

Rosenberger[®]



Automotive Connectors

FAKRA-RF Connectors

Rosenberger Hochfrequenztechnik was found in 1958 and ranks among the leading manufacturers of high-frequency coaxial connectors worldwide today. In addition, a comprehensive program of accessories such as adaptors, attenuators, cables and test accessories is also available. With production facilities, sales offices and exclusive agencies in Europe, Asia and the Americas, we are represented locally throughout the world.

Innovative products of excellent quality play a key role in many high-tech applications – for example in telecom, test and measurement or automotive applications. Rosenberger is certified to **ISO/TS 16949**.

Rosenberger FAKRA*-RF connectors have been especially designed to fulfill the tough requirements of the automotive industry and are specified to the FAKRA standard. A comprehensive coding system offers 11 mechanical and colored codings for modern automotive applications, e.g. GPS, keyless entry or GSM mobile radio.

The catalog Automotive Connectors lists our wide range of automotive connectors for cable assembly and PCB mounting.

New in the catalog:

- PCB connectors for "pin-in-paste"-soldering process
- II. generation of twin connectors.

Connector series such as FME or Mini-UHF that open up further fields of application around the automobile are described in Rosenberger Catalog 1.

We would be pleased to advise you – just contact your Rosenberger partner or your representation.

* FAKRA = **Fachkreis Automobil**

Rosenberger standard connectors are described in Catalog 1. Precision connectors for test and measurement applications are described in Catalog 2.

Die Rosenberger-Standardsteckverbinder finden Sie im Katalog 1, Präzisionssteckverbinder für Anwendungen in der Messtechnik im Katalog 2.

Die **Rosenberger Hochfrequenztechnik** wurde 1958 gegründet und zählt heute zu den weltweit führenden Herstellern von Hochfrequenz-Koaxialsteckverbindern, ergänzt durch ein umfangreiches Zubehörprogramm wie Adapter, Dämpfungsglieder, Kabel oder Messzubehör. Mit Fertigungsstandorten, Rosenberger-Vertriebsniederlassungen und Generalvertretungen in Europa, Asien und Amerika sind wir weltweit vor Ort vertreten.

Innovative Produkte in hervorragender Qualität von Rosenberger spielen heute eine Schlüsselrolle in vielen High-Tech-Anwendungen – in der Telekommunikation, in der industriellen Messtechnik, in der Kfz-Elektronik. Rosenberger ist zertifiziert nach **ISO/TS 16949**.

Rosenberger FAKRA*-HF-Steckverbinder wurden speziell für die hohen Anforderungen in der Automobil-Industrie entwickelt und sind spezifiziert nach der FAKRA-Norm. Das ausgereifte Kodierungssystem bietet 11 mechanische und farbliche Kodierungen für moderne Kfz-Anwendungen – wie z.B. GPS, Keyless Entry oder GSM-Mobilfunkstandard.

Der Katalog Automotive Connectors enthält unser umfangreiches Produktspektrum an Kabel- und Leiterplatten-Steckverbindern.

Neu im Katalog:

- Leiterplatten-Steckverbinder für „Pin-in-Paste“-Lötverfahren
- Doppel-Steckverbinder der II. Generation.

Steckverbinderreihen wie z.B. FME oder Mini-UHF, die weitere Anwendungsfelder rund ums Auto erschließen, finden Sie im Rosenberger Katalog 1.

Wir beraten Sie gerne – wenden Sie sich an Ihren Rosenberger Ansprechpartner oder Ihre Vertretung.

* FAKRA = **Fachkreis Automobil**

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Cables

Kabel

Cable Group	Impedance	Cable Type
02	50 Ω	RG 174, RG 316
06	50 Ω	RG 58
M4	50 Ω	RTK 031

Plating Code

The used platings of outer and center contacts of Rosenberger connectors can be identified by each part number.

Example:

59 K 13D-102 A4-* Plating outer contact: nickel (A)

Plating center contact: gold (4)

Standard plating code of FAKRA-RF connectors is A4.

Oberflächenschlüssel

Die verwendeten Oberflächen bei Innen- und Außenleiter der Rosenberger-Steckverbinder sind durch die beiden letzten Stellen der jeweiligen Artikel-Bestellnummer definiert.

Beispiel:

59 K 13D-102 A4-* Oberfläche Außenleiter: Nickel (A)

Oberfläche Innenleiter: Gold (4)

Die Standard-Oberfläche bei FAKRA-HF-Steckverbindern ist A4.

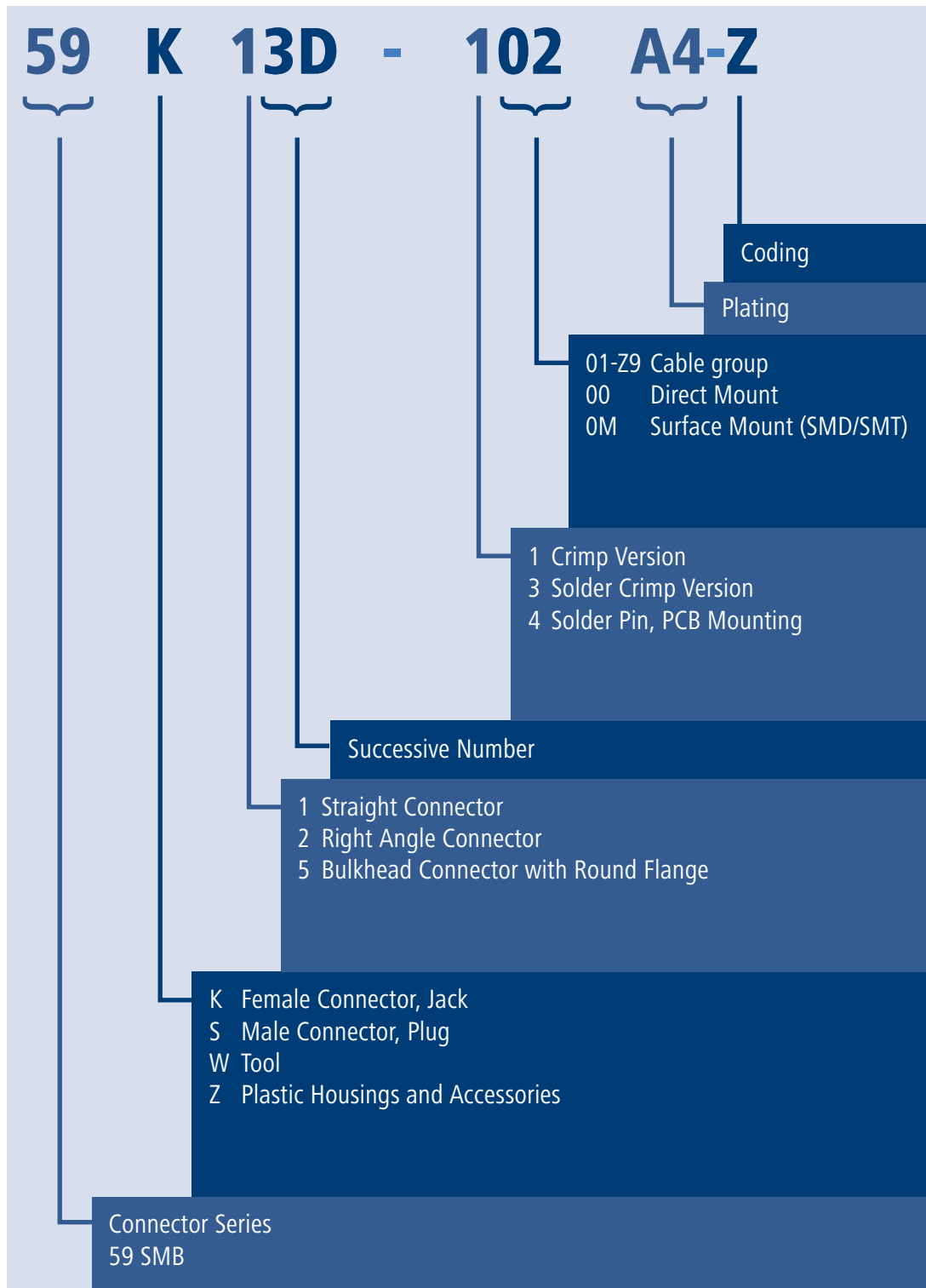
Standard plating codes of other Rosenberger connectors

