

# RF product portfolio

Cables, connectors, assemblies

Edition 2019/01



Perfectly connected



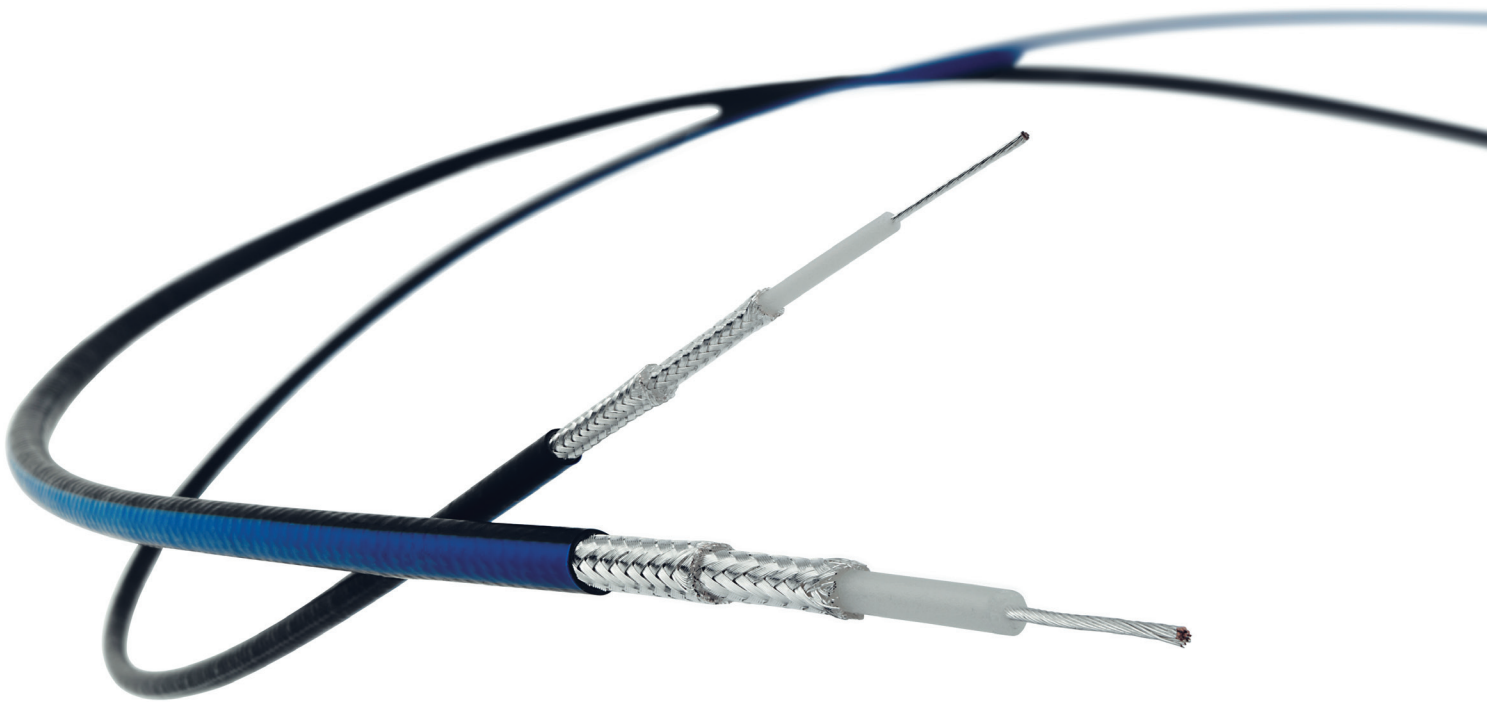


### Your partner for system solutions

The HUBER+SUHNER Group is a leading global supplier of components and systems for electrical and optical connectivity. We offer technical expertise in radio frequency technology, fiber optics and low frequency under one roof, thus providing a unique basis for continual innovation focused on the needs of our customers all over the world.

### Solutions for radio frequency connections

HUBER+SUHNER offers a wide range of RF cables and connectors for various applications. The products are used in markets like Radio Base Stations, Medical, Space, Defense and other industries. The product portfolio is being constantly refined.



## RF coaxial cables

HUBER + SUHNER develops and produces coaxial cables for a wide range of applications all over the world according to international standards. Many years of experience and in-house manufacturing combine to produce a portfolio of components adapted perfectly to one another. Continuous further development ensures that the products are perfectly aligned with market requirements and incorporate the latest technology. An innovative development department with in-house test laboratories can react quickly to changing market trends and even develop customer-specific solutions.

