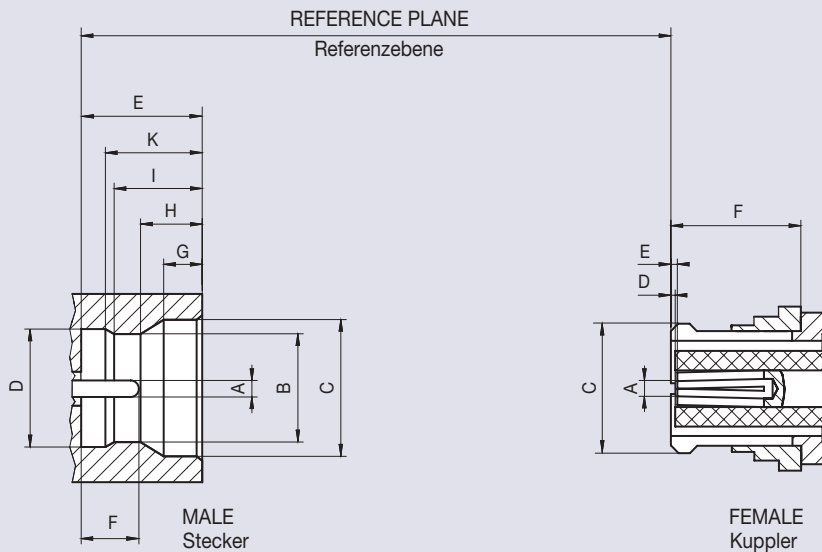


Interface Dimensions SMP

Code 19



	Male Stecker						Female Kuppler	
	Smooth bore		Limited detent		Full detent		min.	max.
	min.	max.	min.	max.	min.	max.		
A	Ø 0.36	Ø 0.41	Ø 0.36	Ø 0.41	Ø 0.36	Ø 0.41	1)	
B	Ø 3.12	Ø 3.23	Ø 3.00	Ø 3.10	Ø 2.90	Ø 3.00	-	-
C	Ø 3.53	Ø 3.68	Ø 3.53	Ø 3.68	Ø 3.53	Ø 3.68	-	Ø 3.43
D	-	-	Ø 3.15	Ø 3.20	Ø 3.15	Ø 3.20	0.00 nom.	
E	2.74	2.84	2.74	2.84	2.74	2.84	0.20 nom.	
F	1.14	1.40	1.14	1.40	1.14	1.40	2.84	-
G	0.84	0.94	0.84	0.94	0.84	0.94	-	-
H	-	-	1.40	1.45	1.40	1.45	-	-
I	-	-	1.98	2.08	1.98	2.08	-	-
K	-	-	2.19	2.29	2.19	2.29	-	-

Dimensions in mm

¹⁾ Resilient, dimension to meet electrical and mechanical requirements

SMP coaxial connectors are available as smooth bore, catchers mitt, limited detent and full detent versions, they are suitable for a wide range of board-to-board interconnect applications up to 40 GHz - from low up to the highest mechanical loads, e.g. in telecommunication, test & measurement or aerospace applications.

SMP connectors are mateable with GPO™ connectors. PCB connectors are supplied in tape & reel packaging.

SMP-Koaxial-Steckverbinder werden in den Festhaltevarianten Smooth bore, Catchers mitt, Limited detent und Full detent angeboten und eignen sich für vielseitige Board-to-Board-Verbindungen bis 40 GHz von geringer bis zu höchster mechanischer Beanspruchung, z.B. in Telekom- und Messtechnik-Anwendungen bis zu Anwendungen in Luft- und Raumfahrt.

SMP Steckverbinder sind steckkompatibel mit GPO™ Steckverbindern. PCB-Steckverbinder werden in Blistergurt-Verpackungen ausgeliefert.

Features

- ▶ Interface according to US MIL-STD 348A, Fig. 326
- ▶ Frequency range DC to 40 GHz
- ▶ Return loss (cable connector straight) ≥ 23 dB @ DC to 20 GHz
- ▶ Impedance 50 Ω
- ▶ Minimum board-to-board distance ≥ 9.05 mm
- ▶ Snap-on coupling

Product Range

- ▶ Cable connectors
- ▶ PCB connectors
- ▶ Panel connectors
- ▶ Adaptors
- ▶ Terminations

