SPINNER

1.0 mm Coaxial Connector – Reliable Connectivity Solutions

S-Parameter Measurements Up to 120 GHz!

HIGH FREQUENCY PERFORMANCE WORLDWIDE
spinner-group.com

The SPINNER Group

For more than 75 years, the SPINNER Group has been setting new standards worldwide in high-frequency technology. Based in Munich with production facilities in Germany, Hungary and China, SPINNER currently has over 900 employees. Our international network of subsidiaries and distributors supports customers in over 40 countries.


TEST & MEASUREMENT


COMMUNICATION


BROADCAST


SATCOM/SPACE


WIND ENERGY


INDUSTRY


SUBSEA/OFFSHORE

RF Measurement

These days, up-to-date measurement equipment is essential for all development, production, testing and quality control departments that deal with RF signals on coaxial lines. Particularly for vector network analyzers, high-precision connectors, terminations, and adapters are a must.

The same statement applies to calibration kits and mechanical accessories such as gauges for checking mating face dimensions or torque wrenches for tightening coupling nuts. In all of these cases, SPINNER has established new, extremely high standards of precision which most users would not want to do without.

Precisely measured values are especially important when transmitting high power levels. Other major applications include extensive testing of mobile communications systems such as LTE, 5G or 6G and wireless data transmission, e.g. via WiMAX, Wi-Fi and RFID.

SPINNER supplies coaxial measurement equipment of outstanding electrical and mechanical quality for use at frequencies up to 165 GHz.

Coaxial and Waveguide Measurement Devices

Coaxial & waveguide measurement devices made by SPINNER are needed for:

VNA / S-Parameter Measurement

- Calibration and verification standards
- Air lines
- Rotary joints
- Articulated lines
- Adapters
- Connector gauges

PIM Measurement and Test Automation

- EasyDock push-pull adapters
- Low PIM switches
- Low PIM test cables
- Low PIM rotary joints
- Low PIM loads
- Low PIM passive intermodulation standards

Millimeter Wave Measurement

- Ruggedized test port adapters
- mmWave waveguide-to-coaxial adapters
- 0.8 mm & 1.0 mm coaxial connector system
- 1.35 mm E Connector
- EasyLaunch PCB connectors
- EasySnake flexible dielectric waveguides
- Connectivity solutions for RF anechoic chambers

Connectivity Solutions for RF Anechoic Chambers

- Ruggedized test port adapters
- mmWave waveguide-to-coaxial adapters
- Panel feedthroughs
- Articulated lines
- EasySnake flexible dielectric waveguides
- Rotary joints

Ensure Reliable Measurements with SPINNER's 1.0 mm Connector

SPINNER's 1.0 mm high precision coaxial calibration kit, connectors, and adapters are engineered for a frequency range from DC up to 120 GHz and offer excellent performance.

The 1.0 mm coaxial connectors are standard in RF labs worldwide. These include vector network analyses (VNA) or measurements in the millimeter-wave range. The 1.0 mm coax interface is also known as the Type W connector.

In fact, they are must-haves for engineers who perform measurements in the range up to 120 GHz. It provides measurement accuracy, versatility and ease of use for coaxial measurements, microwave communication systems, defense and aerospace applications, where precise and accurate signal transmission is critical.

However, their conventional design suffers from a problem: the pitch is too coarse, i.e. the axial distance between the thread walls is too great.

The nut that mates with a 1.0 mm connector loosens practically from being looked at. Calibration problems are therefore literally built-in, often making it necessary to repeat entire test series. Besides the unnecessary extra costs this incurs, it's a major source of frustration.

Achieving Reproducible Test Results from the Start

SPINNER provides multiple solutions to address the common issue of 1.0 mm coaxial connectors loosening over time.

Hence, we offer a comprehensive range of adapters to ensure optimal mechanical connections across various frequency ranges. SPINNER provides adapters from 1.0 mm to 1.85 mm for measurements up to 70 GHz on a 110/120 GHz VNA, as well as adapters for the 1.35 mm E-connector. Our ruggedized test port adapters for the 1.0 mm interface are particularly recommended for achieving reliable and stable connections.