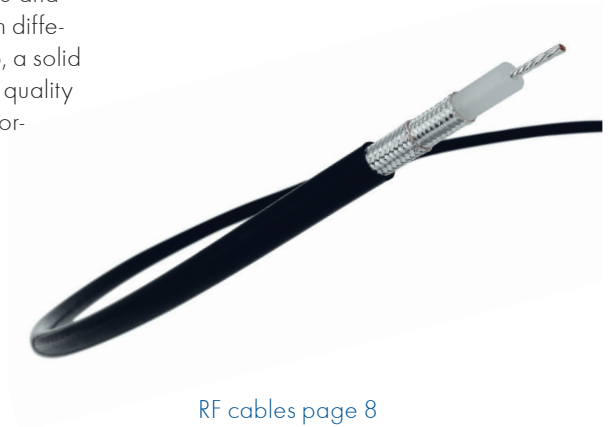
Find all details in our RF cables general catalogue!

## G – Standard PE coax cables

HUBER+SUHNER standard PE coax cables provide a wide range of 50 and 75 Ohm, as well as single and double shielded cable types. Apart from different constructions and materials which are available out of this portfolio, a solid extruded Polyethylene is used as dielectric material. HUBER+SUHNER quality standards and process knowledge guarantees excellent electrical performances, especially for return loss

### Features and benefits

- Standard RG coaxial cables according MIL-C-17
- High precision types
- Halogen free and flame retardant cable types
- Excellent return loss performance



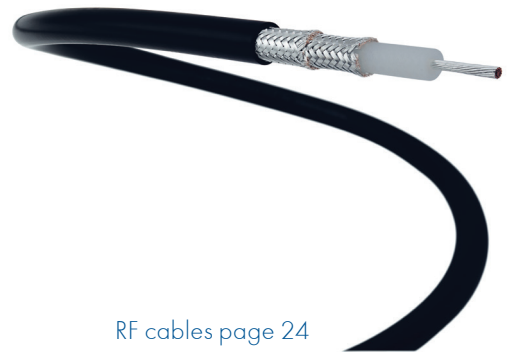
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## GX – Cross-linked PE coax cables

HUBER+SUHNER cross-linked PE coax cables cover an extended temperature range up to 105°C and fulfill highest quality requirements. The cross-linking technology allows a huge variety of application which are focused on demanding environmental requirements. HUBER+SUHNER RADOX® jacket materials provide a unique level of flame retardancy, is very low smoke and free of halogen

### Features and benefits

- High temperature due to cross-linking
- HUBER+SUHNER RADOX® jacket materials
- Great flame retardancy
- Low smoke and halogen free



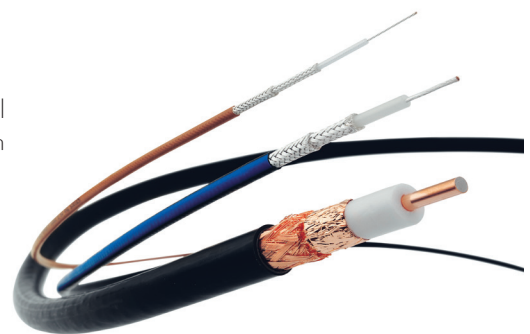
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## S – Low loss coax cables with foamed PE

HUBER+SUHNER low loss coaxial cables with foamed PE dielectric have been carefully designed for excellent electrical performance focusing on low loss, high velocity, high power and low VSWR. These flexible coaxial cables feature greatly improved cable bending characteristics, which make them ideal for use in limited spaces and where multiple bends are required. Ideal for use in critical antenna system applications

### Features and benefits

- Low loss and low attenuation
- Excellent return loss (VSWR)
- Halogen free types
- High flexibility



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## S – Low loss coax cables with tape

HUBER+SUHNER low loss coax cables with tape have the advantage of a very high screening effectiveness which is higher than 90 dB up to 6 GHz. Apart from that, these cables provide low attenuation and an excellent return loss (VSWR). Halogen free, low smoke and flame retardant cable types complete this product family.

### Features and benefits

- Low loss and low attenuation
- High screening effectiveness
- Non-halogen, low smoke and flame resistant types
- Excellent return loss (VSWR)



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## SPUMA

The SPUMA product family provides flexible cable solutions and stands for its extremely low loss. These cables are free of halogen and offer excellent electrical performance, especially an outstanding return loss (VSWR). SPUMA cables are designed for applications up to 6 GHz and offer great opportunities in appliances like communication, transportation and defence.

### Features and benefits

- Very low loss up to 6 GHz
- High screening effectiveness
- Non-halogen, low smoke and flame resistant types
- Excellent return loss (VSWR)



SPUMA flyer

## SX – Cross-linked low loss coax cables

HUBER+SUHNER cross-linking technology in combination with low loss dielectrics makes this product portfolio outstanding. Cross-linking allows the maximum application temperature of polyethylene to be increased from +80 °C to +105 °C. This extended range covers most applications. It allows operation in a higher power range and connectors with soldered inner conductors can be easily applied.

