6 GHz	≤ 1.06 ≤ 1.22

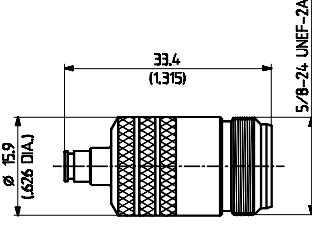
156	H+S type Item no.	33_N-MCX-50-1/1--_UE 22543796
N MCX	plug (m) jack (f)	
Material	N MCX	brass/SUCO brass/gold
VSWR	DC to 6 GHz	≤ 1.03 + 0.03 · f (GHz)

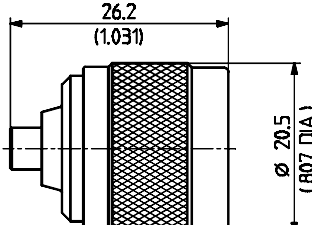
156	H+S type Item no.	31_MCX-N-50-1/1--_UE 22640172
MCX N	jack (f) jack (f)	
Material	MCX N	brass/gold brass/SUCO
VSWR	DC to 6 GHz	≤ 1.03 + 0.05 · f (GHz)

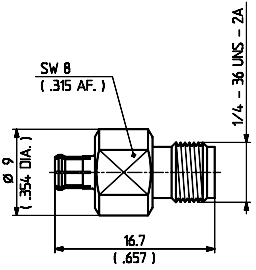
156	H+S type Item no.	34_MCX-N-50-1/133_UE 22646217
MCX N	jack (f) jack (f)	
Material	Mounting hole	brass/SUCO ML 4
VSWR	DC to 6 GHz	≤ 1.08 + 0.02 · f (GHz)

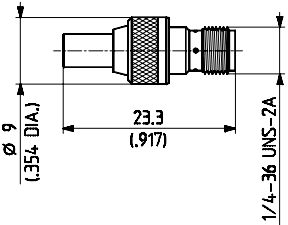
Introduction and general information on page 519 and 520/521.

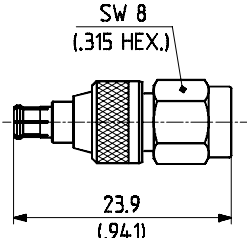
Adapters

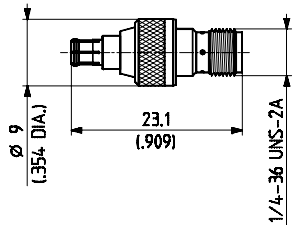
156	H+S type Item no.	31_MCX-N-75-10/133_NE 22651488
MCX N	jack (f) jack (f)	
Material MCX N	CuBe/SUCO brass/SUCO	
VSWR	DC to 3 GHz	≤ 1.07

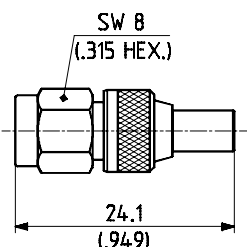
156	H+S type Item no.	33_N-MCX-75-1/1--_NE 22649214
N MCX	plug (m) jack (f)	
Material N MCX	brass/SUCO brass/gold	

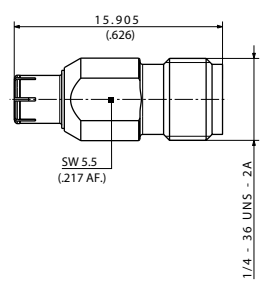
162	H+S type Item no.	33_MCX-PC35-50-1/111_NE 22651594
MCX PC3.5	plug (m) jack (f)	
Material MCX	CuBe/SUPR	
VSWR	DC to 3.5 GHz 3.5 to 6 GHz	≤ 1.065 ≤ 1.094

167	H+S type Item no.	31_MCX-SMA-50-1/111_NE 22645485
MCX SMA	jack (f) jack (f)	
Material MCX SMA	brass/gold CuBe/gold	
VSWR	DC to 6 GHz	≤ 1.03 + 0.03 · f (GHz)

167	H+S type Item no.	32_MCX-SMA-50-1/111_NE 22645486
MCX SMA	plug (m) plug (m)	
Material MCX SMA	brass/gold CuBe/gold	
VSWR	DC to 6 GHz	≤ 1.03 + 0.03 · f (GHz)

167	H+S type Item no.	33_MCX-SMA-50-1/111_NE 22645487
MCX SMA	plug (m) jack (f)	
Material MCX	CuBe/gold	
VSWR	DC to 6 GHz	≤ 1.03 + 0.03 · f (GHz)

167	H+S type Item no.	33_SMA-MCX-50-1/111_NE 22645488
SMA MCX	plug (m) jack (f)	
Material SMA MCX	CuBe/gold brass/gold	
VSWR	DC to 6 GHz	≤ 1.03 + 0.03 · f (GHz)

193	H+S type Item no.	33_MFBX-SMA-50-1/111_NE 85008501
MFBX SMA	plug (m) jack (f)	
Material MFBX SMA	CuBe/SUPR CuBe/SUPR	
VSWR	DC to 3.5 GHz	≤ 1.07

Introduction and general information on page 519 and 520/521.

Adapters

218	H+S type Item no.	31_MMBX-SMA-50-1/111_NE 23004933
MMBX SMA	jack (f) jack (f)	
Material	brass/SUPR CuBe/SUPR	
VSWR	DC to 2.5 GHz 2.5 to 6 GHz 6 to 12.4 GHz	≤ 1.05 ≤ 1.06 ≤ 1.35

225	H+S type Item no.	34_MMBX-TNC-50-1/1-3_NE 23014297
MMBX TNC	jack (f) jack (f)	
Material	brass/SUCO	
VSWR	DC to 5 GHz	≤ 1.3

218	H+S type Item no.	32_MMBX-SMA-50-1/119_NE 23004934
MMBX SMA	plug (m) plug (m)	
Material	CuBe/SUPR	
VSWR	DC to 2.5 GHz 2.5 to 6 GHz 6 to 12.4 GHz	≤ 1.05 ≤ 1.06 ≤ 1.35

229	H+S type Item no.	31_MMCX-50-0-1/111_OE 22645960
MMCX	jack (f) 2 ×	
Material	brass/gold	
VSWR	DC to 3 GHz 3 to 6 GHz	≤ 1.10 ≤ 1.28

218	H+S type Item no.	33_MMBX-SMA-50-1/111_NE 23004937
MMBX SMA	plug (m) jack (f)	
Material	CuBe/SUPR	
VSWR	DC to 2.5 GHz 2.5 to 6 GHz 6 to 12.4 GHz	≤ 1.05 ≤ 1.06 ≤ 1.35

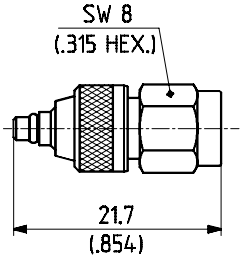
229	H+S type Item no.	34_MMCX-50-0-1/111_OE 22650516
MMCX	jack (f) 2 ×	
Material	brass/gold Mounting hole ML 88	
VSWR	DC to 1.5 GHz: 1.5 to 6 GHz	≤ 1.06 ≤ 1.22

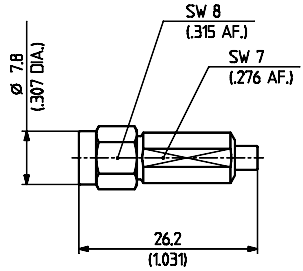
218	H+S type Item no.	33_SMA-MMBX-50-1/119_NE 23004935
SMA MMBX	plug (m) jack (f)	
Material	CuBe/SUPR brass/SUPR	
VSWR	DC to 2.5 GHz 2.5 to 6 GHz 6 to 12.4 GHz	≤ 1.05 ≤ 1.06 ≤ 1.35

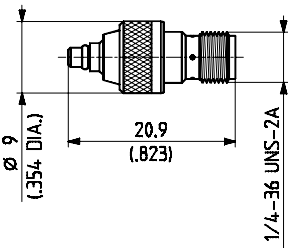
242	H+S type Item no.	31_MMCX-SMA-50-1/111_OE 22645961
MMCX SMA	jack (f) jack (f)	
Material	brass/gold CuBe/SUPR	
VSWR	DC to 2.5 GHz 2.5 to 6 GHz	≤ 1.10 ≤ 1.18

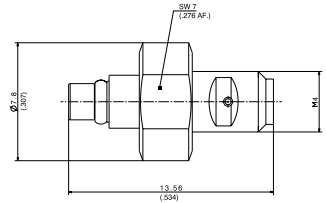
Introduction and general information on page 519 and 520/521.

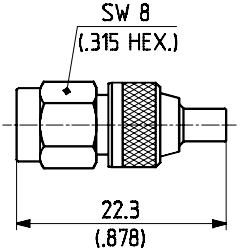
Adapters

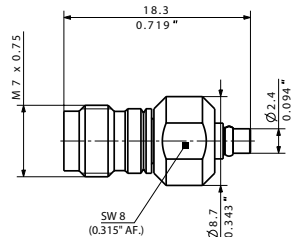
242	H+S type Item no.	32_MMCX-SMA-50-1/111_OE 22645967
MMCX SMA	plug (m) plug (m)	
Material MMCX SMA	brass/gold CuBe/gold	
VSWR	DC to 2.5 GHz 2.5 to 6 GHz	≤ 1.10 ≤ 1.18

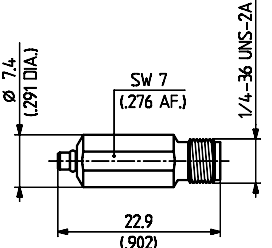
242	H+S type Item no.	33_SMA-MMCX-50-2/111_NE 22658204
SMA MMCX	plug (m) jack (f)	
Material	CuBe/SUPR	
VSWR	DC to 3.5 GHz 3.5 to 6 GHz	≤ 1.065 ≤ 1.094

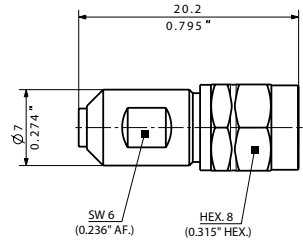
242	H+S type Item no.	33_MMCX-SMA-50-1/111_UE 22645970
MMCX SMA	plug (m) jack (f)	
Material MMCX SMA	brass/gold CuBe/gold	
VSWR	DC to 2.5 GHz 2.5 to 6 GHz	≤ 1.10 ≤ 1.18

256	H+S type Item no.	33_MMPX-PC1-50-1/111_NE 85031764
MMPX PC1.0	plug (m) jack (f)	
Material	CuBe/gold	
VSWR	DC to 20 GHz 20 to 50 GHz 50 to 80 GHz	≤ 1.119 ≤ 1.222 ≤ 1.671

242	H+S type Item no.	33_SMA-MMCX-50-1/111_NE 22645969
SMA MMCX	plug (m) jack (f)	
Material SMA MMCX	CuBe/gold brass/gold	
VSWR	DC to 2.5 GHz 2.5 to 6 GHz	≤ 1.10 ≤ 1.18

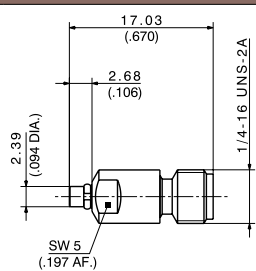
257	H+S type Item no.	33_MMPX-PC185-50-2/1--_NE 84132754
MMPX PC1.85	plug (m) jack (f)	
Material MMPX PC1.85	CuBe/SUPR stainless steel	
VSWR	DC to 15 GHz 15 to 67 GHz	≤ 1.106 ≤ 1.173

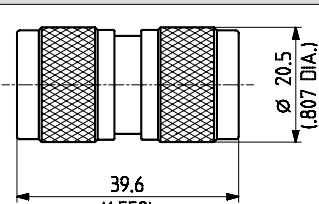
242	H+S type Item no.	33_MMCX-SMA-50-2/111_NE 22658203
MMCX SMA	plug (m) jack (f)	
Material	CuBe/SUPR	
VSWR	DC to 3.5 GHz 3.5 to 6 GHz	≤ 1.065 ≤ 1.094

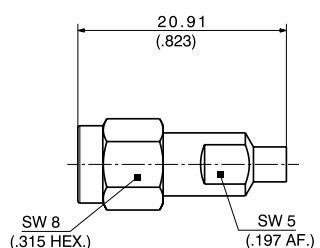
257	H+S type Item no.	33_PC185-MMPX-50-2/199_NE 84132750
PC1.85 MMPX	plug (m) jack (f)	
Material	stainless steel	
VSWR	DC to 15 GHz 15 to 67 GHz	≤ 1.106 ≤ 1.173

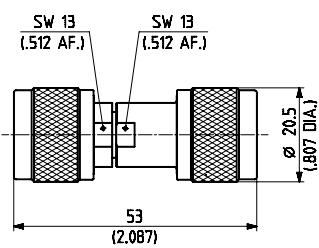
Introduction and general information on page 519 and 520/521.

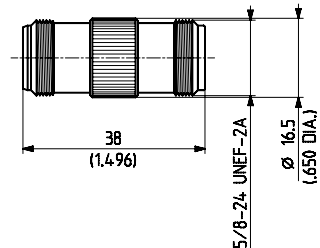
Adapters

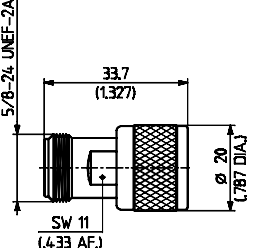
259	H+S type Item no.	33_MMPX-SK-50-1/199_NE 84071648
MMPX SK (292 mm)	plug (m) jack (f)	
El. length	16.1 mm	
Material	stainless steel	
VSWR	DC to 15 GHz: 15 to 30 GHz: 30 to 40 GHz	≤ 1.105 ≤ 1.152 ≤ 1.222

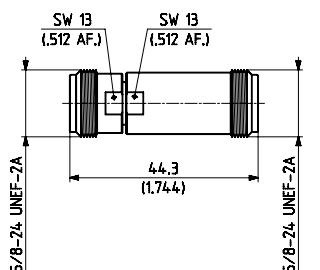
276	H+S type Item no.	32_N-50-0-1/133_NE 22542398
N	plug (m) 2 ×	
Material	brass/SUCO	
VSWR	DC to 9 GHz 9 to 12 GHz	≤ 1.06 + 0.04 · f (GHz) ≤ 1.40

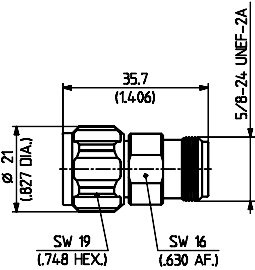
259	H+S type Item no.	33_SK-MMPX-50-1/199_NE 84071696
SK (292 mm) MMPX	plug (m) jack (f)	
El. length	16.1 mm	
Material	stainless steel	
VSWR	DC to 15 GHz 15 to 30 GHz 30 to 40 GHz	≤ 1.105 ≤ 1.152 ≤ 1.222

276	H+S type Item no.	32_N-50-0-51/193_NE 22652113
N	plug (m) 2 ×	
Material	stainless steel	
VSWR	DC to 18 GHz	≤ 1.03 + 0.01 · f (GHz)

276	H+S type Item no.	31_N-50-0-2/133_NE 22542382
N	jack (f) 2 ×	
Material	brass/SUCO	
VSWR	DC to 2 GHz 2 to 8 GHz 8 to 12.4 GHz	≤ 1.07 ≤ 1.43 ≤ 1.92

276	H+S type Item no.	33_N-Q50-0-4/133_NE 22660297
N	plug (m) quick-mate jack (f)	
Material	brass/SUCO	
VSWR	DC to 5 GHz 5 to 8 GHz 8 to 11 GHz	≤ 1.07 ≤ 1.22 ≤ 1.28

276	H+S type Item no.	31_N-50-0-51/199_NE 22652112
N	jack (f) 2 ×	
Material	stainless steel	
VSWR	DC to 18 GHz	≤ 1.03 + 0.01 · f (GHz)

276	H+S type Item no.	33_N-50-0-7/133_NE 23014355
N	plug (m) 1 × jack (f) 1 ×	
Material	brass/SUCO	
VSWR	DC to 18 GHz	≤ 1.03 + 0.05 · f (GHz)

Introduction and general information on page 519 and 520/521.

Adapters

276	H+S type Item no.	33_N-Q50-0-14/13_NE 23003160
N	plug (m) quick-mate jack (f)	
Material	brass/SUCO	
VSWR	DC to 4 GHz 4 to 8 GHz	≤ 1.12 ≤ 1.22

276	H+S type Item no.	33_N-50-0-51/193_NE 22652114
N	plug (m) jack (f)	
Material	stainless steel	
VSWR	DC to 18 GHz	≤ 1.03 + 0.01 · f (GHz)

276	H+S type Item no.	33_N-50-0-52/199_UE 22648921
N	plug (m) jack (f)	
Quick-screw (male side)		
Material	stainless steel	
VSWR	DC to 18 GHz	≤ 1.03 + 0.01 · f (GHz)

276	H+S type Item no.	34_N-50-0-1/133_NE 22542435
N	jack (f) 2 ×	
Material	brass/SUCO ML 12	
VSWR	DC to 12.4 GHz	≤ 1.06 + 0.17 · f (GHz)

276	H+S type Item no.	34_N-50-0-3/133_NE 22642946
N	jack (f) 2 ×	
Material	brass/SUCO ML 12	
VSWR	DC to 11 GHz	≤ 1.08 + 0.13 · f (GHz)

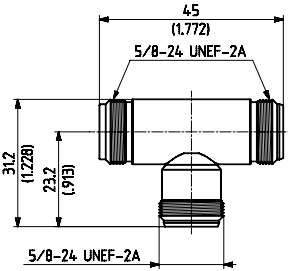
276	H+S type Item no.	34_N-50-0-51/193_NE 22544593
N	jack (f) 2 ×	
Material	stainless steel ML 12	
VSWR	DC to 18 GHz	≤ 1.03 + 0.01 · f (GHz)

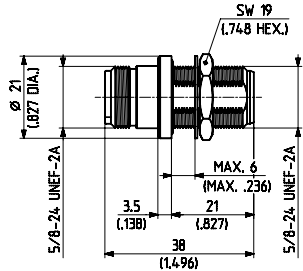
276	H+S type Item no.	37_N-50-0-1/133_NE 22542437
N	jack (f) 2 ×	
Material	brass/SUCO ML 14	
VSWR	DC to 12.4 GHz	≤ 1.19 + 0.06 · f (GHz)

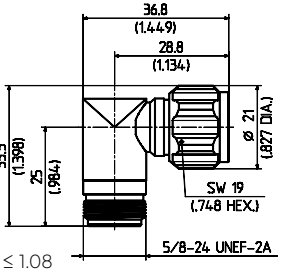
276	H+S type Item no.	43_N-50-0-1/133_NE 22542442
N	jack (f) 2 × plug (m) 1 ×	
Material	brass/SUCO	

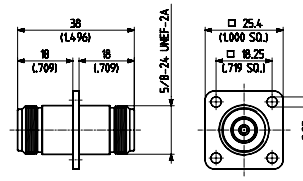
Introduction and general information on page 519 and 520/521.

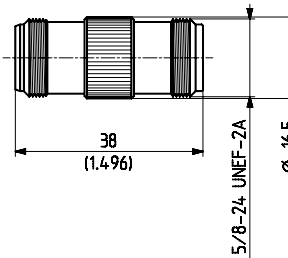
Adapters

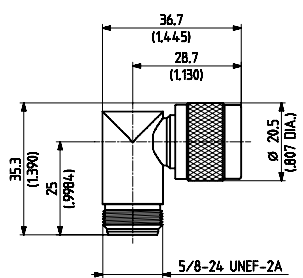
276	H+S type Item no.	46_N-50-0-1/133_NE 22542445
N	jack (f) 3 ×	
Material	brass/SUCO	

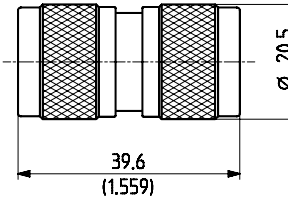
276	H+S type Item no.	34_N-75-0-1/133_NE 22542631
N	jack (f) 2 ×	
Material	brass/SUCO	
Mounting hole	ML 12	

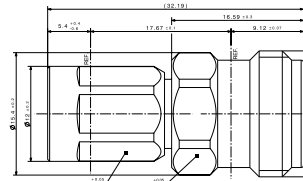
276	H+S type Item no.	53_N-50-0-4/133_NE 22651447
N	plug (m) jack (f)	
Material	brass/SUCO	
VSWR	DC to 2 GHz 2 to 6 GHz 6 to 8 GHz	≤ 1.08 ≤ 1.22 ≤ 1.29

276	H+S type Item no.	37_N-75-0-1/133_NE 22542633
N	jack (f) 2 ×	
Material	brass/SUCO	
Mounting hole	ML 14	

276	H+S type Item no.	31_N-75-0-2/133_NE 22542612
N	jack (f) 2 ×	
Material	brass/SUCO	

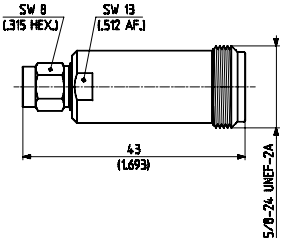
276	H+S type Item no.	53_N-75-0-4/133_NE 22651799
N	plug (m) jack (f)	
Material	brass/SUCO	

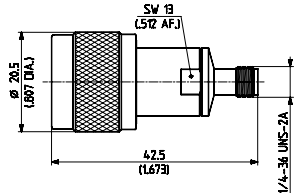
276	H+S type Item no.	32_N-75-0-1/133_NE 22542618
N	plug (m) 2 ×	
Material	brass/SUCO	

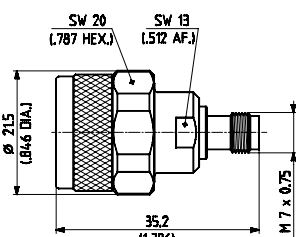
277	H+S type Item no.	33_NEX10-N-50-X1/1-3_NE 85095344
NEX10 N	plug (male) jack (female)	
Material	NEX10 brass/SUCO	
N	brass/SUCO	

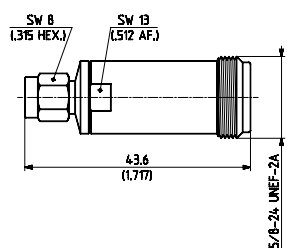
Introduction and general information on page 519 and 520/521.

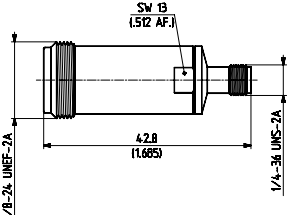
Adapters

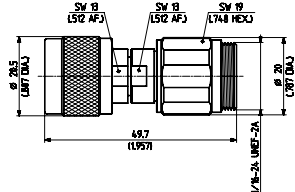
280	H+S type Item no.	33_PC24-N-50-1/199_UE 22650021
PC2.4 N	plug (m) jack (f)	
Material	stainless steel	
VSWR	DC to 10 GHz 10 to 18 GHz	≤ 1.05 ≤ 1.08

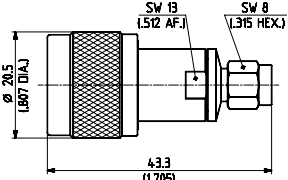
282	H+S type Item no.	33_N-PC35-50-1/1--_UE 22643959
N PC3.5	plug (m) jack (f)	
Material	stainless steel	
VSWR	DC to 12.4 GHz 12.4 to 18 GHz	≤ 1.10 ≤ 1.15

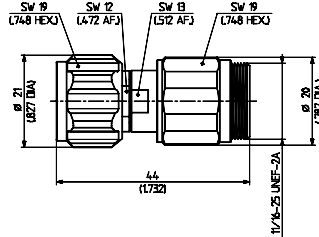
280	H+S type Item no.	33_N-PC24-50-1/199_UE 22649932
N PC2.4	plug (m) jack (f)	
Material	stainless steel	
VSWR	DC to 10 GHz 10 to 18 GHz	≤ 1.05 ≤ 1.08

282	H+S type Item no.	33_PC35-N-50-1/1--_UE 22643958
PC3.5 N	plug (m) jack (f)	
Material	stainless steel	
VSWR	DC to 12.4 GHz 12.4 to 18 GHz	≤ 1.10 ≤ 1.15

282	H+S type Item no.	31_N-PC35-50-1/1--_UE 22643960
N PC3.5	jack (f) jack (f)	
Material	stainless steel	
VSWR	DC to 12.4 GHz 12.4 to 18 GHz	≤ 1.10 ≤ 1.15

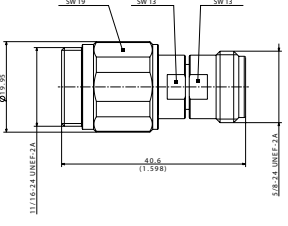
283	H+S type Item no.	32_N-PC7-50-1/1--_UE 22543571
N PC7	plug (m)	
Material	N PC7	stainless steel brass/gold
VSWR	DC to 18 GHz	≤ 1.02 + 0.002 · f (GHz)

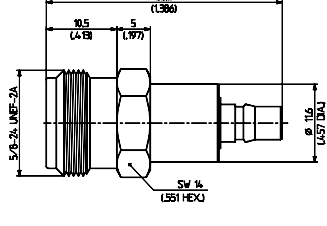
282	H+S type Item no.	32_N-PC35-50-1/1--_UE 22643957
N PC3.5	plug (m) plug (m)	
Material	stainless steel	
VSWR	DC to 12.4 GHz 12.4 to 18 GHz	≤ 1.10 ≤ 1.15

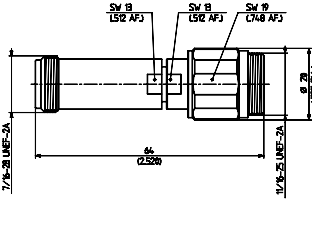
283	H+S type Item no.	32_N-PC7-50-6/1--_NE 23032917
N PC7	plug (m)	
El. length	41.85 mm	
Material	N PC7	stainless steel brass/gold
VSWR	DC to 3 GHz 3 to 6 GHz 6 to 11 GHz	≤ 1.03 ≤ 1.05 ≤ typ. 1.12

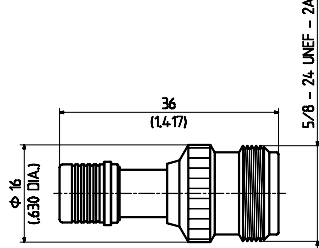
Introduction and general information on page 519 and 520/521.

