

HARAX®

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HARAX® 7/8"

Han® M12-Crimp

HARAX

Technical characteristics

Specifications IEC 60352-4
IEC 61076-2-101

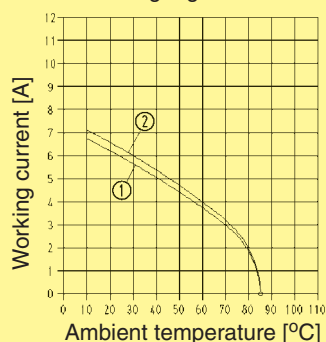
Approval

Construction type	HARAX® M8-S/M12-S	HARAX® M12 angled	HARAX® M12-L 3 poles, 4 poles	HARAX® M12-L screened version, A-coded
Working voltage	32 V	32 V	50 V	50 V
Working current (see current carrying capacity)	4 A	4 A	6 A	4 A
Conductor cross section	0.14 - 0.34 mm ² AWG 26 - 22	0.25 - 0.5 mm ² AWG 24/7 - 20	0.34 - 0.75 mm ² AWG 22 - 18	0.14 - 0.34 mm ² AWG 26 - 22
Diameter of individual strands	≥ 0.1 mm	≥ 0.1 mm	≥ 0.1 mm	≥ 0.1 mm
Conductor insulation material	PVC / PP / TPE	PVC	PVC	PVC
Conductor diameter	1.0 - 1.6 mm	1.2 - 1.6 mm	1.6 - 2.0 mm	1.2 - 1.6 mm
Cable diameter	M8-S: 3.2 - 5.4 mm M12-S: 2.9 - 5.1 mm	4 - 5.1 mm	3 poles: 5.5 - 7.2 mm 4 poles: 6 - 8 mm	7 - 8.8 mm
Limiting temperatures	- 25 °C / + 85 °C	- 25 °C / + 85 °C	- 25 °C / + 85 °C	- 25 °C / + 85 °C
Temperature during connection	- 5 °C ... + 50 °C	- 5 °C ... + 50 °C	- 5 °C ... + 50 °C	- 5 °C ... + 50 °C
Degree of protection	IP 67	IP 67	IP 65 / IP 67	IP 67
Termination cycles with the same cross section	10	10	10	10

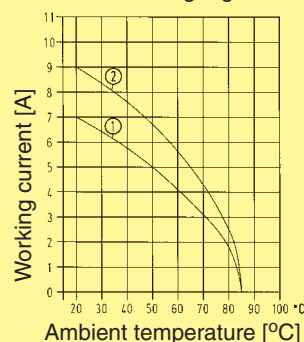
Current carrying capacity The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals. The current capacity-curve is valid for continuous, not interruptet current-loaded contacts of connectors when simultaneous power on all contacts is given, without exceeding the maximum temperature.

Control and test procedures according to DIN IEC 60512-5.

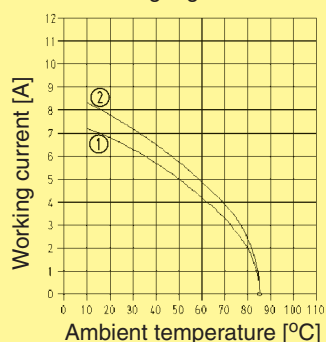
M8-S, 4 poles 1 = wire gauge 0.25 mm²
M12-S, 4 poles 2 = wire gauge 0.34 mm²



M12-L 3 poles, 4 poles 1 = wire gauge 0.34 mm²
2 = wire gauge 0.75 mm²



M12, 4 poles, angled 1 = wire gauge 0.25 mm²
2 = wire gauge 0.5 mm²



Technical characteristics

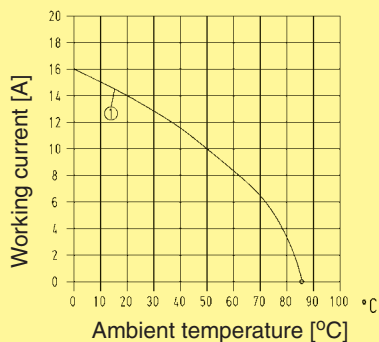
Specifications IEC 60352-4
IEC 61076-2-101