Die Rosenberger Standard-Oberflächen

Outer Contact				
A	Nickel	3	μm	Non magnetic
B	Silver	3	μm	
E	Gold	0.80	μm	
F	Gold	0.10	μm	
H	Gold	1.27	μm	
L	PSC	0.15	μm Gold over chem. Nickel	Non magnetic
N	Optalloy, Optargen			Non magnetic
S	Stainless Steel			
T	Tin/Lead	6–8	μm	Non magnetic
Center Contact				
1	Silver	3	μm	Non magnetic
3	Gold	1.27	μm	
4	Gold	0.80	μm	Non magnetic
5	Gold	0.15	μm	

Number Designation

Nummernschlüssel



Specifications of FAKRA RF

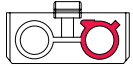
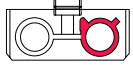
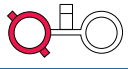
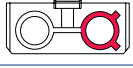
Spezifikationen der FAKRA HF

Electrical characteristics		Elektrische Daten
Characteristic impedance	50 Ω	Wellenwiderstand
Frequency range	DC..6 GHz	Frequenzbereich
Return loss	≤ -18 dB	Rückflussdämpfung
Insertion loss max.	≤ 0.1 dB @ 4 GHz	Dämpfung
Insulation resistance	1000 M Ω	Isolationswiderstand
Center contact resistance	≤ 5.0 m Ω	Übergangswiderstand Innenleiter
Outer contact resistance	≤ 2.5 m Ω	Übergangswiderstand Außenleiter
Test voltage	≤ 750 V rms (at sea level, 50 Hz)	Prüfspannung
Working voltage	≤ 335 V rms (at sea level, 50 Hz)	Betriebsspannung
Working current	≤ 1.5 A DC	Betriebsstrom
Screening effectiveness	> 55 dB	Schirmung
Mechanical characteristics		Mechanische Daten
Engagement force	25 N max.	Einsteckkraft
Disengagement force	2 N min.	Ausziehkraft
Design according to	DIN 72594 (CECC 22130)	Anschlussdimensionen gemäß
Connecting operations	≤ 50	Anzahl Steckzyklen
Plating Version A4 (Standard)		Beschichtungen Version A4 (Standard)
Contact area	Ni 2.0 μ m min.	Kontaktbereich
Center contact	Au 0.8 μ m	Innenleiter
Other parts	Ni 2.0 μ m min.	andere Teile
Solder parts	Au 0.1 μ m min.	Lötteile
Plating Version E4		Beschichtungen Version E4
Contact area	Au 0.8 μ m	Kontaktbereich
Center contact	Au 0.8 μ m	Innenleiter
Other parts	Ni 2.0 μ m min.	andere Teile
Solder parts	Au 0.1 μ m min.	Lötteile
Environmental influences		Umgebungseinflüsse
Temperature range	-40 °C to/bis $+100$ °C	Temperaturbereich
Solder version	to/bis 200 °C/60 s	Lötteile
Solder version SMD	to/bis 260 °C/20 s	Lötteile SMD
Vibration	MIL-STD-202 Meth. 204/B	Vibration
Humidity	MIL-STD-202 Meth. 106/D	Feuchtigkeit
Shock	MIL-STD-202 Meth. 213/B	Schockfestigkeit
Climatic class according IEC 68	40/100/21	Klimaklasse entsprechend IEC 68
Materials		Materialien
Outer contact	Brass	Außenleiter
Spring ring	CuBe or stainless steel	Federring
Center contact, plug	Brass	Innenleiter, Stecker
Center contact, jack	CuBe	Innenleiter, Kuppler
Insulator	PTFE	Isolator

Plugs, jacks and housings according to FAKRA standards (FAKRA = **Fachkreis** Automobil).
Steckverbinder und Gehäuse entsprechen der FAKRA-Norm (FAKRA = **Fachkreis** Automobil).

Coding

Kodierung

Coding	Jack		Plug		Color/ RAL-Nr.
	Single	Twin	Single	Twin	
A Radio without phantom supply/ Radio ohne Speisespannung					Black/ 9005
B Radio with phantom supply/ Radio mit Speisespannung					White/ 9001
C GPS: telematics or navigation/ GPS: Telematik oder Navigation					Blue/ 5005
D GSM Cellular phone/ GSM Mobiltelefon					Bordeaux- violett/ 4004
E TV1					Green/ 6002
F TV2					Brown/ 8011
G Remote control keyless entry/ Funkfernbedienung ZV (Kessy)					Grey/ 7031
H GPS: telematics and navigation/ GPS: Telematik und Navigation					Violett/ 4003
I Radio controlled parking heating/ Funkfernbedienung Standheizung (SHA)					Beige/ 1001
K Radio with IF/ Radio mit ZF-Ausgang (Antennendiversity)					Curry/ 1027
Z Neutral coding/ Nullkodierung					Waterblue/ 5021

All connectors listed in this catalog are available with the following codings: A, B, C, D, E, F, G, H, I, K, Z

Alle in diesem Katalog aufgeführten Steckverbinder sind in folgenden Kodierungen verfügbar: A, B, C, D, E, F, G, H, I, K, Z

Automotive connectors mounted on PCB

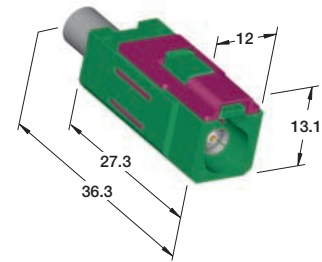
Automobil-Steckverbinder montiert auf Leiterplatte