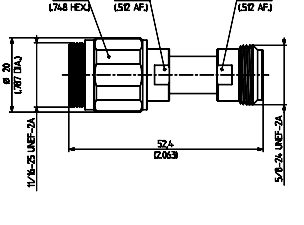
Adapters

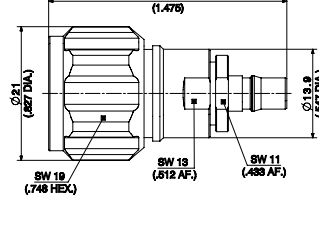
293	H+S type Item no.	33_PC7-N-50-1/1--_UE 22543547
PC7 N	jack (f)	
Material PC7 N	brass/gold stainless steel	
VSWR	DC to 18 GHz	$\leq 1.02 + 0.002 \cdot f$ (GHz)

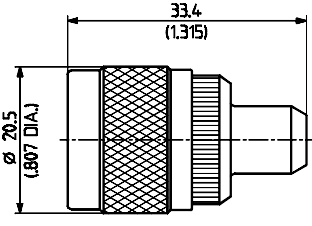
285	H+S type Item no.	31_N-QMA-50-1/1--_NE 23027960
N QMA	jack (f) jack (f)	
Material	stainless steel	
VSWR	DC to 2.5 GHz 2.5 to 6 GHz	≤ 1.036 ≤ 1.135

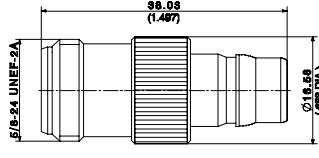
283	H+S type Item no.	33_PC7-N-50-5/-33_NE 23004036
PC7 N	jack (f)	
Material PC7 N	brass/gold stainless steel	
VSWR	DC to 18 GHz	$\leq 1.03 + 0.002 \cdot f$ (GHz)

285	H+S type Item no.	33_QMA-N-50-1/133_NE 23023143
QMA N	plug (m) jack (f)	
Material	brass/SUCO	
VSWR	DC to 6 GHz	≤ 1.04

283	H+S type Item no.	33_PC7-N-50-6/1--_NE 23032916
PC7 N	jack (f)	
El. length	41.85 mm	
Material PC7 N	brass/gold stainless steel	
VSWR	DC to 3 GHz 3 to 6 GHz 6 to 11 GHz	≤ 1.03 ≤ 1.05 $\leq \text{typ. } 1.12$

285	H+S type Item no.	33_N-QMA-50-1/133_NE 23024265
N QMA	plug (m) jack (f)	
Material	brass/SUCO	
VSWR	DC to 6 GHz	≤ 1.04

284	H+S type Item no.	33_N-QLA-01-1/1--_NE 22542431
N QLA	plug (m) jack (f)	
Material N QLA	brass/SUCO brass/nickel	

286	H+S type Item no.	31_N-QN-50-1/133_NE 84016830
N QN	jack (f) jack (f)	
Material	brass/SUCO	
VSWR	DC to 2 GHz 2 to 6 GHz 6 to 11 GHz	≤ 1.05 ≤ 1.3 ≤ 1.5

Introduction and general information on page 519 and 520/521.

Adapters

286	H+S type Item no.	32_N-QN-50-1/133_NE 23033962
N QN	plug (m) plug (m)	
Material	brass/SUCO	
VSWR	DC to 4 GHz 4 to 8 GHz 8 to 10 GHz	≤ 1.035 ≤ 1.06 ≤ 1.22

287	H+S type Item no.	32_N-SMA-50-1/11-_NE 22542399
N SMA	plug (m) plug (m)	
Material	N SMA	brass/SUCO CuBe/gold*
VSWR	DC to 12.4 GHz	≤ 1.05 + 0.017 · f (GHz)

286	H+S type Item no.	33_QN-N-50-1/133_NE 23036033
QN N	plug (m) jack (f)	
Material	brass/SUCO	

287	H+S type Item no.	32_N-SMA-50-51/1--_UE 22543916
N SMA	plug (m) plug (m)	
Material	N SMA	stainless steel CuBe/gold
VSWR	DC to 18 GHz	≤ 1.025 + 0.007 · f (GHz)

287	H+S type Item no.	31_N-SMA-50-1/1--_UE 22542386
N SMA	jack (f) jack (f)	
Material	N SMA	brass/SUCO CuBe/gold*
VSWR	DC to 12.4 GHz	≤ 1.05 + 0.015 · f (GHz)

287	H+S type Item no.	33_N-SMA-50-1/113_UE 22542421
N SMA	plug (m) jack (f)	
Material	N SMA	brass/SUCO CuBe/gold*
VSWR	DC to 12.4 GHz	≤ 1.05 + 0.015 · f (GHz)

287	H+S type Item no.	31_N-SMA-50-51/1--_NE 22660178
N SMA	jack (f) jack (f)	
Material	N SMA	stainless steel CuBe/gold
VSWR	DC to 18 GHz	≤ 1.025 + 0.007 · f (GHz)

287	H+S type Item no.	33_SMA-N-50-1/1--_UE 22640154
SMA N	plug (m) jack (f)	
Material	SMA N	CuBe/gold brass/SUCO
VSWR	DC to 12.4 GHz	≤ 1.05 + 0.015 · f (GHz)

Introduction and general information on page 519 and 520/521.

Adapters

287	H+S type Item no.	33_SMA-N-Q50-4/1-3_NE 22660211
SMA N	plug (m) quick-mate jack (f)	
Material SMA N	CuBe/SUPR brass/SUCO	
VSWR	DC to 6 GHz 6 to 12.4 GHz	≤ 1.07 ≤ 1.18

287	H+S type Item no.	33_N-SMA-50-51/1--_NE 22660180
N SMA	plug (m) jack (f)	
Material N SMA	stainless steel CuBe/gold	
VSWR	DC to 18 GHz	≤ 1.025 + 0.007 · f (GHz)

287	H+S type Item no.	33_SMA-N-50-51/1--_NE 22660181
SMA N	plug (m) jack (f)	
Material SMA N	CuBe/gold stainless steel	
VSWR	DC to 18 GHz	≤ 1.025 + 0.007 · f (GHz)

287	H+S type Item no.	34_N-SMA-50-1/193_UE 22642820
N SMA	jack (f) jack (f)	
Material Mounting hole	stainless steel ML 12	
VSWR	DC to 12.4 GHz	≤ 1.05 + 0.017 · f (GHz)

287	H+S type Item no.	37_N-SMA-50-1/1--_UE 22543458
N SMA	jack (f) jack (f)	
Material N SMA Mounting hole	brass/SUCO CuBe/gold ML 13/14	
VSWR	DC to 12.4 GHz	≤ 1.05 + 0.015 · f (GHz)

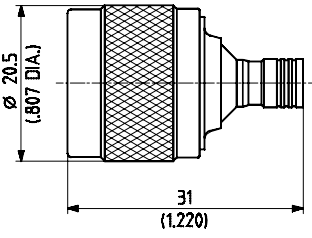
287	H+S type Item no.	37_N-SMA-50-51/1--_NE 22645162
N SMA	jack (f) jack (f)	
Material N SMA	stainless steel CuBe/gold	
VSWR	DC to 18 GHz	≤ 1.025 + 0.007 · f (GHz)

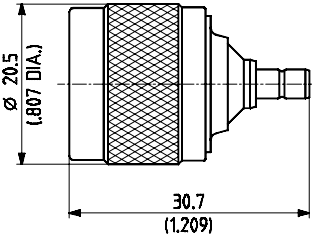
287	H+S type Item no.	39_SMA-N-50-1/1--_NE 22640156
SMA N	plug (m) jack (f)	
Material SMA N Mounting hole	CuBe/gold brass/SUCO ML 13/14	
VSWR	DC to 12.4 GHz	≤ 1.05 + 0.015 · f (GHz)

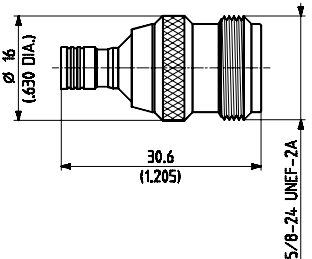
288	H+S type Item no.	31_N-SMB-50-1/1--_UE 22542387
N SMB	jack (f) jack (f)	
Material N SMB	brass/SUCO brass/gold	
VSWR	DC to 3 GHz 3 to 4 GHz	≤ 1.03 + 0.08 · f (GHz) ≤ 1.27

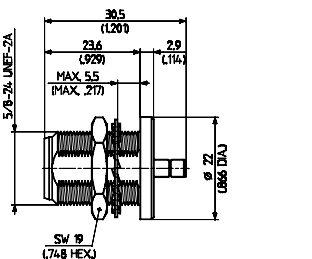
Introduction and general information on page 519 and 520/521.

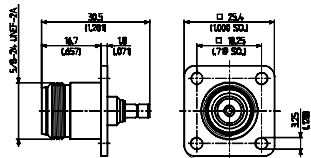
Adapters

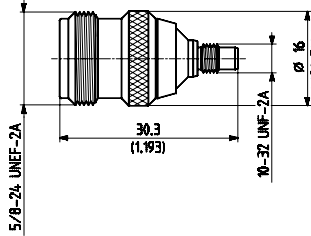
288	H+S type Item no.	32_N-SMB-50-1/1--_UE 22542400
N SMB	plug (m) plug (m)	
Material N SMB	brass/SUCO brass/gold	
VSWR	DC to 3 GHz 3 to 4 GHz	$\leq 1.03 + 0.08 \cdot f$ (GHz) ≤ 1.27

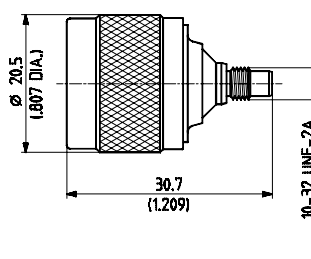
288	H+S type Item no.	33_N-SMB-50-1/1--_UE 22542422
N SMB	plug (m) jack (f)	
Material N SMB	brass/SUCO brass/gold	
VSWR	DC to 3 GHz 3 to 4 GHz	$\leq 1.03 + 0.08 \cdot f$ (GHz) ≤ 1.27

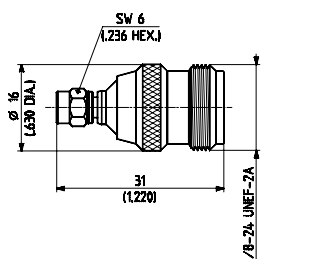
288	H+S type Item no.	33_SMB-N-50-1/1--_UE 22640394
SMB N	plug (m) jack (f)	
Material SMB N	brass/gold brass/SUCO	
VSWR	DC to 3 GHz 3 to 4 GHz	$\leq 1.03 + 0.08 \cdot f$ (GHz) ≤ 1.27

288	H+S type Item no.	34_N-SMB-50-1/1--_UE 22642272
N SMB	jack (f) jack (f)	
Material N SMB Mounting hole	brass/SUCO brass/gold ML 12	
VSWR	DC to 4 GHz	≤ 1.22

288	H+S type Item no.	37_N-SMB-50-1/1--_UE 22641514
N SMB	jack (f) jack (f)	
Material N SMB Mounting hole	brass/SUCO brass/gold ML 14	
VSWR	DC to 4 GHz	$\leq 1.06 + 0.08 \cdot f$ (GHz)

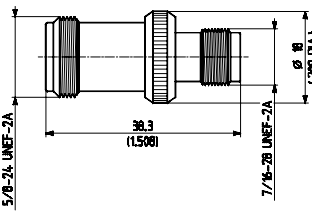
289	H+S type Item no.	31_N-SMC-50-1/1--_NE 22542389
N SMC	jack (f) jack (f)	
Material N SMC	brass/SUCO brass/gold	
VSWR	DC to 2 GHz 2 to 4 GHz 4 to 10 GHz	≤ 1.10 ≤ 1.20 ≤ 1.40

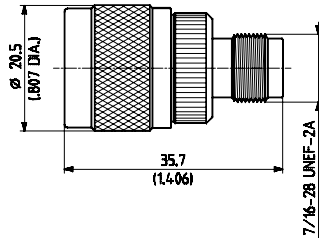
289	H+S type Item no.	33_N-SMC-50-1/1--_NE 22542423
N SMC	plug (m) jack (f)	
Material N SMC	brass/SUCO brass/SUCO	
VSWR	DC to 2 GHz 2 to 4 GHz 4 to 10 GHz	≤ 1.10 ≤ 1.20 ≤ 1.40

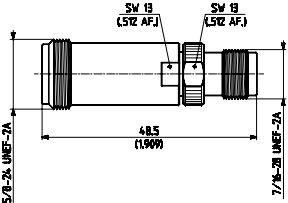
289	H+S type Item no.	33_SMC-N-50-1/1--_NE 22640406
SMC N	plug (m) jack (f)	
Material SMC N	brass/gold brass/SUCO	
VSWR	DC to 2 GHz 2 to 4 GHz 4 to 10 GHz	≤ 1.10 ≤ 1.20 ≤ 1.40

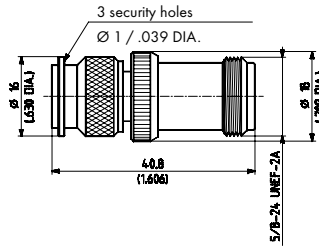
Introduction and general information on page 519 and 520/521.

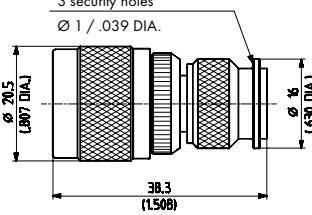
Adapters

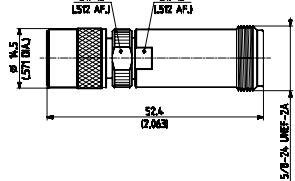
294	H+S type Item no.	31_N-TNC-50-1/133_UE 22542392
N TNC	jack (f) jack (f)	
Material	brass/SUCO	
VSWR	DC to 7 GHz 7 to 11 GHz	$\leq 1.06 + 0.12 \cdot f \text{ (GHz)} \leq 1.90$

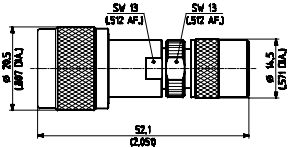
294	H+S type Item no.	33_N-TNC-50-1/133_NE 22542427
N TNC	plug (m) jack (f)	
Material	brass/SUCO	
VSWR	DC to 11 GHz	$\leq 1.13 + 0.02 \cdot f \text{ (GHz)}$

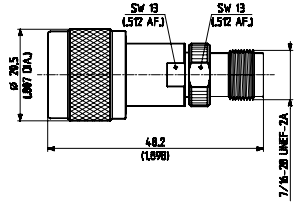
294	H+S type Item no.	31_N-TNC-50-51/1--_UE 22543954
N TNC	jack (f) jack (f)	
Material	stainless steel	
VSWR	DC to 12.4 GHz	$\leq 1.05 + 0.01 \cdot f \text{ (GHz)}$

294	H+S type Item no.	33_TNC-N-50-1/133_UE 22640637
TNC N	plug (m) jack (f)	
Material	brass/SUCO	
VSWR	DC to 3 GHz 3 to 5.5 GHz 5.5 to 11 GHz	≤ 1.05 ≤ 1.18 ≤ 2.00

294	H+S type Item no.	32_N-TNC-50-1/---_UE 22542406
N TNC	plug (m) plug (m)	
Material	brass/SUCO	
VSWR	DC to 11 GHz	$\leq 1.06 + 0.11 \cdot f \text{ (GHz)}$

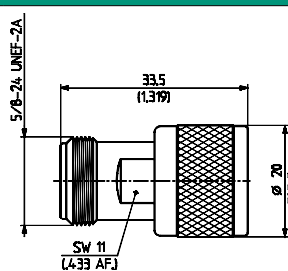
294	H+S type Item no.	33_TNC-N-50-51/---_UE 22544046
TNC N	plug (m) jack (f)	
Material	stainless steel	
VSWR	DC to 12.4 GHz	$\leq 1.05 + 0.01 \cdot f \text{ (GHz)}$

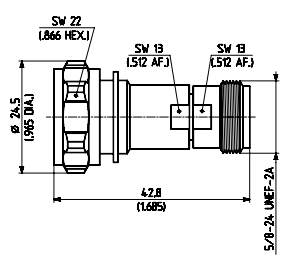
294	H+S type Item no.	32_N-TNC-50-51/1--_UE 22543953
N TNC	plug (m) plug (m)	
Material	stainless steel	
VSWR	DC to 12.4 GHz	$\leq 1.05 + 0.01 \cdot f \text{ (GHz)}$

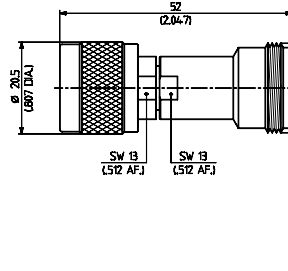
294	H+S type Item no.	33_N-TNC-50-51/1--_UE 22543955
N TNC	plug (m) jack (f)	
Material	stainless steel	
VSWR	DC to 12.4 GHz	$\leq 1.05 + 0.01 \cdot f \text{ (GHz)}$

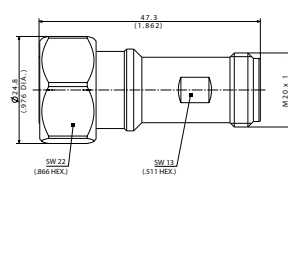
Introduction and general information on page 519 and 520/521.

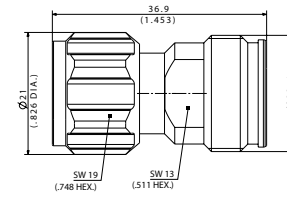
Adapters

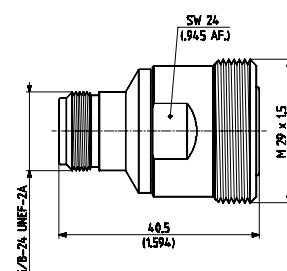
294	H+S type Item no.	33_TNC-N-Q50-4/133_NE 22660360
TNC N	plug (m) quick-mate jack (f)	
Material	brass/SUCO	
VSWR	DC to 4 GHz 4 to 8 GHz 8 to 11 GHz	

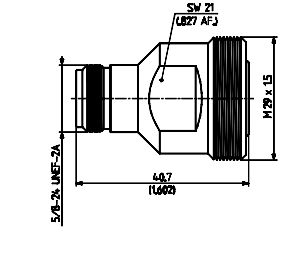
295	H+S type Item no.	33_4195-N-50-1/---_UE 22646154
4.1/9.5 N	plug (m) jack (f)	
Material	brass/SUCO stainless steel	
VSWR	DC to 6 GHz 6 to 14 GHz	

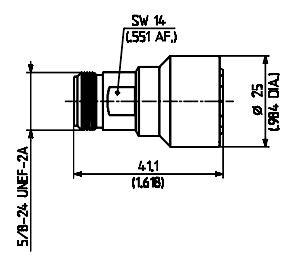
294	H+S type Item no.	33_N-4195-50-51/1-3_UE 22648618
N 4.1/9.5	plug (m) jack (f)	
Material	stainless steel brass/SUCO	
VSWR	DC to 6 GHz 6 to 14 GHz	

296	H+S type Item no.	33_4310-N-50-X1/133_NE 85017229
4.3-10 N	plug (m) jack (f)	
Material	brass	
VSWR	DC to 4 GHz 4 to 6 GHz	

296	H+S type Item no.	33_N-4310-50-1/133_NE 85017232
N 4.3-10	plug (m) jack (f)	
Material	brass	
VSWR	DC to 4 GHz 4 to 6 GHz	

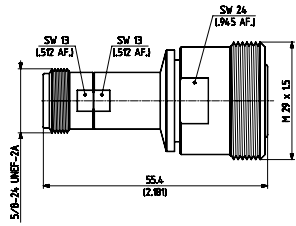
297	H+S type Item no.	31_N-716-50-1/---_UE 22640869
N 7/16	jack (f) jack (f)	
Material	brass/SUCO	
VSWR	DC to 7.5 GHz	

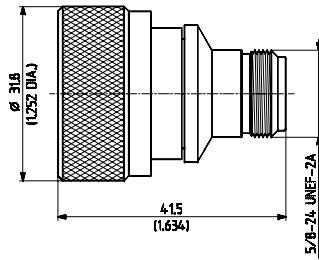
297	H+S type Item no.	31_N-716-50-2/133_WE 22658137
N 7/16	jack (f) jack (f)	
Material	brass/SUCO	
PIM:	≤ -165 dBc	

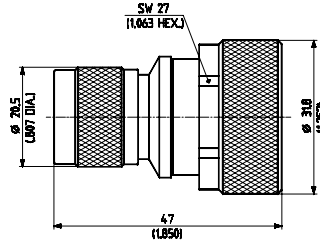
297	H+S type Item no.	31_716-N-Q50-1/1-3_NE 23008294
7/16 N	jack (f) quick-mate jack (f)	
Material	brass/SUCO	
VSWR	DC to 6 GHz	

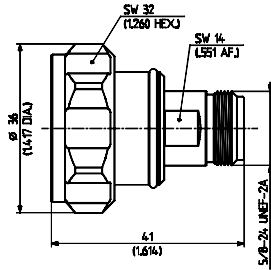
Introduction and general information on page 519 and 520/521.

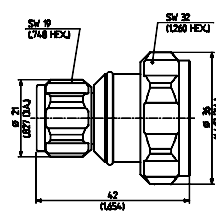
Adapters

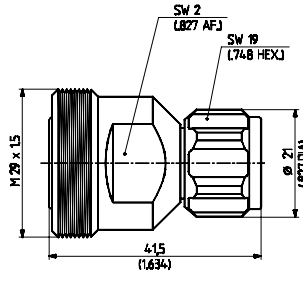
297	H+S type Item no.	31_N-716-50-51/-33_NE 22544129
N 7/16	jack (f) jack (f)	
Material	brass/SUCO	
VSWR	DC to 7.5 GHz	$\leq 1.03 + 0.004 \cdot f$ (GHz)

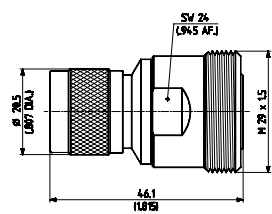
297	H+S type Item no.	33_716-N-50-1/---_UE 22544119
7/16 N	plug (m) jack (f)	
Material	brass/silver brass/SUCO	
VSWR	DC to 7.5 GHz:	$\leq 1.03 + 0.02 \cdot f$ (GHz)

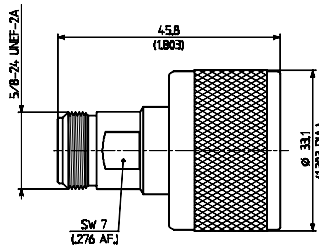
297	H+S type Item no.	32_N-716-50-1/---_NE 22544576
N 7/16	plug (m) plug (m)	
Material	brass/SUCO brass/silver	
VSWR	DC to 7.5 GHz	$\leq 1.03 + 0.02 \cdot f$ (GHz)

297	H+S type Item no.	33_716-N-50-3/133_WE 22658823
7/16 N	male (m) jack (f)	
Material	brass/SUCO	
PIM:		≤ -165 dBc

297	H+S type Item no.	32_N-716-50-2/133_WE 22658140
N 7/16	plug (m) plug (m)	
Material	brass/SUCO	
PIM:		≤ -165 dBc

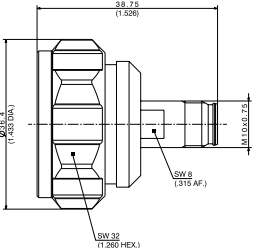
297	H+S type Item no.	33_N-716-50-3/133_WE 22658217
N 7/16	plug (m) jack (f)	
Material	brass/SUCO	
PIM:		≤ -165 dBc

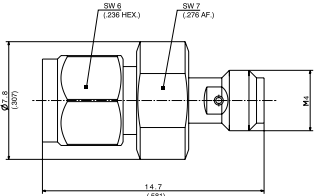
297	H+S type Item no.	33_N-716-50-1/---_UE 22641229
N 7/16	plug (m) jack (f)	
Material	brass/SUCO brass/silver	
VSWR	DC to 7.5 GHz	$\leq 1.03 + 0.02 \cdot f$ (GHz)

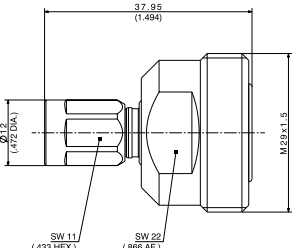
297	H+S type Item no.	33_716-N-Q50-4/133_UE 23000487
7/16 N	plug (m) quick-mate jack (f)	
Material	brass/SUCO	
VSWR	DC to 4 GHz 4 to 7.5 GHz	≤ 1.05 ≤ 1.15

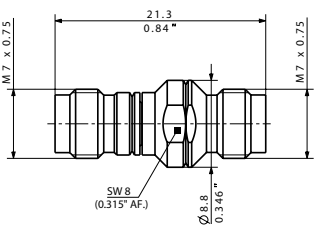
Introduction and general information on page 519 and 520/521.