Technical Data SMP

Code 19

Applicable standards Anwendbare Normen	
Interface according to Interface gemäß	MIL-STD-348A, Fig. 326 Mateable with GPO™ (Gilbert Engineering Co., Inc)
Electrical data Elektrische Daten	
Impedance Wellenwiderstand	50 Ω
Frequency range Frequenzbereich	DC to 40 GHz
Return loss (cable connector straight) Rückflusdämpfung (Kabelsteckverbinder gerade)	≥ 23 dB @ DC to 20 GHz ≥ 14 dB @ 20 GHz to 40 GHz
Insertion loss Dämpfung	≤ 0.1 x √f (GHz) dB
Insulation resistance Isolationswiderstand	≥ 5 GΩ
Center contact resistance Übergangswiderstand Innenleiter	≤ 6 mΩ
Outer contact resistance Übergangswiderstand Außenleiter	≤ 2 mΩ
Test voltage Prüfspannung	500 V rms
Working voltage Betriebsspannung	335 V rms
Power handling Leistungsbelastbarkeit	65 W @ 2.2 GHz
Contact current Kontaktstrombelastbarkeit	≤ 1.2 A DC
RF leakage - Interface Schirmdämpfung	≥ 85 dB @ DC to 4 GHz
Mechanical data Mechanische Daten	
Mating cycles Steckzyklen	Full detent: ≥ 100 Limited detent: ≥ 500 Smooth bore, Catchers mitt: ≥ 1000
Center contact captivation Innenleiter Haltekraft	axial: ≥ 7 N
Engagement force Steckkraft	Full detent: ≤ 68 N Limited detent: ≤ 45 N Smooth bore, Catchers mitt: ≤ 9 N
Disengagement force Ziehkraft	Full detent: ≥ 22 N Limited detent: ≥ 9 N Smooth bore, Catchers mitt: ≥ 2.2 N
Axial misalignment Axialer Toleranzausgleich	± 0.3 mm
Radial misalignment Radialer Toleranzausgleich	4° (interface)
Board-to-board distance (min.) Board-to-Board Abstand (min.)	9.05 mm (solder paste thickness not included)
Environmental data Umweltdaten	
Temperature range Temperaturbereich	-65 °C to +155 °C
Thermal shock Temperaturzyklen	MIL-STD-202, Method 107, Condition B
Damp heat Feuchte Wärme	IEC 60068-2-78 (40 °C, 93% RH, 56d)
Climatic category Klimakategorie	IEC 61169-1, Sub-clause 9.4.5 (+155 °C, 1000 hours)
Moisture resistance Feuchtigkeitsbeständigkeit	MIL-STD-202, Method 106
Vibration Vibration	MIL-STD-202, Method 204, Condition B
Shock Schock	MIL-STD-202, Method 213, Condition A
Max. soldering temperature (PCB connectors) Max. Löttemperatur (Leiterplattensteckverbinder)	IEC 61760-1, +260 °C for 10 sec.
Materials Materialien	
Spring loaded contact parts Federnde Kontaktteile	CuBe, Au plating
Center contact Innenleiter	CuZn, Au plating
Outer contact Außenleiter	CuZn, Au plating
Crimping ferrule Crimphülse	Cu, Au plating
Dielectric Dielektrikum	PTFE / PEEK / LCP



Rosenberger connectors generally fulfill the indicated technical data. Individual values of connectors may deviate depending upon application, design, type of cable, assembly method and workmanship. Data sheets for particular products can be downloaded on our website or can be provided on request from your Rosenberger sales partner.

Rosenberger-Steckverbinder erfüllen grundsätzlich die hier angegebenen technischen Daten. Je nach Anwendung, Bauart, Kabeltyp, Montageart und -ausführung können einzelne Werte der Steckverbinder hiervon abweichen. Datenblätter zu einzelnen Produkten können Sie von unserer Website herunterladen oder auf Anfrage von Ihrem Rosenberger-Ansprechpartner erhalten.

Cable Connectors Semi-Rigid Cables



Straight Plug, solder Panel mount; hexagonal flange

Semi-Rigid Cables

Rosenberger No.	Order No.	Sales Unit	Packaging	Remarks	Cable Group	
19 S 601-271 L5	179837	100	standard	Limited detent rear mount	71	
19 S 641-271 L5	108028	100	standard	Smooth bore rear mount	71	
19 S 602-271 L5	139095	100	standard	Limited detent snap-in	71	


Straight Jack, solder

Semi-Rigid Cables

Rosenberger No.	Order No.	Sales Unit	Packaging	Remarks	Cable Group	
19 K 101-270 L5	192320	50	standard	Frequency: DC to 26.5 GHz	70	
19 K 107-270 L5	163569	50	standard	Frequency: DC to 40 GHz	70	
19 K 101-271 L5	189301	100	standard	Frequency: DC to 26.5 GHz	71	
19 K 107-271 L5	192325	100	standard	Frequency: DC to 40 GHz	71	
19 K 101-272 L5	135145	50	standard	Frequency: DC to 26.5 GHz	72	