Jack

Kuppler

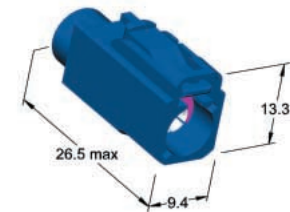
Part Number	Cable	Assembly Instruction
59 K 13A-106 A4-*	RG 58	59 V 001
59 K 13A-102 A4-*	RG 174, RG 316	59 V 001
59 K 13A-1M4 A4-*	RT K 031	59 V 001



Jack

Kuppler

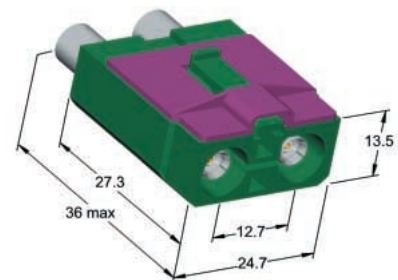
Part Number	Cable	Assembly Instruction	Remarks
59 K 13D-106 A4-*	RG 58	59 V 009	Stamped and formed center contact, tape & reel packaging (500, 5000, 20000 pcs.) II. Generation
59 K 13D-102 A4-*	RG 174	59 V 009	
59 K 13D-1M4 A4-*	RT K 031	59 V 009	
On request: straight jack for water proof systems			
59 K 13F-106 A4-*	RG 58	59 V 002	II. Generation
59 K 13F-1M4 A4-*	RT K 031	59 V 002	II. Generation



Twin Jack

Doppel-Kuppler

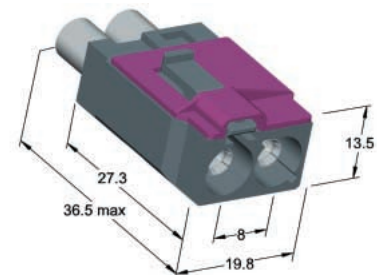
Part Number	Cable	Assembly Instruction	Distance of contacts
59 K 13B-106 A4-*	RG 58	59 V 003	12.7 mm
59 K 13B-102 A4-*	RG 174	59 V 003	12.7 mm
59 K 13B-1M4 A4-*	RT K 031	59 V 003	12.7 mm



Twin Jack

Doppel-Kuppler

Part Number	Cable	Assembly Instruction	Distance of contacts
59 K 13C-106 A4-*	RG 58	59 V 003	8.0 mm
59 K 13C-102 A4-*	RG 174	59 V 003	8.0 mm
59 K 13C-1M4 A4-*	RT K 031	59 V 003	8.0 mm

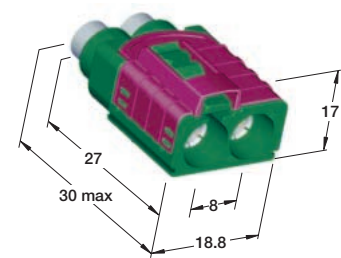


*) Part number has to be accomplished by codification!
Die Kodierung ist Teil der Bestellnummer und muss hier eingetragen werden!
Example for codification **A** / Beispiel für Kodierung **A**: 59 K 23B-106 A4-**A**

Twin Jack

Part Number	Cable	Assembly Instruction	Remarks
59 K 13K-106 A4-*	RG 58	59 V 025	8.0 mm
59 K 13K-102 A4-*	RG 174, RG 316	59 V 025	II. Generation
59 K 13K-1M4 A4-*	RT K 031	59 V 025	

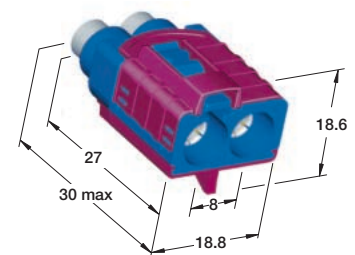
Doppel-Kuppler



Twin Jack

Part Number	Cable	Assembly Instruction	Remarks
59 K 1AK-106 A4-*	RG 58	59 V 026	8.0 mm
59 K 1AK-102 A4-*	RG 174, RG 316	59 V 026	II. Generation
59 K 1AK-1M4 A4-*	RT K 031	59 V 026	With slot positioning clip/ Mit Befestigungsschiene für Halteclip

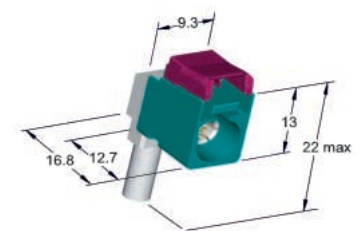
Doppel-Kuppler



Jack, 360° Angle

Part Number	Cable	Assembly Instruction
59 K 25A-106 A4-*	RG 58	59 V 014
59 K 25A-102 A4-*	RG 174	59 V 014
59 K 25A-1M4 A4-*	RT K 031	59 V 014

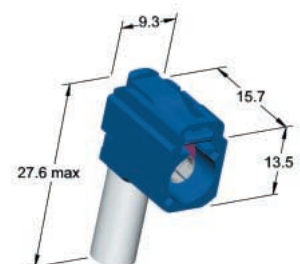
Kuppler, 360°-Winkel



Jack, 90° Angle

Part Number	Cable	Assembly Instruction
59 K 23B-106 A4-*	RG 58	59 V 007
59 K 23B-102 A4-*	RG 174	59 V 007
59 K 23B-1M4 A4-*	RT K 031	59 V 007
On request: right-angle jack for water proof systems		

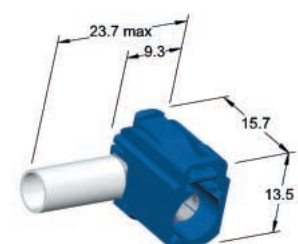
Kuppler, 90°-Winkel



Jack, 90° Angle, Cable Separation Right

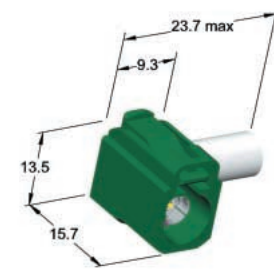
Part Number	Cable	Assembly Instruction
59 K 23C-106 A4-*	RG 58	59 V 007
59 K 23C-102 A4-*	RG 174	59 V 007
59 K 23C-1M4 A4-*	RT K 031	59 V 007

Kuppler, 90°-Winkel, Kabelabgang rechts

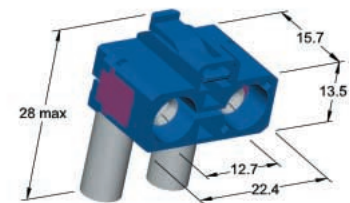


Jack, 90° Angle, Cable Separation Left

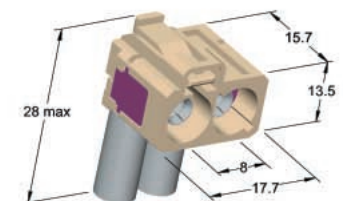
Part Number	Cable	Assembly Instruction
59 K 23D-106 A4-*	RG 58	59 V 007
59 K 23D-102 A4-*	RG 174	59 V 007
59 K 23D-1M4 A4-*	RT K 031	59 V 007