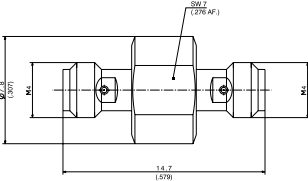
Adapters

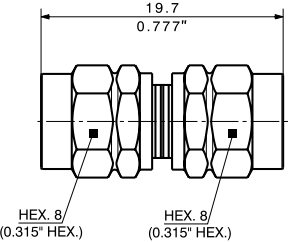
318	H+S type Item no.	33_716-NEX10-50-1/133_WE 85092476
7/16 NEX10	plug (male) jack (female)	
Material 7/16 NEX10	brass/SUCO brass/SUCO	
VSWR	DC to 2 GHz 2 to 6 GHz	≤ 1.065 ≤ 1.119

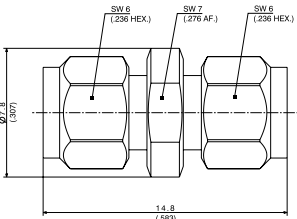
319	H+S type Item no.	33_PC1-50-0-1/11_UE 85031288
PC1.0	plug (m) jack (f)	
Material	CuBe/gold	
VSWR	DC to 50 GHz 50 to 75 GHz 75 to 110 GHz	≤ 1.222 ≤ 1.308 ≤ 1.377

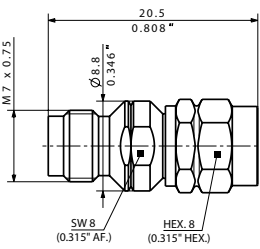
318	H+S type Item no.	33_NEX10-716-50-X1/133_WE 85092478
NEX10 7/16	plug (male) jack (female)	
Material NEX10 7/16	brass/SUCO brass/SUCO	
VSWR	DC to 2 GHz 2 to 6 GHz	≤ 1.065 ≤ 1.119

339	H+S type Item no.	31_PC185-50-0-1/199_NE 84132746
PC1.85	jack (f) 2 ×	
Material	stainless steel	
VSWR	DC to 30 GHz 30 to 50 GHz 50 to 67 GHz	≤ 1.083 ≤ 1.119 ≤ 1.152

319	H+S type Item no.	31_PC1-50-0-1/111_UE 85031727
PC1.0	jack (f) 2 ×	
Material	CuBe/gold	
VSWR	DC to 50 GHz 50 to 75 GHz 75 to 110 GHz	≤ 1.222 ≤ 1.308 ≤ 1.377

339	H+S type Item no.	32_PC185-50-0-1/19_UE 84132748
PC1.85	plug (m) 2 ×	
Material	stainless steel	
VSWR	DC to 35 GHz 35 to 55 GHz 55 to 67 GHz	≤ 1.052 ≤ 1.065 ≤ 1.106

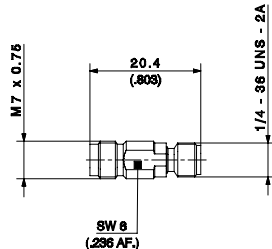
319	H+S type Item no.	32_PC1-50-0-1/11_UE 85031743
PC1.0	plug (m) 2 ×	
Material	CuBe/gold	
VSWR	DC to 50 GHz 50 to 75 GHz 75 to 110 GHz	≤ 1.222 ≤ 1.308 ≤ 1.377

339	H+S type Item no.	33_PC185-50-0-1/199_NE 84019546
PC1.85	plug (m) jack (f)	
Material	stainless steel	
VSWR	DC to 25 GHz 25 to 45 GHz 45 to 67 GHz	≤ 1.052 ≤ 1.065 ≤ 1.106

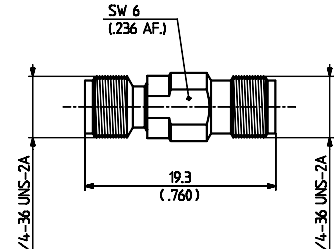
Introduction and general information on page 519 and 520/521.

Adapters

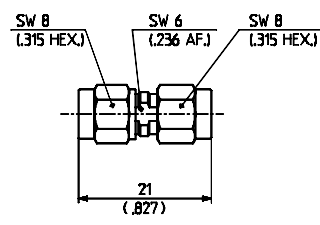
359	H+S type Item no.	31_PC24-SK-50-1/199_NE 84008075
PC2.4 SK (2.92 mm)	jack (f) jack (f)	
Material	stainless steel	
VSWR	DC to 40 GHz	≤ 1.12



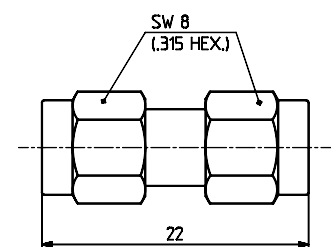
376	H+S type Item no.	31_SK-50-0-1/199_NE 23004726
SK (2.92 mm)	jack (f) 2 ×	
El. length	16.1 mm	
Material	stainless steel	
VSWR	DC to 40 GHz	≤ 1.20



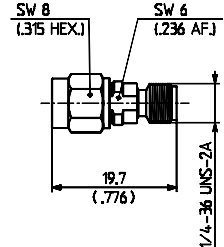
359	H+S type Item no.	32_PC24-SK-50-1/199_NE 23004729
PC2.4 SK (2.92 mm)	plug (m) plug (m)	
El. length	16.1 mm	
Material	stainless steel	
VSWR	DC to 40 GHz	≤ 1.12



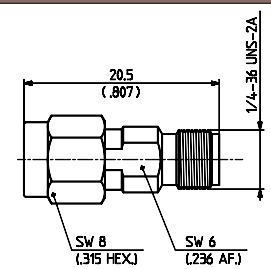
376	H+S type Item no.	32_SK-50-0-1/199_NE 23004727
SK (2.92 mm)	plug (m) 2 ×	
El. length	16.1 mm	
Material	stainless steel	
VSWR	DC to 40 GHz	≤ 1.20



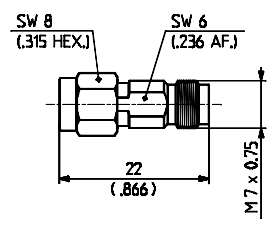
359	H+S type Item no.	33_PC24-SK-50-2/199_NE 23004730
PC2.4 SK (2.92 mm)	plug (m) jack (f)	
El. length	16.1 mm	
Material	stainless steel	
VSWR	DC to 40 GHz	≤ 1.12



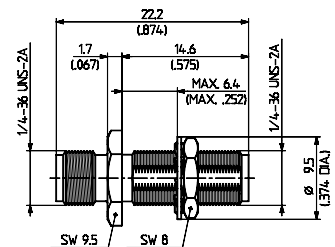
376	H+S type Item no.	33_SK-50-0-1/199_NE 23004728
SK (2.92 mm)	plug (m) jack (f)	
El. length	16.1 mm	
Material	stainless steel	
VSWR	DC to 40 GHz	≤ 1.20



359	H+S type Item no.	33_SK-PC24-50-1/199_NE 23004731
SK (2.92 mm) PC2.4	plug (m) jack (f)	
El. length	16.1 mm	
Material	stainless steel	
VSWR	DC to 40 GHz	≤ 1.12

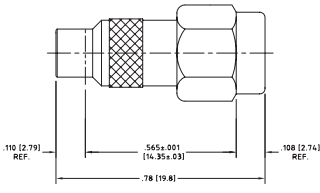


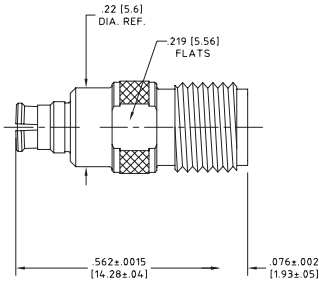
376	H+S type Item no.	34_SK-50-0-51/199_NE 22658969
SK (2.92 mm)	jack (f) 2 ×	
Material	stainless steel	
Mounting hole	ML 35	
VSWR	DC to 40 GHz	≤ 1.02 + 0.01 · f (GHz)

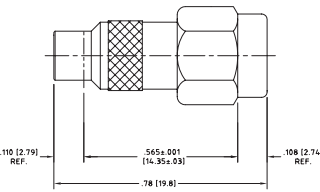


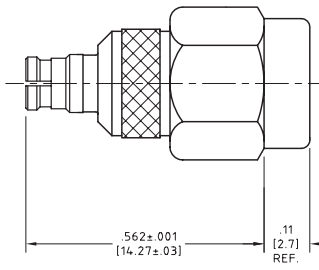
Introduction and general information on page 519 and 520/521.

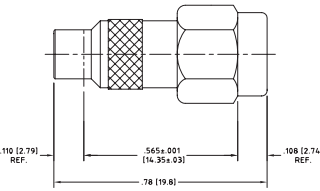
Adapters

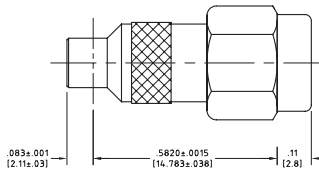
385	H+S type Item no.	29487-1 80318037
SMP SK (2.92 mm)	male full detent plug (m)	
Material	stainless steel (passivated)	
VSWR	DC to 40 GHz	≤ 1.35

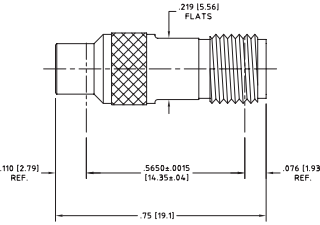
385	H+S type Item no.	29487-3 80318039
SMP SK (2.92 mm)	female jack (f)	
Material	CuBe/gold	
VSWR	DC to 40 GHz	≤ 1.35

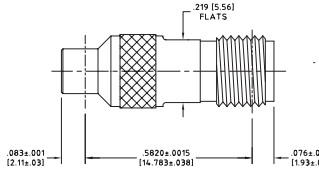
385	H+S type Item no.	29487-1-3 80367952
SMP SK (2.92 mm)	male limited detent plug (m)	
Material	stainless steel (passivated)	
VSWR	DC to 40 GHz	≤ 1.35

385	H+S type Item no.	29487-4 80363059
SMP SK (2.92 mm)	female plug (m)	
Material	CuBe/gold	
VSWR	DC to 40 GHz	≤ 1.35

385	H+S type Item no.	29487-1-4 80370562
SMP SK (2.92 mm)	male smooth bore plug (m)	
Material	stainless steel (passivated)	
VSWR	DC to 40 GHz	≤ 1.35

386	H+S type Item no.	29429-1 80317861
SMPM SK (2.92 mm)	male full detent plug (m)	
Material	CuBe/gold	
VSWR	DC to 40 GHz	≤ 1.35

385	H+S type Item no.	29487-2 80318038
SMP SK (2.92 mm)	male full detent jack (f)	
Material	stainless steel	
VSWR	DC to 40 GHz	≤ 1.35

386	H+S type Item no.	29429-4 80362544
SMPM SK (2.92 mm)	male full detent jack (f)	
Material	CuBe/gold	
VSWR	DC to 40 GHz	≤ 1.35

Introduction and general information on page 519 and 520/521.

Adapters

387	H+S type Item no.	29429-1T2 80317870
SMPM-T SK (2.92 mm)	male full detent plug (m)	
Material	CuBe/gold	
VSWR	DC to 40 GHz	≤ 1.35

387	H+S type Item no.	29429-4T2 80362561
SMPM-T SK (2.92 mm)	male full detent jack (f)	
Material	CuBe/gold	
VSWR	DC to 40 GHz	≤ 1.35

393	H+S type Item no.	31_PC35-50-0-1/199_UE 22644360
PC3.5	jack (f) 2 ×	
El. length	14.1 mm	
Material	stainless steel	
VSWR	DC to 18 GHz 18 to 26.5 GHz	≤ 1.08 ≤ 1.15

393	H+S type Item no.	31_PC35-50-0-2/199_NE 23020456
PC3.5	jack (f) 2 ×	
El. length	25.5 mm	
Material	stainless steel	
VSWR	DC to 1.5 GHz 1.5 to 6 GHz 6 to 18 GHz	≤ 1.036 ≤ 1.065 ≤ 1.22

393	H+S type Item no.	32_PC35-50-0-1/199_UE 22644361
PC3.5	plug (m) 2 ×	
El. length	14.1 mm	
Material	stainless steel	
VSWR	DC to 18 GHz 18 to 26.5 GHz	≤ 1.08 ≤ 1.15

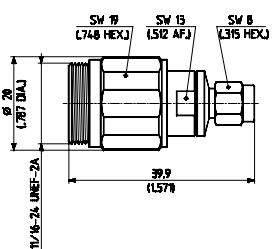
393	H+S type Item no.	32_PC35-50-0-2/199_NE 23020457
PC3.5	plug (m) 2 ×	
El. length	25.5 mm	
Material	stainless steel	
VSWR	DC to 1.5 GHz 1.5 to 6 GHz 6 to 18 GHz	≤ 1.036 ≤ 1.065 ≤ 1.22

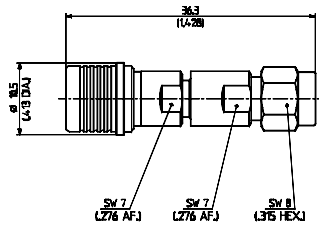
393	H+S type Item no.	33_PC35-50-0-1/199_UE 22644362
PC3.5	plug (m) jack (f)	
El. length	14.1 mm	
Material	stainless steel	
VSWR	DC to 18 GHz 18 to 26.5 GHz	≤ 1.08 ≤ 1.15

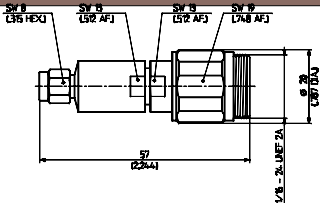
393	H+S type Item no.	33_PC35-50-0-2/199_NE 23020453
PC3.5	plug (m) jack (f)	
El. length	25.5 mm	
Material	stainless steel	
VSWR	DC to 1.5 GHz 1.5 to 6 GHz 6 to 18 GHz	≤ 1.036 ≤ 1.065 ≤ 1.22

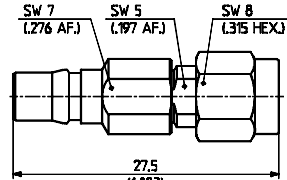
Introduction and general information on page 519 and 520/521.

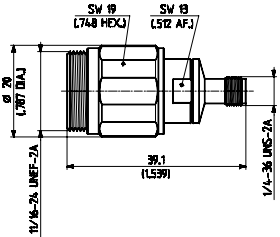
Adapters

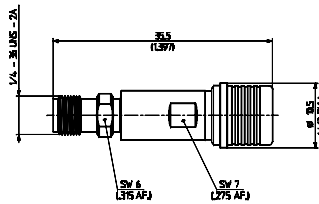
394	H+S type	32_PC7-PC35-50-1/1--_UE
	Item no.	22644230
PC7 PC3.5	plug (m)	
Material	brass/gold stainless steel	
PC7 PC3.5		
VSWR	DC to 15 GHz 15 to 18 GHz	≤ 1.05 ≤ 1.09

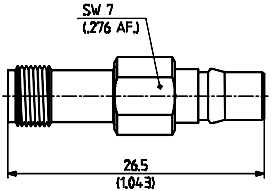
396	H+S type	32_PC35-QMA-50-1/1--_NE
	Item no.	23017489
PC3.5 QMA	plug (m) plug (m)	
El. length	25.5 mm	
Material	stainless steel	
VSWR	DC to 1.5 GHz 1.5 to 6 GHz 6 to 18 GHz	≤ 1.036 ≤ 1.065 ≤ 1.22

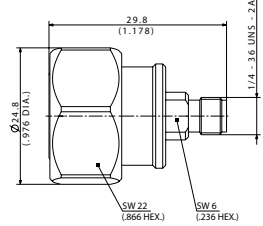
394	H+S type	32_PC35-PC7-50-3/-33_NE
	Item no.	23003902
PC3.5 PC7	plug (m)	
Material	brass/SUCO brass/gold	
PC3.5 PC7		
VSWR	DC to 18 GHz	≤ 1.06

396	H+S type	33_PC35-QMA-50-1/199_NE
	Item no.	23017467
PC3.5 QMA	plug (m) jack (f)	
El. length	25.5 mm	
Material	stainless steel	
VSWR	DC to 1.5 GHz 1.5 to 6 GHz 6 to 18 GHz	≤ 1.036 ≤ 1.065 ≤ 1.22

394	H+S type	33_PC7-PC35-50-1/1--_UE
	Item no.	22644231
PC7 PC3.5	jack (f)	
Material	brass/gold stainless steel	
PC7 PC3.5		
VSWR	DC to 15 GHz 15 to 18 GHz	≤ 1.05 ≤ 1.09

396	H+S type	33_QMA-PC35-50-1/1--_NE
	Item no.	23017488
QMA PC3.5	plug (m) jack (f)	
El. length	25.5 mm	
Material	stainless steel	
VSWR	DC to 1.5 GHz 1.5 to 6 GHz 6 to 18 GHz	≤ 1.036 ≤ 1.065 ≤ 1.22

396	H+S type	31_PC35-QMA-50-1/199_NE
	Item no.	23017468
PC3.5 QMA	jack (f) jack (f)	
El. length	25.5 mm	
Material	stainless steel	
VSWR	DC to 1.5 GHz 1.5 to 6 GHz 6 to 18 GHz	≤ 1.036 ≤ 1.065 ≤ 1.22

407	H+S type	33_4310-PC35-50-X1/133_NE
	Item no.	85017252
4.3-10 PC3.5	plug (m) jack (f)	
Material	brass	
VSWR	DC to 4 GHz 4 to 6 GHz	≤ 1.032 ≤ 1.052

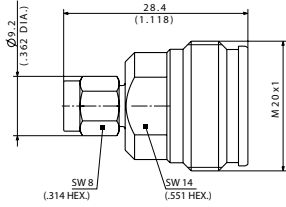
Introduction and general information on page 519 and 520/521.

Adapters

407	H+S type	33_PC35-4310-50-1/1-9_NE
	Item no.	85017256

PC3.5
4.3-10

plug (m)
jack (f)

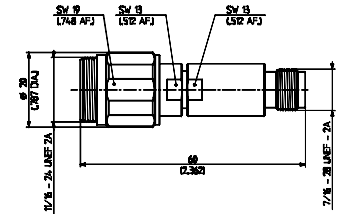


Material brass

420	H+S type	33_PC7-TNC-50-52/-33_NE
	Item no.	23003920

PC7
TNC

jack (f)



Material PC7
TNC

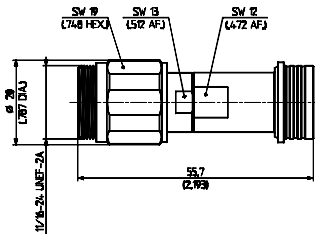
brass/gold
stainless steel

VSWR DC to 18 GHz $\leq 1.03 + 0.009 \cdot f$ (GHz)

412	H+S type	32_PC7-QN-50-1/1--_NE
	Item no.	23032720

PC7
QN

plug (m)



El. length 41.85 mm

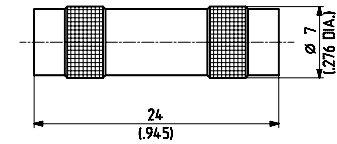
Material brass/gold

VSWR DC to 3 GHz ≤ 1.03
3 to 6 GHz ≤ 1.05
6 to 11 GHz \leq typ. 1.12

424	H+S type	31_QLA-01-0-1/112_NE
	Item no.	22640028

QLA

jack (f) 2 x

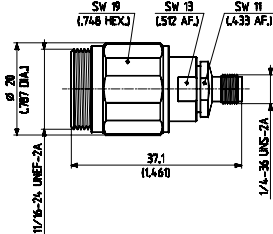


Material brass/nickel

413	H+S type	33_PC7-SMA-50-1/1--_UE
	Item no.	22543548

PC7
SMA

jack (f)



Material PC7
SMA

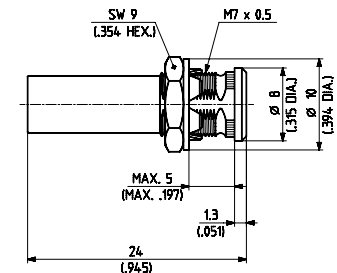
brass/gold
CuBe/gold

VSWR DC to 18 GHz $\leq 1.025 + 0.002 \cdot f$ (GHz)

424	H+S type	34_QLA-01-0-2/112_NE
	Item no.	22640031

QLA

jack (f) 2 x

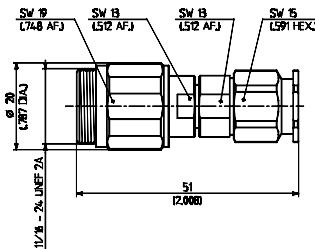


Material brass/nickel
Mounting ML 99
hole

420	H+S type	32_PC7-TNC-50-52/-33_NE
	Item no.	23003983

PC7
TNC

plug (m)



Material PC7
TNC

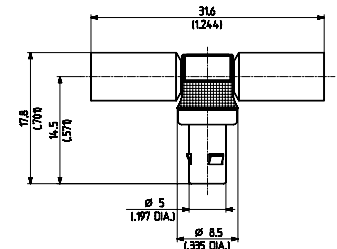
brass/gold
stainless steel

VSWR DC to 18 GHz $\leq 1.03 + 0.009 \cdot f$ (GHz)

424	H+S type	43_QLA-01-0-1/112_NE
	Item no.	22640032

QLA

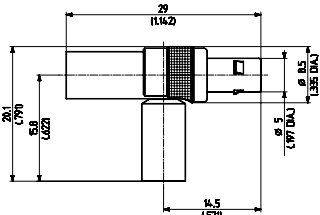
jack (f) 2 x
plug (m) 1 x

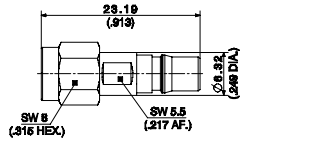


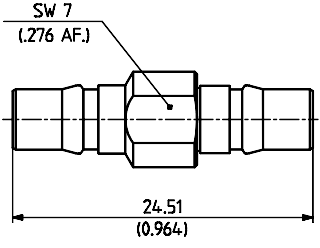
Material brass/nickel

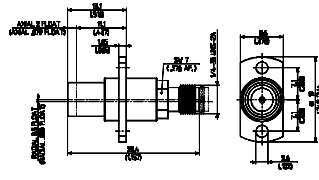
Introduction and general information on page 519 and 520/521.

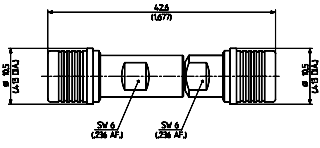
Adapters

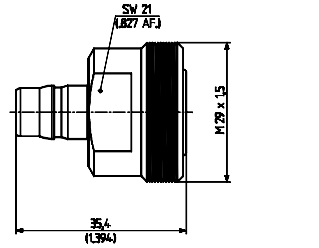
424	H+S type Item no.	45_QLA-01-0-1/112_NE 22640033
QLA	jack (f) 2 × plug (m) 1 ×	
Material	brass/nickel	

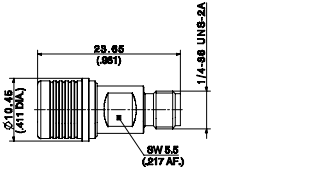
440	H+S type Item no.	33_SMA-QMA-50-1/133_NE 84012204
SMA QMA	plug (m) jack (f)	
Material	brass/SUCO	
VSWR	DC to 4 GHz	≤ 1.05
	4 to 6 GHz	≤ 1.17

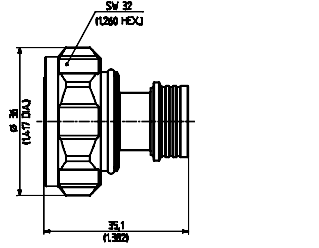
438	H+S type Item no.	31_QMA-50-0-1/199_NE 23023171
QMA	jack (f) 2 ×	
Material	stainless steel	
VSWR	DC to 1.5 GHz	≤ 1.036
	1.5 to 6 GHz	≤ 1.065

440	H+S type Item no.	39_QMA-SMA-U50-1/11-_NE 23022741
QMA SMA	plug (m) jack (f)	
Material	stainless steel	
QMA	CuBe/SUPR	
Mounting hole	ML 58	
VSWR	DC to 2 GHz	≤ 1.04
	1.2 to 4 GHz	≤ 1.05
	4 to 6 GHz	≤ 1.08

438	H+S type Item no.	32_QMA-50-0-1/1--_NE 23023199
QMA	plug (m) 2 ×	
Material	stainless steel	
VSWR	DC to 1.5 GHz	≤ 1.036
	1.5 to 6 GHz	≤ 1.065

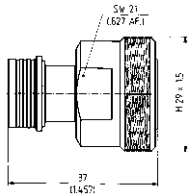
462	H+S type Item no.	31_QN-716-50-1/113_WE 23033269
QN 7/16	jack (f) jack (f)	
Material	brass/SUCO	
PIM:	≤ -155 dBc	

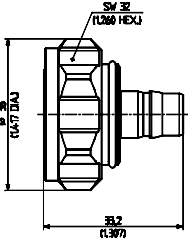
440	H+S type Item no.	33_QMA-SMA-50-1/133_NE 84014876
QMA SMA	plug (m) jack (f)	
Material	brass/SUCO	
VSWR	DC to 4 GHz	≤ 1.05
	4 to 6 GHz	≤ 1.17

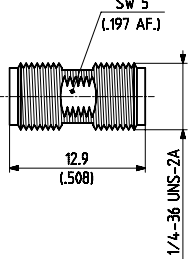
462	H+S type Item no.	32_QN-716-50-1/113_WE 23033643
QN 7/16	plug (m) plug (m)	
Material	brass/SUCO	
PIM	≤ -155 dBc	

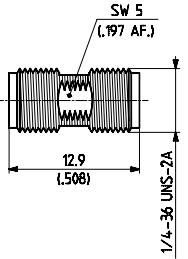
Introduction and general information on page 519 and 520/521.