### Features and benefits

- Low loss and low attenuation
- High temperature due to cross-linking
- HUBER+SUHNER RADOX® jacket materials
- High flame retardancy
- Low smoke and free of halogen



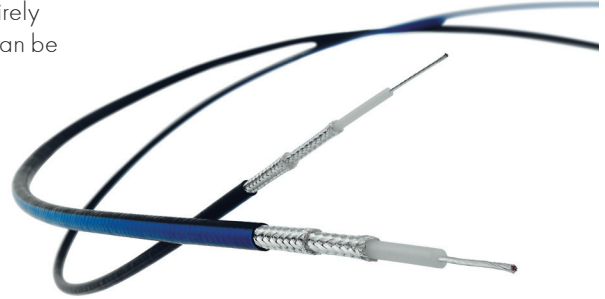
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## ENVIROFLEX® coax cables

The ENVIROFLEX cable family enables users to quickly switch from fluorine-containing cables to non-halogen alternatives. The materials used in the cable design – both for the dielectric and for the jacket – do not include any fluorine-containing plastics. The dimensions of the individual cable types are entirely compatible with the international RG standards. Standard connectors can be used without any restrictions with the ENVIROFLEX cable family.

### Features and benefits

- Non-halogen RG replacement
- UL recognised cable portfolio
- HUBER+SUHNER RADOX® jacket materials
- Low smoke and high flame retardancy



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## K - High temperature coax cables

HUBER+SUHNER high temperature coax cables are designed for applications up to 200 °C, depending on the material selection of the cable. Cable types out of this portfolio provide lowest loss especially at high frequency thanks to PTFE dielectric material.

### Features and benefits

- Standard RG coaxial cables according MIL-C-17
- High temperature
- High power applications
- PTFE/PFA/FEP based dielectric



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## Low noise coax and triax cables

HUBER+SUHNER low noise coax and low noise triax cables are developed for sophisticated signal measurements. The low noise technology with semi-conductive layer for the transmission of weak analogue sensor signals, mostly of high impedance, are used in various applications.

### Features and benefits

- Noise level reduction
- Low noise TRIAX types



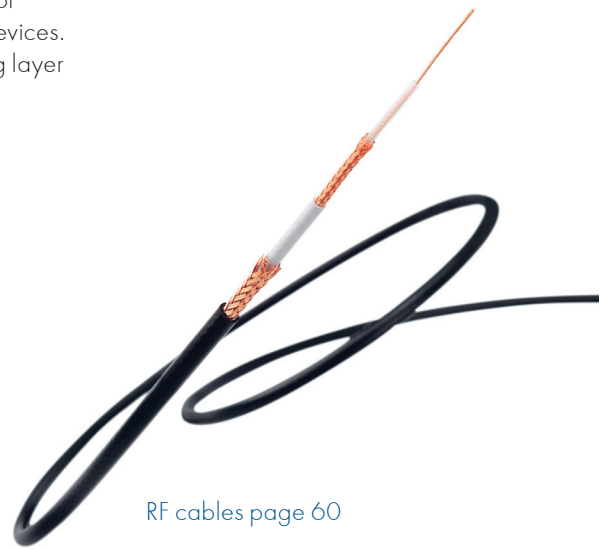
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# TRIAx cables

HUBER+SUHNER TRIAX cables consist of an additional outer conductor which is usually used for power supply or grounding purposes of any devices. Apart from that, the extra outer conductor represents a second shielding layer and increases the shielding effectiveness.

## Features and benefits

- Designed for powered devices and sensor applications
- High screening effectiveness
- PE based dielectric



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# SUCOFEED - corrugated coaxial cables

SUCOFEED product range of foam corrugated coaxial cables with suitable stripping tools and connectors has excellent electrical, mechanical and climatic properties for indoor as well as for outdoor installations. All sizes of these corrugated coaxial cables are available either as raw cable or ready-to-use cable assembly. SUCOFEED products are the perfect solution for reliable applications exposed to severe and variable environmental conditions.

The comprehensive SUCOFEED portfolio matches optimally all kind of links between transceiver / receiver and antenna systems:

- Corrugated coaxial cables (from 1/4» HF up to 1-5/8»)
- With outer conductor in copper or aluminium
- Customised jumper cables and ready-to-use assemblies
- Coaxial connectors of the QUICK-FIT series
- Lightning protectors with QUICK-FIT cable entries
- User-friendly grounding kits in straight and parallel version



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# Semi-Rigid microwave cables

The semi-rigid cable is unique due to its easily bent-to-finished shape which still maintains its set after bending. This property makes it ideal for the use with automated bending equipment as well as a hand-forming by bending tools. The range covers hundreds of proven applications which include: low-noise amplifiers, a full range of microwave components, aeronautical and space applications and a variety of high-performance laboratory instrumentation. The cables feature outstanding electrical characteristics, particularly an impedance tolerance.

## Features and benefits

- Excellent electrical performance: impedance tolerance as low as 0.5 Ohm; minimum VSWR, smooth attenuation vs. frequency curve; minimum change in impedance and attenuation
- Easy to form, strip and solder, making for convenient installation
- Small sizes permit the use in high-density areas
- MIL-C-17 qualified



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# SUCOFORM – microwave cables

SUCOFORM microwave coaxial cables offer distinct mechanical advantages over semi-rigid cables. They are based on the same design as the standard PTFE-insulated semi-rigid cables, but have a tin-soaked copper braid for the outer conductor, giving them outstanding hand formability. These cables combine the excellent characteristics of semi-rigid cables with those of flexible coaxial cables. Thanks to their small bending radii, they allow space-saving routing and packaging.