Kuppler, 90°-Winkel, Kabelabgang links**Twin Jack, 90° Angle**

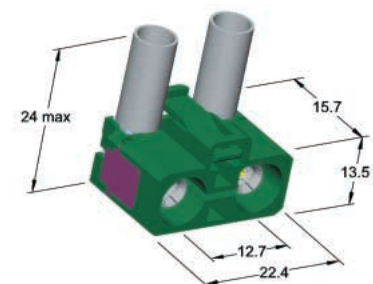
Part Number	Cable	Assembly Instruction	Distance of contacts
59 K 23E-106 A4-*	RG 58	59 V 005	12.7 mm
59 K 23E-102 A4-*	RG 174	59 V 005	12.7 mm
59 K 23E-1M4 A4-*	RT K 031	59 V 005	12.7 mm

Doppel-Kuppler, 90°-Winkel**Twin Jack, 90° Angle**

Part Number	Cable	Assembly Instruction	Distance of contacts
59 K 23F-106 A4-*	RG 58	59 V 005	8.0 mm
59 K 23F-102 A4-*	RG 174	59 V 005	8.0 mm
59 K 23F-1M4 A4-*	RT K 031	59 V 005	8.0 mm

Doppel-Kuppler, 90°-Winkel**Twin Jack, 90° Angle**

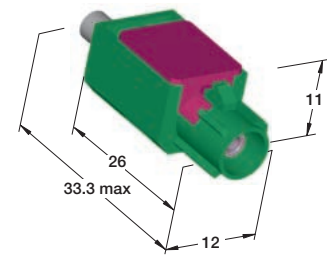
Part Number	Cable	Assembly Instruction	Distance of contacts
59 K 23G-106 A4-*	RG 58	59 V 005	12.7 mm
59 K 23G-102 A4-*	RG 174	59 V 005	12.7 mm
59 K 23G-1M4 A4-*	RT K 031	59 V 005	12.7 mm

Doppel-Kuppler, 90°-Winkel

Plug

Stecker

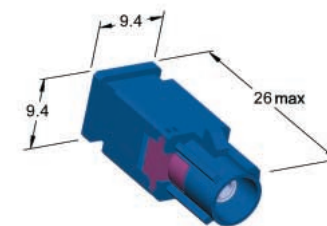
Part Number	Cable	Assembly Instruction
59 S 10A-106 A4-*	RG 58	59 V 004
59 S 10A-102 A4-*	RG 174, RG 316	59 V 004
59 S 10A-1M4 A4-*	RT K 031	59 V 004



Plug

Stecker

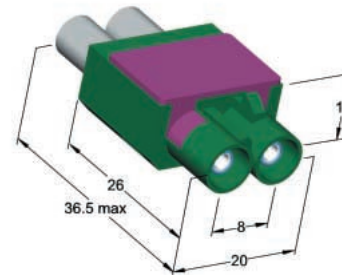
Part Number	Cable	Assembly Instruction	Remarks
59 S 10L-106 A4-*	RG 58	59 V 016	Stamped and formed center contact, tape & reel packaging (500, 5000, 20000 pcs.) II. Generation
59 S 10L-102 A4-*	RG 174	59 V 016	
59 S 10L-1M4 A4-*	RT K 031	59 V 016	
59 S 10E-106 A4-*	RG 58	59 V 010	II. Generation
59 S 10E-102 A4-*	RG 174	59 V 010	II. Generation
59 S 10E-1M4 A4-*	RT K 031	59 V 010	II. Generation



Twin Plug

Doppel-Stecker

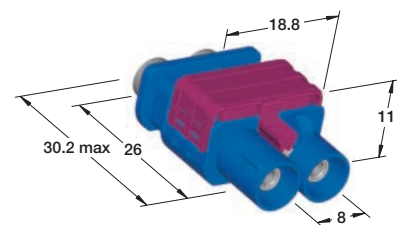
Part Number	Cable	Assembly Instruction	Distance of contacts
59 S 10D-106 A4-*	RG 58	59 V 006	8.0 mm
59 S 10D-102 A4-*	RG 174	59 V 006	8.0 mm
59 S 10D-1M4 A4-*	RT K 031	59 V 006	8.0 mm



Twin Plug

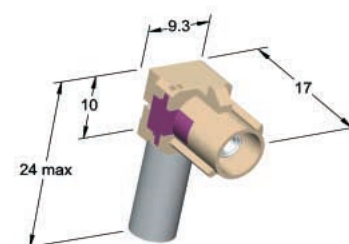
Doppel-Stecker

Part Number	Cable	Assembly Instruction	Remarks
59 S 10M-106 A4-*	RG 58	59 V 028	8.0 mm
59 S 10M-102 A4-*	RG 174, RG 316	59 V 028	II. Generation
59 S 10M-1M4 A4-*	RT K 031	59 V 028	

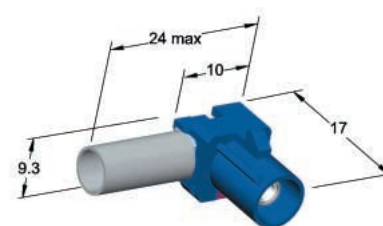


Plug, 90° Angle

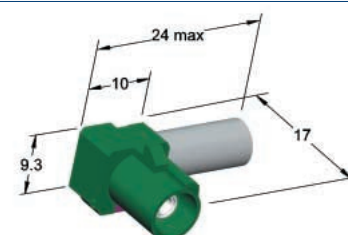
Part Number	Cable	Assembly Instruction
59 S 20A-106 A4-*	RG 58	59 V 011
59 S 20A-102 A4-*	RG 174	59 V 011
59 S 20A-1M4 A4-*	RT K 031	59 V 011

Stecker, 90°-Winkel**Plug, 90° Angle, Cable Separation Right**

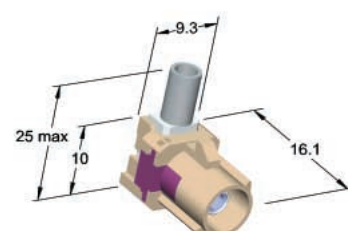
Part Number	Cable	Assembly Instruction
59 S 20E-106 A4-*	RG 58	59 V 011
59 S 20E-102 A4-*	RG 174	59 V 011
59 S 20E-1M4 A4-*	RT K 031	59 V 011

Stecker, 90°-Winkel, Kabelabgang rechts**Plug, 90° Angle, Cable Separation Left**

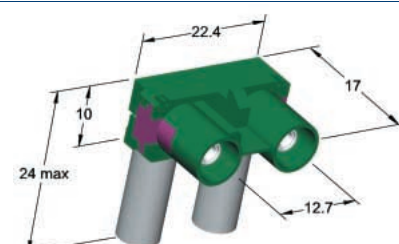
Part Number	Cable	Assembly Instruction
59 S 20F-106 A4-*	RG 58	59 V 011
59 S 20F-102 A4-*	RG 174	59 V 011
59 S 20F-1M4 A4-*	RT K 031	59 V 011