Right Angle Jack, solder

Semi-Rigid Cables

Rosenberger No.	Order No.	Sales Unit	Packaging	Remarks	Cable Group	
19 K 202-270 L5	145500	100	standard	Frequency: DC to 26.5 GHz	70	
19 K 202-271 L5	192102	100	standard	Frequency: DC to 26.5 GHz	71	

Cable Connectors - Flexible Cables

Straight Jack, crimp

Flexible Cables

Rosenberger No.	Order No.	Sales Unit	Packaging	Cable Group	
19 K 102-101 L5	146101	50	standard	01	
19 K 101-102 L5	183540	100	standard	02	
19 K 101-103 L5	183543	100	standard	03	
19 K 102-1X1 L5	107932	100	standard	X1	

Right Angle Jack, solder-crimp



Flexible Cables

Rosenberger No.	Order No.	Sales Unit	Packaging	Cable Group	
19 K 202-301 L5	183546	100	standard	01	
19 K 201-302 L5	183483	100	standard	02	
19 K 201-303 L5	151723	100	standard	03	
19 K 203-3X1 L5	169113	25	standard	X1	

Panel Connectors - Coaxial End


Panel Plug

Coaxial End

Rosenberger No.	Order No.	Sales Unit	Packaging	Remarks	
19 S 105-500 L5	186175	100	blister	Limited detent	
19 S 181-5H0 E4	139397	100	blister	Full detent hermetic sealed	

Panel Plug, hexagonal flange



Coaxial End

Rosenberger No.	Order No.	Sales Unit	Packaging	Remarks	
19 S 601-500 L5	157742	100	blister	Limited detent Panel feed through	

PCB Connectors - SMD


Straight Plug, PCB

SMD

Rosenberger No.	Order No.	Sales Unit	Packaging	Remarks		
19 S 101-40M L5	179930	1500	tape & reel	Limited detent		
	180774	100	blister			
19 S 10H-40M L5	182497	1500	tape & reel	Limited detent removable plastic cap on suction area		
	148138	100	blister			
19 S 141-40M L5	145799	1500	tape & reel	Smooth bore		
	179999	100	blister			
19 S 14H-40M L5	147074	1500	tape & reel	Smooth bore removable plastic cap on suction area		
19 S 102-40M L5	136644	1500	tape & reel	Limited detent removable plastic cap on suction area Frequency: DC to 40 GHz		
	141613	100	blister			
19 S 122-40M L5	102524	100	blister	Limited detent, stainless steel removable plastic cap on suction area Frequency: DC to 40 GHz		
19 S 144-40M L5	135686	750	tape & reel	Catchers mitt		
	183482	100	blister			
19 S 14K-40M L5	151875	750	tape & reel	Catchers mitt removable plastic cap on suction area		
19 S 104-40M L5	102294	1500	tape & reel	Catchers mitt		
	142205	100	blister			
19 S 14L-40M L5	272608	750	tape & reel	Limited detent		
	174585	100	blister			
19 S 106-500 L5	107111	100	blister	Limited detent, pin length 0.8 mm pin-in-paste removable plastic cap on suction area		
19 S 103-500 L5	182496	100	blister	Limited detent, pin length 2.5 mm pin-in-paste		
19 S 103-400 L5	104517	750	tape & reel	Limited detent pin-in-paste		
	180770	100	blister			
19 S 10A-400 L5	146632	500	tape & reel	Limited detent pin-in-paste removable plastic cap on suction area		
	148157	100	blister			



Straight Plug, PCB, panel mount

SMD

Rosenberger No.	Order No.	Sales Unit	Packaging	Remarks	
19 S 10D-40M L5	183477	100	blister	Limited detent rear mount	

Right Angle Plug, PCB

SMD

Rosenberger No.	Order No.	Sales Unit	Packaging	Remarks	
19 S 201-40M L5	179841	1500	tape & reel	Limited detent removable sticker on suction area	
	182011	100	blister		
19 S 241-40M L5	197991	1500	tape & reel	Smooth bore removable sticker on suction area	
	189070	100	blister		
19 S 202-40M L5	167254	1500	tape & reel	Limited detent	
	167257	100	blister		
19 S 242-40M L5	171438	1500	tape & reel	Smooth bore	
	138377	100	blister		

PCB Connectors - Solder Pin

Straight Plug, PCB

Solder Pin

Rosenberger No.	Order No.	Sales Unit	Packaging	Remarks	
19 S 102-400 L5	182508	50	blister	Limited detent	
19 S 145-400 L5	145152	750	tape & reel	Smooth bore	
	142203	100	blister		