## Features and benefits

- Excellent properties: low loss, high screening effectiveness, high operating frequency, high temperature range
- Due to the high phase stability over every production run, SUCOFORM is especially suitable for delay lines
- Good flexibility: easy handforming without tooling; fits into the smallest systems
- Comprehensive connector range; use of standard semi-rigid connectors
- Quick and easy assembly
- Available in long lengths and various versions



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## MULTIFLEX – the alternative to Semi-Rigid

MULTIFLEX microwave cables are the flexible alternative to semi-rigid cables. They are used in commercial and military RF and microwave airborne systems, satellite ground systems, communication systems, cellular base stations as well as in test+measurement applications.

### Features and benefits

- Comparable electrical performance as corresponding semi-rigid cable types
- High flexibility – no 3D drawings required for design and manufacture
- High screening effectiveness
- Resistant to chemicals, oil lubricants, humidity, etc.



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## S-series – economical low loss microwave cables

S-series is a line of cost-efficient, low-loss microwave cables. It covers technically demanding requirements in a wide range of applications, preferably in fixed installations. These versatile cables are characterized by their very low insertion loss across a wide frequency range.

S-SERIES cables are easy to assemble and are made of environmentally friendly, halogen free materials.

### Features and benefits

- Low loss across a wide frequency range
- Excellent screening effectiveness
- Environmentally friendly
- Quick and easy to assemble



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## EACON – field mountable microwave cables

To suit to the needs of our customers, HUBER+SUHNER has developed this innovative solution. EACON stands for a simple, flexible and fast way to assemble microwave cables and connectors in the field without compromises to the best performance. The new field mountable microwave cables and connectors are light and waterproofed, built for frequencies up to 18 GHz – ready for use in the defence market as well as generally in the industrial market.

### Features and benefits

- Low loss
- Usable up to 18 GHz
- Assembling tool kit available
- Easy assembling – only two connector parts
- Taking on site decision regarding length and configurations
- Narrowest cable feedthrough dimensions (assembling after installation)



EACON brochure



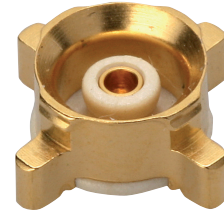
## RF coaxial connectors

HUBER+SUHNER offers a wide range of RF connectors for various applications. The products are used in markets like Radio Base Stations, Medical, Space, Defense and other industries. The product portfolio is being constantly refined. New market trends and customer requirements drive product developments such as MBX, MXP, MMPX. Additionally HUBER+SUHNER supports its customers worldwide with application engineers, helping the customers in selecting the right product for each specific application.

Find all details in our RF connectors general catalogue!

## MMBX - board-to-board (board-to-module) connectors

HUBER+SUHNER MMBX connectors are especially developed for board-to-board and board-to-module RF interconnections. Along with MBX 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 a wide range of board and cable connectors with a minimum board-to-board distance of only 6.7 mm.



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## MBX - board-to-board (board-to-module) connectors

HUBER+SUHNER MBX 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 completes the board-to-board assortment of HUBER+SUHNER with its development based on the well-known board-to-board connector MMBX. MBX fulfils higher requirements with best in class axial misalignment of  $\pm 1.2$  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.



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## MMCX - micro miniature snap-on connectors

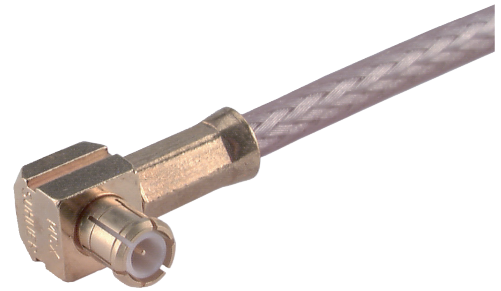
HUBER+SUHNER MMCX connectors are intended for use in applications where the smallest dimensions have to be achieved. These connectors can be used in applications from DC to 6 GHz. The reliable "snap-on" coupling mechanism ensures that the electrical parameters are consistently reproduced. Due to its 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.



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## MCX – snap-on (50 $\Omega$ and 75 $\Omega$ ) connectors

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.



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## MMPX – micro miniature precision connectors

The Snap-on connector family MMPX is the most ideal coaxial-to-PCB system solution for operating frequencies up to 67 GHz and data rates up to 80 Gbps. The comprehensive product range consists of cable connectors and assemblies, PCB connectors and adaptors 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.



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## SMB – subminiature snap-on connectors

HUBER+SUHNER SMB subminiature connectors are suitable for applications from DC up to 4 GHz. The SMB snap-on mechanism provides a fast and reliable connection for applications with high packing density.