Approval

Construction type	HARAX® M12-L screened version		Han® 7/8"	HARAX® M12-L	Han® M12
	Ethernet	Profibus		5 poles	Crimp
Working voltage	50 V	32 V	230 V / 400 V	50 V	50 V
Working current (see current carrying capacity)	4 A	4 A	10 A	4 A	4 A
Conductor cross section	① 0.14 - 0.34 mm ² AWG 26 - 22 ② 0.34 - 0.5 mm ² AWG 22-20	0.25 - 0.34 mm ² AWG 24- 22	0.75 - 1.5 mm ² AWG 18 - 16	0.25 - 0.34 mm ² AWG 24 - 22 0.34 - 0.5 mm ² AWG 22 - 20	0.34 - 0.5 mm ² AWG 22 - 20
Diameter of individual strands	≥ 0.1 mm	≥ 0.1 mm	≥ 0.15 mm	≥ 0.1 mm	
Conductor insulation material	PVC / PE	PVC, Zell-PE	PVC, PP, TPE	PVC	
Conductor diameter	1.2 - 2.0 mm	2 - 2.6 mm	≤ 2.8 mm	1.2 - 2.0 mm	2.0 - 2.3 mm
Cable diameter	① 5.5 - 7.2 mm (black) ② 7 - 8.8 mm (light grey)	7 - 8.8 mm	6.8 - 9.5 mm (black) 9 - 12.5 mm (grey)	6 - 8 mm	4.5 - 5.4 mm (transp.) 7 - 8.8 mm (light grey)
Limiting temperatures	- 25 °C / + 85 °C	- 25 °C / + 85 °C	- 40 °C / + 85 °C	- 40 °C / + 85 °C	- 40 °C / + 85 °C
Temperature during connection	- 5 °C ... + 50 °C	- 5 °C ... + 50 °C	- 5 °C ... + 50 °C	- 5 °C ... + 50 °C	- 5 °C ... + 50 °C
Degree of protection	IP 67	IP 67	IP 65 / IP 67	IP 65 / IP 67	IP 67
Termination cycles with the same cross section	10	10	10	10	

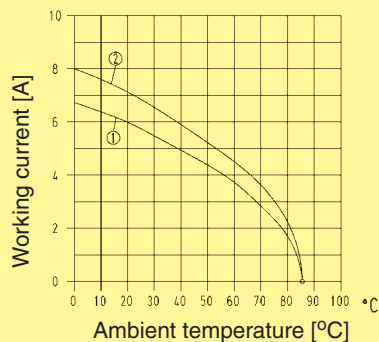
7/8"