Right Angle Plug, PCB

Solder Pin

Rosenberger No.	Order No.	Sales Unit	Packaging	Remarks	
19 S 201-400 L5	102064	100	blister	Limited detent	

Adaptors

Bullets SMP female-female




Rosenberger No.	Order No.	Sales Unit	Packaging	Board-to-Board Distance ^{1) 3)}	Bullet Length ²⁾	
19 K 101-K00 L5	180771	100	standard	9.35 mm ± 0.3 mm	6.45 mm	
19 K 102-K00 L5	167255	100	standard	9.90 mm ± 0.3 mm	7.00 mm	
19 K 110-K00 L5	183484	50	standard	11.10 mm ± 0.3 mm	8.20 mm	
19 K 106-K00 L5	203609	100	standard	11.50 mm ± 0.3 mm	8.60 mm	
19 K 109-K00 L5	183527	250	standard	12.80 mm ± 0.3 mm	9.90 mm	
19 K 108-K00 L5	183530	250	standard	14.30 mm ± 0.3 mm	11.40 mm	
19 K 114-K00 L5	183523	100	standard	15.49 mm ± 0.3 mm	12.59 mm	
19 K 119-K38 L5	254062	25	standard	17.78 mm ± 0.3 mm	14.88 mm	
19 K 104-K00 L5	192074	250	standard	19.64 mm ± 0.3 mm	16.74 mm	
19 K 119-K11 L5	185638	25	standard	20.10 mm ± 0.3 mm	17.20 mm	
19 K 115-K00 L5	162598	50	standard	22.40 mm ± 0.3 mm	19.50 mm	
19 K 119-K00 L5	151931	25	standard	23.20 mm ± 0.3 mm	20.30 mm	
19 K 117-K00 L5	145147	25	standard	25.29 mm ± 0.3 mm	22.39 mm	
19 K 107-K00 L5	148746	100	standard	26.70 mm ± 0.3 mm	23.80 mm	
19 K 116-K00 L5	145516	50	standard	27.09 mm ± 0.3 mm	24.19 mm	
19 K 119-K06 L5	201131	100	standard	40.45 mm ± 0.3 mm	37.55 mm	

1) When standard SMD-connectors are applied (e.g. 19 S 101-40M, 19 S 144-40M, ...).

2) Bullets with other lengths on request.

3) Solder paste thickness not included.

Adaptors SMP - SMP

Rosenberger No.	Order No.	Sales Unit	Packaging	Remarks	Return Loss	
19 S 101-S20 D3	106021	1	standard	SMP male - male calibration adaptor	≥ 26 dB @ DC to 4 GHz ≥ 20 dB @ 4 GHz to 18 GHz	
19 S 101-K20 D3	104358	1	standard	SMP male - female calibration adaptor	≥ 26 dB @ DC to 4 GHz ≥ 20 dB @ 4 GHz to 18 GHz	
19 K 101-K20 D3	104599	1	standard	SMP female - female calibration adaptor	≥ 26 dB @ DC to 4 GHz ≥ 20 dB @ 4 GHz to 18 GHz	


Adaptors SMP - SMA

Rosenberger No.	Order No.	Sales Unit	Packaging	Remarks	
19 S 132-S00 S3	100585	1	standard	SMP male - SMA male	
19 S 132-K00 S3	101244	1	standard	SMP male - SMA female	
19 K 132-S00 D3	150878	1	standard	SMP female - SMA male	
19 K 132-K00 D3	105168	1	standard	SMP female - SMA female	

Adaptors SMP - RPC-2.92


Rosenberger No.	Order No.	Sales Unit	Packaging	Remarks	Return Loss	
02 S 119-S00 E3	106429	1	standard	RPC-2.92 male - SMP male	≥ 32 dB @ DC to 12 GHz ≥ 26 dB @ 12 GHz to 26.5 GHz ≥ 21 dB @ 26.5 GHz to 40 GHz	
02 S 119-K00 E3	104118	1	standard	RPC-2.92 male - SMP female	≥ 32 dB @ DC to 12 GHz ≥ 26 dB @ 12 GHz to 26.5 GHz ≥ 21 dB @ 26.5 GHz to 40 GHz	
02 K 119-S00 E3	101856	1	standard	RPC-2.92 female - SMP male	≥ 32 dB @ DC to 12 GHz ≥ 26 dB @ 12 GHz to 26.5 GHz ≥ 21 dB @ 26.5 GHz to 40 GHz	
02 K 119-K00 E3	106066	1	standard	RPC-2.92 female - SMP female	≥ 32 dB @ DC to 12 GHz ≥ 26 dB @ 12 GHz to 26.5 GHz ≥ 21 dB @ 26.5 GHz to 40 GHz	