Stecker, 90°-Winkel, Kabelabgang links**Plug, 90° Angle**

Part Number	Cable	Assembly Instruction
59 S 20C-106 A4-*	RG 58	59 V 011
59 S 20C-102 A4-*	RG 174	59 V 011
59 S 20C-1M4 A4-*	RT K 031	59 V 011

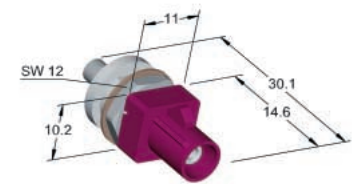
Stecker, 90°-Winkel**Twin Plug, 90° Angle**

Part Number	Cable	Assembly Instruction	Distance of contacts
59 S 20B-106 A4-*	RG 58	59 V 008	12.7 mm
59 S 20B-102 A4-*	RG 174	59 V 008	12.7 mm
59 S 20B-1M4 A4-*	RT K 031	59 V 008	12.7 mm

Doppel-Stecker, 90°-Winkel

Bulkhead Plug

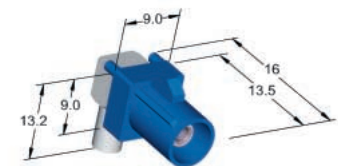
Part Number	Cable	Assembly Instruction	Panel Piercing
59 S 50A-102 A4-*	RG 174	59 G 7	B 148



Gehäusestecker

Bulkhead Plug, 90° Angle

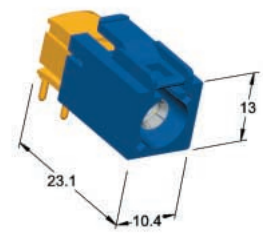
Part Number	Cable	Assembly Instruction	Panel Piercing	Remarks
59 S 20D-301 A4-*	RG 178	59 F 7	B 129	Recommended panel thickness 1 ± 0.05 mm



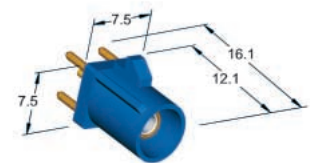
Gehäusestecker, 90°-Winkel

Jack, 90° Angle

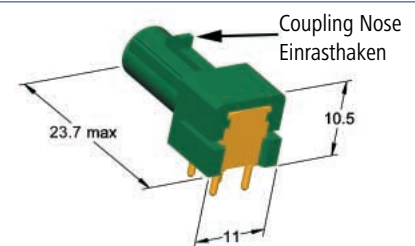
Part Number	Panel Piercing	Remarks
59 K 23A-400 A4-*	B30	Only for wave soldering technology/ Nur für Schwalllöttechnik

Kuppler, 90°-Winkel**Plug**

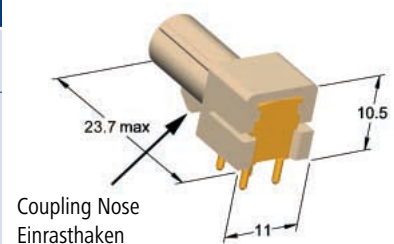
Part Number	Panel Piercing	Remarks
59 S 10A-400 F4-*	B30	Only for wave soldering technology/ Nur für Schwalllöttechnik Other pin lengths on request/ Weitere Pin-Längen auf Anfrage

Stecker**Plug, 90° Angle**

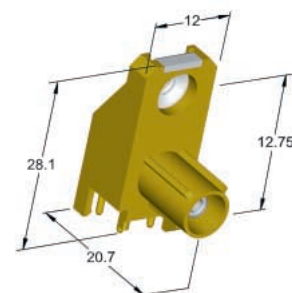
Part Number	Panel Piercing	Remarks
59 S 20B-400 A4-*	B30	Only for wave soldering technology/ Nur für Schwalllöttechnik

Stecker, 90°-Winkel**Plug, 90° Angle**

Part Number	Panel Piercing	Remarks
59 S 20E-400 A4-*	B30	Only for wave soldering technology/ Nur für Schwalllöttechnik
59 S 20H-400 A4-*	B30	Only for wave soldering technology/ Nur für Schwalllöttechnik Case height 12.3/ Bauhöhe 12.3

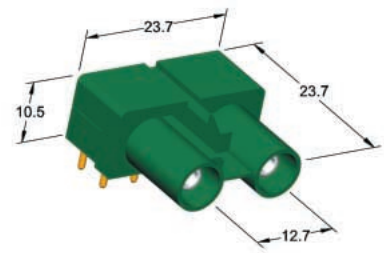
Stecker, 90°-Winkel**Plug, 90° Angle**

Part Number	Panel Piercing	Remarks
59 S 20N-400 A4-*	B133	Only for wave soldering technology/ Nur für Schwalllöttechnik Please use screw M 2.5 (self-cutting) for thread insert. Bitte Schraube M 2.5 (selbst- schneidend) für Gewindeeinsatz verwenden.

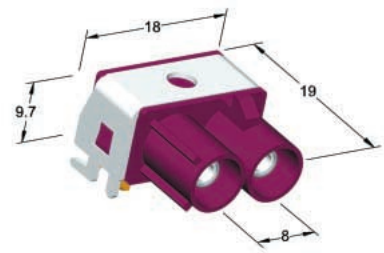
Stecker, 90°-Winkel

Twin Plug, 90° Angle

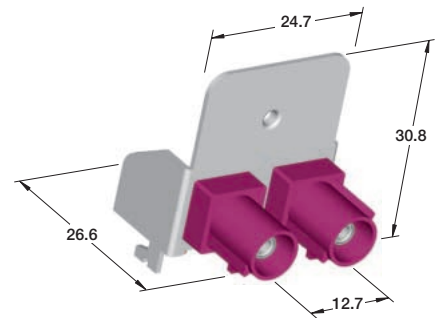
Part Number	Panel Piercing	Distance of contacts	Remarks
59 S 20C-400 A4-*	B30	12.7 mm	Only for wave soldering technology/ Nur für Schwalllöttechnik

Doppel-Stecker, 90°-Winkel**Twin Plug**

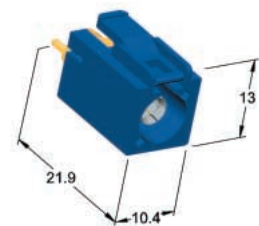
Part Number	Panel Piercing	Distance of contacts	Remarks
59 S 20J-400 A4-*	B119	8.0 mm	Only for wave soldering technology/ Nur für Schwalllöttechnik
59 S 20K-400 A4-*	B119	8.0 mm	Only for wave soldering technology/ Nur für Schwalllöttechnik Without clamp/ Ohne Haltebügel

Doppel-Stecker**Twin Plug**

Part Number	Panel Piercing	Distance of contacts	Remarks
59 S 20U-400 A4-*	B157	12.7 mm	Only for wave soldering technology/ Nur für Schwalllöttechnik