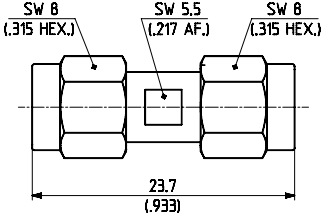
Adapters

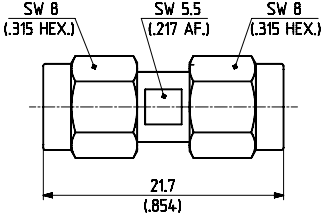
462	H+S type Item no.	33_QN-716-50-1/113_WE 23033550
QN 7/16	plug (m) jack (f)	
Material	brass/SUCO	
PIM	≤ -155 dBc	

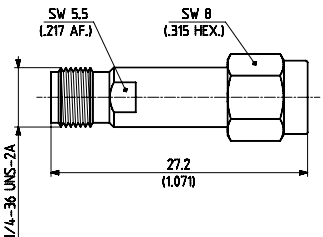
462	H+S type Item no.	33_716-QN-50-1/113_WE 23033644
7/16 QN	plug (m) jack (f)	
Material	brass/SUCO	
PIM:	≤ -155 dBc	

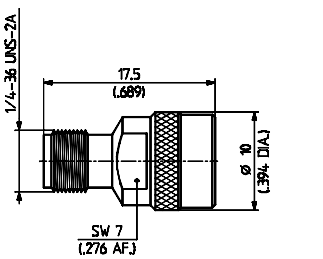
463	H+S type Item no.	31_SMA-50-0-1/111_NE 22640150
SMA	jack (f) 2 ×	
Material	CuBe/gold	
VSWR	DC to 18 GHz	≤ 1.05 + 0.01 · f (GHz)

463	H+S type Item no.	31_SMA-50-0-51/199_NE 22641486
SMA	jack (f) 2 ×	
Material	stainless steel	
VSWR	DC to 18 GHz	≤ 1.05 + 0.01 · f (GHz)

463	H+S type Item no.	32_SMA-50-0-1/111_NE 22640151
SMA	plug (m) 2 ×	
Material	CuBe/gold	
VSWR	DC to 18 GHz	≤ 1.05 + 0.005 · f (GHz)

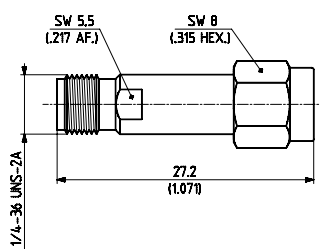
463	H+S type Item no.	32_SMA-50-0-52/199_NE 22643689
SMA	plug (m) 2 ×	
Material	stainless steel	
VSWR	DC to 18 GHz	≤ 1.05 + 0.005 · f (GHz)

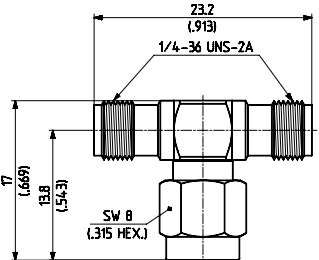
463	H+S type Item no.	33_SMA-50-0-1/111_NE 22641119
SMA	plug (m) jack (f)	
Material	CuBe/gold	
VSWR	DC to 18 GHz	≤ 1.05 + 0.008 · f (GHz)

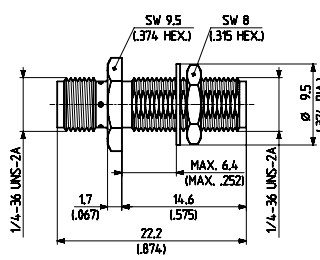
463	H+S type Item no.	33_SMA-Q50-0-4/1-9_NE 22660213
SMA	plug (m) quick-mate jack (f)	
Material	CuBe/SUPR	
VSWR	DC to 5 GHz	≤ 1.07
	5 to 16 GHz	≤ 1.22
	16 to 18 GHz	≤ 1.28

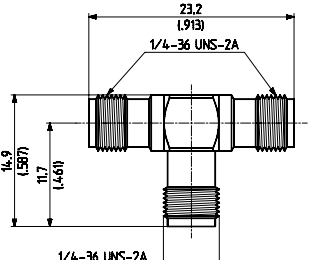
Introduction and general information on page 519 and 520/521.

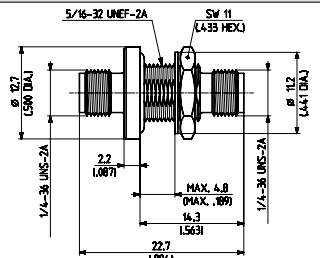
Adapters

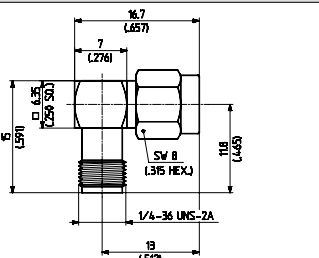
463	H+S type Item no.	33_SMA-50-0-51/199_NE 22644253
SMA	plug (m) jack (f)	
Material	stainless steel	
VSWR	DC to 18 GHz	$\leq 1.05 + 0.008 \cdot f$ (GHz)

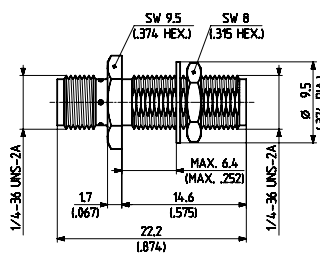
463	H+S type Item no.	43_SMA-50-0-1/111_NE 22543356
SMA	plug (m) 1 × jack (f) 2 ×	
Material	CuBe/gold	
VSWR	DC to 18 GHz	$\leq 1.05 + 0.008 \cdot f$ (GHz)

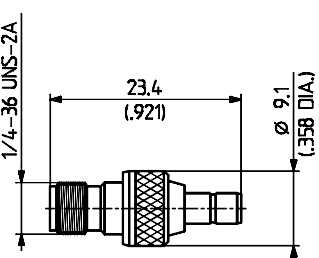
463	H+S type Item no.	34_SMA-50-0-1/111_NE 23009027
SMA	jack (f) 2 ×	
Material	CuBe/gold	
Mounting hole	ML 35	
VSWR	DC to 18 GHz	$\leq 1.05 + 0.005 \cdot f$ (GHz)

463	H+S type Item no.	46_SMA-50-0-1/111_NE 22543357
SMA	jack (f) 3 ×	
Material	CuBe/gold	
VSWR	DC to 18 GHz	$\leq 1.05 + 0.005 \cdot f$ (GHz)

463	H+S type Item no.	34_SMA-50-0-3/111_NE 22641297
SMA	jack (f) 2 ×	
Hermetic sealed		
Material	CuBe/gold	
Mounting hole	ML 38	
VSWR	DC to 3 GHz	≤ 1.1
	3 to 7 GHz	≤ 1.2
	7 to 18 GHz	≤ 1.3

463	H+S type Item no.	53_SMA-50-0-51/199_NE 22642655
SMA	plug (m) jack (f)	
Material	stainless steel	
VSWR	DC to 14 GHz	$\leq 1.02 + 0.03 \cdot f$ (GHz)

463	H+S type Item no.	34_SMA-50-0-51/199_NE 22544823
SMA	jack (f) 2 ×	
Material	stainless steel	
Mounting hole	ML 35	
VSWR	DC to 18 GHz	$\leq 1.05 + 0.005 \cdot f$ (GHz)

464	H+S type Item no.	31_SMA-SMB-50-1/111_UE 22641728
SMA SMB	jack (f) jack (f)	
Material	CuBe/gold brass/gold	
VSWR	DC to 4 GHz	$\leq 1.05 + 0.04 \cdot f$ (GHz)

Introduction and general information on page 519 and 520/521.

Adapters

464	H+S type Item no.	33_SMA-SMB-50-1/111_NE 22658917
SMA SMB	plug (m) jack (f)	
Material	brass/gold	
VSWR	DC to 4 GHz 4 to 7 GHz	$\leq 1.05 + 0.04 \cdot f$ (GHz) ≤ 1.21

464	H+S type Item no.	33_SMB-SMA-50-1/111_UE 22641727
SMB SMA	plug (m) jack (f)	
Material SMB SMA	brass/gold CuBe/gold	
VSWR	DC to 4 GHz	$\leq 1.05 + 0.04 \cdot f$ (GHz)

469	H+S type Item no.	29120 80310705
SSMA SMA	plug (m) jack (f)	
Material	stainless steel (passivated)	
VSWR	DC to 18 GHz	≤ 1.15

469	H+S type Item no.	29121 80310706
SSMA SMA	plug (m) plug (m)	
Material	stainless steel (passivated)	
VSWR	DC to 18 GHz	≤ 1.15

470	H+S type Item no.	31_SMA-TNC-50-1/1--_UE 22640941
SMA TNC	jack (f) jack (f)	
Material SMA TNC	CuBe/gold brass/SUCO	
VSWR	DC to 2 GHz 2 to 6 GHz 6 to 11 GHz	≤ 1.10 ≤ 1.20 ≤ 1.30

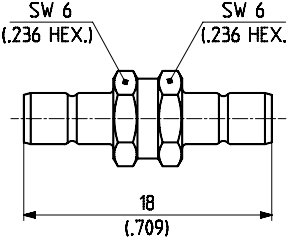
470	H+S type Item no.	32_SMA-TNC-50-1/1--_UE 22640938
SMA TNC	plug (m) plug (m)	
Material SMA TNC	CuBe/gold brass/SUCO	
VSWR	DC to 4 GHz 4 to 8 GHz 8 to 11 GHz	≤ 1.10 ≤ 1.20 ≤ 1.30

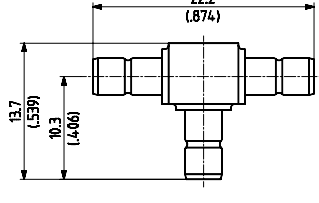
470	H+S type Item no.	33_SMA-TNC-50-1/1--_NE 22640939
SMA TNC	plug (m) jack (f)	
Material SMA TNC	CuBe/gold brass/SUCO	
VSWR	DC to 6 GHz 6 to 11 GHz	$\leq 1.03 + 0.05 \cdot f$ (GHz) ≤ 1.33

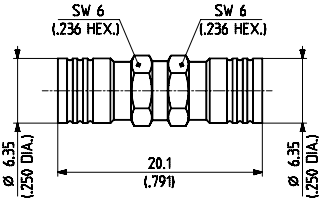
470	H+S type Item no.	33_TNC-SMA-50-1/1--_UE 22640940
TNC SMA	plug (m) jack (f)	
Material TNC SMA	brass/SUCO CuBe/gold	
VSWR	DC to 4 GHz 4 to 8 GHz 8 to 11 GHz	≤ 1.10 ≤ 1.20 ≤ 1.30

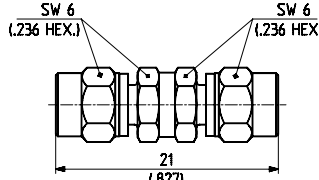
Introduction and general information on page 519 and 520/521.

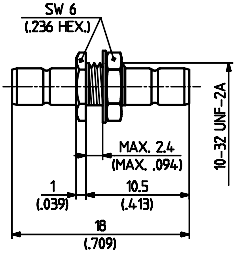
Adapters

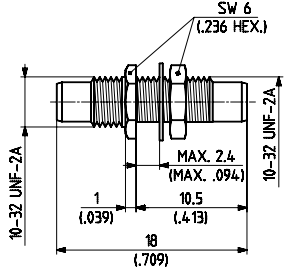
474	H+S type Item no.	31_SMB-50-0-1/111_NE 22640221
SMB	jack (f) 2 ×	
Material	brass/gold	
VSWR	DC to 4 GHz	$\leq 1.03 + 0.08 \cdot f$ (GHz)

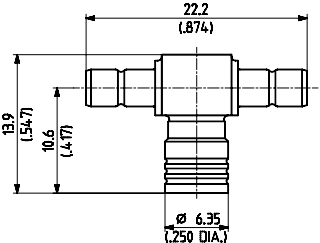
474	H+S type Item no.	46_SMB-50-0-2/111_NE 22640228
SMB	jack (f) 3 ×	
Material	brass/gold	

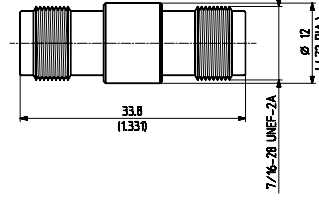
474	H+S type Item no.	32_SMB-50-0-1/111_NE 22640222
SMB	plug (m) 2 ×	
"open entry"		
Material	brass/gold	
VSWR	DC to 1.5 GHz 1.5 to 4 GHz	$\leq 1.03 + 0.18 \cdot f$ (GHz) ≤ 1.30

484	H+S type Item no.	32_SMC-50-0-1/111_NE 22543822
SMC	plug (m) 2 ×	
Material	brass/gold	
VSWR	DC to 10 GHz	$\leq 1.08 + 0.10 \cdot f$ (GHz)

474	H+S type Item no.	34_SMB-50-0-2/111_NE 22640224
SMB	jack (f) 2 ×	
Material	brass/gold	
Mounting hole	ML 11	
VSWR	DC to 2 GHz 2 to 4 GHz	$\leq 1.04 + 0.1 \cdot f$ (GHz) ≤ 1.24

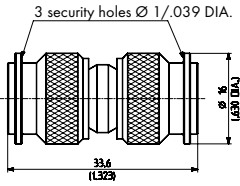
484	H+S type Item no.	34_SMC-50-0-2/111_NE 22640302
SMC	jack (f) 2 ×	
Material	brass/gold	
Mounting hole	ML 11	
VSWR	DC to 10 GHz	$\leq 1.03 + 0.08 \cdot f$ (GHz)

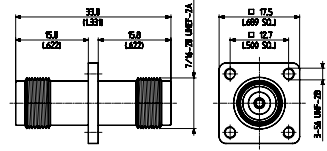
474	H+S type Item no.	43_SMB-50-0-2/111_NE 22640226
SMB	plug (m) 1 × jack (f) 2 ×	
"open entry"		
Material	brass/gold	

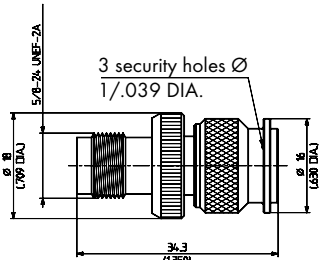
519	H+S type Item no.	31_TNC-50-0-1/133_NE 22640623
TNC	jack (f) 2 ×	
Material	brass/SUCO	
VSWR	DC to 11 GHz	$\leq 1.06 + 0.15 \cdot f$ (GHz)

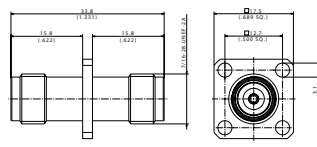
Introduction and general information on page 519 and 520/521.

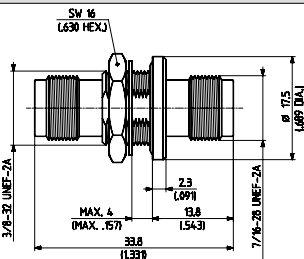
Adapters

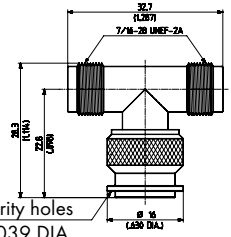
519	H+S type Item no.	32_TNC-50-0-1/133_NE 22543407
TNC	plug (m) 2 ×	
Material	brass/SUCO	
VSWR	DC to 11 GHz	$\leq 1.03 + 0.025 \cdot f$ (GHz)

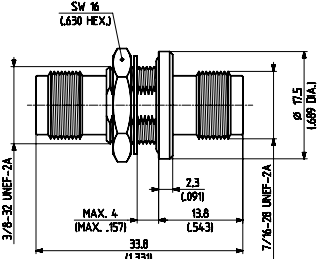
519	H+S type Item no.	37_TNC-50-0-1/133_NE 22640646
TNC	jack (f) 2 ×	
Material	brass/SUCO	
Mounting hole	ML 8	
Flange	4 threads	
VSWR	DC to 9 GHz 9 to 11 GHz	$\leq 1.09 + 0.16 \cdot f$ (GHz) ≤ 2.53

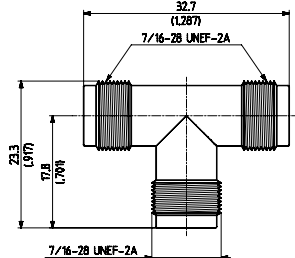
519	H+S type Item no.	33_TNC-50-0-1/133_NE 22543649
TNC	plug (m) jack (f)	
Material	brass/SUCO	
VSWR	DC to 11 GHz:	$\leq 1.10 + 0.027 \cdot f$ (GHz)

519	H+S type Item no.	37_TNC-50-0-2/133_NE 22640648
TNC	jack (f) 2 ×	
Material	brass/SUCO	
Mounting hole	ML 8	
Flange	4 holes	
VSWR	DC to 9 GHz 9 to 11 GHz	$\leq 1.09 + 0.16 \cdot f$ (GHz) ≤ 2.53

519	H+S type Item no.	34_TNC-50-0-1/133_NE 22640643
TNC	jack (f) 2 ×	
Material	brass/SUCO	
Mounting hole	ML 4	
VSWR	DC to 2 GHz 2 to 8 GHz 8 to 11 GHz	≤ 1.11 ≤ 1.50 ≤ 1.90

519	H+S type Item no.	43_TNC-50-0-1/133_NE 22640651
TNC	jack (f) 2 × plug (m) 1 ×	
Material	brass/SUCO	
VSWR		

519	H+S type Item no.	34_TNC-50-0-4/133_NE 22658794
TNC	jack (f) 2 ×	
Material	brass/SUCO	
Mounting hole	ML 4	
VSWR	DC to 8 GHz	$\leq 1.07 + 0.01 \cdot f$ (GHz)

519	H+S type Item no.	46_TNC-50-0-1/133_NE 22640655
TNC	jack (f) 3 ×	
Material	brass/SUCO	
VSWR		

Introduction and general information on page 519 and 520/521.

Adapters

519	H+S type Item no.	53_TNC-50-0-1/133_NE 22640659
TNC	plug (m) jack (f)	
Material	brass/SUCO	
VSWR	DC to 5 GHz 5 to 11 GHz	$\leq 1.03 + 0.11 \cdot f$ (GHz) ≤ 1.58

527	H+S type Item no.	33_4310-716-50-X1/133_WE 85017237
4.3-10 7/16	plug (m) jack (f)	
Material	brass/SUCO	
PIM		≤ -166 dBc

525	H+S type Item no.	31_4195-716-50-1/133_WE 22658138
4.1/9.5 7/16	jack (f) jack (f)	
Material	brass/SUCO	
PIM		≤ -165 dBc

527	H+S type Item no.	32_4310-716-50-X2/133_WE 85031321
4.3-10 7/16	plug (m) plug (m)	
Material	brass/SUCO	
PIM		≤ -155 dBc, typ. -160 dBc

527	H+S type Item no.	32_4310-716-50-X1/133_WE 85017233
4.3-10 7/16	plug (m) plug (m)	
Material	brass/SUCO	
PIM		≤ -166 dBc

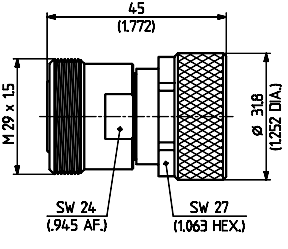
527	H+S type Item no.	33_4310-716-50-X2/133_WE 85031408
4.3-10 7/16	plug (m) jack (f)	
Material	brass/SUCO	
PIM		≤ -155 dBc, typ. -160 dBc

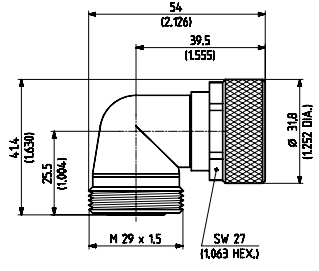
527	H+S type Item no.	33_716_4310-50-1/133_WE 85017213
7/16 4.3-10	plug (m) jack (f)	
Material	brass/SUCO	
PIM		≤ -166 dBc

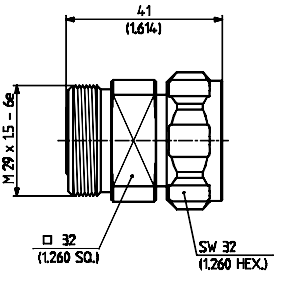
527	H+S type Item no.	33_716-4310-50-2/133_WE 85031552
7/16 4.3-10	plug (m) jack (f)	
Material	brass/SUCO	
PIM		≤ -155 dBc, typ. -160 dBc

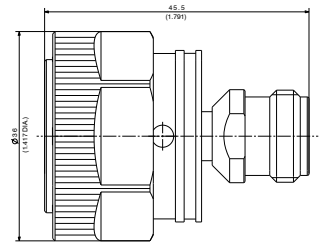
Introduction and general information on page 519 and 520/521.

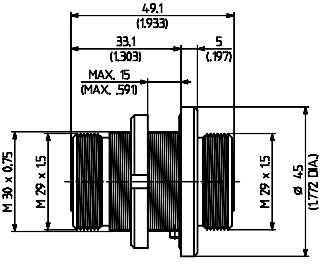
Adapters

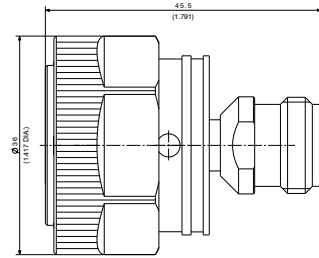
528	H+S type Item no.	33_716-50-0-1/003_-E 22651577
7/16	plug (m) jack (f)	
Material	brass/silver	
VSWR	DC to 2 GHz 2 to 4 GHz 4 to 6 GHz	≤ 1.02 ≤ 1.03 ≤ 1.04

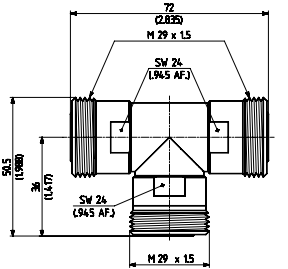
528	H+S type Item no.	53_716-50-0-1/003_-E 22641259
7/16	plug (m) jack (f)	
Material	brass/SUCO	
VSWR	DC to 7.5 GHz	≤ 1.02 + 0.025 · f (GHz)

528	H+S type Item no.	33_716-50-0-2/133_WE 22658193
7/16	plug (m) jack (f)	
Material	brass/SUCO	
PIM	≤ -165 dBc	

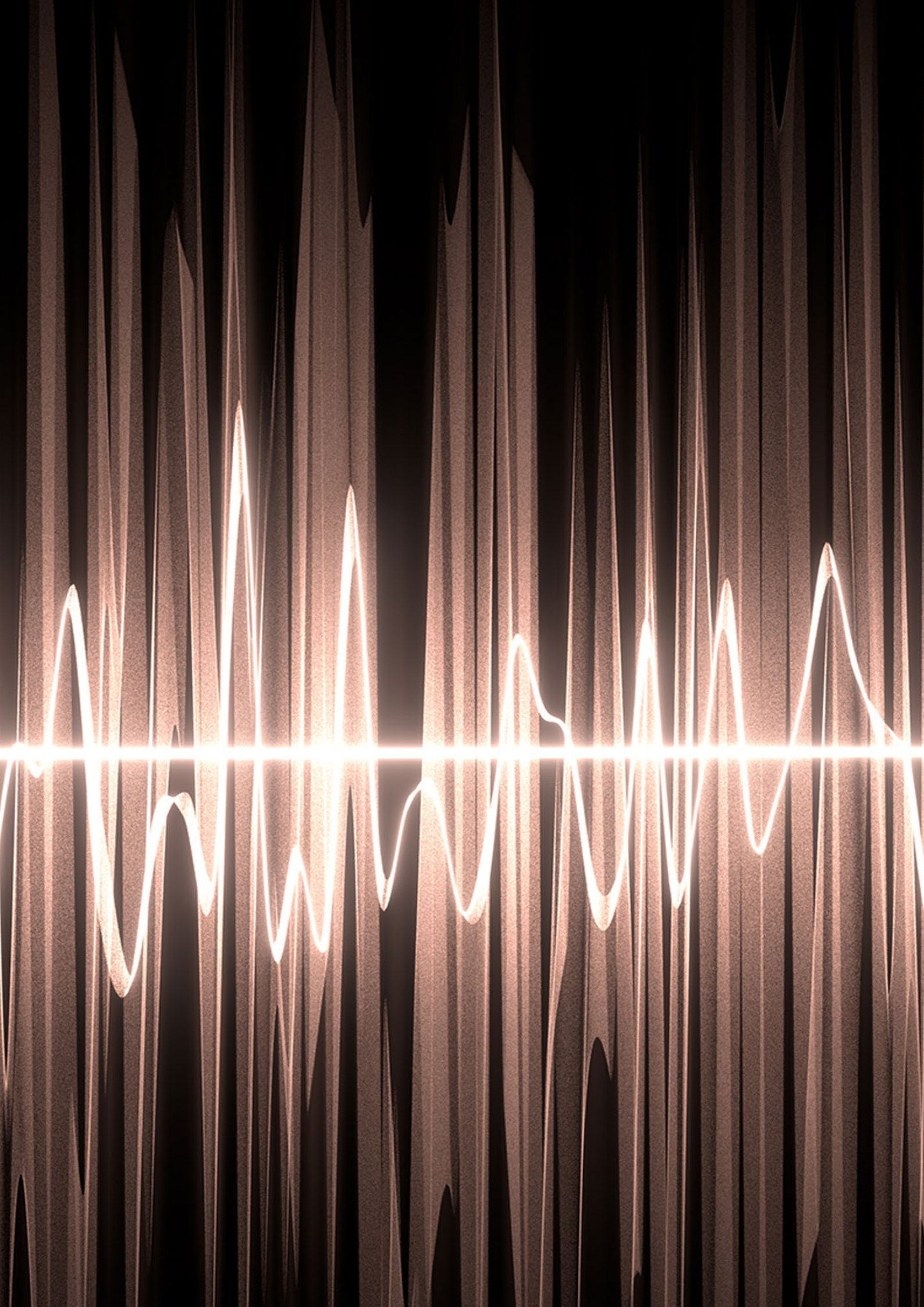
529	H+S type Item no.	33_MQ4-N-50-1/105_NE 85180450
MQ4 N	plug (m) jack (f)	
Material	brass/Tin-Nickel brass/SUCO	
VSWR	DC to 6 GHz	≤ 1.09

528	H+S type Item no.	34_716-50-0-1/003_-E 22544120
7/16	jack (f) 2 ×	
Material	brass/SUCO	
Mounting hole	ML 29	
VSWR	DC to 4 GHz 4 to 7.5 GHz	≤ 1.02 + 0.05 · f (GHz) ≤ 1.22

530	H+S type Item no.	33_MQ5-N-50-1/105_NE 85180485
MQ5 N	plug (m) jack (f)	
Material	brass/Tin-Nickel brass/SUCO	
VSWR	DC to 6 GHz	≤ 1.09

528	H+S type Item no.	46_716-50-0-1/003_-E 22643266
7/16	jack (f) 3 ×	
Material	brass/SUCO	

Introduction and general information on page 519 and 520/521.