Adaptors SMP - RPC-3.50


Rosenberger No.	Order No.	Sales Unit	Packaging	Remarks	Return Loss	
03 K 719-S22 S3	135504	1	standard	RPC-3.50 female - SMP male full detent 2-hole flange floating test adaptor	≥ 30 dB @ DC to 12 GHz ≥ 20 dB @ 12 GHz to 26.5 GHz	

Terminations

Termination Plug



Rosenberger No.	Order No.	Sales Unit	Packaging	Remarks	Return Loss	
19 S 15R-001 E4	135083	1	standard	1 Watt Frequency: DC to 18 GHz	≥ 28.3 dB @ DC to 1 GHz ≥ 20.1 dB @ 1 GHz to 18 GHz	

Termination Jack


Rosenberger No.	Order No.	Sales Unit	Packaging	Remarks	Return Loss	
19 K 15R-001 E4	103103	10	blister	1 Watt Frequency: DC to 18 GHz	≥ 28.3 dB @ DC to 1 GHz ≥ 20.1 dB @ 1 GHz to 18 GHz	

Special Tools

Extraction Tool

Rosenberger No.	Order No.	Sales Unit	Packaging	Remarks	
19 W 002-000	104203	1	standard	extraction tool for SMP connectors	
19 W 009-000	214301	1	box	extraction tool for SMP connectors	

Distance Gauge

Rosenberger No.	Order No.	Sales Unit	Packaging	Remarks	
11 W 115-000	150600	1	standard	distance gauge for SMP connectors width 0.6 mm, thickness 0.5 mm	

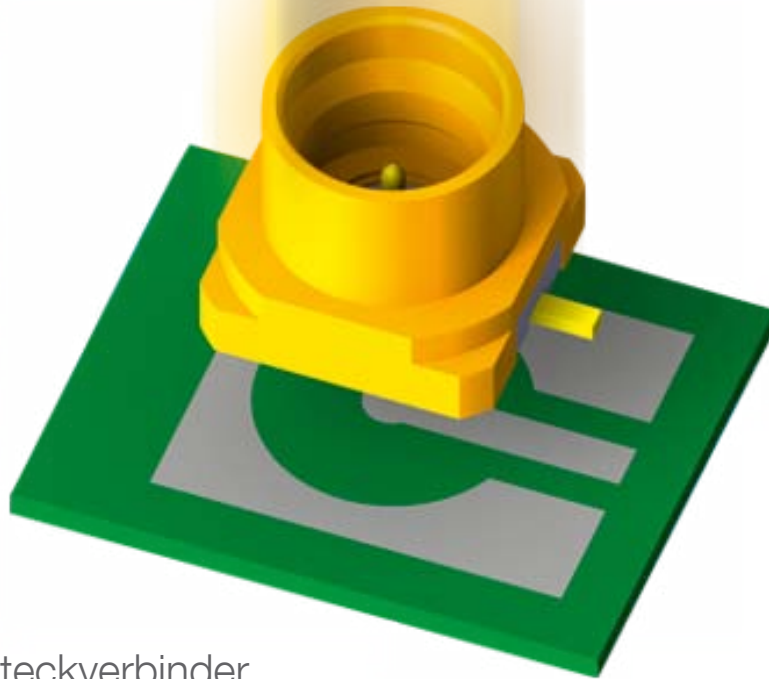
PCB Connectors

Rosenberger provides a wide range of RF coaxial connectors for PCB applications. A wide range of retention and installation variants are available. The range incorporates straight and angled Cable-to-Board connections for common standard RF series such as SMA, QMA, SMB or MCX as well as Board-to-Board connectors for innovative coaxial series such as SMP, Longwipe-SMP, P-SMP, FMC, Mini-SMP and Micro-RF.

The surface-mount technology facilitates very good transmission characteristics and automatic installation using the special tape & reel packaging. In addition to small Board-to-Board distances, essential characteristics are equalization of radial and axial misalignments, the different holding forces and a fast and cost-effective assembly design.

The quality of surface mount connections is dependent on several parameters, such as substrate thickness and board-stack-up. Rosenberger offers tailor-made footprints and layout recommendations for customized applications. The quality of surface mount connections is dependent on several parameters, such as substrate thickness and board-stack-up.

Rosenberger offers tailor-made footprints and layout recommendations for customized applications.