1 = wire gauge 0.75 mm² / 1.5 mm²



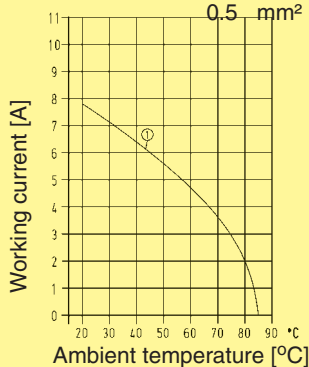
M12L, 5 poles

1 = wire gauge 0.25 mm²
2 = wire gauge 0.34 mm²



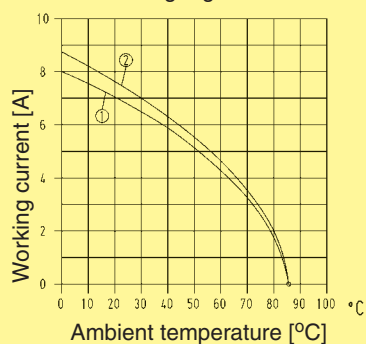
M12, Crimp

1 = wire gauge 0.34 mm² / 0.5 mm²

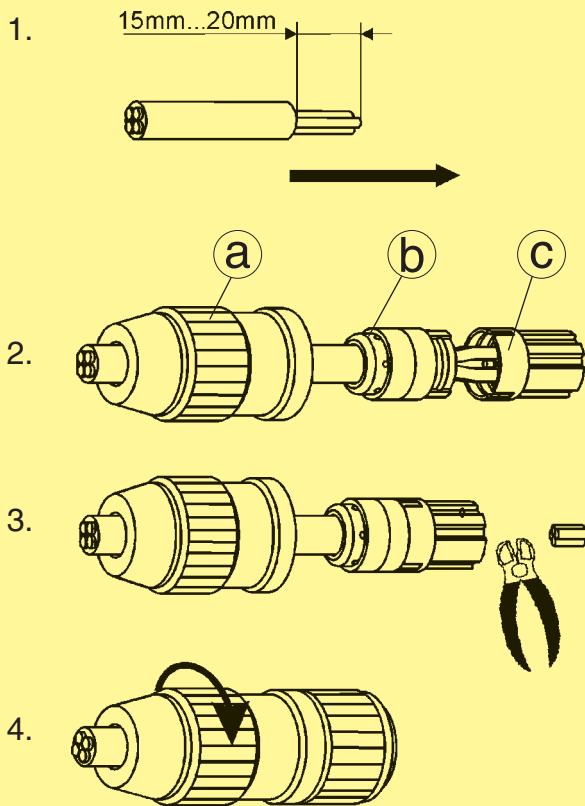


M12L, 5 poles

1 = wire gauge 0.34 mm²
2 = wire gauge 0.5 mm²



Assembly manual HARAX®



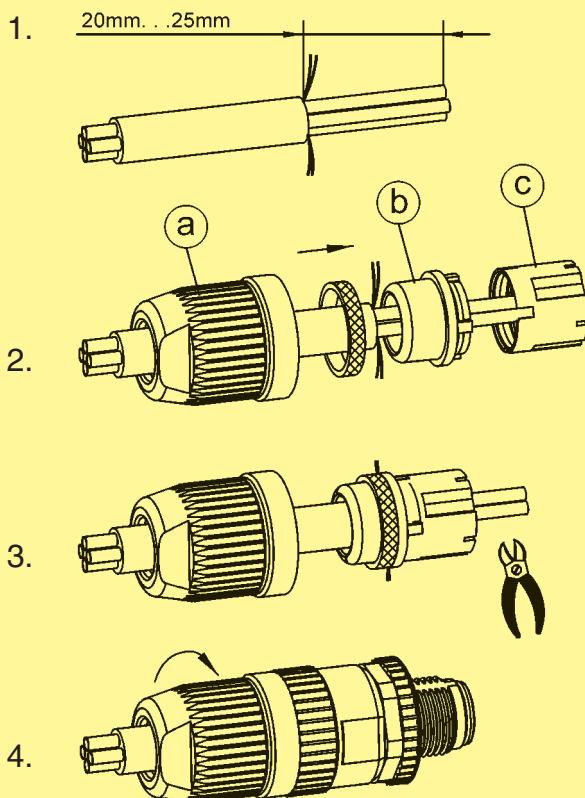
1. strip cable
2. assemble HARAX® elements
3. cut off cable ends
4. screw the connector

- (a) Nut
(b) Strain relief
(c) Insert

Screw the nut onto the insert until a stop is noticeable.

Note!
For reconnection cut off the used cable ends and repeat steps 1 to 4.

Assembly manual HARAX® shielded



1. strip cable
2. assemble HARAX® elements
twist screening braid and push it into the sealing slot
3. Slide ring over the sealing cut off cable ends and the screening braid
4. screw the connector

- (a) Nut
(b) Strain relief
(c) Insert

Note!
For reconnection cut off the used cable ends and repeat steps 1 to 4.