Assembly tools

Crimping tools and inserts for flexible cables	564
SMA tool set for semi-rigid cable assembling	567
N, PC7, BNC, TNC, tool set for semi-rigid cable assembling	569
SMA tool set for semi-rigid cable assembling	571
Soldering tool and soldering support	573
Selection of common and helpful assembly tools	574
Torque wrenches	580

Crimping tools and inserts for flexible cables

Large crimp tool, «G» with interchangeable inserts 1/2/A, 2/B, 2/C, 3/D



Fig. 1



Fig. 2

HUBER+SUHNER type	Item no.	Description	Fig.
75_Z-0-0-1	22543157	tool without inserts	1
76_Z-0-0-15	22543177	tool with various inserts 1/2/A, 2/B, 2/C, 3/D and cutting insert in wooden box	2

Tool boxes



HUBER+SUHNER type	Item no.	Description
76_Z-0-0-9	22644671	large tool box (empty)
76_Z-0-0-11	22543175	large tool box without tooling but including foam insert for tools and allen key

Table press with interchangeable inserts



HUBER+SUHNER type	Item no.	Description
75_Z-0-0-2	22543158	press without inserts (for inserts see page 534)

Crimping tools and inserts for flexible cables

Interchangeable inserts fitting large crimp tool and table press



HUBER +SUHNER type	Item no.	Cavity ID	Square cavity size for centre contact mm	Hexagonal cavity size for outer contact mm
76_Z-0-1-2	23000885	0.54/A	0.51	3.3
76_Z-0-2-1	22543181	1/2/A	0.74/1.58	3.3
76_Z-0-2-8	22544191	1/4.95	0.7	4.95
76_Z-0-3-1	22543185	2/B	1.58	5.5
76_Z-0-3-9	22641133	1.22/1.22/B	1.20/1.20	5.5
76_Z-0-4-1	22543189	2/C	1.58	6.5
76_Z-0-4-8	22543190	1.22/1.22/C	1.20/1.20	6.5
76_Z-0-5-8	22543192	1.22/1.22/8	1.20/1.20	8
76_Z-0-5-21	22543193	2/8.0	1.58	8
76_Z-0-6-1	22649051	3/8.65	2.38	8.65
76_Z-0-7-1	22543195	3/D	2.38	10.7
76_Z-0-7-7	22543196	2/D	1.58	10.7
76_Z-0-7-8	22660322	2.5/D	2.48	10.7
76_Z-0-7-14	22544524	4/D	3.28	10.7
76_Z-0-10-14	23002630	12.4		12.4
76_Z-0-0-26	22645880	1/2.67	0.8	2.73
76_Z-0-3-26	84077169	1.22/B	1.2	5.5
76_Z-0-4-24	84077171	1.22/6.5	1.2	6.5
76_Z-0-5-22	84077161	1.22/8.0	1.2	8
76_Z-0-0-57	85008389	5.5		5.5
76_Z-0-4-23	84074473	C		6.5
76_Z-0-12-1	85009833	14.5		14.5

Crimping tools and inserts for flexible cables

Special insert and tools for large crimp tool and table press



HUBER+SUHNER type	Item no.	Description
76_Z-0-0-1	22543170	cutting insert for cables up to 12 mm/4.720 in outer diameter
76_Z-0-0-2	22543172	spare blades for cutting insert (10 pieces per package)
76_Z-0-0-3	22543173	support plate for bench mounting of large crimp tool

SMA tool set for semi-rigid cable assembling

This tool set includes all tools required for assembling of SMA connectors.

The following additional tools are required for assembling of N and PC7 connectors to cables semi-rigid 0.141 and 0.086:

74_Z-0-3-29, 74_Z-0-0-35, 74_Z-0-0-66, 74_Z-0-0-67, 74_Z-0-3-4.

All tools and replacement parts can be ordered individually.

The individual tools can also be used with the large soldering fixture W442, HUBER+SUHNER type 74_Z-0-0-442, to be ordered separately.



HUBER+SUHNER type	Item no.	Description	Packaging	Weight
74_Z-0-0-70	22544725	large tool set for SMA semi-rigid cable assembling	wooden box 366x188x51 mm	1,41 kg

Small tool set see 74_Z-0-0-72.

Content of set

HUBER+SUHNER type	Item no.	W-no. *	Description	Qty
74_Z-0-3-2	22543148	W3-2	stripping gauge for insulation semi-rigid 0.0141	1
74_Z-0-0-14	22543124	W14	locator tool, male and female	1
74_Z-0-0-21	22543130	W21	torque wrench Ncm 100	1
74_Z-0-0-52	22544553	W52	dielectric insertion tool, for plugs	1
74_Z-0-0-53	22544554	W53	dielectric insertion tool, for jacks	1
74_Z-0-0-54	22544555	W54	contact holder for pins and sockets	1
74_Z-0-0-55	22544516	W55	soldering gauge 0.25mm	1
74_Z-0-0-56	22544517	W56	soldering gauge 0.4mm	1
74_Z-0-0-58	22544557	W58	soldering fixture	1
74_Z-0-0-59	22544558	W59	clamping inserts for semi-rigid 0.141, used with W58	2
74_Z-0-0-60	22544559	W60	clamping inserts for semi-rigid 0.086, used with W58	2
74_Z-0-0-63	22544562	W63	trim tool, for plugs without pin	1
74_Z-0-0-68	22544715	W68	1 set of blades with protector	1
74_Z-0-0-81	22641423	W81	positioner for W164 assembling of coupling nuts (SMA)	1
74_Z-0-0-142	22643462	W142	trim tool for removal of extended dielectric	1
74_Z-0-0-157	22643029	W157	cable stripping tool	1
74_Z-0-0-164	22643028	W164	trim tool for centre contact	1
74_Z-0-0-368	23021264	W368	locator tool, used with W58	1
74_Z-0-0-369	23021266	W369	locator tool, used with W58	1

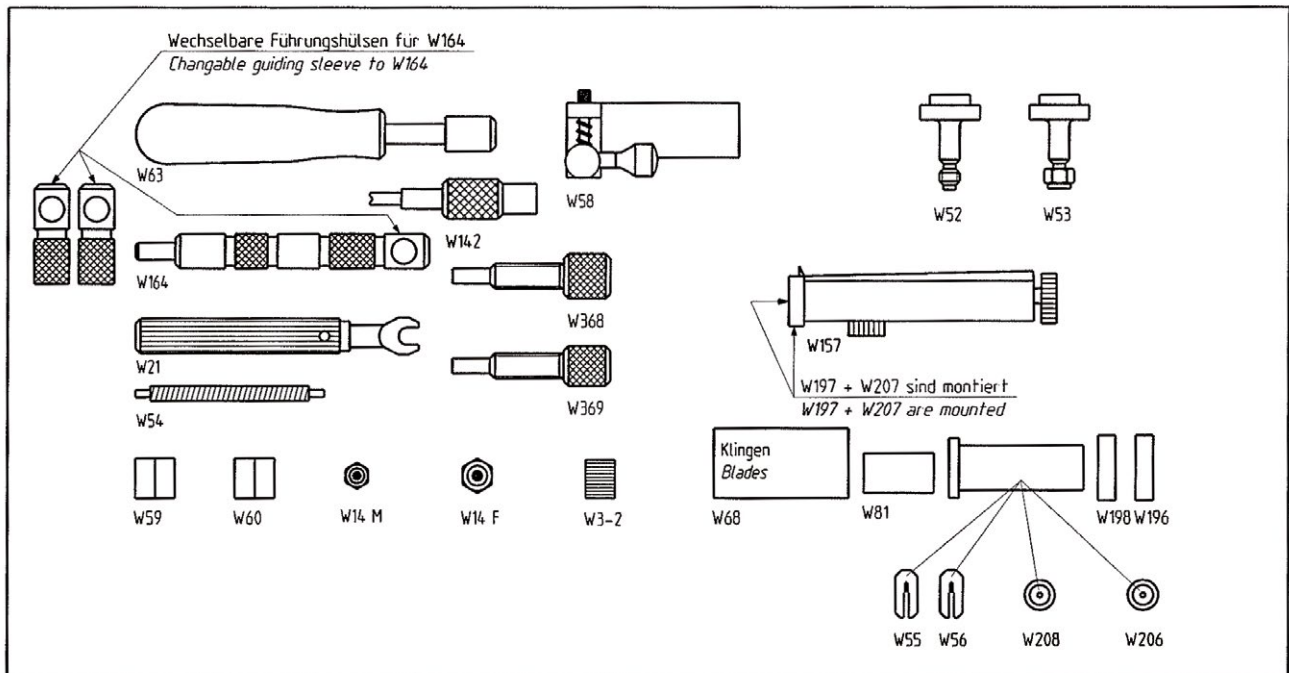
* Identification marked on tool and referenced in assembling instruction, abbreviated notation derived from the HUBER+SUHNER type e.g. W58 from 74_Z-0-0-58.

SMA tool set for semi-rigid cable assembling

Assembly instruction for semi-rigid cables and SMA connectors

DOC-0000178687 for female connectors

DOC-0000179086 for male connectors



N, PC7, BNC, TNC, tool set for semi-rigid cable assembling

This tool set includes all tools required for assembling of N, PC7, BNC, TNC connectors.

All tools and replacement parts can be ordered individually.

The individual tools can also be used with the large soldering fixture W442 HUBER+SUHNER type 74_Z-0-0-442, to be ordered separately.



HUBER+SUHNER type	Item no.	Description	Packaging	Weight
74_Z-0-0-71	22641350	N, PC7, BNC, TNC, tool set for semi-rigid cable assembling	wooden box 366x188x51 mm	1.22 kg

Content of set

HUBER+SUHNER type	Item no.	W-no. *	Description	Qty
74_Z-0-3-2	22543148	W3-2	stripping gauge for insulation semi-rigid 0.141	1
74_Z-0-3-4	22543150	W3-4	trim tool for remove protruding dielectric semi-rigid 0.141	1
74_Z-0-0-29	22543138	W29	dielectric insertion tool for insulators	1
74_Z-0-0-35	22544282	W35	soldering gauge 0.45 mm/0.018 in	1
74_Z-0-0-58	22544557	W58	soldering fixture	1
74_Z-0-0-59	22544558	W59	clamping inserts for semi-rigid 0.141, used with W58	2
74_Z-0-0-60	22544559	W60	clamping inserts for semi-rigid 0.086, used with W58	2
74_Z-0-0-66	22544616	W66	locator tool	1
74_Z-0-0-67	22544640	W67	contact holder for pins and sockets	1
74_Z-0-0-68	22544715	W68	1 set of blades with protector	1
74_Z-0-0-81	22641423	W81	positioner for assembly of coupling nuts	1
74_Z-0-0-157	22643029	W157	cable stripping tool	1
74_Z-0-0-164	22643028	W164	trim tool for centre contact	1

* Identification marked on tool and referenced in assembling instruction, abbreviated notation derived from the HUBER+SUHNER type e.g. W58 from 74_Z-0-0-58.

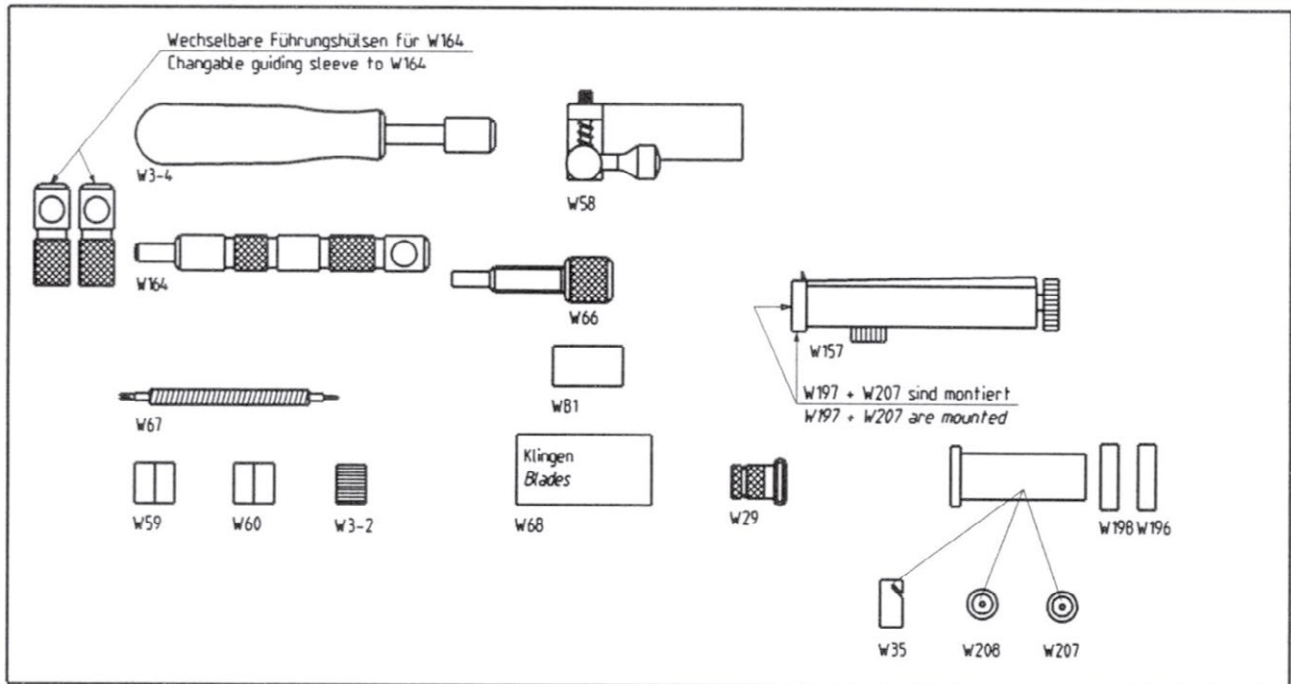
N, PC7, BNC, TNC, tool set for semi-rigid cable assembling

Assembly instruction for semi-rigid cables and N, BNC,TNC, PC7 connectors

DOC-0000180866 for series N connectors

DOC-0000179121 for series BNC – TNC connectors

DOC-0000180866 for series N – PC7 connectors



SMA tool set for semi-rigid cable assembling

This tool set includes all tools required for assembling of SMA connectors.

The following additional tools are required for assembling of N and PC7 connectors to semi-rigid cables 0.141 and 0.086: 74_Z-0-3-2, 74_Z-0-3-4, 74_Z-0-0-29, 74_Z-0-0-35, 74_Z-0-0-66, 74_Z-0-0-67.

All tools and replacement parts can be ordered individually. The individual tools can also be used with the large soldering fixture W442, HUBER+SUHNER type 74_Z-0-0-442, to be ordered separately.



HUBER+SUHNER type	Item no.	Description	Packaging	Weight
74_Z-0-0-72	22544747	small tool set for SMA semi-rigid cable assembling	wooden box 366x188x51 mm	1.13 kg

Large tool set see 74_Z-0-0-70.

Content of set

HUBER+SUHNER type	Item no.	W-no. *	Description	Qty
74_Z-0-0-14	22543124	W14	locator tool, male and female	1
74_Z-0-0-52	22544553	W52	dielectric insertion tool, for plugs	1
74_Z-0-0-53	22544554	W53	dielectric insertion tool, for jacks	1
74_Z-0-0-54	22544555	W54	contact holder for pins and sockets	1
74_Z-0-0-55	22544516	W55	soldering gauge 0.25mm	1
74_Z-0-0-56	22544517	W56	soldering gauge 0.4mm	1
74_Z-0-0-58	22544557	W58	soldering fixture	1
74_Z-0-0-59	22544558	W59	clamping Inserts for semi-rigid 0.141, used with W58	2
74_Z-0-0-60	22544559	W60	clamping Inserts for semi-rigid 0.086, used with W58	2
74_Z-0-0-68	22544715	W68	1 set of blades with protector	1
74_Z-0-0-142	22643462	W142	trim tool for removal of extended dielectric	1
74_Z-0-0-157	22643029	W157	cable stripping tool	1
74_Z-0-0-368	23021264	W368	locator tool, used with W58	1
74_Z-0-0-369	23021266	W369	locator tool, used with W58	1

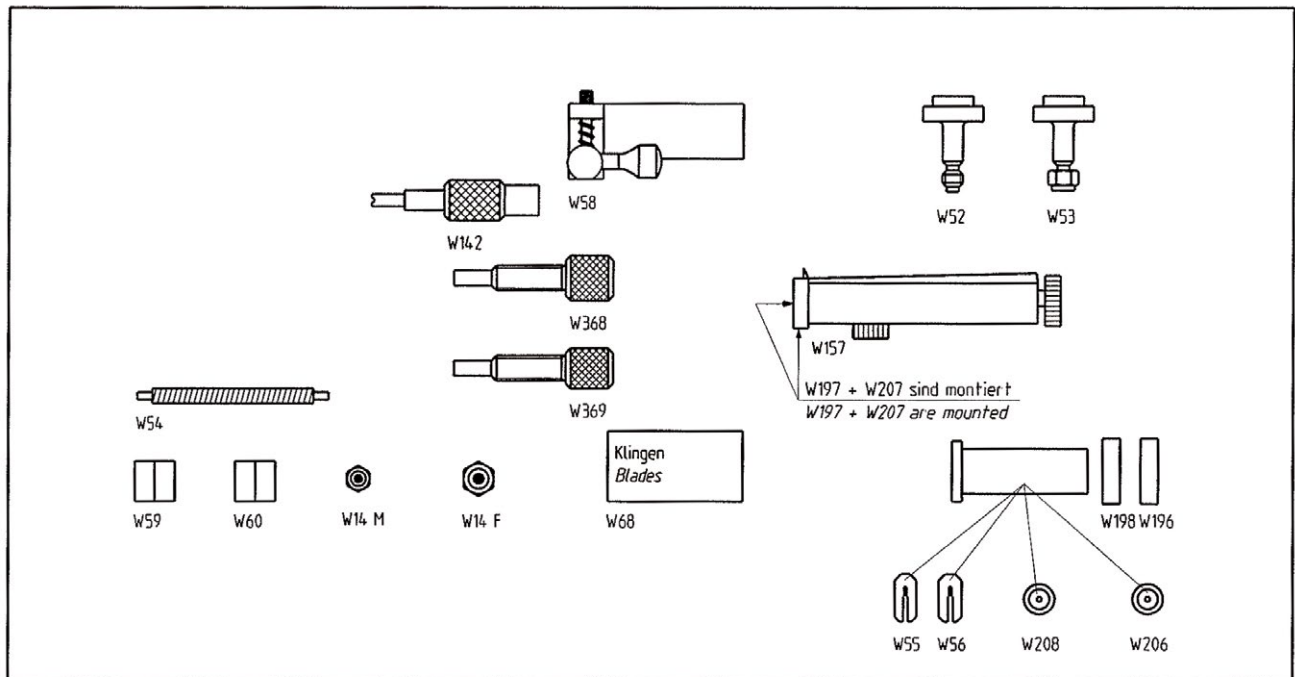
* Identification marked on tool and referenced in assembling instruction, abbreviated notation derived from the HUBER+SUHNER type e.g. W58 from 74_Z-0-0-58.

SMA tool set for semi-rigid cable assembling

Assembly instruction for semi-rigid cables and SMA connectors

DOC-0000178687 for female connectors

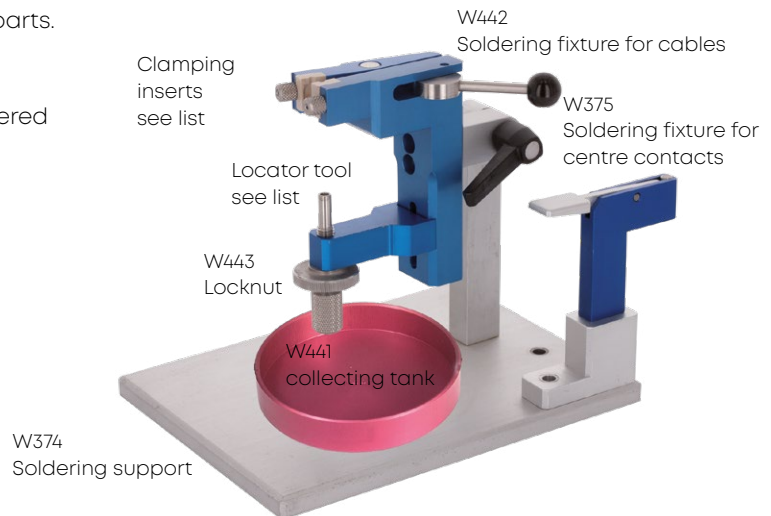
DOC-0000179086 for male connectors



Soldering tool and soldering support

The soldering tool consist of several different parts.

Depending on the requirement, the individual items can be combined. The parts can be ordered separately.



Basic equipment

Large soldering fixture W442

Alternative see small fixture W58

HUBER+SUHNER type	Item no.	W-no.*	Description	Comments
74_Z-0-0-442	23024588	W442	soldering fixture	can also be used without soldering support W374, e.g. mounted/assembling on a table
74_Z-0-0-374	23022146	W374	support for soldering fixture	can be used with the new version of the soldering fixture W58, the new version contains two additional scrwholes
74_Z-0-0-443	23024584	W443	positioning locator tool	for a positioning of the locator tool- free from backflash
74_Z-0-0-441	23024586	W441	collecting tank for coolant or flux	collecting tank for coolant or flux
74_Z-0-0-375	23022145	W375	soldering fixture for centre contacts	supporting tool, to solder the cable into the centre contact

Additional components

Locator tool, adapted for W442/W58

for the appropriate connector-interface see list

HUBER+SUHNER type	Item no.	W-no. *	For series
74_Z-0-0-62	22544561	W62	SMA
74_Z-0-0-66	22544616	W66	N
74_Z-0-0-209	22645585	W209	BMA plug
74_Z-0-0-210	22645586	W210	BMA jack
74_Z-0-0-231	22646131	W231	SK plug
74_Z-0-0-232	22646132	W232	SK jack
74_Z-0-0-368	23021264	W368	SMA female
74_Z-0-0-369	23021266	W369	SMA male
74_Z-0-0-390	23035218	W390	QN
74_Z-0-0-391	23035220	W391	QN

Clamping inserts, adapted for W442/W58

for the appropriate connector-interface see list

HUBER+SUHNER type	Item no.	W-no. *	For series
74_Z-0-0-59	22544558	W59	BMA, N, SMA, semi-rigid 0.141
74_Z-0-0-60	22544559	W60	BMA, N, SMA, semi-rigid 0.086
74_Z-0-0-133	22643022	W133	BMA, N, SMA, semi-rigid 0.047
74_Z-0-0-233	22646133	W233	SK, semi-rigid 0.118
74_Z-0-0-364	23019268	W364	MULTIFLEX_86
74_Z-0-0-365	23019269	W365	MULTIFLEX_141, SUCCOFORM_141

* Identification marked on tool and referenced in assembling instruction, abbreviated notation derived from the HUBER+SUHNER type e.g. W58 from 74_Z-0-0-58.