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## SMC – subminiature screw-on connectors

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

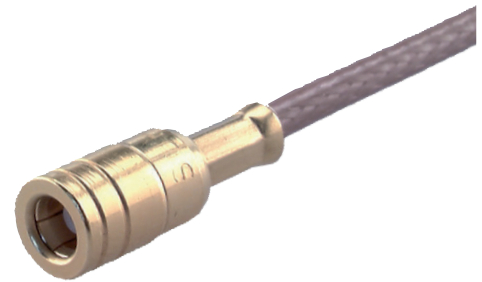
The SMC screw-on mechanism permits a vibration-proof connection suitable for semi-permanent connections and for use in mobile equipment with low VSWR requirements.



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## SMS – subminiature slide-on connectors

HUBER+SUHNER SMS connectors are used in applications requiring rapid connection and disconnection, even where space is limited. The small physical size of the connector allows a high packing density to be achieved. These connectors are suitable for applications up to 4 GHz.



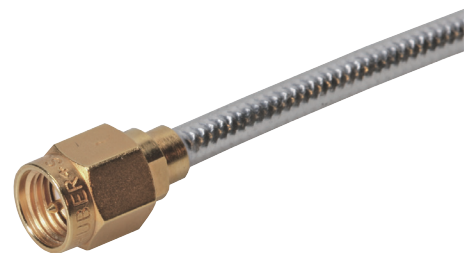
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## SMA – subminiature A screw-on connectors

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, such as telecommunication, Test+Measurement, instruments, avionics, etc.

The 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

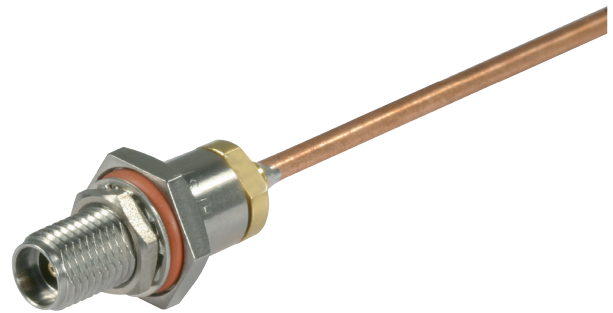


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## PC 3.5– precision connectors (3.5 mm)

HUBER+SUHNER PC 3.5 connectors are precision connectors for the use in microwave applications up to 26.5 GHz. They are especially suitable for semi-rigid cables and microwave components and intermateable with SMA and SK connectors.

Due to an air dielectric interface and the more durable construction a superior repeatability further enhances the performance.

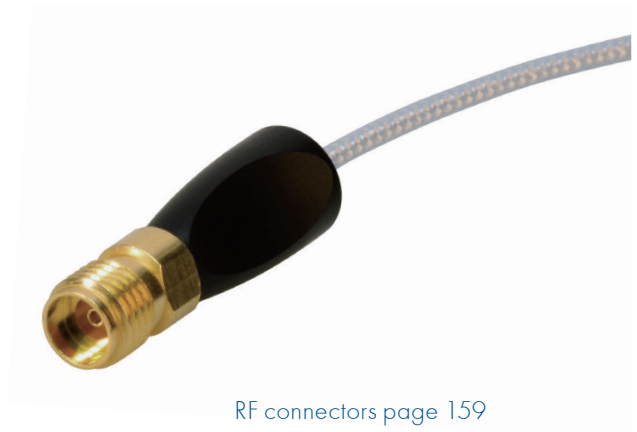


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## SK– HUBER+SUHNER K\* precision connectors

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. When used in conjunction with the SK launchers, the glass beads enable the connectors to be replaced without disturbing the hermetic seal. Stress relief contacts are available for a mechanical decoupling between glass bead and internal microwave circuit.

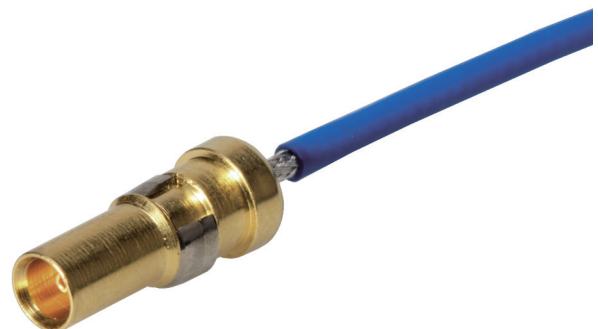
\* trademark of Anritsu Corporation



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## 1.0/2.3– coaxial inserts according to DIN 41626/2

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 connectors. The 1.0/2.3 inserts are suitable for applications up to 4 GHz.



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## QLA – quick-latch connectors

The QLA 00 series contains connectors with a quick latch coupling mechanism: connection is achieved by simply pushing the plug into the jack. 3 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. All connectors of the series QLA 00 are without any restrictions intermateable with Lemo series 00.250.



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## BMA – blind mate connectors

HUBER+SUHNER BMA blind mate connectors open up special dimensions in microwave applications up to 18 GHz. HUBER+SUHNER offers a range of connectors for fixed as well as «floating» configurations with any 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. The HUBER+SUHNER range of BMA connectors is fully compatible with the OSP connector series.