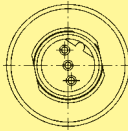
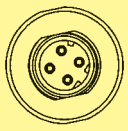
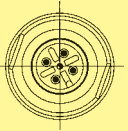
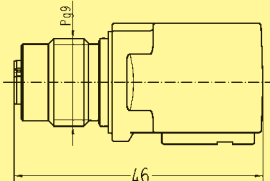
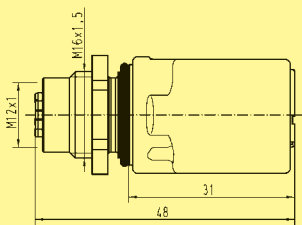
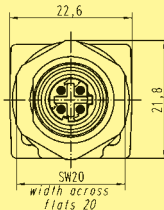
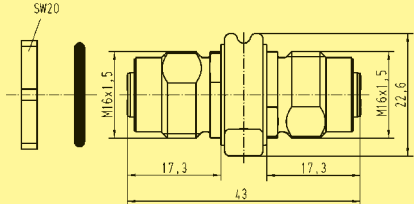
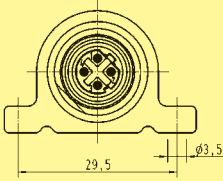
Identification	Male	Female	Drawing	Dimensions in mm
HARAX® M8-S straight version, 3 poles straight version, 4 poles straight version, 3 poles straight version, 4 poles	21 02 151 1305 21 02 151 1405	21 02 151 2305 21 02 151 2405	View mating side: 3 poles, male version View mating side: 4 poles, male version	ca. 40,8 ca. 41,9 Ø11,5 M8x1
HARAX® M12-S straight version, 4 poles	21 03 111 1405	21 03 111 2405	View mating side: 4 poles, male version	ca. 43,5 ca. 42,7 Ø15,3 M12x1
HARAX® M12 angled version, 4 poles angled version, 4 poles	21 01 140 5081	21 01 140 5091	View mating side:	ca. 39,4 36,5 Ø14,7 M12x1



Identification	Part No.		Drawing	Dimensions in mm
	Male	Female		
HARAX® M12-L 3 poles, A-coded, with pre-leading contact 3 poles, A-coded 4 poles, A-coded	21 03 212 1400 21 03 212 1306 21 03 212 1305			
3 poles, A-coded, with pre-leading contact 3 poles, A-coded 4 poles, A-coded		21 03 212 2400 21 03 212 2306 21 03 212 2305		
5 poles, A-coded, 0.25 - 0.34 mm², AWG 24 - 22	21 03 271 1505	21 03 271 2505	View mating side, male version: HARAX® M12-L 3 poles with pre-leading contact 3 poles 4 poles	
5 poles, A-coded, 0.34 - 0.5 mm², AWG 22 - 20	21 03 272 1505	21 03 272 2505		
Han® M12 panel feed-through Male, A-coded, 50 cm conductors, 0.5 mm², 5 poles	21 03 311 1501			
Female, A-coded, 50 cm conductors, 0.5 mm², 5 poles		21 03 311 2501		