Selection of common and helpful assembly tools

HUBER+SUHNER type	Item no.	W-no. *	For series and cables	Description	Works with tool of W-no.	Picture
74_Z-0-0-12	22642718			small hand saw		
74_Z-0-0-13	22644241			replacement saw blade for 74_Z-0-0-12		
74_Z-0-0-14	22543124	W14	SMA	locator tools for contact and insulators		
74_Z-0-0-21	22543130	W21	SMA, PC3.5	torque wrench 100 Ncm		
74_Z-0-0-24	22543133		SMA	tap drill for SMA (1/4-36 UNS-2B thread)		
74_Z-0-0-29	22543138	W29	N	dielectric insertion tool for insulators		
74_Z-0-0-30	22543139		MCX, MMBX	assembly tool for right angle connectors for decoupling and cap mounting		
74_Z-0-0-35	22544282	W35	N	soldering gauge 0.45 mm/0.018 in		
74_Z-0-0-52	22544553	W52	SMA plugs	dielectric insertion tool		
74_Z-0-0-53	22544554	W53	SMA jacks	dielectric insertion tool		
74_Z-0-0-54	22544555	W54	SMA	contact holder for pins and sockets		
74_Z-0-0-55 74_Z-0-0-56	22544516 22544517	W55 W56	SMA SMA	soldering gauge 0.20 mm soldering gauge 0.40 mm	W58/W442 W58/W442	
74_Z-0-0-58	22544557	W58	BMA, SK, N, SMA	soldering fixture	W374/W55/ W56	
74_Z-0-0-59	22544558	W59	BMA, N, SMA, semi-rigid 0.141	clamping inserts	W58/W442	
74_Z-0-0-60	22544559	W60	BMA, N, SMA, semi-rigid 0.086	clamping inserts	W58/W442	

Selection of common and helpful assembly tools

HUBER+SUHNER type	Item no.	W-no. *	For series and cables	Description	Works with tool of W-no.	Picture
74_Z-0-0-62	22544561	W62	SMA	locator tool for SMA plugs without pin	W58/W442	
74_Z-0-0-63	22544562	W63	SMA	trim tool for SMA plugs without pin		
74_Z-0-0-66	22544616	W66	N	locator tool	W58/W442	
74_Z-0-0-67	22544640	W67	N	contact holder for pins and sockets		
74_Z-0-0-68	22544715	W68	BMA, SK, N, SMA	1 set of blades with protector		
74_Z-0-0-75	22544807	W75	SK, SMA	assembly tool for hermetic jacks		
74_Z-0-0-81	22641423		SK, SMA	positioner for assembly of coupling nuts		
74_Z-0-0-89	22644721	W89	716	screwdriver for female centre contacts	W79	
74_Z-0-0-115	22642492			syringe for casting compound capacity 3.5 ccm		
74_Z-0-0-116	22642493			casting compound (set of two tubes: resin and hardener)		
74_Z-0-0-133	22643022	W133	BMA, N, SMA, semi-rigid 0.047	clamping inserts	W58/W442	
74_Z-0-0-142	22643462	W142	SMA	trim tool for removal of extended dielectric		
74_Z-0-0-157	22643029	W157	BMA, SK, N, SMA, semi-rigid 0.047, 0.186, 0.141, SUCO-FORM_86 and 141	cable stripping tool		
74_Z-0-0-160	22643514		semi-rigid 0.047, 0.086, 0.141	replacement cutting wheels set	W157	
74_Z-0-0-164	22643028	W164	BMA, N, SMA, semi-rigid 0.086, 0.141	trim tool for centre contacts	W245	
74_Z-0-0-177	22644541	W177	16 SMB, C, S	tool for cap mounting		

Selection of common and helpful assembly tools

HUBER+SUHNER type	Item no.	W-no. *	For series and cables	Description	Works with tool of W-no.	Picture
74_Z-0-0-196 74_Z-0-0-197 74_Z-0-0-198 74_Z-0-0-397	22645359 22645360 22645361 84005300		semi-rigid 0.047 semi-rigid 0.086 semi-rigid 0.141 semi-rigid 0.118	replacement support cover	W157	
74_Z-0-0-206 74_Z-0-0-207 74_Z-0-0-208	22645364 22645363 22645362		semi-rigid 0.047 semi-rigid 0.086 semi-rigid 0.141	replacement cutting wheels	W157	
74_Z-0-0-209	22645585	W209	BMA plug	locator tool	W58/W442	
74_Z-0-0-210	22645586	W210	BMA jack	locator tool	W58/W442	
74_Z-0-0-211	22645591		BMA hermetic seal	soldering fixture for hermetic seal		
74_Z-0-0-213	22645593	W213	BMA	removal tool for receptacles with snap-in mechanism		
74_Z-0-0-214	22645579		BMA hermetic seal	torque wrench 200 Ncm		
74_Z-0-0-225	22645861		MMCX	decoupling and cap mounting		
74_Z-0-0-226	22646136	W226	SK	soldering fixture for glass bead		
74_Z-0-0-227	22646137	W227	SK	soldering fixture for glass bead		
74_Z-0-0-228	22646138	W228	SK	assembling tool for dielectric bead		
74_Z-0-0-229	22646139	W229		tap drill (thread 1/4-36 UNS for blind hole thread)		
74_Z-0-0-230	22646130	W230	SK	step drill (only if sliding contacts are not used)		
74_Z-0-0-231	22646131	W231	SK plug	locator tool	W58/W442	
74_Z-0-0-232	22646132	W232	SK jack	locator tool	W58/W442	
74_Z-0-0-233	22646133	W233	SK, semi-rigid 0.118	clamping inserts	W58/W442	
74_Z-0-0-234	22646134	W234	SK, semi-rigid 0.118	replacement cutting wheels	W157	





Selection of common and helpful assembly tools

HUBER+SUHNER type	Item no.	W-no. *	For series and cables	Description	Works with tool of W-no.	Picture
74_Z-0-0-235	22646135	W235	SK	step drill (only if sliding contacts are not used)		
74_Z-0-0-238	22646071			tap drill (thread 5/8-24 UNEF)		
74_Z-0-0-246	22646873	W246	SMA	jacket remover for semi-rigid and Sucoform cables, after cutting and braking of jacket	W157/W246	
74_Z-0-0-264	22646290	W264	SK, semi-rigid 0.118	trim tool for centre conductor		
74_Z-0-0-265	22646291	W265	SK	spare blade for W264		
74_Z-0-0-270	22648901	W270	1.0/2.3	removal tool for 1.0/2.3 inserts		
74_Z-0-0-272	22648614		MMCX	decoupling and cap mounting for 11_MMCX,16_MMCX connectors		
74_Z-0-0-350	23004135		MMCX	removal tool		
74_Z-0-0-360	23023444	W360	QMA	locator tool		
74_Z-0-0-364	23019268	W364	MULTIFLEX_86	clamping inserts	W58/W442	
74_Z-0-0-365	23019269	W365	MULTIFLEX_141, SUCOFORM_141	clamping inserts	W58/W442	
74_Z-0-0-368	23021264	W368	SMA female	locator tool	W58/W442	
74_Z-0-0-369	23021266	W369	SMA male	locator tool	W58/W442	
74_Z-0-0-374	23022146	W374	BMA, SK, SMA, N	support for soldering fixture	W58/W442	

Selection of common and helpful assembly tools

HUBER+SUHNER type	Item no.	W-no. *	For series and cables	Description	Works with tool of W-no.	Picture
74_Z-0-0-375	23022145	W375	BMA, SK, SMA, N	soldering fixture for centre contacts	W442	
74_Z-0-0-390	23035218	W390	QN	locator tool for 11_QN, 16_QN	W58/W442	
74_Z-0-0-391	23035220	W391	QN	locator tool for 24_QN	W58/W442	
74_Z-0-0-437	23023494		MMBX 32_adapters within series	assembly tool		
74_Z-0-0-441	23024586	W441	BMA, SK, SMA, N	collecting tank for coolant or flux	W374	
74_Z-0-0-442	23024588	W442	BMA, SK, SMA, N	soldering fixture	W374	
74_Z-0-0-443	23024584	W443	BMA, SK, SMA, N	positioning locator tool	W442	
74_Z-0-0-459	84032400	W459	QMA, QN	decoupling tool for high density application		
74_Z-0-0-461	84029787	W461	QMA waterproof	suitable for semi-rigid cables		
74_Z-0-0-488	84101887	W488	MBX 32- adapters within series	assembly and disassembly tool		
74_Z-0-0-555	84020011	W555	MMPX	decoupling tool (distance washers included)		
74_Z-0-0-556	84031617	W556	MMPX	distance washers (for replacement)		

Selection of common and helpful assembly tools

HUBER+SUHNER type	Item no.	W-no. *	For series and cables	Description	Works with tool of W-no.	Picture
74_Z-0-0-557	84032418		MMBX	decoupling tool		
74_Z-0-0-622	85022707	W622	MFBX	coupling tool		
74_Z-0-3-2	22543148	W3-2	SMA, N, semi-rigid 0.141	stripping gauge for insulation		
74_Z-0-3-4	22543150	W3-4	N, semi-rigid 0.0141	trim tool for remove protruding dielectric		

* Identification marked on tool and referenced in assembling instruction, abbreviated notation derived from the HUBER+SUHNER type e.g. W58 from 74_Z-0-0-58.

Torque wrenches



Box-spanner



Torque wrench (standard style)

HUBER+SUHNER type	Item no.	Suitable for series	Torque Ncm	Opening WAF mm	Notes
74_Z-0-0-504	85020152	4.3-10	500	22.0	standard style
74_Z-0-0-321	22651994	N	100	19.0	standard style
74_Z-0-0-193	22645085	N	100	20.0	standard style
74_Z-0-0-330	22658130	N	100	18.0	standard style
74_Z-0-0-663	85101096	NEX10	150	11.0	standard style
74_Z-0-0-688	85153022	NEX10	500	14.0	standard style
74_Z-0-0-174	22643898	SK	130	8.0	standard style
74_Z-0-0-189	22644368	SK hermetic	200	8.0	standard style
74_Z-0-0-77	22544820	SMA	100	8.0	box spanner style
74_Z-0-0-21	22543130	SMA/PC3.5	100	8.0	standard style
74_Z-0-0-79	22642374	SMA economic	45	8.0	standard style
74_Z-0-0-80	22544821	SMA hermetic	195	7.0	standard style
74_Z-0-0-45	22544232	SMC	30	6.0	standard style
74_Z-0-0-192	22645084	TNC	100	15.0	standard style
74_Z-0-0-373	23021864	TNC	100	14.0	standard style
74_Z-0-0-511	84151106	TNC	260	14.0	standard style

Precision torque wrench

- In plastic box
- With calibration certificate



HUBER+SUHNER type	Item no.	For series	Torque Ncm	Opening WAF mm	Notes
74_Z-0-0-492	84104509	SMA, PC3.5, SK	90	8.0	precision (standard style)

Accessories

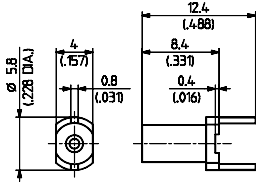
Cable terminators	581
Taper sleeves and suitable assembly tools	583
Insulating washers	586
Solder tags	587
Component container "Sucobox"	588
Accessories for SK connectors	589
Accessories for BMA connectors	589

Cable terminators

Straight PCB cable terminators

For flexible cables

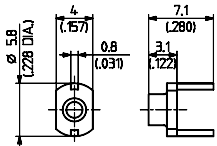
- Cable entry crimp
- 2.54 mm/0.100 in grid



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Plating body	Assembly instruction	Mounting hole	Crimp insert
83_CT-0-1-1/-11_NE-1	23013158	U1 (RG_178_B/U, ENVIROFLEX_178)	single	gold	27408	ML 45	A
83_CT-0-2-1/-11_NE	23013159	U2 (RG_316_/U, ENVIROFLEX_316)					
83_CT-0-2-2/-11_NE	23013161	U4 (K_02252_D, ENVIROFLEX_316_D)					

For Semi-rigid cables

- Cable entry soldered
- 2.54 mm/0.100 in grid



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Plating body	Assembly instruction	Mounting hole
83_CT-0-2-4/-11_NE-1	23013176	Y3, Y16 (EZ_86)	single	gold	27410	ML 45
83_CT-0-2-4/-11_NH-1	23013177		bulk 100 pcs.			

Cable terminators

For flexible cables

- Cable entry soldered

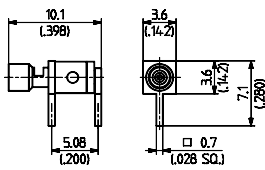


Fig. 1

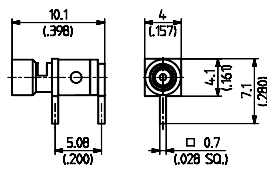


Fig. 2

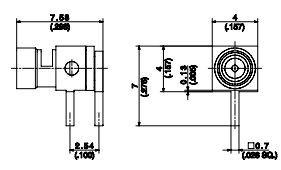
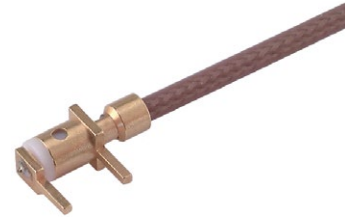


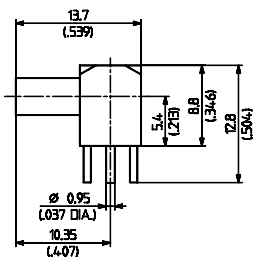
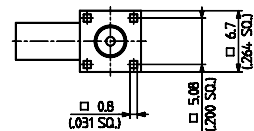
Fig. 3



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Plating body	Assembly instruction	Mounting hole	Fig.
86_CT-0-1-1/111_NE	23013202	U1 (RG_178_B/U, ENVIROFLEX_178)	single	gold	27411	ML 100	1
86_CT-0-2-1/111_NH	23013216	U2 (RG_316_/U, ENVIROFLEX_316)	bulk 100 pcs.		27411	ML 100	2
86_CT-0-2-5/111_NH	23016926	U2 (RG_316_/U, ENVIROFLEX_316)	bulk 100 pcs.		27432	ML 164	3

For flexible cables

- Cable entry crimp
- 5.08 mm/0.200 in grid



HUBER+SUHNER type	Item no.	Cable group (example)	Packaging	Plating body	Assembly instruction	Mounting hole	Crimp insert
86_CT-0-2-2/111_NE	23013227	U2 (RG_316_/U, ENVIROFLEX_316)	single	gold	27412	ML 15	A

Taper sleeves and suitable assembly tools

Installation recommendation: silicone-containing release agent in spray form to improve the separating and lubricating effect, e.g. ACMOS 70-2406.

- For connectors with cable entry crimp
- Made of EVA (ethylenevinylacetat)
- Temperature resistant -40 to $+70$ °C/ -40 to $+158$ °F
- Free of halogen
- Recyclable



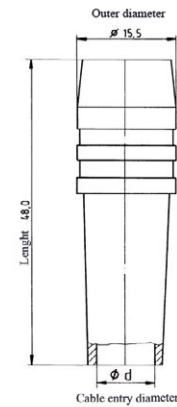
Cable size examples	RG_196_A/U	RG_188_A/U, RG_179_B/U	G_02232_D, K_02252_D	RG_58_C/U, RG_142_B/U	RG_223_/U, G_03213_D	RG_59_B/U	G_04233_D
Cable group	U1	U2, U5	U4, R8	U7, U11, U12, U13, U9	U14	U16, U17	U18
Taper sleeve dimensions							
Cable entry diameter mm	1.8	2.5	2.9	4.8	5.3	6.0	6.6
Outer diameter mm	6.2	6.2	6.2	10.0	10.0	11.0	11.0
Length mm	20	20	20	38	38	38	38
Colour black							
H+S type	78_Z-0-1-1	78_Z-0-2-1	78_Z-0-2-3	78_Z-0-3-4	78_Z-0-3-5	78_Z-0-4-4	78_Z-0-4-5
Item no.	2641162	22544467	22544457	22544408	22641890	22544427	22641673
Colour brown							
H+S type	78_Z-1-1-1	78_Z-1-2-1	78_Z-1-2-3	78_Z-1-3-4	78_Z-1-3-5	78_Z-1-4-4	78_Z-1-4-5
Item no.	22544448	22544468	22544458	22544416	22641664	22544436	22641674
Colour red							
H+S type	78_Z-2-1-1	78_Z-2-2-1	78_Z-2-2-3	78_Z-2-3-4	78_Z-2-3-5	78_Z-2-4-4	78_Z-2-4-5
Item no.	22544449	22544469	22544459	22544415	22641665	22544435	22641675
Colour orange							
H+S type	78_Z-3-1-1	78_Z-3-2-1	78_Z-3-2-3	78_Z-3-3-4	78_Z-3-3-5	78_Z-3-4-4	78_Z-3-4-5
Item no.	22544450	22544470	22544460	22544414	22641166	22544434	22641676
Colour yellow							
H+S type	78_Z-4-1-1	78_Z-4-2-1	78_Z-4-2-3	78_Z-4-3-4	78_Z-4-3-5	78_Z-4-4-4	78_Z-4-4-5
Item no.	22544451	22544471	22544461	22544413	22641667	22544433	22641677
Colour green							
H+S type	78_Z-5-1-1	78_Z-5-2-1	78_Z-5-2-3	78_Z-5-3-4	78_Z-5-3-5	78_Z-5-4-4	78_Z-5-4-5
Item no.	22544452	22544472	22544462	22544412	22641668	22544432	22641678
Colour blue							
H+S type	78_Z-6-1-1	78_Z-6-2-1	78_Z-6-2-3	78_Z-6-3-4	78_Z-6-3-5	78_Z-6-4-4	78_Z-6-4-5
Item no.	22544453	22544473	22544463	22544411	22641669	22544431	22641679
Colour violet							
H+S type	78_Z-7-1-1	78_Z-7-2-1	78_Z-7-2-3	78_Z-7-3-4	78_Z-7-3-5	78_Z-7-4-4	78_Z-7-4-5
Item no.	22544454	22544474	22544464	22544410	22641670	22544430	22641680
Colour grey							
H+S type	78_Z-8-1-1	78_Z-8-2-1	78_Z-8-2-3	78_Z-8-3-4	78_Z-8-3-5	78_Z-8-4-4	78_Z-8-4-5
Item no.	22544455	22544475	22544465	22544409	22641671	22544429	22641681
Colour White							
H+S type	78_Z-9-1-1	78_Z-9-2-1	78_Z-9-2-3	78_Z-9-3-4	78_Z-9-3-5	78_Z-9-4-4	78_Z-9-4-5
Item no.	22544456	22544476	22544466	22544508	22641672	22544428	22641682
Assembly tools							
H+S type	74_Z-0-2-1			74_Z-0-3-6		74_Z-0-4-6	
Tool colour	blue			red		gold	

For more details see: operating instruction DOC-0000270949

Taper sleeves and suitable assembly tools

The two types below are available in black only

Cable size examples	RG_213_/U	RG_214_/U
Cable group	U29, U30, U34	U32, U36
Taper sleeve dimensions		
Cable entry diameter mm	10.1	10.7
Outer diameter mm	15.5	15.5
Length mm	48	48
Colour black		
H+S type	78_Z-0-7-1	78_Z-0-7-2
Item no.	2641162	22544467
Assembly tool		
H+S type	74_Z-0-7-2	74_Z-0-7-3
Tool colour	grey	black



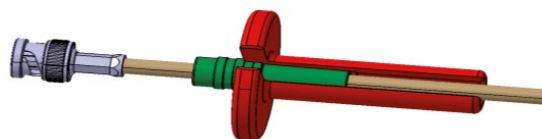
For more details see: operating instruction DOC-0000270949

Assembly tools

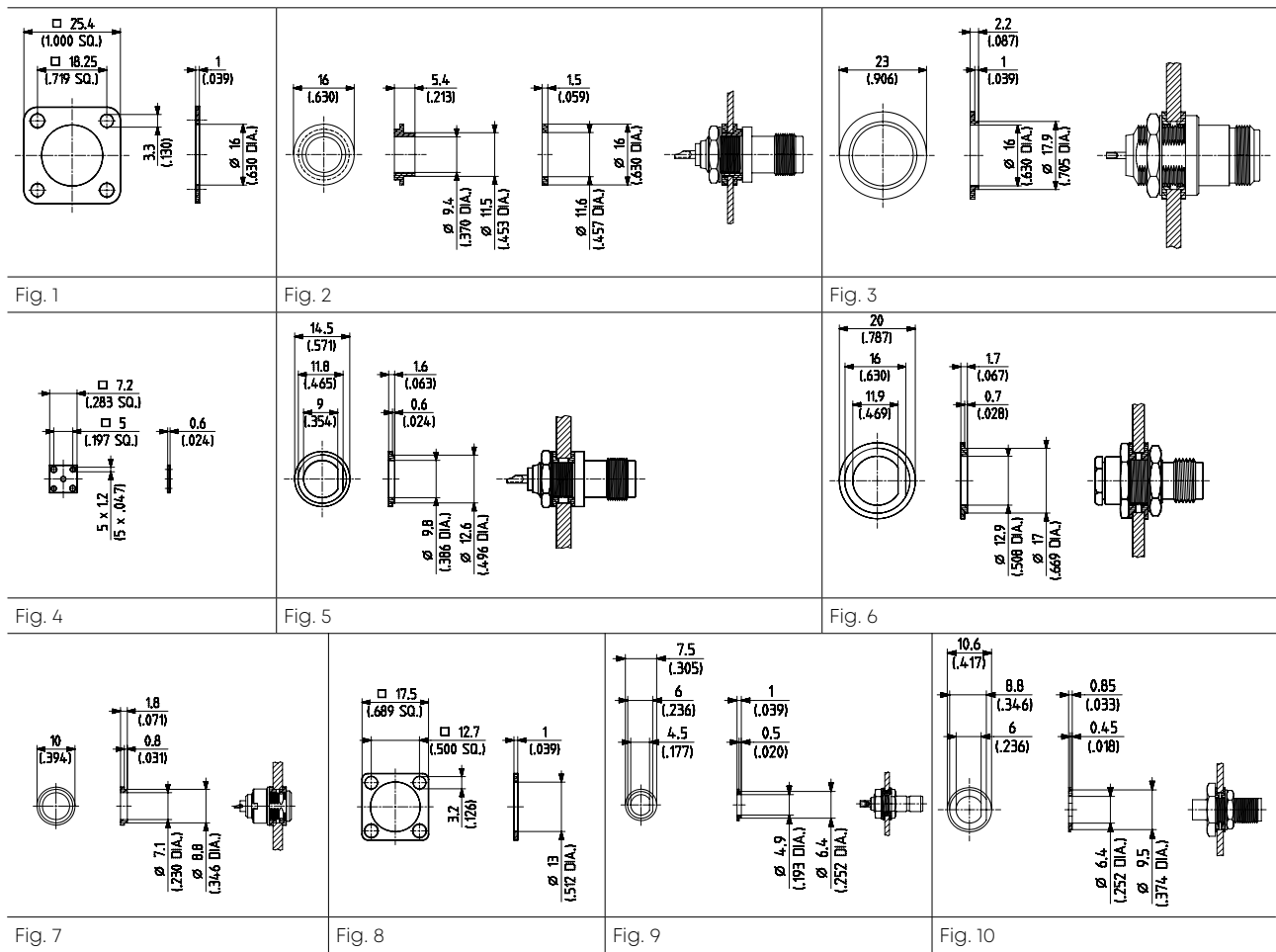
H+S type	74_Z-0-2-1	74_Z-0-3-6	74_Z-0-4-6	74_Z-0-7-2	74_Z-0-7-3
Item no.	22543144	22544544	22544543	22641165	22641164
Tool colour	blue	red	gold	grey	black
Suitable taper sleeve	78_Z-X-1-1 78_Z-X-2-1 78_Z-X-2-3	78_Z-X-3-4 78_Z-X-3-5	78_Z-X-4-4 78_Z-X-4-5	78_Z-0-7-1	78_Z-0-7-2



For more details see: operating instruction DOC-0000270949



Insulating washers



HUBER+SUHNER type	Item no.	Suitable for			Material	Fig.	Notes
		Connector pattern*	Connector series	Mounting hole			
77_Z-0-0-1/---_H	22543199	23, 25	N	ML 14	polyamide	1	100 pcs.
77_Z-0-0-2/---_H	22543200	12, 22	BNC, TNC	ML 102	polyamide	2	**/100 pairs
77_Z-0-0-4/---_Z	22543202	12,22,24,34	N	ML 113	polyamide	3	**/10 pairs
77_Z-0-0-8/---_H	22543204	82, 85	SMB/C/S,MCX, QLA 00, SMA	ML 41	PTFE	4	100 pcs.
77_Z-0-0-9/---_Z	22543205	12, 22	BNC, TNC	ML 4	polycarbonate	5	10 pairs
77_Z-0-0-12/---_H	22543209	24, 34	BNC, TNC	ML 22	polycarbonate	6	100 pairs
77_Z-0-0-14/---_Z	22543211	22, 24, 34	QLA 00	ML 114	polyamide	7	**/10 pairs
77_Z-0-0-15/---_H	22641429	23, 25	BNC, TNC	ML 8	polyethylene	8	100 pcs.
77_Z-0-0-21/---_Z	22645782	22, 24, 34	SMB/C/S	ML 35	polycarbonate	9	10 pairs
77_Z-0-0-23/---_Z	22652083	22, 34***	SMA	ML 2	polycarbonate	10	for connectors with ML 35 only/10 pairs

* See connector pattern on page 8p

** Without rotation protection

*** Not all types of pattern 34 are suitable for insulated mounting

Solder tags

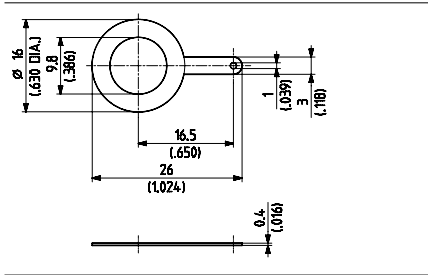


Fig. 1

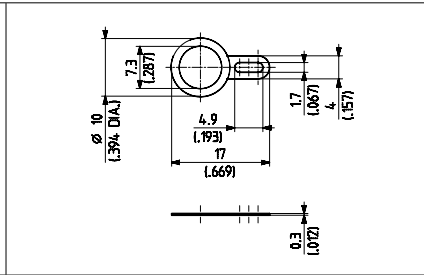


Fig. 2

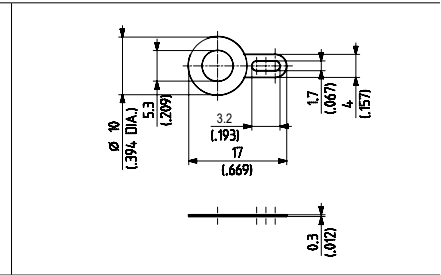


Fig. 3

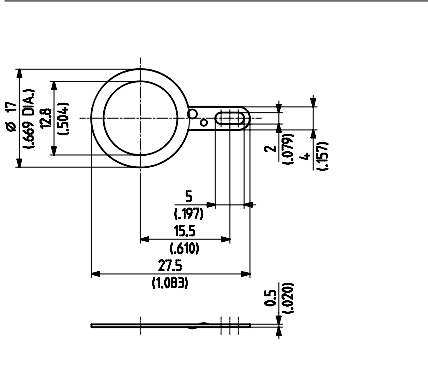


Fig. 4

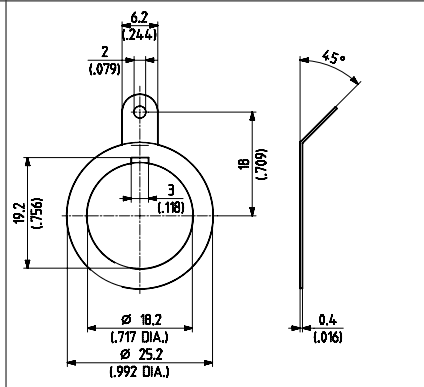


Fig. 5

HUBER+SUHNER type	Item no.	Suitable for		Packaging	Fig.	Notes
		Connector pattern*	Connector series			
72_Z-0-0-1/--5_-H	22543029	12, 22	BNC, SHV, MHV, TNC	bulk 100 pcs.	1	single ended
72_Z-0-0-8/--5_-H	22543038	22, 24	QLA 00		2	
72_Z-0-0-9/--5_-H	22543039	12, 22, 24, 34	SMB/SMC, MCX		3	
72_Z-0-0-11/--5_-H	22641496	24, 34	BNC, SHV, MHV, TNC		4	
72_Z-0-0-13/--5_-H	22642507	22, 24, 34	N		5	

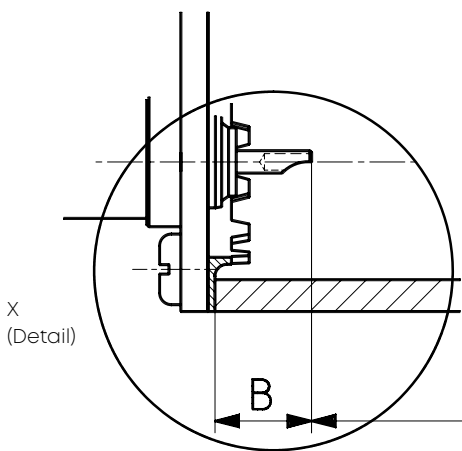
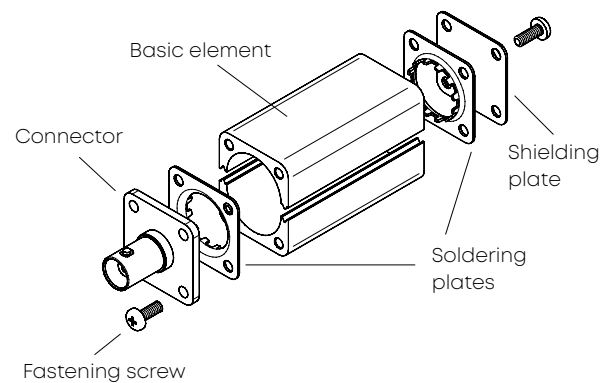
* See connector pattern on page 8p

Component container "Sucobox"

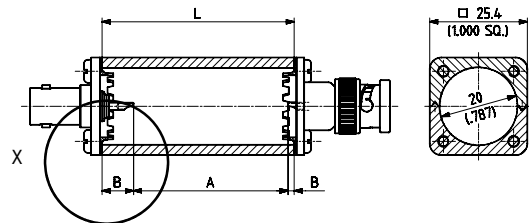
The HUBER+SUHNER "Sucobox" is a versatile component container with coaxial input and output connectors or cable entries.