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## QMA – quick-lock (QLF<sup>®</sup>), SMA size

HUBER+SUHNER QMA coaxial connectors are according to QLF standard and available with 50  $\Omega$  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 (IP 68) and are compatible with QLF standard.



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## QN – quick lock (QLF<sup>®</sup>), N size

HUBER+SUHNER QN coaxial connectors are available with 50  $\Omega$  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.



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## BNC – bajonet (50 $\Omega$ and 75 $\Omega$ ) connectors

HUBER+SUHNER 50  $\Omega$  BNC is still a popular connector serie, featuring a two stud bayonet coupling mechanism, which is particularly useful for frequently coupled and uncoupled RF connections with frequencies up to 4 GHz. «Real» 75  $\Omega$  BNC connectors are suitable for applications up to 3 GHz, contrary to the conventional 75  $\Omega$  BNC connector types, which are applicable up to 1 GHz only. With the 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. Mechanically they are mateable with all conventional BNC connectors (50  $\Omega$  and 75  $\Omega$ ).



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## TNC – threaded (50 $\Omega$ and 75 $\Omega$ ) connectors

HUBER+SUHNER 50  $\Omega$  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. Within the internationally standardised TNC mating face dimensions, a perfect 75  $\Omega$  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.

50  $\Omega$  TNC connectors and 75  $\Omega$  TNC connectors are intermateable without restrictions.

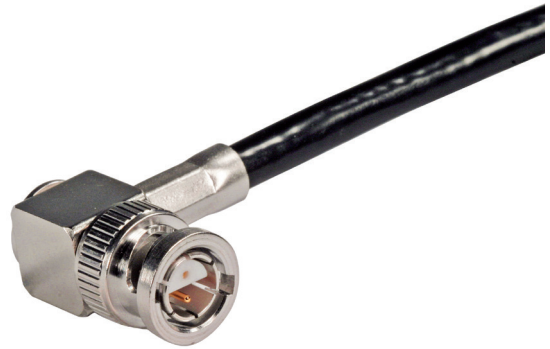


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## BNO – twinaxial (bajonet) connectors

HUBER+SUHNER BNO twin connectors are two pin bayonet coupled (same bayonet locking mechanism as BNC) connectors for use with balanced twin-conductor cables with 75  $\Omega$  to 130  $\Omega$  impedance. They have polarized contacts and are not intermateable with BNC.

The HUBER+SUHNER BNO twin connectors are suitable for applications up to 200 MHz (i.e. computer networks and process control).



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## BNT – triaxial (bajonet) connectors

HUBER+SUHNER BNT triaxial connectors are RF connectors with a bayonet coupling mechanism and three concentric contacts (inner conductor, inner screen and outer screen) for triaxial cables.

The BNT connectors are intermateable with BNC connectors, but the inner conductor and outer screen are connected only. BNT connectors are suitable for applications up to 3 GHz (inner coaxial line).



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## SHV – high voltage (3.5 kV) connectors

HUBER+SUHNER SHV (Safe High Voltage) connectors provide more secure handling: center contacts are well recessed to prevent shock hazards in unmated condition. All inner contacts are fully captivated and will withstand axial forces of 100 N minimum. 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

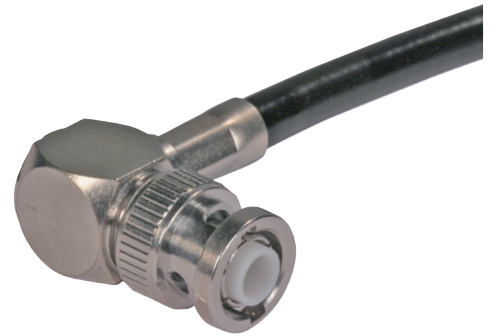


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## MHV (H4)- high voltage (1.6 kV) connectors

HUBER+SUHNER MHV connectors are coaxial miniature high voltage (MHV = 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



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## C - mid size bayonet connectors

HUBER+SUHNER C connectors are medium size RF connectors with two-stud bayonet mechanism which allows quick and easy coupling and de-coupling.

The C connectors provide 50  $\Omega$  impedance and the frequency range (connector interface) is specified for applications up to 11 GHz.



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## N - mid size threaded (50 $\Omega$ and 75 $\Omega$ ) connectors

HUBER+SUHNER N connectors are available with 50  $\Omega$  and 75  $\Omega$  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.

The N connectors are available for flexible, semi-rigid and corrugated copper tube cables.

Cable entries: clamp, crimp and solder types available, as well as HUBER+SUHNER QUICK-FIT for corrugated copper tube cables.



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## UHF – mid size threaded connectors\*

UHF connectors do not have defined impedance. They are intended for applications up to 200 MHz where mechanically robust connectors are required. They are mateable with 4 mm banana plugs

\* with front end tooth system



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## 7/16 – large size, threaded connectors

HUBER+SUHNER 7/16 connectors are mechanically very rugged coaxial connectors with screw lock. They have a characteristic impedance of 50  $\Omega$  and are applicable with excellent electrical properties up to 7.5 GHz.