Leiterplatten-Steckverbinder

Rosenberger verfügt über eine breite Palette von koaxialen HF-Steckverbindern für PCB-Anwendungen. Vielfältige Festhalte- und Montage-Varianten stehen zur Verfügung. Das Spektrum umfasst gerade und gewinkelte Cable-to-Board-Steckverbinder z.B. der Serien SMA, QMA, SMB oder MCX und zudem Board-to-Board-Steckverbinder aller innovativen Koaxial-Serien wie SMP, Longwipe-SMP, P-SMP, FMC, Mini-SMP und Micro-RF.

Die Surface-Mount-Technologie ermöglicht sehr gute Übertragungseigenschaften und automatische Montage durch spezielle Tape & Reel-Verpackungen.

Wesentliche Merkmale sind, neben der geringen Board-to-Board-Abstände, der axiale und radiale Toleranzausgleich, die verschiedenen Festhaltekräfte und ein schnelles und kostengünstiges Baugruppendesign. Die Qualität der Surface-Mount-Anschlüsse ist abhängig von einer Vielzahl von Parametern, wie z.B. Substratstärke und Board-Stack-up.

Rosenberger bietet maßgeschneiderte Footprints und Layoutempfehlungen für kundenspezifische Anwendungen.

Retention Variants

Smooth bore

Sliding contact

For modular systems, backplane applications

Catchers mitt

Sliding contact with extended catching range

For modular systems, backplane applications

Limited detent

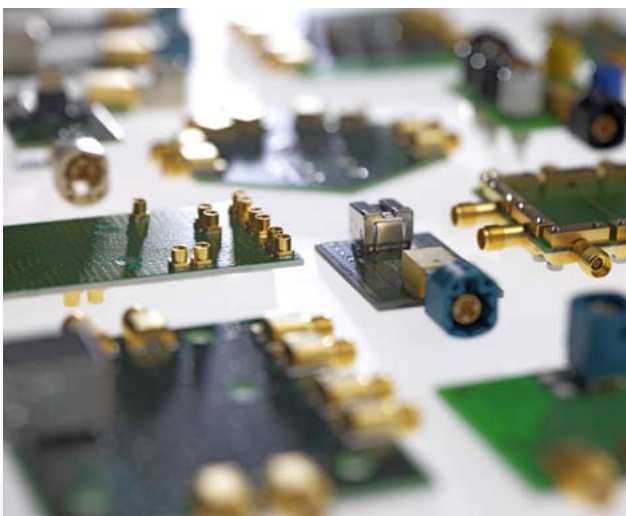
Medium-tight retention

For applications with low to medium mechanical loads: telecommunications and test and measurement applications

Full detent

Fixed retention, vibration resistant

For high mechanical loads, e.g. in aerospace applications



Festhaltevarianten

Smooth bore

Gleitender Kontakt

Für Einschubtechnik, Backplane-Anwendungen

Catchers mitt

Gleitender Kontakt mit erweitertem Fangbereich für lange Board-to-Board-Verbindungen