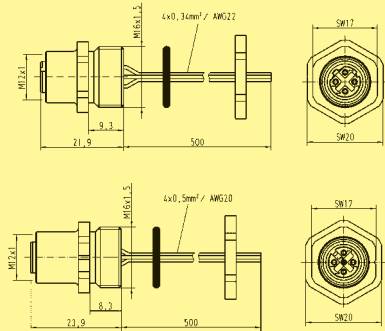
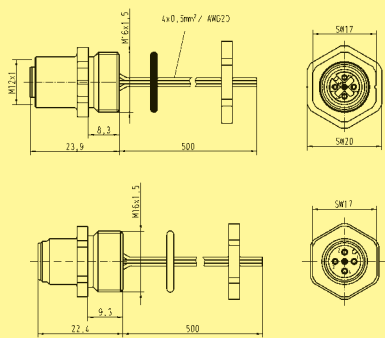
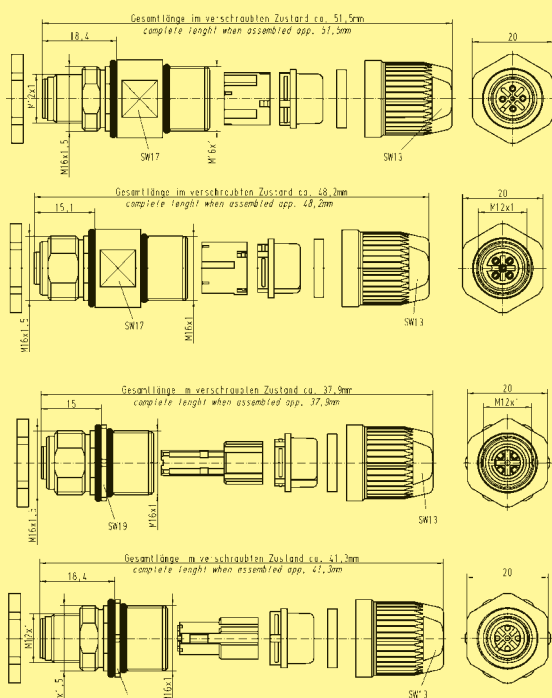
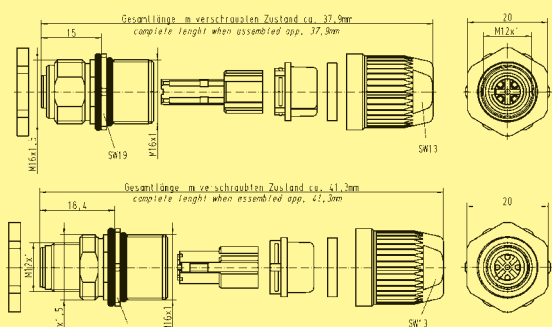
Stock items in bold type



Identification	Part No.		Drawing	Dimensions in mm
	Male	Female		
HARAX® M12-L, screened version 3 poles, B-coded, Profibus version 4 poles, D-coded, 0.14 - 0.34 mm², AWG 26-22 0.34 - 0.5 mm², AWG 22-20 4 poles, A-coded  3 poles, B-coded, Profibus version 4 poles, D-coded, 0.14 - 0.34 mm², AWG 26-22 0.34 - 0.5 mm², AWG 22-20 4 poles, A-coded 	21 03 241 1300 21 03 281 1405 21 03 282 1405 21 03 221 1405		View mating side, male version: HARAX® M12-L, screened version 3 poles, Profibus B-coded 4 poles, Ethernet D-coded 4 poles A-coded   	
Han® M12-RJ45 panel feed-through 4 poles, D-coded, angled 	21 03 381 4400			
Han® M12-RJ45 panel feed-through 4 poles, D-coded, straight 	21 03 381 2400			
Han® M12-RJ45 Gender Changer 4 poles, D-coded 	21 03 381 6405			

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Identification	Part No.	Drawing	Dimensions in mm
Han® M12 panel feed-through  Female, D-coded, 50 cm conductors, AWG 22, 4 poles  Male, D-coded, 50 cm conductors, AWG 22, 4 poles	21 03 371 2403 21 03 371 1403		
Han® M12 panel feed-through  Female, A-coded, 50 cm conductors, 0.5 mm ²  Male, A-coded, 50 cm conductors, 0.5 mm ²	21 03 311 2400 21 03 311 1402		
Identification	Part No.	Drawing	Dimensions in mm
HARAX® panel feed-through  Female, A-coded  Male, A-coded	21 03 321 2425 21 03 321 1425		
Han® M12 panel feed-through Crimp  Female, A-coded  Male, A-coded	21 03 822 2425 21 03 822 1425		

Stock items in bold type

Identification	Part No.	Drawing	Dimensions in mm
Han® M12 panel feed-through for outer termination Female, D-coded, screened version, 360 mm cable ¹⁾ , AWG 26, 4 poles	21 03 383 6407		
Han® M12 panel feed-through for inner termination Female, D-coded, screened version, 700 mm cable ¹⁾ , AWG 20, 4 poles	21 03 383 6405		
Han® M12 panel feed-through with RJ45 Female, D-coded, screened version, 48 mm cable ¹⁾ , AWG 26, 4 poles	21 03 683 6401		
HARAX® panel feed-through Female, D-coded	21 03 381 2425		
Han® M12 panel feed-through Crimp Female, D-coded	21 03 882 2425		