Transmission of medium to high power in transmitting stations and low loss transmission of received signals such as in mobile phone base stations are typical applications. For these purposes low intermodulation products and waterproof types are also available



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## QUICK-FIT – low PIM cell site connectors\*

HUBER+SUHNER QUICK-FIT connectors are worldwide approved N 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.

The cable entries support standard foam dielectric corrugated copper tube cables 1/2", 7/8", 1 1/4" and 1 5/8" and 1/2" highflex SUCOFEEED as well as equivalent products from Andrew, RFS (Kabelmetal) and NK cables.

\* series N and 7/16



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## Reverse polarity connectors - series N, SMA, TNC

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: 11\_TNC-**R**50-3-42



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## MXP- precision multi coax connectors

The ganged multicoax solution MXP offers a true 40 GHz / 40 Gbps coaxial-to-PCB transition with a very small form factor. Its reliable mating and ease of use make it especially suited for bench-top test systems as well as interconnect within automated test equipment.

A broad range of configurations with highly flexible cable assemblies and compact PCB connectors are available.



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## Adaptors - between and within series

HUBER+SUHNER manufactures a wide range of adaptors to realise transitions from one interconnection interface to another. Our RF adaptor assortment covers all commercially available RF interfaces and configurations, frequency and return loss specification. Any RF coaxial adaptor can be modified to fit specific applications.

Please consult your local HUBER+SUHNER representative or our comprehensive electronic catalogue.



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## RF and microwave cable assemblies

By developing and producing our own RF connectors and cables in-house, we have gained extensive know-how in the field of coaxial cable assembly technology. Our customers benefit from a balanced range of connectors and cables and perfect cable assembly techniques.

All assembly shops both at headquarters and in the affiliated companies are based on identical organisational procedures and comply with the same stringent quality standards. A clean room is available at group headquarters in Herisau for manufacturing assemblies which must meet the most exacting quality standards as required in the space industry.

Each month, tens of thousands of ready-to-use cable assemblies are produced according to customers' specifications. In other words, we are the users of our own products, allowing our range of products to be continuously improved. So, why not take advantage of our carefully matched line of connectors and cables and the years of practical experience accumulated by our cable assembly shops.

Find all details in our microwave cables and assemblies catalogue!

# LISCA

## Low Loss and Low Intermodulation Soldered Corrugated Cable Assembly

LISCA cable assemblies are specially developed for applications where low VSWR and low attenuation combined with low intermodulation products are required. The excellent performance is achieved utilising corrugated SUCOFEED cables with low intermodulation designed connectors and a controlled assembly process with HUBER+SUHNER solder technology.

This product line is designed to provide optimal performance up to 4 GHz.

### Features and benefits

- As jumper cables for indoor and outdoor applications
- In antenna links and internal connections of mobile phone base stations
- As test leads for low intermodulation test equipment
- Excellent RF performance
- Low attenuation
- Low, stable intermodulation products
- Moisture protection IP68



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# Semi-Rigid

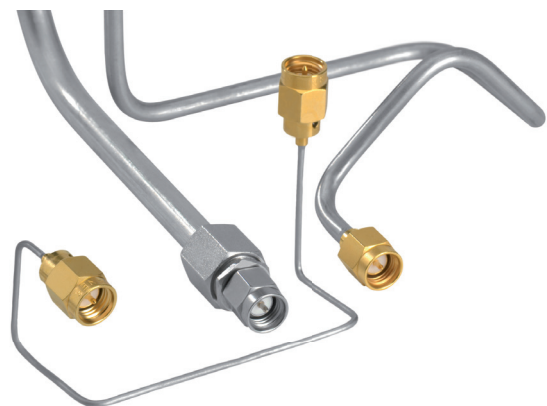
## The form-stable microwave cable assemblies

The semi-rigid cable is unique in that it is easily bent to finished shape and still maintains its set after bending. This property makes it ideal for use with automated bending equipment as well as hand forming by bending tools. Our one-stop-shopping service for you solves even sophisticated semi-rigid assembling tasks. Our engineers offer you competent advice as early as during the design-in phase. They support you in selecting bent semi-rigid assemblies and special delay lines optimally tailored to your specific needs.

Take advantage of our vast experience in the design and development of semi-rigid assemblies in our state-of-the-art production facilities and automated assembly shops, and profit from our comprehensive, matched connector and cable range.

### Features and benefits

- Advice, design, cost-efficient routing planning and prototyping
- Precise forming with computerised numerical control machines
- Customised phase matching and thermal conditioning
- Customised RF testing
- Installation in delivered chassis



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# SUCOTEST

## Precision at a constant high level

The SUCOTEST cable assembly family ensures for fast, cost-efficient, reliable and accurate tests and measurements procedures. The assemblies are the ideal solution for tough daily use in components and assembly shops, test labs and automatic test equipment applications. SUCOTEST cable assemblies are especially designed for applications that require repeated connection/disconnection procedures and where measurement cable wear is an issue.