Secured by a Ruggedized Test Port Adapter

For laboratories that rely on 1.0 mm connectors, we offer various ruggedized test port adapter specifically designed for one-millimeter coax connections.

These adapters use a larger thread to achieve a secure mechanical lock, effectively blocking unintended transverse or torsional forces that could damage the delicate 1.0 mm coaxial connection. As a result, once a test setup is assembled and calibrated, it can be consistently relied upon to perform as intended.

Design Goals

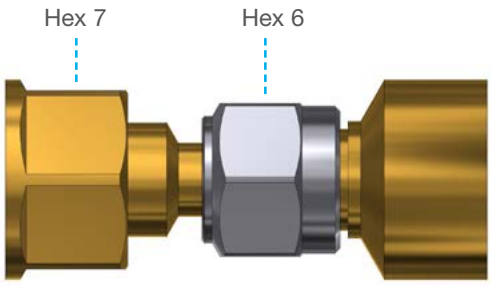
1 mm precision interface with:

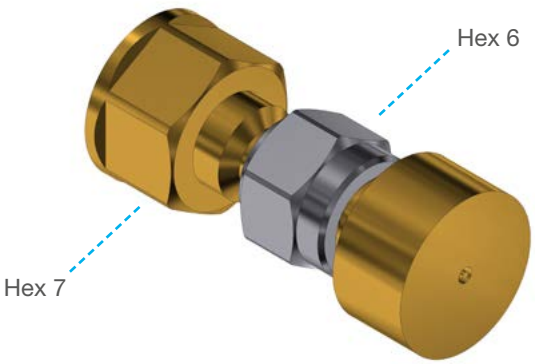
- Accurate alignment with outer conductor
- Well-defined reference plane
- Maximized return loss
- High connector repeatability
- Suitable for precision S-parameter measurements
- Operating frequency range DC to 120 GHz
- Especially designed load element up to 120 GHz

Special Design Features

Wrench size avoid accidental use

In contrast to the coupling nut of the 1.0 mm interface with 6 mm wrench size, the wrench flats for counter holding have been designed in 7 mm. This prevents the accidental use of the counter holding wrench on the coupling nut, which should be tightened with a torque wrench.





SPINNER 1.0 mm Portfolio Overview

1.0 mm OSLT High Precision Calibration Kit, 50 Ω, Basic Version

Features:

- High-end S-parameter measurements
- Open, Short, Load and Through (OSLT): each one in male and female version including three types of through adapters
- For Frequencies from DC up to 120 GHz

Part Number	Description	Frequency Range
BN 535742	1.0 mm OSLT High Precision Calibration Kit, Basic Version with an improved frequency range up to 120 GHz	DC to 120 GHz
BN 535733	Open circuit termination; 1.0 mm male	
BN 535734	Open circuit termination; 1.0 mm female	
BN 535735	Short circuit termination; 1.0 mm male	
BN 535736	Short circuit termination; 1.0 mm female	
BN 535737	Matched load; Precision; 1.0 mm male	
BN 535738	Matched load; Precision; 1.0 mm female	
BN 535739	Adapter; Precision; 1.0 mm male, 1.0 mm male	
BN 535740	Adapter; Precision; 1.0 mm female, 1.0 mm female	
BN 535741	Adapter; Precision; 1.0 mm male, 1.0 mm female	
BN 238748C0001	Torque Wrench 6 mm, 0.45 N·m	
BN 238749C0001	Torque Wrench 6 mm, 0.34 N·m	
BN 238750	Double open-ended wrench 7 mm*	
	USB-Drive with datasheet, factory certificate of calibration, s-parameter for traceable calibration up to 116.5 GHz, calibration coefficients for calibration up to 120 GHz	

* In opposite to the coupling nut of the 1.0 mm interface with 6 mm wrench size, the wrench flats for counter holding have been designed in 7 mm. This prevents the accidental use of the counter holding wrench on the coupling nut, which should be tightened with a torque wrench.