Für Einschubtechnik, Backplane-Anwendungen

Limited detent

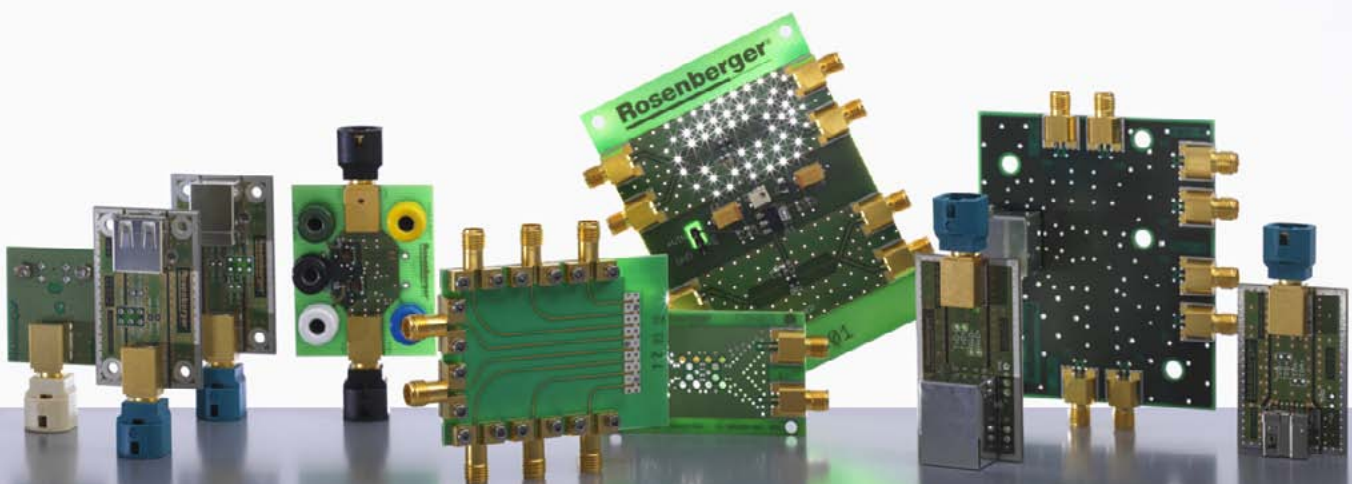
Mittelfeste Verrastung

Für Anwendungen mit geringer bis mittlerer mechanischer Beanspruchung: Telekom- und Messtechnik-Anwendungen

Full detent

Feste Verrastung, vibrationsstabil

Für hohe mechanische Beanspruchungen, z.B. für Anwendungen in Luft- und Raumfahrt

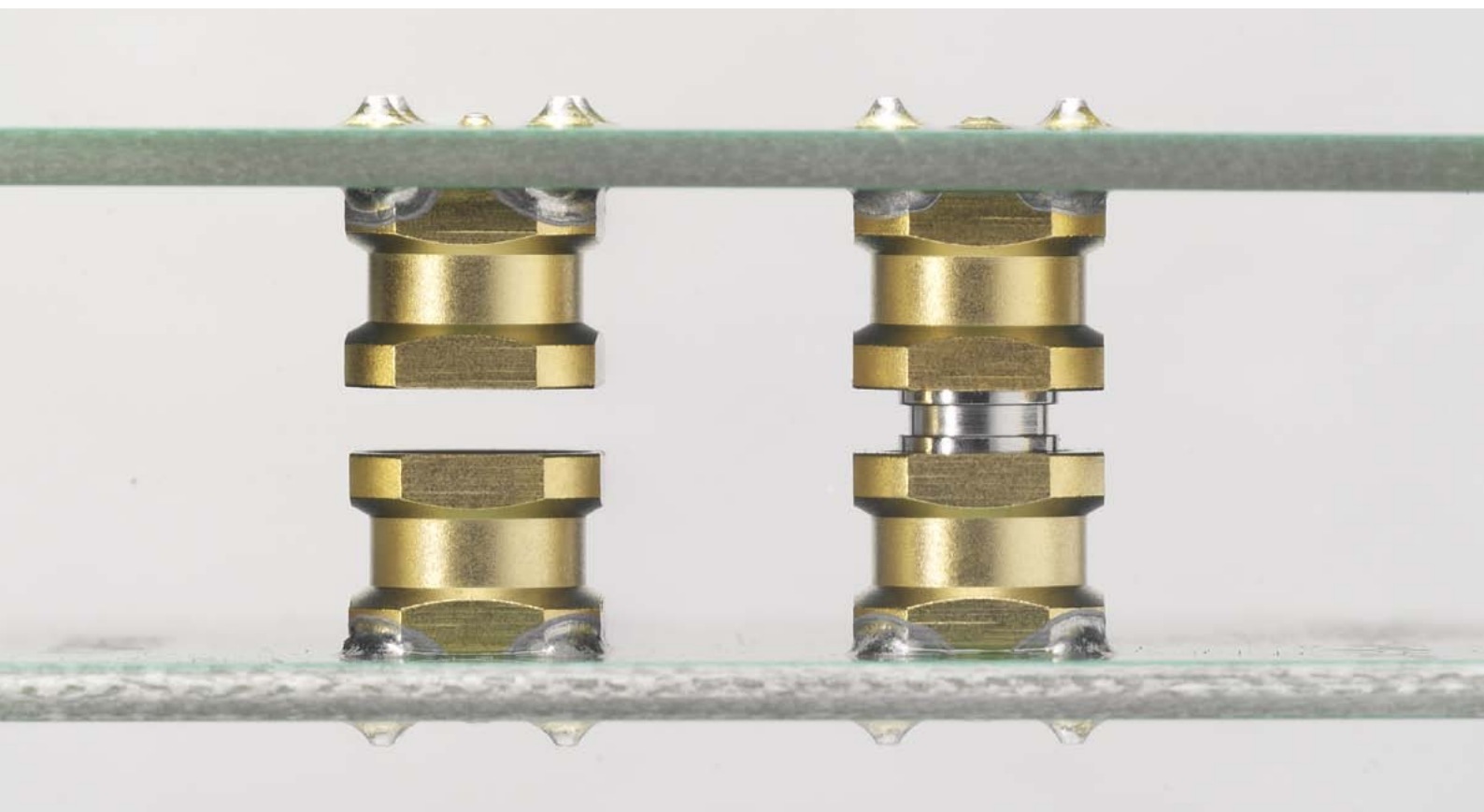


Misalignment with board-to-board connectors

Rosenberger's three-part board-to-board connection consists of a PCB connector with limited or full detent retention on one side and a smooth bore type on the other side, with a bullet in between. This design allows mechanical misalignment, while at the same time guaranteeing excellent electrical performance. It is possible to connect PCBs which are arranged parallel or perpendicular to each other.