## Features and benefits

- Precise and constant measurement results
- Longer calibration intervall
- Low overall measurement costs



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# SUCOFLEX® 100

## The high performance microwave cable assembly

The flexible SUCOFLEX 100 series microwave cable assemblies offer superior electrical and mechanical performance for static and dynamic applications. This series is a high-end product designed to provide optimal performance up to 50 GHz, where stringent electrical requirements, in particular stability and low loss, are important. The mechanical and climatic resistance properties exceed those of standard flexible cables. This cable type is ideally suited for test+measurement applications and is used in aerospace and defence systems.

## Features and benefits

- The cable maintains stable electrical characteristics when exposed to bending and temperature, enabling reliable test results
- A balanced range of connectors is available, including types featuring NWA-specific interfaces
- Can be provided with various ruggedizations to protect the assembly against different environmental influences
- Only available as assembly



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# SUCOFLEX® 300

## The lightweight, high-performance microwave cable

The SUCOFLEX 300 lightweight, low-loss flexible microwave cable is a high-end product designed to meet the stringent needs of space flights systems (i.e. satellites) and aerospace systems (aircraft, helicopters, missiles), which are subject to extremely severe operating conditions. The 300 series offer a consistently outstanding mechanical and electrical performance, stability and reliability up to 18 GHz. The added feature of this SUCOFLEX type is a weight reduction of up to 40% compared to our conventional products.

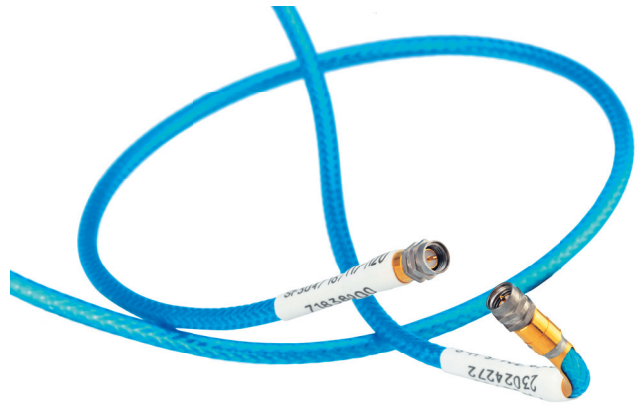
### Features

#### for space applications

- Assemblies produced in a clean environment room
- Application-specific lightweight connectors
- Extensive testing of assemblies
- Approved by Europe's leading satellite manufacturers

#### for defence applications

- Lightweight reduces overall system weight
- Rugged connectors made for easy serviceability
- High-end product approved for Europe's military aircraft
- Additional armours provide increased crush and abrasion resistance



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# SUCOFLEX® TVAC

## The cable assembly for thermal vacuum application

In space product testing environment Test + Measurement support equipment with special features are needed. Devices under test (DUTs) in thermal vacuum chambers have to be connected with the test-equipment outside the chamber. Also satellites under test in vast vacuum test chambers need to be connected with RF-assemblies for testing. Outgassing requirements according to ESA-PSS-01-702 is a must. Contamination of the devices under test from solvents of plastic materials has to be avoided as they can lead to corrosion of the content of the thermal vacuum chamber.

The pressurization and depressurization of all components in the vacuum chamber, including the support equipment such as the cable assemblies, happens fast and within well defined parameters – this requires venting holes for non-hermetic components. With such holes in the connectors and defined evacuation paths in the cable and the connector interface the best venting characteristics can be achieved, resulting in fast and non material-stressing adaptation to the applicable pressure.

Thanks to their good mechanical properties HUBER+SUHNER's SUCOFLEX TVAC cables are ideally suited to such applications when combined with connectors with the strongest mechanical design. HUBER+SUHNER provides microwave cable assemblies and an RF-adaptor specially designed for these applications.

## Features and benefits

### Extended temperature range

- Low outgassing according ESA-PSS-01-702
- Assemblies
  - Superior mechanical and electrical stability
  - Vented connectors for fast evacuation and venting
  - Different connectors, frequency ranges, electrical features available
- Adaptor:
  - Hermetically sealed
  - Superior return loss performance



[SUCOFLEX TVAC brochure](#)

# Online documentation mentioned in this brochure



RF cables  
General catalogue



RF coaxial connectors  
General catalogue



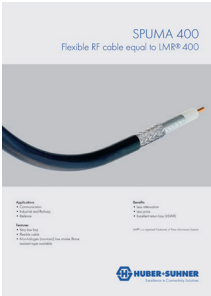
RF microwave assemblies  
General catalogue



Wireless infrastructure  
Catalogue



EAACON  
Brochure



SPUMA 400  
Flyer



SUCOFLEX TVAC  
Brochure



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HUBER+SUHNER is certified according to ISO 9001, ISO 14001, ISO/TS 16949 und IRIS.

**Waiver**

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