1.0 mm OSLT High Precision Calibration Kit, 50 Ω, Plus Version

Part Number	Description	Frequency Range
BN 535743	1.0 mm OSLT High Precision Calibration Kit, Plus Version with an improved frequency range up to 120 GHz	DC to 120 GHz
Like BN 530850, additionally with:	Boxed OSLT High Precision Calibration Kit 1.0 mm	
+BN 537085	Connector gauge 1.0 mm male	
+BN 537086	Connector gauge 1.0 mm female	

SPINNER 1.0 mm Portfolio Overview

mmWave Waveguide-to-Coaxial-Adapters RUG-1.0 mm and 1.0 mm

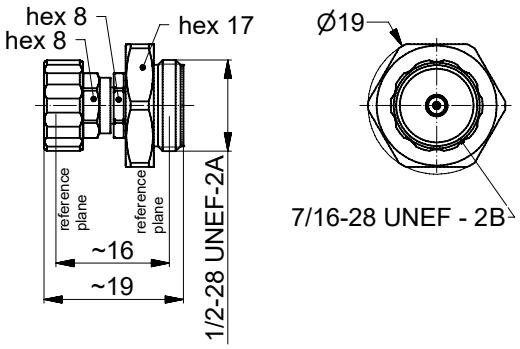
Features

- Well-defined reference plane
- Maximized return losses
- High connector repeatability (min. 45 dB)
- Suitable for precision measurement of S-parameters
- Ruggedized coaxial ports
- In-line style: DC short circuit
- Right-angle style: DC open circuit

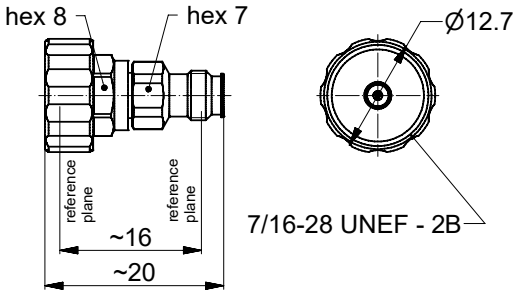
Part Number	Style	Description	Frequency Range	Return Loss, min.
BN 533140	in-line	Precision waveguide-to-coaxial adapter R 1.2k (WR 8) to RUG-1.0 mm female	90 to 120 GHz	≥ 10 dB
BN 533141	in-line	Precision waveguide-to-coaxial adapter R 900 (WR 10) to RUG-1.0 mm female	Full W band	≥ 16 dB
BN 533142	in-line	Precision waveguide-to-coaxial adapter R 740 (WR 12) to RUG-1.0 mm female	Full E band	≥ 16 dB
BN 533143	in-line	Precision waveguide-to-coaxial adapter R 620 (WR 15) to RUG-1.0 mm female	Full V band	≥ 16 dB
BN 533161	in-line	Precision waveguide-to-coaxial adapter R 900 (WR 10) to RUG-1.0 mm male	Full W band	≥ 16 dB
BN 533162	in-line	Precision waveguide-to-coaxial adapter R 740 (WR 12) to RUG-1.0 mm male	Full E band	≥ 16 dB
BN 533163	in-line	Precision waveguide-to-coaxial adapter R 620 (WR 15) to RUG-1.0 mm male	Full V band	≥ 16 dB
BN 533107	in-line	Precision waveguide-to-coaxial adapter R 1.2k (WR 08) to 1.0 mm female	90 to 120 GHz	≥ 10 dB
BN 533108	in-line	Precision waveguide-to-coaxial adapter R 1.2k (WR 08) to 1.0 mm male	90 to 120 GHz	≥ 10 dB
BN 533110	right-angle	Precision waveguide-to-coaxial adapter R 1.2k (WR 08) to 1.0 mm female	90 to 120 GHz	≥ 16 dB
BN 533112	in-line	Precision waveguide-to-coaxial adapter R 900 (WR 10) to 1.0 mm female	Full W band	≥ 16 dB
BN 533114	right-angle	Precision waveguide-to-coaxial adapter R 900 (WR 10) to 1.0 mm female	Full W band	≥ 16 dB
BN 533116	in-line	Precision waveguide-to-coaxial adapter R 740 (WR 12) to 1.0 mm female	Full E band	≥ 16 dB
BN 533118	right-angle	Precision waveguide-to-coaxial adapter R 740 (WR 12) to 1.0 mm female	Full E band	≥ 16 dB
BN 533120	in-line	Precision waveguide-to-coaxial adapter R 620 (WR 15) to 1.0 mm female	Full V band	≥ 16 dB