Doppel-Stecker**Jack, SMD Type**

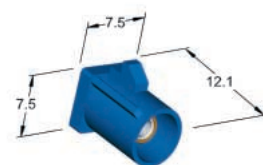
Part Number	Panel Piercing
59 K 23A-40M E4-*	B149, Footprint B150

Kuppler, SMD-Bauform

Plug, SMD Type

Part Number	Panel Piercing
59 S 10A-40M F4-*	Footprint B147

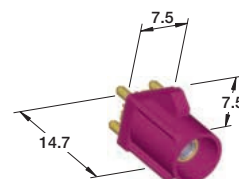
Stecker, SMD-Bauform



Plug, SMD Type

Part Number	Panel Piercing	Assembly Instruction	Remarks
59 S 10B-40M E4-*	Footprint B153	59 V 020	Pin-in-paste

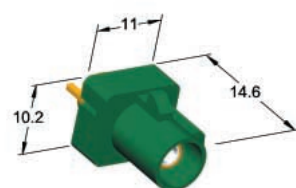
Stecker, SMD-Bauform



Plug, SMD Type

Part Number	Panel Piercing
59 S 20A-40M E4-*	B149, Footprint B150

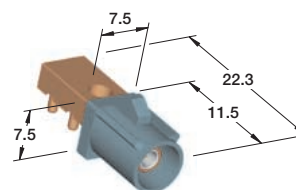
Stecker, SMD-Bauform



Plug, SMD Type

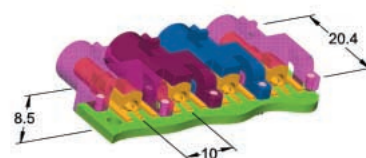
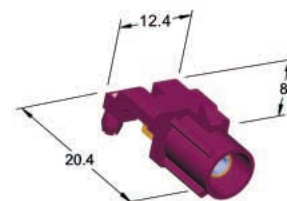
Part Number	Panel Piercing	Assembly Instruction	Remarks
59 S 20N-40M E4-*	Footprint B160	59 V 021	Pin-in-paste

Stecker, SMD-Bauform

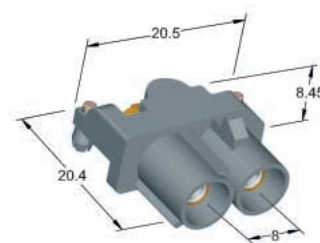


Plug, 90° Angle, SMD Type**Stecker, 90°-Winkel, SMD-Bauform**

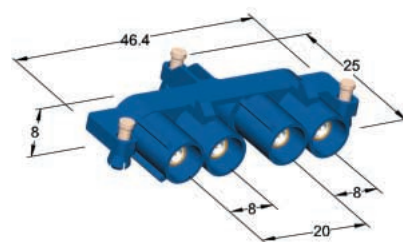
Part Number	Panel Piercing
59 S 20G-40M E4-*	B117 Anwendungen mit geradem Kabelabgang: 59 K 13D-102 A4-* (Seite 6) Applications with straight cable separation: 59 K 13D-102 A4-* (page 6)
	Modular mounting possible/ modularer Aufbau möglich

**Twin Plug, SMD Type****Doppel-Stecker, SMD-Bauform**

Part Number	Panel Piercing	Distance of contacts	Remarks
59 S 20J-40M L4-*	B 132	8.0 mm	Other coupling nose directions on request/ Bauformen mit anderen Einrasthaken-Positionen auf Anfrage

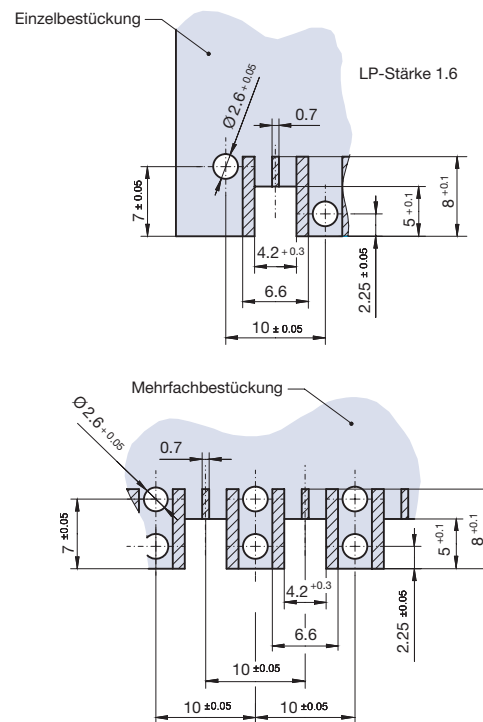
**Quadruple Plug, SMD Type****Vierfach-Stecker, SMD-Bauform**