Toleranzausgleich mit Board-to-Board-Verbindern

Das dreiteilige Design der Rosenberger Board-to-Board-Verbindern besteht aus einem Leiterplatten-Steckverbinder in Limited-Detent- oder Full-Detent-Ausführung auf der einen Seite und aus einem Smooth-Bore-Typen auf der anderen Seite. Zwischen beide Steckverbinder wird ein Adapter, das so genannte Bullet, eingesetzt. Diese Anordnung ermöglicht einen mechanischen Toleranzausgleich und gewährleistet gleichzeitig ausgezeichnete elektrische Eigenschaften. Es können sowohl senkrecht aufeinander stehende als auch parallel angeordnete Leiterplatten kontaktiert werden.



Axial Misalignment

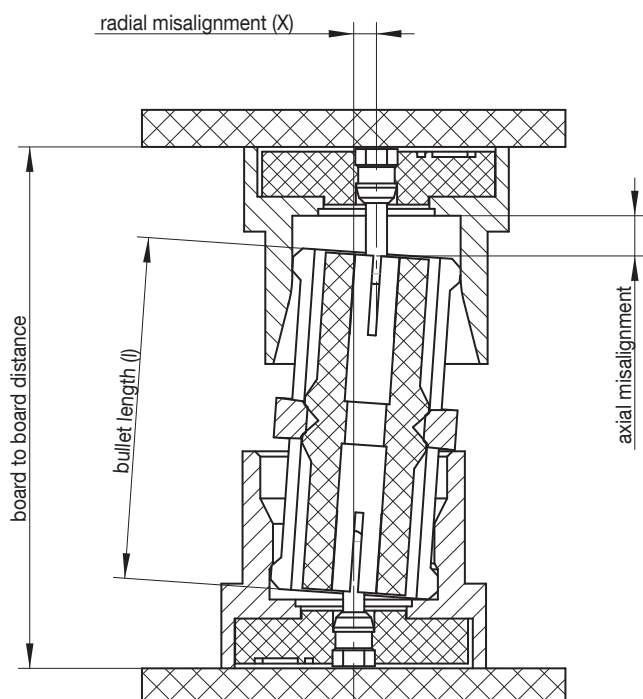
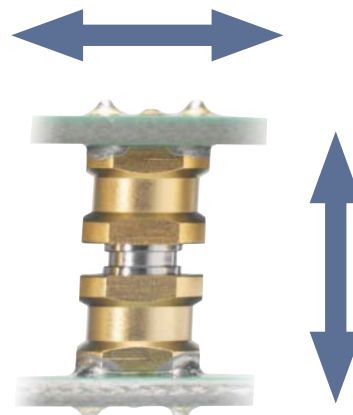
When using a smooth bore type on one side, the connection allows axial misalignment.

It is limited by the sliding surface of the outer contact. Depending on the used connector series, different tolerance ranges are covered. With simultaneous radial misalignment applied to the connection, the maximum axial misalignment is reduced accordingly.

Axialer Toleranzausgleich

Der axiale Toleranzausgleich ist möglich bei Verwendung eines Smooth-Bore-Steckverbinders auf der einen Seite der Leiterplattenverbindung.

Er ist begrenzt durch die maximale Gleitfläche des Außenleiters. Abhängig von der eingesetzten Steckverbinder-Serie werden unterschiedlich große Toleranzbereiche abgedeckt. Bei gleichzeitigem radialen Toleranzausgleich verringert sich der maximale axiale Toleranzausgleich entsprechend.



Radial Misalignment

The maximum radial misalignment of the three-part board-to-board connection is dependent on the length of the bullet. It can be easily calculated by using following formula:

$$X = l \times \sin \alpha$$

X = maximum radial tolerance [mm]

α = maximum angle 4°

l = bullet length [mm]

Radialer Toleranzausgleich

Die maximale radiale Toleranz bei der dreiteiligen Leiterplattenverbindung ist abhängig von der Länge des verwendeten Bullets und kann mit einer einfachen Formel berechnet werden:

$$X = l \times \sin \alpha$$

X = maximale radiale Toleranz [mm]

α = maximaler Winkel 4°

l = Länge des Bullets [mm]