SPINNER 1.0 mm Portfolio Overview

Precision Inter-Type Test Port Adapters RUG-1.0 mm



Part Number	Interface type A	Interface type B	Frequency range	Return loss, min.
BN 534974	RUG-1.0 mm female	RUG-1.35 mm male	DC to 90 GHz	28 dB @ DC to 20 GHz 20 dB @ 20 to 50 GHz 17 dB @ 50 to 70 GHz 14 dB @ 70 to 90 GHz



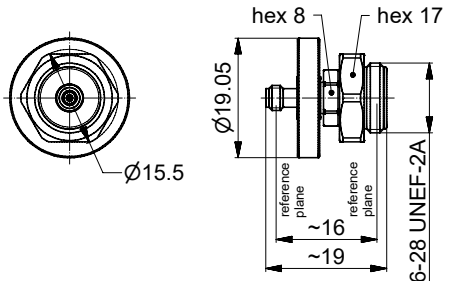
Part Number	Interface type A	Interface type B	Frequency range	Return loss, min.
BN 534975	RUG-1.0 mm female	1.35 mm female	DC to 90 GHz	28 dB @ DC to 20 GHz 20 dB @ 20 to 50 GHz 17 dB @ 50 to 70 GHz 14 dB @ 70 to 90 GHz

SPINNER 1.0 mm Portfolio Overview

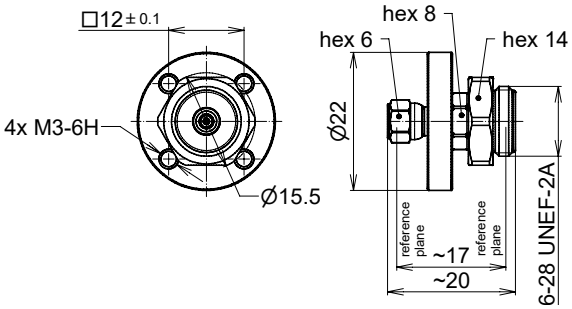
Precision Within-Type Test Port Adapters RUG-1.0 mm

Features

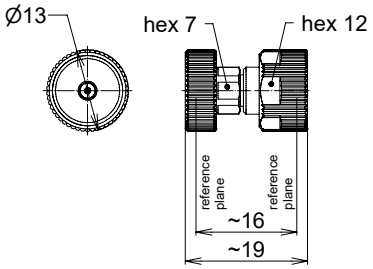
- Full bandwidth
- Amongst others especially suitable to ANRITSU VNA broadband millimeter-wave module with “Adapter Mounting Bracket” to stabilize the sophisticated coaxial 1.0 mm test port



Part Number	Interface type A	Interface type B	Frequency range	Return loss, min.
BN 534976	RUG-1.0 mm male	1.0 mm female	DC to 110 GHz	28 dB @ DC to 20 GHz 20 dB @ 20 to 50 GHz 17 dB @ 50 to 70 GHz 14 dB @ 70 to 110 GHz



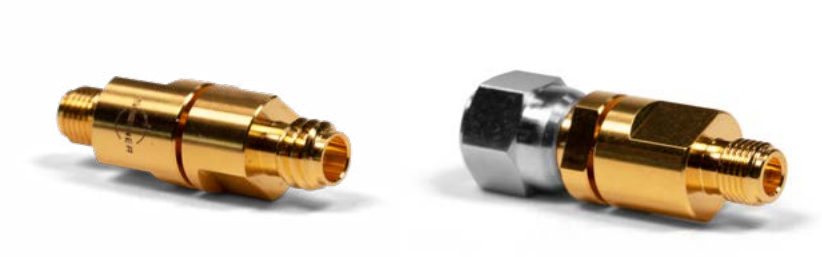
Part Number	Interface type A	Interface type B	Frequency range	Return loss, min.
BN 535126	RUG-1.0 mm male	1.0 mm male 4-hole female	DC to 110 GHz	28 dB @ DC to 20 GHz 20 dB @ 20 to 50 GHz 17 dB @ 50 to 70 GHz 14 dB @ 70 to 110 GHz
BN 535127	RUG-1.0 mm female	1.0 mm male	DC to 110 GHz	
BN 535129	RUG-1.0 mm female	1.0 mm female	DC to 110 GHz	