Part Number	Panel Piercing	Distance of contacts
59 S 20C-40M E4-*	B134	8.0 mm

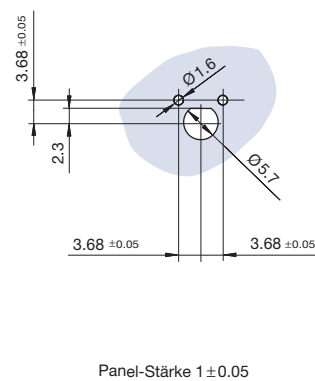


**Stand November 2002,
geringfügige Änderungen möglich**

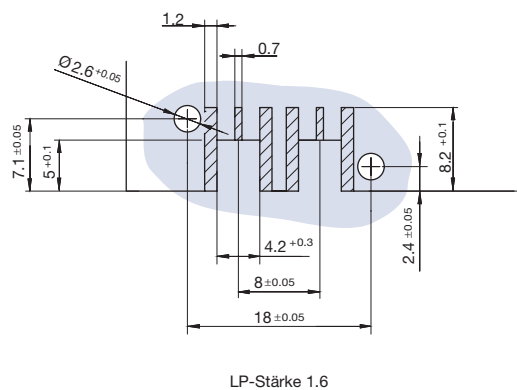
B117



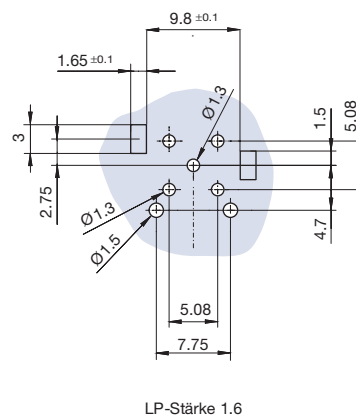
B129



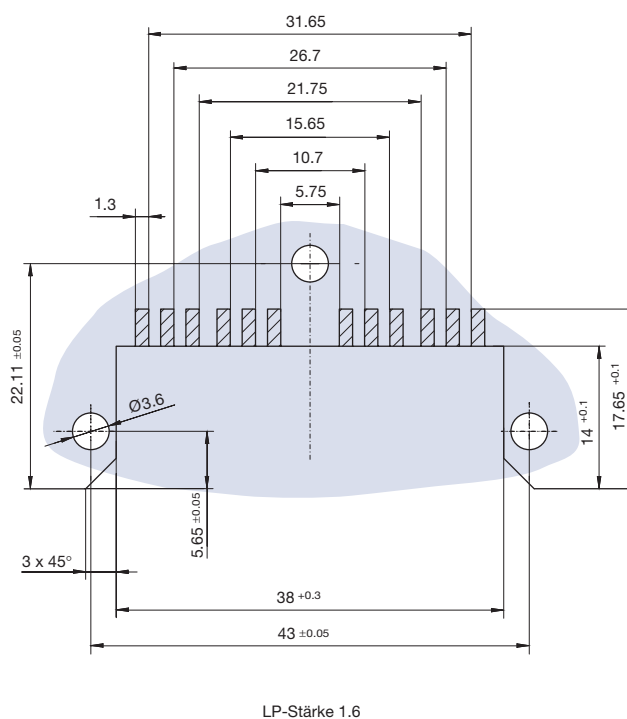
B132



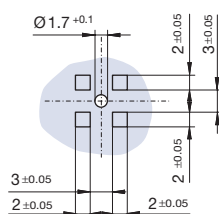
B133



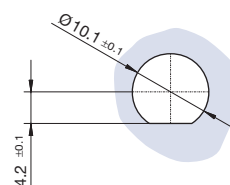
B134



Footprint B147

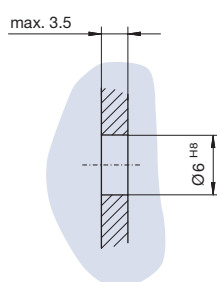


B148



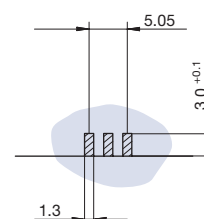
Panel-Stärke 3.2 max.

B149

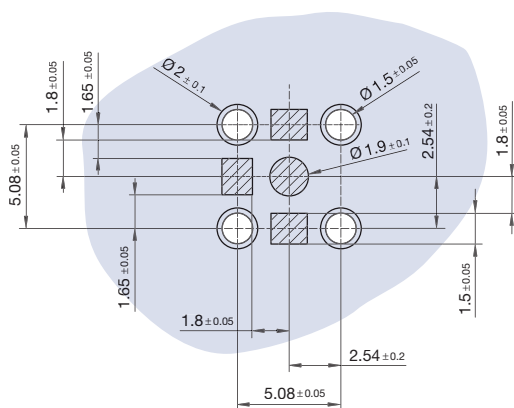


Montageloch in ALU-Rahmen

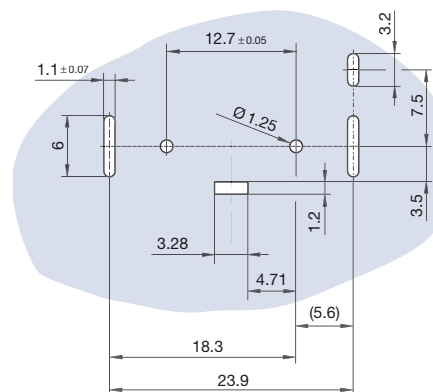
Footprint B150



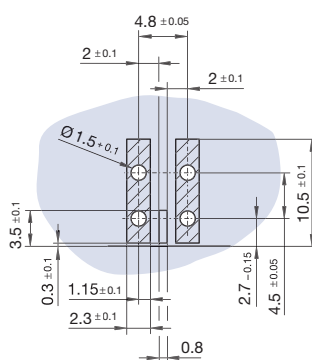
Footprint B153



Footprint B157



Footprint B160



Rosenberger
Hochfrequenztechnik GmbH & Co.
 P.O. Box 1260
 D-84526 Tittmoning
Tel: +49-86 84-18-0
 Fax: +49-86 84-184 99
 E-Mail: info@rosenberger.de
 sales@rosenberger.de
 Web: www.rosenberger.de

Vertriebsbüro München
 Rotwandweg 5
 D-82024 Taufkirchen
 Tel: 00 49/89/6 14 17 30
 Fax: 00 49/89/6 14 09 54
 E-Mail: info@rosenberger.isar.de

Vertriebsbüro Ost
 Heidestraße 70
 D-01454 Radeberg
 Tel: 00 49/35 28/46 24 61
 Fax: 00 49/35 28/46 24 62
 E-Mail: stecker_radeberg@t-online.de

Vertriebsbüro Nord
 WI-tronik
 Walter Wingenroth
 Alfred-Nobel-Straße 9
 D-57299 Burbach
 Tel: 00 49/27 36/44 70 06
 Fax: 00 49/27 36/44 70 07
 E-Mail: wi-tronik@t-online.de

Vertrieb/Sales Automotive
 Heinrich-Heine-Weg 26
 D-24568 Kaltenkirchen
 Tel: 00 49/41 91/90 92 99
 Fax: 00 49/41 91/90 92 97
 E-Mail: jpfreundt.rosenberger@t-online.de

Argentina
 Mercotel S.R.L.
 Viel 2079
 1424 Buenos Aires
 Tel: 00 54/1 1/49 21 46 20
 Fax: 00 54/1 1/49 24 59 52
 E-Mail: mercotel@interar.com.ar

Australia and New Zealand
 Braemac Pty. Ltd.
 1/59-61 Burrows Road
 Alexandria, Sydney
 NSW 2015
 Tel: 00 61/2 9550 6600
 Fax: 00 61/2 9550 6377
 E-Mail: p.deluca@braemac.com.au

Austria, Croatia, Czech Republic, Hungary, Slovakia, Slovenia
 Walter Krenn
 Hochfrequenztechnik GmbH
 Simmeringer Hauptstraße 421
 A-1110 Wien
 Tel: 00 43/1/7 48 71 17-0
 Fax: 00 43/1/7 48 71 17-90
 E-Mail: info@krenn.at

Belgium
 Rosenberger Benelux B.V.
 Postbus 7
 NL-6675 ZG Valburg
 Tel: 00 31/48 84/7 01 17
 Fax: 00 31/48 84/7 01 77
 E-Mail: info@rosenberger.nl

Brazil
 Rosenberger Domex Telecom
 Rua Miracema, 781
 Chacaras Reunidas
 Sao Jose dos Campos - SP
 CEP 12238-360
 Tel: 00 55/12/3 35 65 00
 Fax: 00 55/12/3 33 16 31
 E-Mail: vendas@domextelecom.com.br

Canada
 DENICKX Komponenten Inc.
 17 Hardy Crescent
 Brockville, Ontario K6V-3A2
 Tel: 00 1/6 13/3 42 31 96
 Fax: 00 1/6 13/3 42 84 94
 E-Mail: denisk@denickx.ca

Chile, Latin America
 Rosenberger Sudamerica Ltda.
 Av. Echenique 8009
 La Reina
 Santiago
 Tel: 00 56/2/2 75 29 08
 Fax: 00 56/2/2 75 13 16
 E-Mail: info@rosenberger.cl