Sucobox

The basic element consists of two similar container parts, two soldering plates for easy soldering of the earthing and 8 tightening screws.



B
Distance between pin end and soldering plate



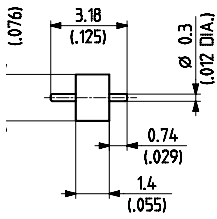
HUBER+SUHNER type	Item no.	Description	Length L	Material	Packaging
66_CB-35-0-1/---_E	22541510	basic element	35.0 mm/1.38 in	aluminium, anodised, blue	single
66_CB-50-0-1/---_E	22541514	basic element	50.0 mm/1.97 in	aluminium, anodised, blue	single
72_Z-0-0-5/---_OH	22543035	soldering plate, separate	—	brass, silver plated	bulk 100 pcs.
73_Z-0-0-9/---_H	22543056	shielding plate, separate	—	brass, silver plated	bulk 100 pcs.

Suitable connectors

HUBER+SUHNER type	Item no.	Connector	Dimension B (see drawing top left)	Packaging
13_BNC-50-0-2/133_NE	22540160	plug	1.5 mm/0.06 in	single
23_BNC-50-0-2/133_NE	22540333	jack	8.0 mm/0.31 in	
13_N-50-0-1/133_NE	22542173	plug	9.0 mm/0.35 in	
23_N-50-0-1/133_NE	22542272	jack	9.0 mm/0.35 in	

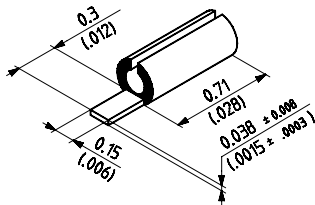
Accessories for SK connectors

Glass bead for 12_SK-, 13_SK-, 22_SK-, 23_SK-50-0-51 launchers (package with 1 piece).



HUBER+SUHNER type	Item no.
73_Z-0-0-203	22645983

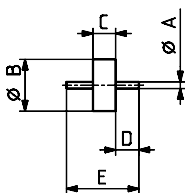
Microstrip stress relief contacts (package with 100 pieces).



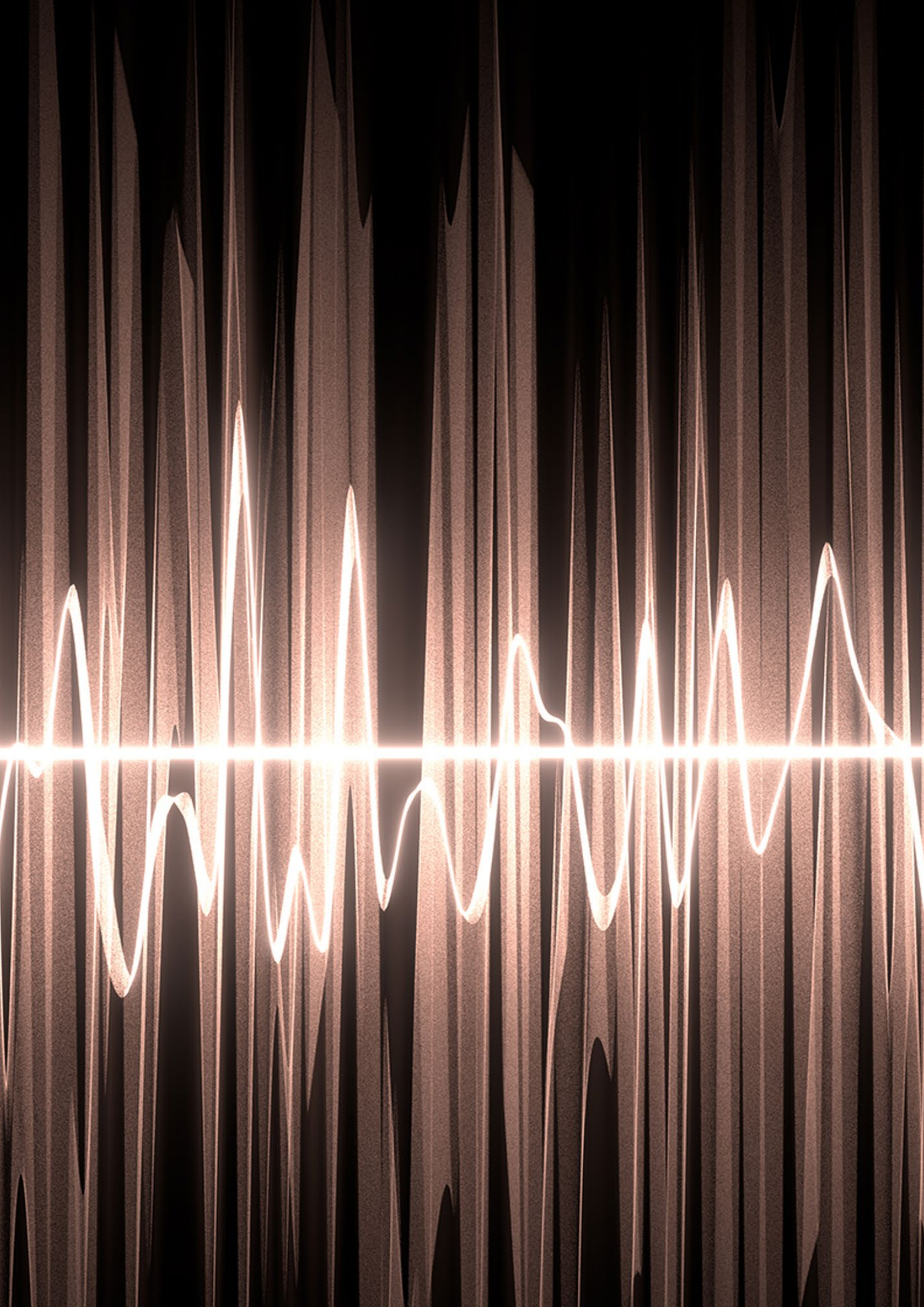
HUBER+SUHNER type	Assembly instruction (M09183)	Item no.
73_Z-0-0-204	DOC-0000191296	22645980

Accessories for BMA connectors

Glass bead for 12_BMA-50-0-3 and 22_BMA-50-0-3.

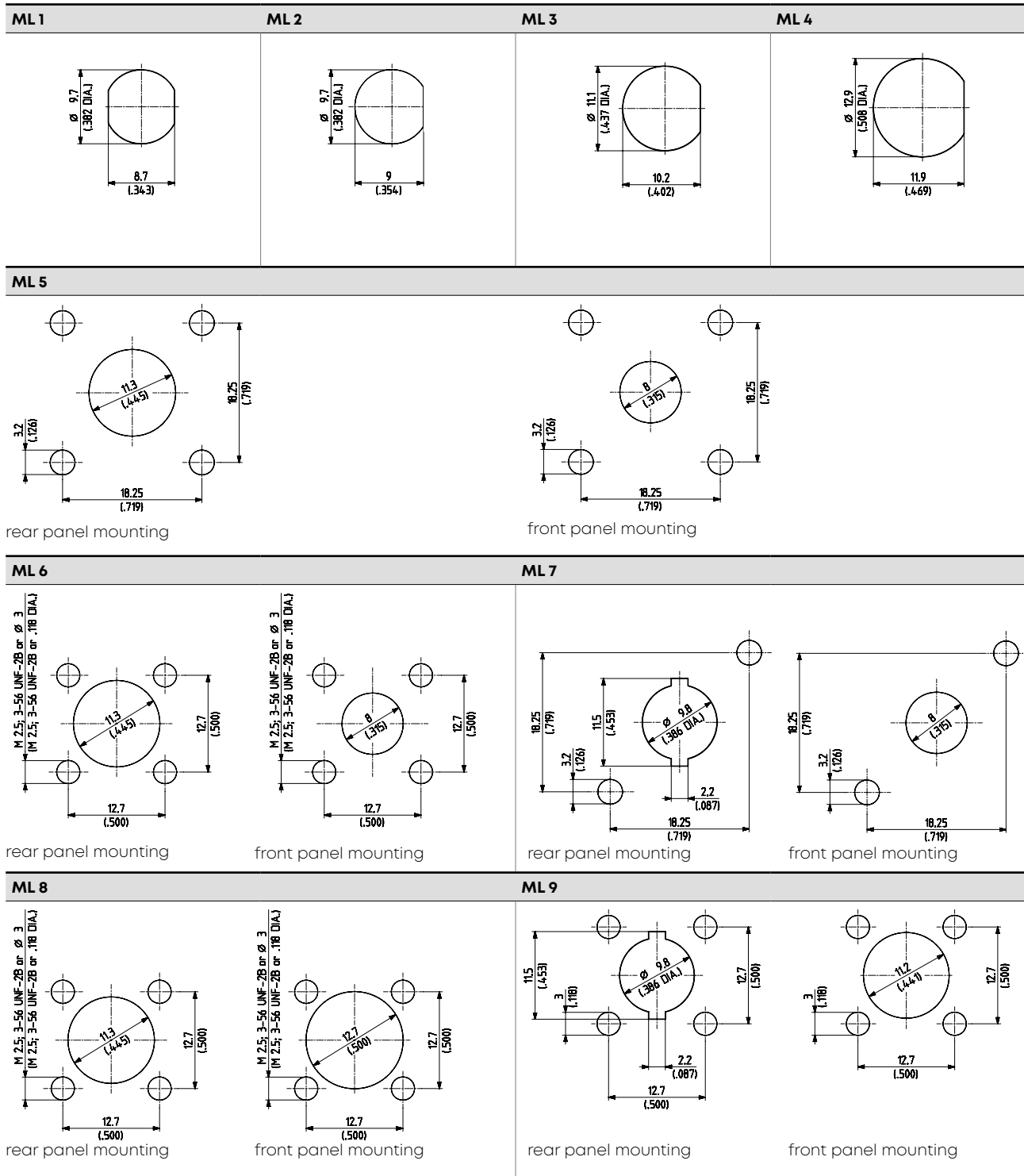


HUBER+SUHNER type	Item no.	A	B	C	D	E
73_Z-0-0-198	22645655	0.5 mm/0.020 in	4.0 mm/0.157 in	1.75 mm/0.069 in	1.8 mm/0.071 in	5.6 mm/0.220 in



Mounting holes and PCB layouts

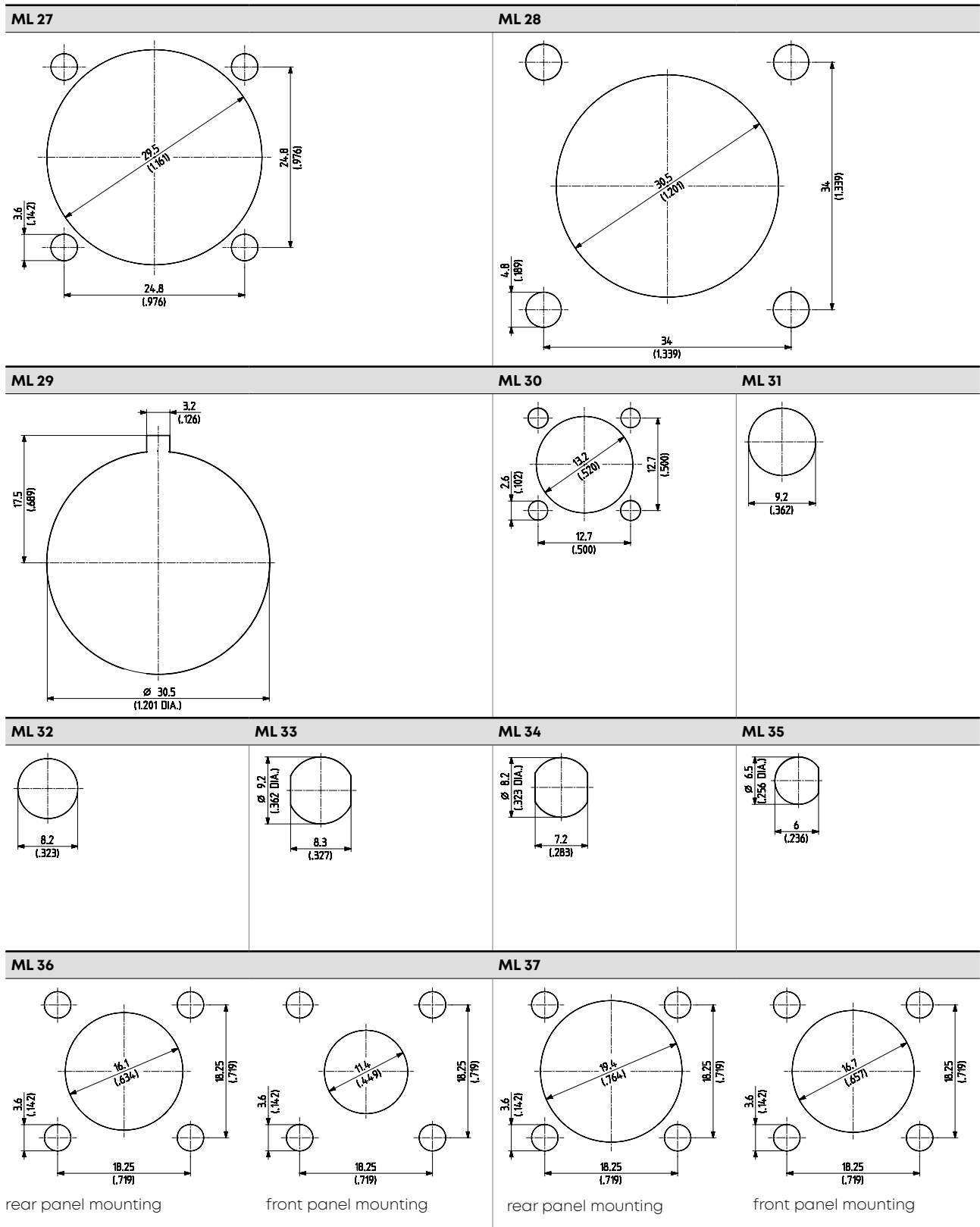
Dimensions of mounting holes



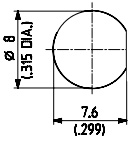
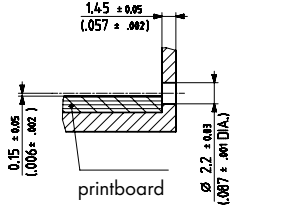
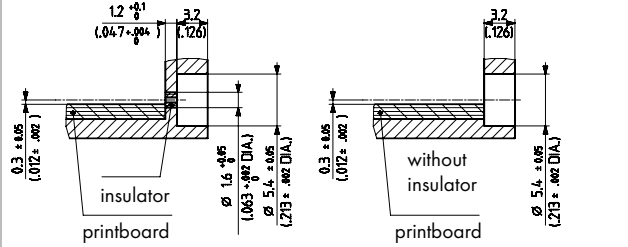
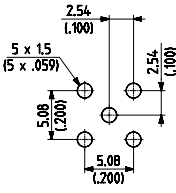
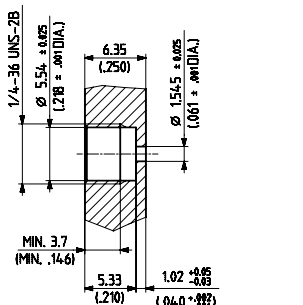
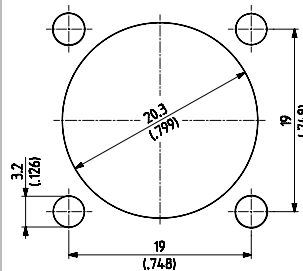
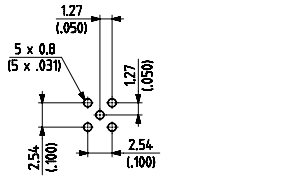
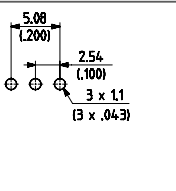
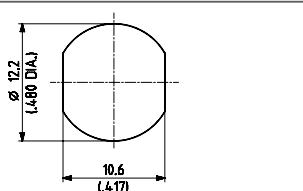
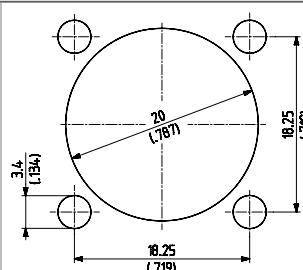
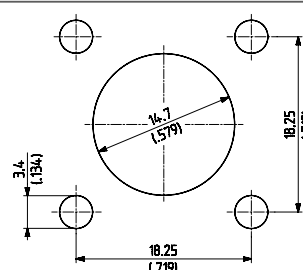
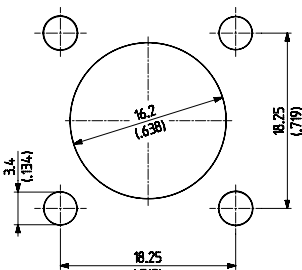
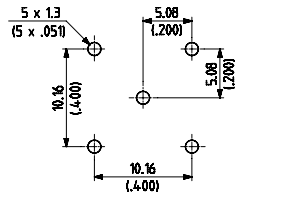
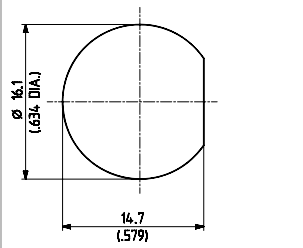
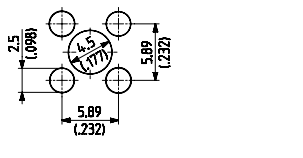
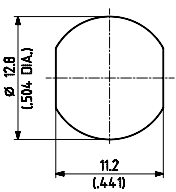
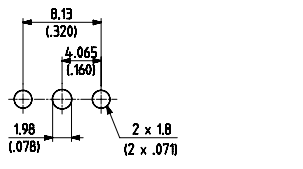
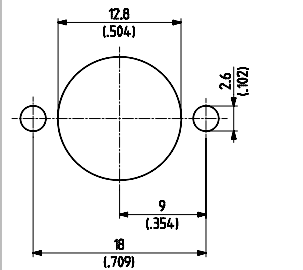
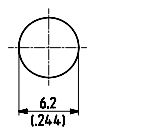
Mounting holes and PCB layouts

ML 10	ML 11	ML 12	ML 13
<p>M 2.5; 3-56 UNF-28 or .03 (M 2.5; 3-56 UNF-28 or .18 DIA.)</p> <p>Dimensions: 12.7 (500), 11.5 (453), 12.7 (500), 2.2 (087), 9.9 (386 DIA.)</p>	<p>Dimensions: 4.9 (193 DIA.), 6.5 (177)</p>	<p>Dimensions: 16.1 (634 DIA.), 13.7 (539)</p>	<p>Dimensions: 13.2 (520), 18.25 (719), 3.2 (126)</p>
ML 14	ML 15	ML 16	ML 16
<p>Dimensions: 16.1 (634), 18.25 (719), 3.2 (126)</p>	<p>Dimensions: 2.54 (100), 5 x 1.3 (5 x .051 DIA.), 5.08 (200), 2.54 (100), 5.08 (200)</p>	<p>Dimensions: 20.9 (823), 18.25 (719), 3.2 (126)</p> <p>rear panel mounting</p>	<p>Dimensions: 12.4 (488), 18.25 (719), 3.2 (126)</p> <p>front panel mounting</p>
ML 17	ML 18		
<p>Dimensions: 16.1 (634), 18.25 (719), 3.2 (126)</p> <p>rear panel mounting</p>	<p>Dimensions: 12.3 (484), 18.25 (719), 3.2 (126)</p> <p>front panel mounting</p>	<p>Dimensions: 16.1 (634), 18.25 (719), 3.2 (126)</p> <p>rear panel mounting</p>	<p>Dimensions: 19.4 (764), 18.25 (719), 3.2 (126)</p> <p>front panel mounting</p>
ML 19	ML 20	ML 21	ML 22
<p>Dimensions: 2.6 (102), 7.2 (283), 8.64 (340), 8.64 (340)</p>	<p>Dimensions: 7.2 (283 DIA.), 6.8 (268)</p>	<p>Dimensions: 6.2 (244 DIA.), 5.6 (220)</p>	<p>Dimensions: 17.2 (677 DIA.), 16.2 (638)</p>
ML 23	ML 24	ML 25	ML 26
<p>Dimensions: 7.1 (280 DIA.), 6.4 (252)</p>	<p>Dimensions: 16.2 (636 DIA.), 15.1 (594)</p>	<p>Dimensions: 19.3 (760 DIA.), 18.2 (717)</p>	<p>Dimensions: 2 (079), 9 (354), 16 (630)</p>

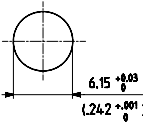
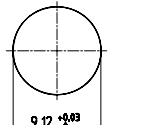
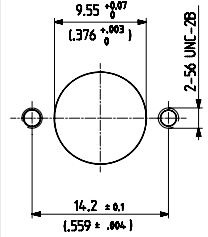
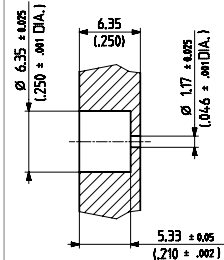
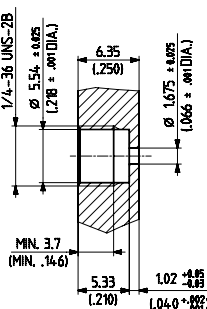
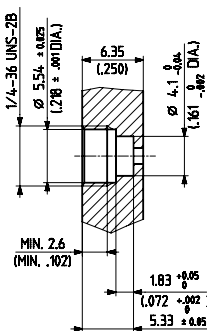
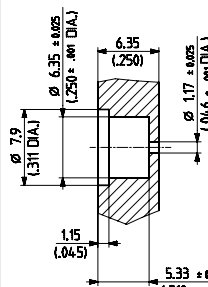
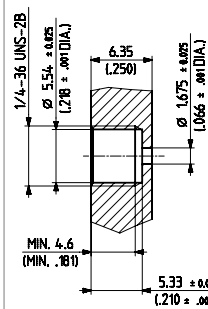
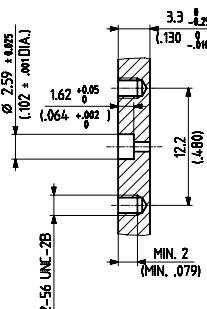
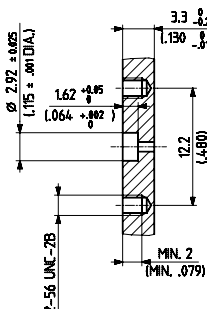
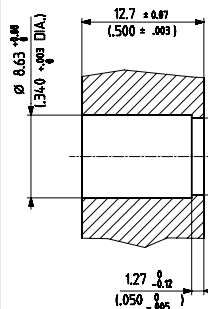
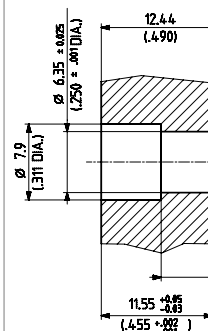
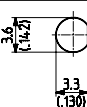
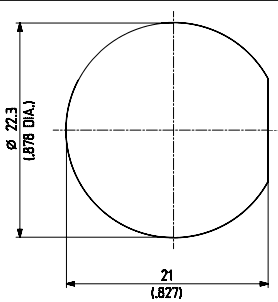
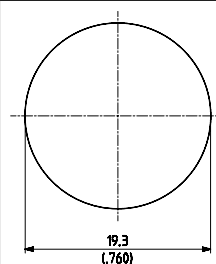
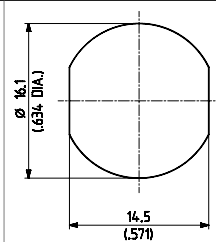
Mounting holes and PCB layouts