Part Number	Interface type A	Interface type B	Frequency range	Return loss, min.
BN 535128	RUG-1.0 mm female	RUG-1.0 mm female	DC to 110 GHz	28 dB @ DC to 20 GHz 20 dB @ 20 to 50 GHz 17 dB @ 50 to 70 GHz 14 dB @ 70 to 110 GHz

SPINNER 1.0 mm Portfolio Overview

Precision Inter-Type Adapters Coax-to-Coax



Part Number	Interface type A	Interface type B	Frequency range	Return loss, min.
BN 535143	1.85 mm male	1.0 mm male	DC to 70 GHz	28 dB @ DC to 20 GHz 20 dB @ 20 to 50 GHz 17 dB @ 50 to 70 GHz
BN 535144	1.85 mm male	1.0 mm female		
BN 535145	1.85 mm female	1.0 mm male		
BN 535146	1.85 mm female	1.0 mm female		
BN 534917R000	1.35 mm male	1.0 mm male	DC to 90 GHz	28 dB @ DC to 20 GHz 20 dB @ 20 to 50 GHz 17 dB @ 50 to 90 GHz
BN 534918R000	1.35 mm male	1.0 mm female		
BN 534919R000	1.35 mm female	1.0 mm male		
BN 534920R000	1.35 mm female	1.0 mm female		
BN 533164	1.0 mm female	0.8 mm male	DC to 120 GHz	25 dB @ DC to 26.5 GHz 22 dB @ 26.5 to 50 GHz 18 dB @ 50 to 90 GHz 15 dB @ 90 to 120 GHz
BN 533165	1.0 mm male	0.8 mm female		
BN 533166	1.0 mm male	0.8 mm male		
BN 533167	1.0 mm female	0.8 mm female		

PCB-Launch-Connector EasyLaunch 1.0 mm

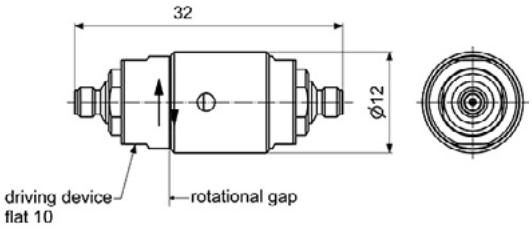
Features

- Variable positioning for maximum flexibility in compact board design
- Excellent RF performance for the highest frequencies
- solderless and reusable
- keeps the micro stripline free of damage through FCC (flattened center conductor) technology

Part Number	Description	Frequency range	Return loss, min.
BN 533402C0001	PCB Launch Connector 1.0 mm female	DC to 110 GHz	10 dB @ DC to 110 GHz

SPINNER 1.0 mm Portfolio Overview

Single Channel Coaxial Rotary Joint 1.0 mm

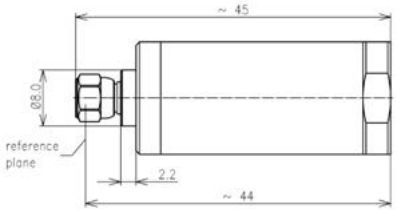


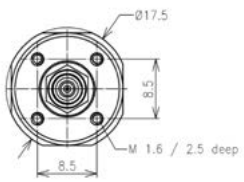
Part Number	Interface type A	Interface type B	Frequency range	VSWR, max.
BN 8350BNE2	1.0 mm female	1.0 mm female	DC to 110 GHz	1.2 @ DC to 26.5 GHz 1.4 @ 26.5 to 70 GHz 1.5 @ 70 to 110 GHz
BN 8350MME1	1.0 mm female	1.0 mm female panel 3-hole	DC to 110 GHz	