China
 Beijing Rosenberger
 Electronic Company, Ltd.
 No. 3, Anxiang Road, Block B
 Tianzhu Airport Industrial Zone
 Beijing 101300
 PR China
 Tel: 00 86/10/80 48 19 95
 Fax: 00 86/10/80 48 24 38
 E-Mail: info@rosenberger.com.cn

Denmark
 Rosenberger Danmark A/S
 Toftebakken 5, Postboks 92
 DK-3460 Birkerød
 Tel: 00 45/45 82 07 40
 Fax: 00 45/45 81 03 94
 E-Mail: reception@rosenberger.dk

Finland
 Dinlog OY
 Hakamäenkuja 7
 FIN-01510 Vantaa
 Tel: 00 3 58/9/27 09/20 10
 Fax: 00 3 58/9/27 09/20 19
 E-Mail: seppo.martikainen@dinlog.fi

France
 Rosenberger France
 Actipark
 17, Rue des Frères Lumière
 F-67201 Eckbolsheim
 Tel: 00 33/3/90 20 76 00
 Fax: 00 33/3/90 20 76 01
 E-Mail: n_dumontel@rosenberger.de

India
 Chithra International
 476, 3A-Main Road
 2nd Stage, Indira Nagar
 Bangalore-560 038
 Tel: 00 91/80/5 25 83 10
 Fax: 00 91/80/5 25 11 21
 E-Mail: chithra@giabsg01.vsnl.net.in

Indonesia
 PT Prima Mitratama Sejati
 Green Ville Blok BG No 26
 Jakarta Barat, 11510
 Indonesia
 Tel: 00 62/21/5 66 92 30
 Fax: 00 62/21/5 66 92 25
 E-Mail: prima@centrin.net.id

Israel
 M.T.I Engineering Ltd.
 Afek Industrial Park
 11 Hamelacha St.
 48091 Rosh Ha'ayin
 Tel: 00 9 72/3/9 02 55 55
 Fax: 00 9 72/3/9 02 55 56
 E-Mail: info@mti-group.co.il
 www.mti-group.com

Italy
 Rosenberger Italia S.R.L.
 Via Chiasserini, 15
 I-20157 Milano
 Tel: 00 39/02/39 09 62 04
 Fax: 00 39/02/3 57 07 74
 E-Mail: info@rosenberger.it

Japan
 Fusoh Shoji Co., Ltd.
 No. 10 - 2, 2-Chome
 Nagata-Cho, Chiyoda-Ku
 Tokyo 100-0014
 Tel: 00 81/3/35 81 90 56
 Fax: 00 81/3/35 81 57 09
 E-Mail: info@fusoh.co.jp

Mexico
 MESA
 Medición y Electronica S.A.
 Americas no. 43
 Col. Moderna
 Mexico, D.F.
 C.P. 03510
 Mexico
 Tel: 00 52/5 579 9555
 Fax: 00 52/5 579 0826
 E-Mail: rhernandez@gpoelec.com.mx

Netherlands
 Rosenberger Benelux B.V.
 Postbus 7
 NL-6675 ZG Valburg
 Tel: 00 31/48 84/7 01 17
 Fax: 00 31/48 84/7 01 77
 E-Mail: info@rosenberger.nl

Norway
 T&G Elektro A/S
 P.O. Box 85
 Terrassevn. 6
 N-1321 Stabekk
 Tel: 00 47/67/12 90 50
 Fax: 00 47/67/12 90 60
 E-Mail: epost@tgelektro.no

Poland
 PTH meopta
 UL. Wlodkowska 14
 PL-60-334 Poznan
 Tel: 00 48/61/8 62 16 80
 Fax: 00 48/61/6 62 48 52
 E-Mail: meopta@gmx.net

Singapore
 Rosenberger RF Technology Pte. Ltd.
 16 Ayer Rajah Crescent #03-04
 Singapore 139965
 Tel: 00 65/67 74 84 39
 Fax: 00 65/67 74 84 54
 E-Mail: sales@rosenberger.com.sg

South Africa
 Connecta PL
 P.O. Box 98616
 Sloane Park 2152
 RSA-Johannsburg
 Tel: 00 27/11/4 63 22 40
 Fax: 00 27/11/4 63 15 90
 E-Mail: colin@connecta.co.za

Spain
 Rosenberger Telecom, S.A.
 Berlin, 4 Of. 2
 E-28224 Pozuelo de Alarcon
 Tel: 00 34/91/3 52 83 52
 Fax: 00 34/91/3 52 98 13
 E-Mail: rosenberger@epirsa.com

Sweden
 Rosenberger Carlberg AB
 Batsmansvägen 8
 S-181 10 Lidingö
 Tel: 00 46/8/6 36 26 00
 Fax: 00 46/8/6 36 26 26
 E-Mail: info@carlberg.se

Switzerland
 EME AG
 Interconnection & Motion
 Lohwistrasse 50
 CH-8123 Ebmatingen
 Tel: 00 41/1/9 82 11 11
 Fax: 00 41/1/9 82 11 33
 E-Mail: info@eme.ch

Taiwan R.O.C.
 JIMCOM CO LTD
 11F, No 206, Sec 1, Fu Hsing S Rd
 Taipei, 106
 Taiwan
 Tel: 00 8 86/2/27 81-30 28
 Fax: 00 8 86/2/27 81-13 76
 E-Mail: jimcom@ms19.hinet.net

Thailand, Laos, Cambodia
 Matrix Business Co., Ltd.
 201 Petchkasem 2
 Petchkasem Road
 Thapha Bangkokkai
 Bangkok 10600
 Thailand
 Tel: 00 66/2/8 91 89 19
 Fax: 00 66/2/8 91 72 17
 E-Mail: matrixb@loxinfo.co.th

Turkey
 Norana Dis Ticaret
 ve Müessilik Ltd. Sti.
 Atatürk Caddesi 206/1, Derya Apt.
 TR-35220 Birinci Kordon, Izmir
 Tel: 00 90/2 32/4 64 00 11
 Fax: 00 90/2 32/4 63 06 73
 E-Mail: info@norana.com.tr

United Kingdom
 Rosenberger Micro-Coax
 2b Mercury House
 Calleva Park, Aldermaston
 GB-Berkshire RG7 8PN
 Tel: 00 44/1 18/9 81 00 23
 Fax: 00 44/1 18/9 81 61 80
 E-Mail: sales@rmcoax.com

USA
 Rosenberger of North America
 Greenfield Corporate Center
 P.O. Box 10113
 USA-Lancaster, PA 17605-0113
 Tel: 001/717/290 8000
 Fax: 001/717/399 9885
 E-Mail: parker@rosenbergerna.com

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Rosenberger
Hochfrequenztechnik GmbH & Co.

P.O.Box 1260
D-84526 Tittmoning
Tel: +49 - 86 84 -18-0
Fax: +49 - 86 84 -18-499

E-Mail: info@rosenberger.de
Web: www.rosenberger.de

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