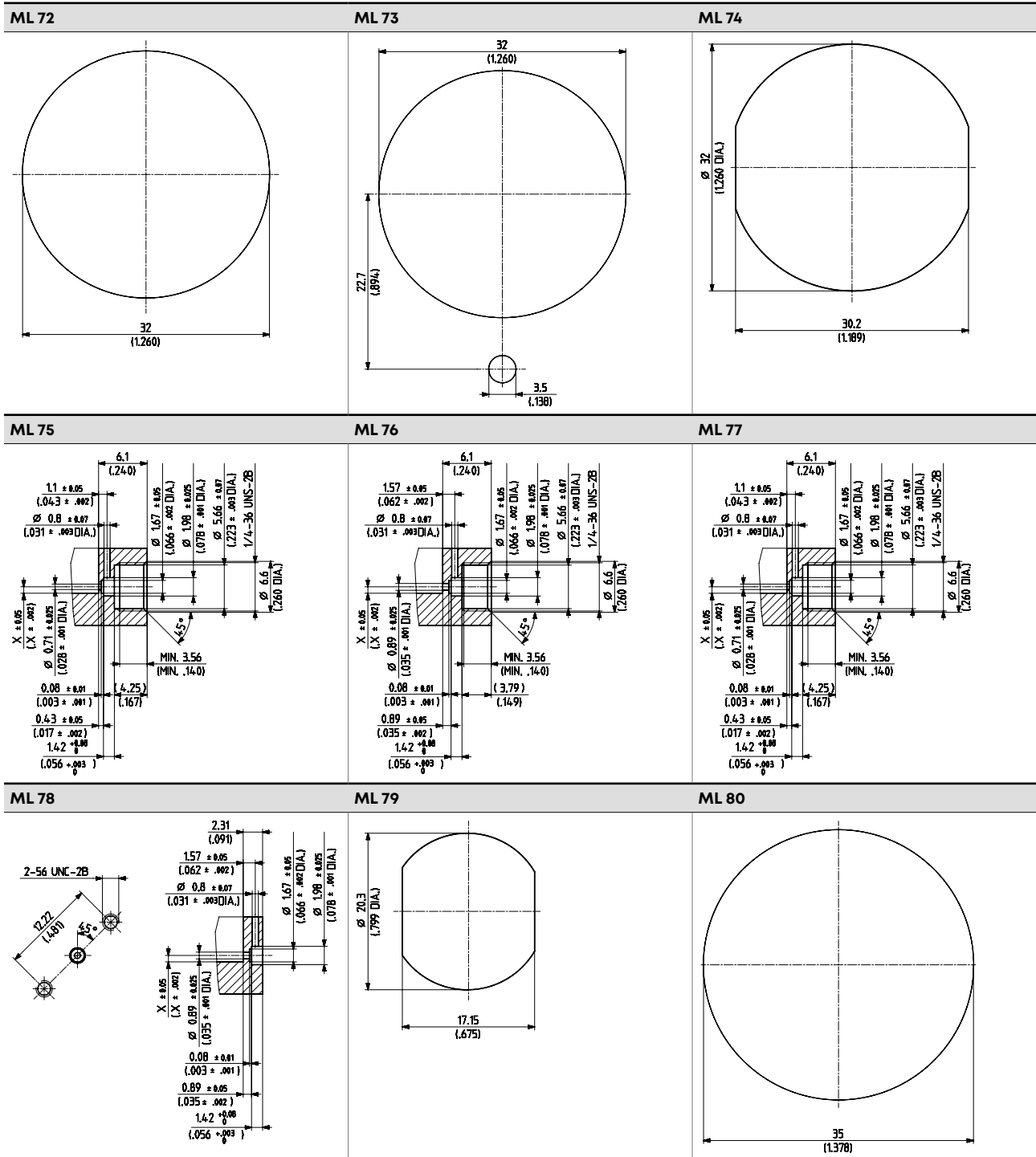
Mounting holes and PCB layouts

<p>ML 38</p> 	<p>ML 39</p>  <p>printboard</p>	<p>ML 40</p>  <p>insulator printboard</p> <p>without insulator printboard</p>	
<p>ML 41</p> 	<p>ML 42</p>  <p>1/4-36 UNS-2B MIN. 3.7 (MIN. .146)</p>	<p>ML 43</p> 	<p>ML 44</p> 
<p>ML 45</p> 	<p>ML 46</p> 	<p>ML 47</p>  <p>rear panel mounting</p>	<p>ML 47</p>  <p>front panel mounting</p>
<p>ML 48</p> 	<p>ML 49</p> 	<p>ML 50</p> 	<p>ML 51</p> 
<p>ML 52</p> 	<p>ML 53</p> 	<p>ML 54</p> 	<p>ML 55</p> 

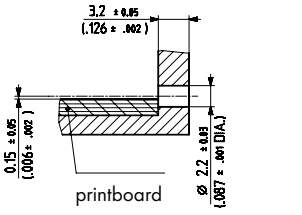
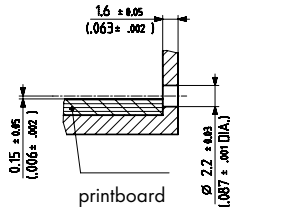
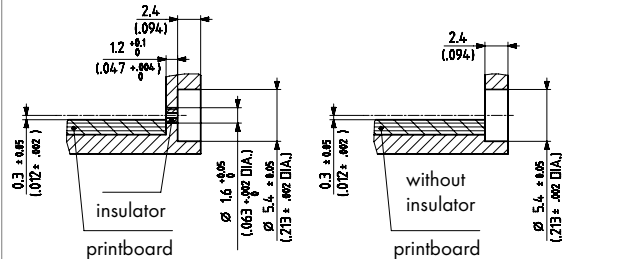
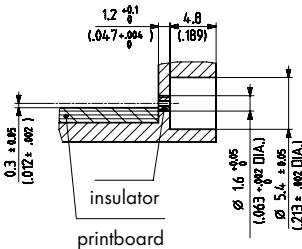
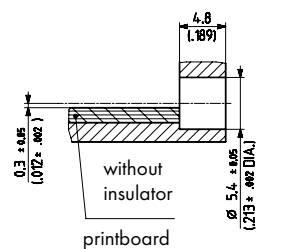
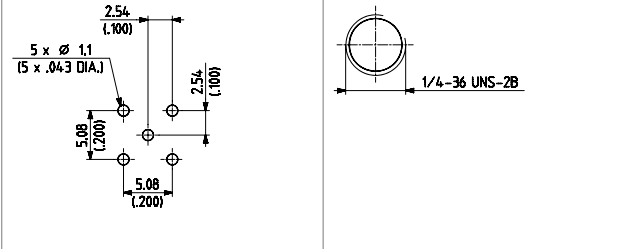
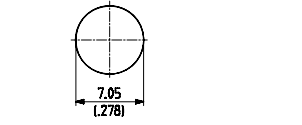
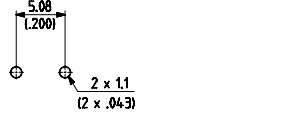
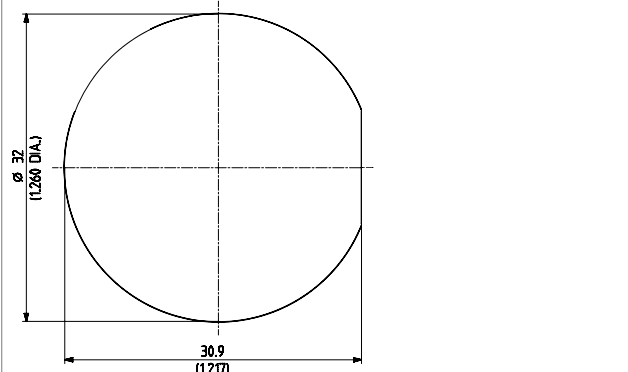
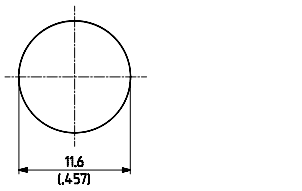
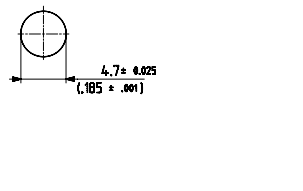
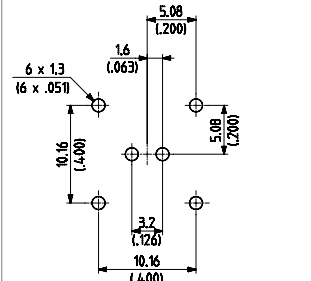
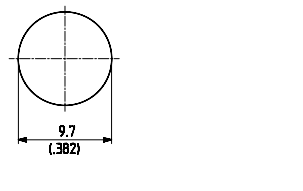
Mounting holes and PCB layouts

ML 56	ML 57	ML 58	ML 59
 <p>6.15 ± 0.03 (.242 ± .001)</p>	 <p>9.12 ± 0.03 (.359 ± .001)</p>	 <p>9.55 ± 0.07 (.376 ± .003)</p> <p>14.2 ± 0.1 (.559 ± .004)</p> <p>2-56 UNC-2B</p>	 <p>6.35 ± 0.005 (.250 ± .001 DIA.)</p> <p>5.33 ± 0.05 (.210 ± .002)</p> <p>1.17 ± 0.005 (.046 ± .001 DIA.)</p>
ML 60	ML 61	ML 62	ML 63
 <p>1/4-36 UNS-2B</p> <p>5.54 ± 0.005 (.218 ± .001 DIA.)</p> <p>6.35 (.250)</p> <p>1.675 ± 0.005 (.066 ± .001 DIA.)</p> <p>MIN. 3.7 (MIN. .146)</p> <p>5.33 ± 0.05 (.210)</p> <p>1.02 ± 0.05 (.040 ± .002)</p>	 <p>1/4-36 UNS-2B</p> <p>5.54 ± 0.005 (.218 ± .001 DIA.)</p> <p>6.35 (.250)</p> <p>4.1 ± 0.04 (.161 ± .002 DIA.)</p> <p>MIN. 2.6 (MIN. .102)</p> <p>1.83 ± 0.05 (.072 ± .002)</p> <p>5.33 ± 0.05 (.210 ± .002)</p>	 <p>6.35 ± 0.005 (.250 ± .001 DIA.)</p> <p>6.35 (.250)</p> <p>7.9 (.311 DIA.)</p> <p>1.15 (.045)</p> <p>5.33 ± 0.05 (.210 ± .002)</p> <p>1.17 ± 0.005 (.046 ± .001 DIA.)</p>	 <p>1/4-36 UNS-2B</p> <p>5.54 ± 0.005 (.218 ± .001 DIA.)</p> <p>6.35 (.250)</p> <p>1.675 ± 0.005 (.066 ± .001 DIA.)</p> <p>MIN. 4.6 (MIN. .181)</p> <p>5.33 ± 0.05 (.210 ± .002)</p>
ML 64	ML 65	ML 66	ML 67
 <p>2.59 ± 0.005 (.102 ± .001 DIA.)</p> <p>1.62 ± 0.05 (.064 ± .002)</p> <p>3.3 ± 0.25 (.130 ± .010)</p> <p>12.2 (.480)</p> <p>2-56 UNC-2B</p> <p>MIN. 2 (MIN. .079)</p>	 <p>2.92 ± 0.005 (.115 ± .001 DIA.)</p> <p>1.62 ± 0.05 (.064 ± .002)</p> <p>3.3 ± 0.25 (.130 ± .010)</p> <p>12.2 (.480)</p> <p>2-56 UNC-2B</p> <p>MIN. 2 (MIN. .079)</p>	 <p>12.7 ± 0.07 (.500 ± .003)</p> <p>1.27 ± 0.12 (.050 ± .005)</p> <p>0.63 ± 0.08 (.025 ± .003 DIA.)</p> <p>8.03 ± 0.05 (.316 ± .002 DIA.)</p>	 <p>6.35 ± 0.005 (.250 ± .001 DIA.)</p> <p>12.44 (.490)</p> <p>7.9 (.311 DIA.)</p> <p>1.17 ± 0.005 (.046 ± .001 DIA.)</p> <p>5.33 ± 0.05 (.210 ± .002)</p> <p>11.55 ± 0.05 (.455 ± .002)</p>
ML 68	ML 69	ML 70	ML 71
 <p>3.6 ± 0.14 (.142)</p> <p>3.3 ± 0.13 (.130)</p>	 <p>22.3 (.878 DIA.)</p> <p>21 (.827)</p>	 <p>19.3 (.760)</p>	 <p>16.1 (.634 DIA.)</p> <p>14.5 (.571)</p>

Mounting holes and PCB layouts



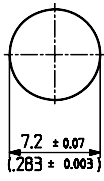
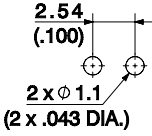
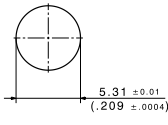
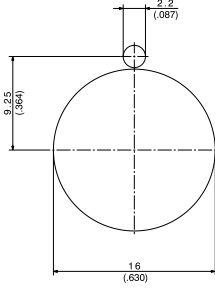
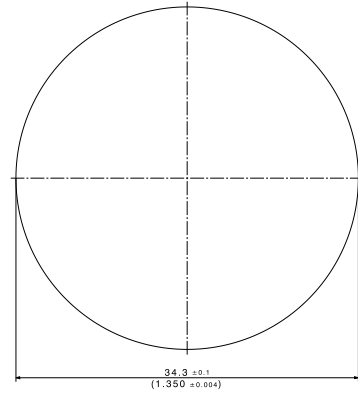
Mounting holes and PCB layouts

ML 93	ML 94	ML 95	
 <p>printboard</p>	 <p>printboard</p>	 <p>insulator printboard</p> <p>without insulator printboard</p>	
ML 96	ML 97	ML 98	
 <p>insulator printboard</p> <p>without insulator printboard</p>		 <p>1/4-36 UNS-2B</p>	
ML 99	ML 100	ML 101	
 <p>counter sunk from rear</p>			
ML 102	ML 103	ML 104	ML 105
			

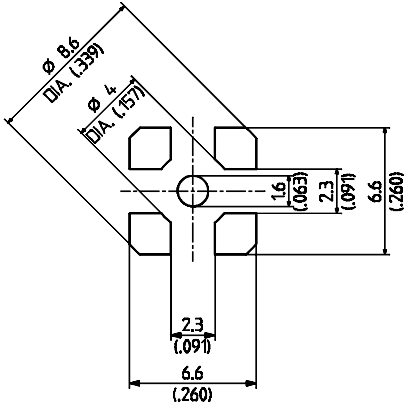
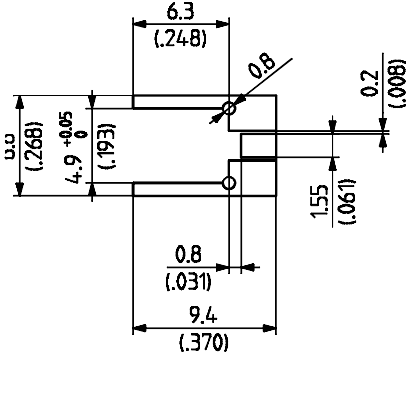
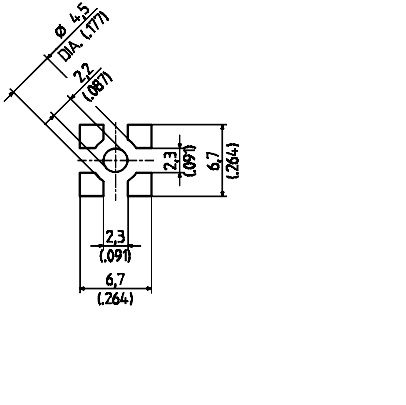
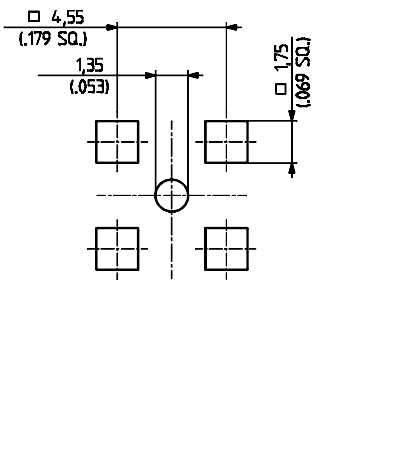
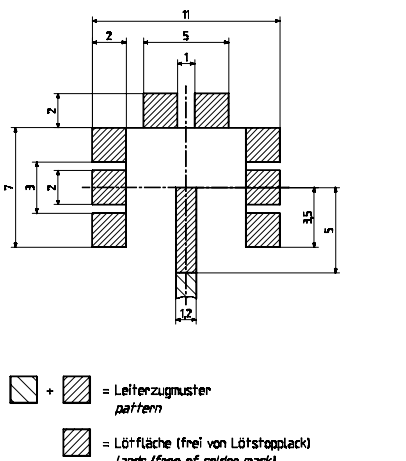
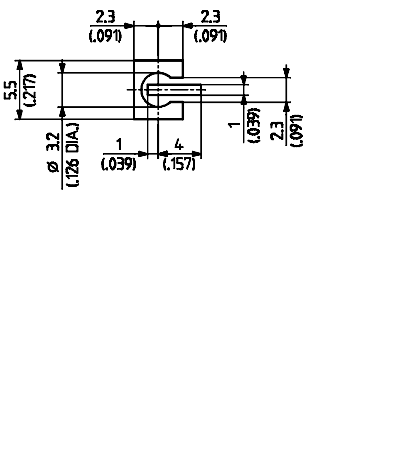
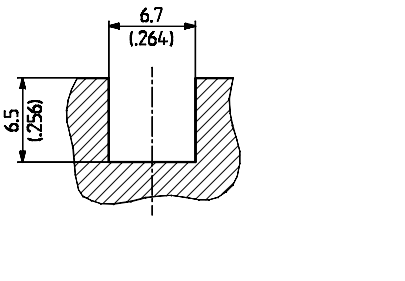
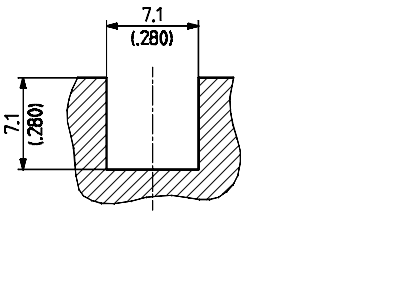
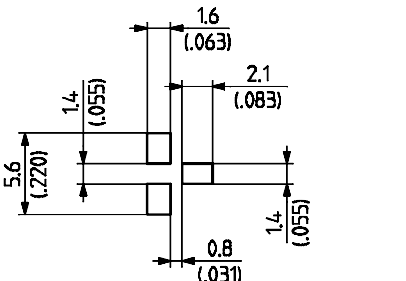
Mounting holes and PCB layouts

ML 106	ML 107		
<p>M 2.5; 3-56 UNF-2B or \varnothing 3 (M 2.5; 3-56 UNF-2B or .118 DIA.)</p>	<p>M 2.5; 3-56 UNF-2B or \varnothing 3 (M 2.5; 3-56 UNF-2B or .118 DIA.)</p>		
ML 108	ML 109	ML 110	ML 111
ML 112	ML 113	ML 114	ML 115
ML 118	ML 119	ML 128	ML 143

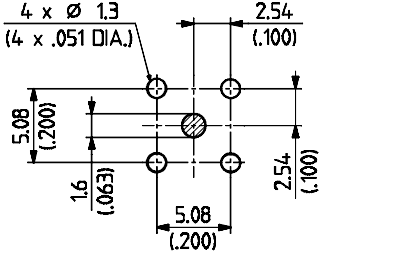
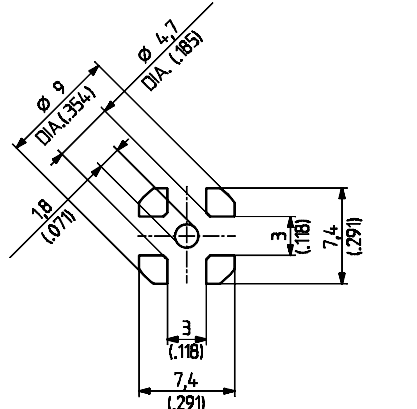
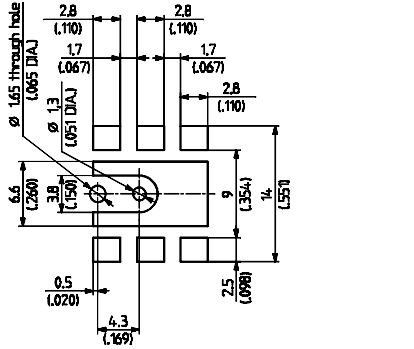
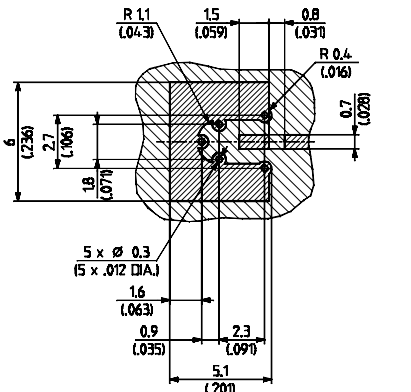
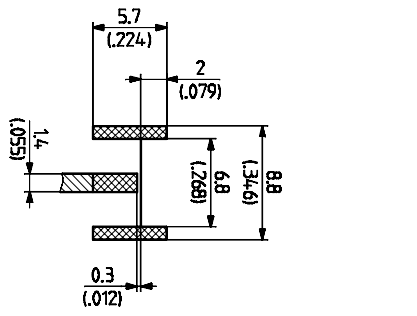
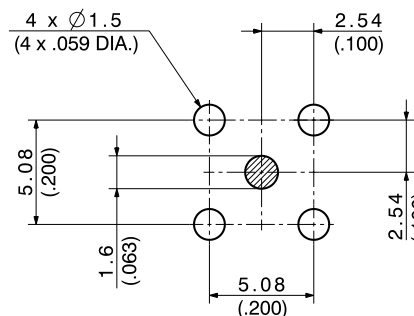
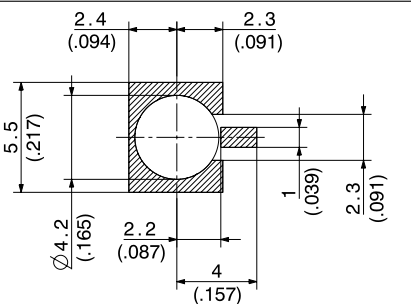
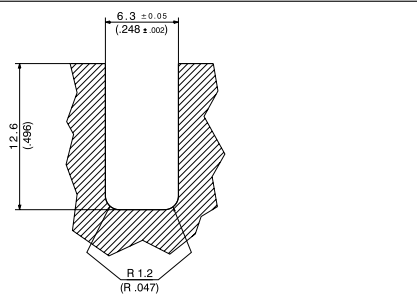
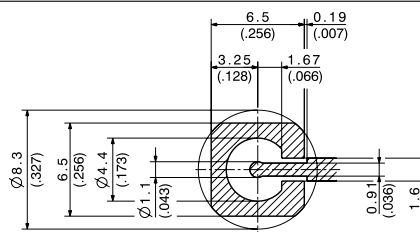
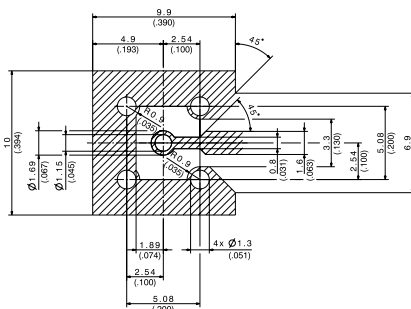
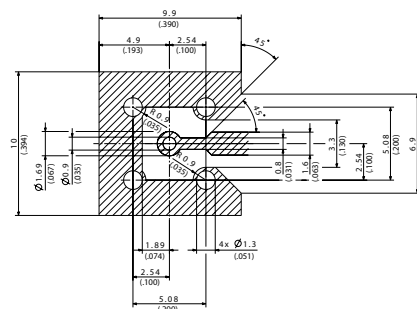
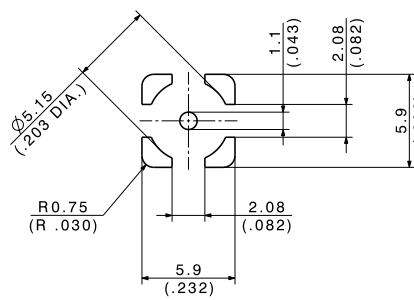
Mounting holes and PCB layouts

ML 146	ML 164	ML 177
 <p>7.2 ± 0.07 (.283 ± 0.003)</p>	 <p>2.54 (.100) 2 x Ø 1.1 (2 x .043 DIA.)</p>	 <p>5.31 ± 0.01 (.209 ± 0.004)</p>
ML 178	ML 187	
 <p>2.2 (.087) 9.25 (.364) 16 (.630)</p>	 <p>34.3 ± 0.1 (1.350 ± 0.004)</p>	

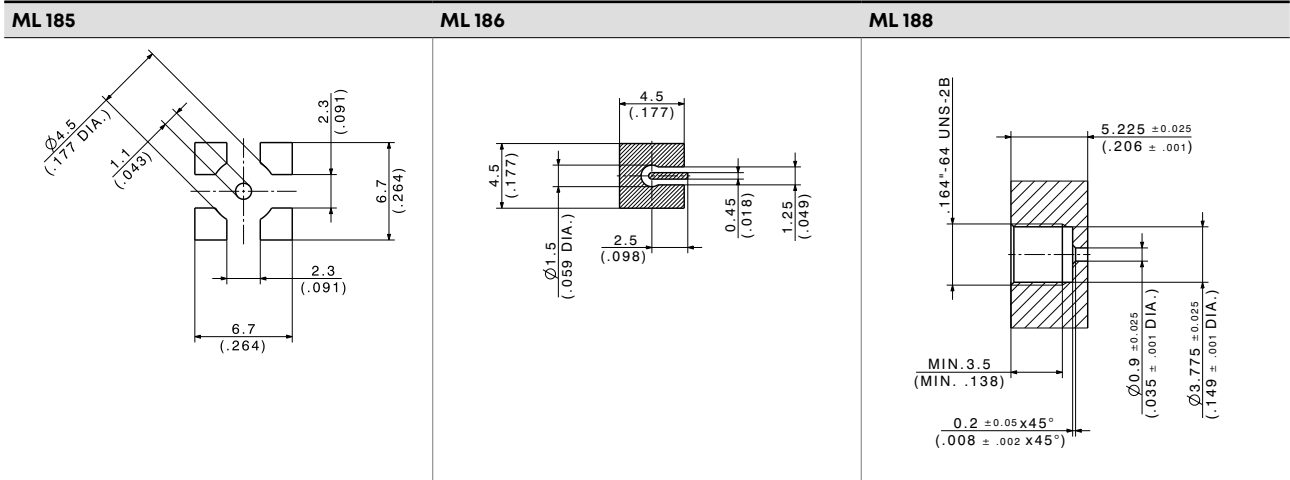
Dimensions of PCB layouts (ML)

ML 120	ML 121	ML 122
		
ML 123	ML 126	ML 130
		
ML 131	ML 132	ML 134
		

Dimensions of PCB layouts (ML)

ML 135	ML 136	ML 137
		
ML 138	ML 147	ML 155
		
ML 167	ML 169	ML 173
		
ML 174	ML 182	ML 184
		

Dimensions of PCB layouts (ML)



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HUBER+SUHNER is certified according to ISO 9001, ISO 14001, OHSAS 18001, EN(AS) 9100, IATF 16949 and ISO/TS 22163 – IRIS.

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