Cable Connectors

Part Number	Interface type A	Cable type	Frequency range	Return loss, min.
BN 533144	1.0 mm male	Semi-Rigid UT-047 (MIL-DTL-17/151)	DC to 110 GHz	17 dB @ DC to 90 GHz 15 dB @ 90 to110 GHz
BN 533188	1.0 mm female			
BN 533186	1.0 mm male	Semi-Rigid UT-047-LL	DC to 110 GHz	17 dB @ DC to 90 GHz 15 dB @ 90 to110 GHz
BN 533187	1.0 mm female			

Matched Load 1.0 mm





Features

- 1 W power handling @110GHz

Part Number	Description	Frequency range	Return loss, min.
BN 531715	Matched Load 1.0 mm male	DC to 110 GHz	10 dB @ DC to 110 GHz
BN 531717	Matched Load 1.0 mm female	DC to 110 GHz	10 dB @ DC to 110 GHz

SPINNER 1.0 mm Portfolio Overview

Panel Connectors

Part Number	Interface type A	Interface type B	Frequency range	Return loss, min.
BN 534999	1.0 mm female, d-hole	1.0 mm female	DC to 120 GHz	24 dB @ DC to 26.5 GHz 18 dB @ 26.5 to 70 GHz 15 dB @ 70 to 90 GHz 12 dB @ 90 to 120 GHz

Connector Gauges for 1.0 mm Interface

Part Number	Interface type
BN 537085	Connector gauge 1.0 mm male
BN 537086	Connector gauge 1.0 mm female

Torque Wrenches

Part Number	Description
BN 238748C0001	Torque Wrench 6 mm, 0.45 N·m
BN 238749C0001	Torque Wrench 6 mm, 0.34 N·m
BN 238750	Counter wrench 7 mm

HIGH FREQUENCY PERFORMANCE WORLDWIDE

SPINNER designs and builds cutting-edge radio frequency systems, setting performance and longevity standards for others to follow. The company's track record of innovation dates back to 1946, and many of today's mainstream products are rooted in SPINNER inventions.

Industry leaders continue to count on SPINNER's engineering excellence to drive down their costs of service and ownership with premium-quality, off-the-shelf products and custom solutions. Headquartered in Munich, Germany, the global frontrunner in RF components remains the first choice in simple-yet-smart RF solutions.

www.spinner-group.com

SPINNER GmbH
Headquarters
Erzgiessereistr. 33
80335 Munich
GERMANY
Phone: +49 89 12601-0
info@spinner-group.com

SPINNER Austria GmbH
Modecenterstraße 22/C38
1030 Vienna
AUSTRIA
Phone: +43 1 66277 51
info-austria@spinner-group.com

SPINNER Electrotécnica S.L.
c/ Perú, 4 – Local n° 15
28230 Las Rozas (Madrid)
SPAIN
Phone: +34 91 6305 842
info-iberia@spinner-group.com

SPINNER France S.A.R.L.
24 Rue Albert Priolet
78100 St. Germain en Laye
FRANCE
Phone: +33 1 74 13 85 24
info-france@spinner-group.com

SPINNER ICT Inc.
2220 Northmont Parkway, 250
Duluth, GA 30096
USA
Phone: +1 770 2636 326
info@spinner-group.com

SPINNER Nordic AB
Kråketorpsgatan 20
43153 Mölndal
SWEDEN
Phone: +46 31 7061670
info-nordic@spinner-group.com

SPINNER Telecommunication
Devices (Shanghai) Co., Ltd.
351 Lian Yang Road
Songjiang Industrial Zone
Shanghai 201613
P.R. CHINA
Phone: +86 21 577 45377
info-china@spinner-group.com

SPINNER UK Ltd.
Suite 8 Phoenix House
Golborne Enterprise Park,
High Street
Golborne, Warrington
WA3 3DP
UNITED KINGDOM
Phone: +44 1942 275222
info-uk@spinner-group.com

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