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¹⁾ Other length on request



Technical characteristics: Han® M12 pcb

Degree of protection	IP 20
Working current	max. 4 A (dependent on pcb layout)
Working voltage	50 V
mating cycles	max. 100

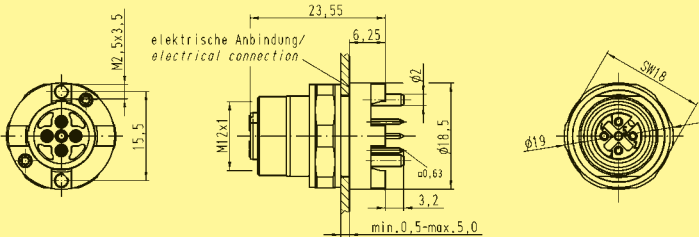
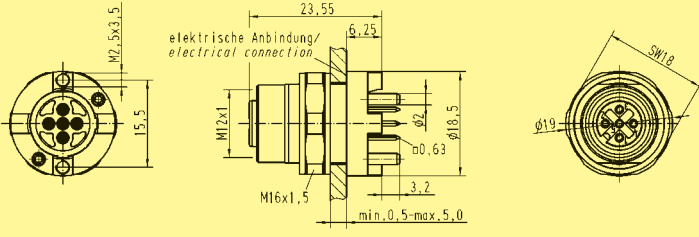
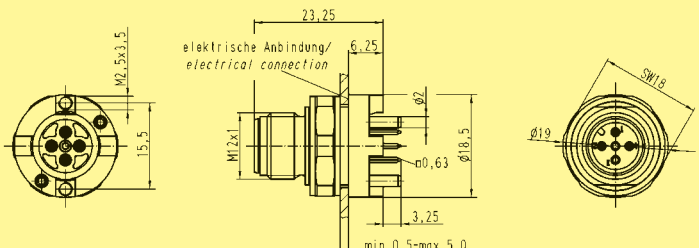
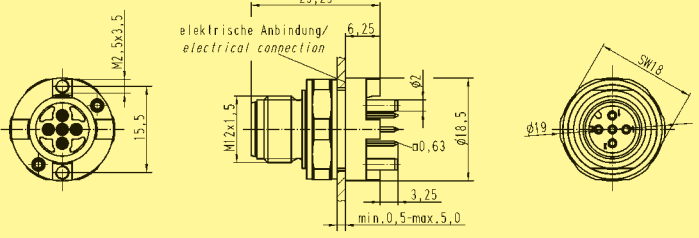
Identification	Part No.	Drawing	Dimensions in mm
Han® M12 Female, D-coded, straight, 4 poles	21 03 371 2415 21 03 381 6410		
Han® M12 Male, D-coded, straight, 4 poles	21 03 371 1400		
Han® M12 Female, D-coded, angled, 4 poles	21 03 381 4410 21 03 381 4412		

without fixing hole

with fixing hole

Stock items in bold type



Identification	Part No.	Drawing	Dimensions in mm
Han® M12 Female, A-coded, straight			
 4 poles	21 03 321 6410		
 5 poles	21 03 321 6510		
Han® M12 Male, A-coded, straight			
 4 poles	21 03 321 1410		
 5 poles	21 03 321 1510		



General Description

- Fibre optic data transmission system for industrial applications
- Optical transceiver for 1300 nm
- Passive interface as coupling unit and panel feed-through
- Based on M12 hoods and housings in accordance with IEC 61 076-2-101
- Suitable for multimode glass fibre
- 2 supplementary electrical contacts
- Degree of protection: IP 65 / IP 67
- Wide temperature range of -40 °C up to +85 °C
- Minimum insertion loss: < 0.3 dB

Technical characteristics

Mechanical Features

Storage temperature	-40 °C / +85 °C
Working temperature	-25 °C / +85 °C
Degree of protection	IP 65/67
Tightening torque	50 - 60 Ncm

Electrical Data

Rated voltage of electrical contacts	60 V DC
Rated current	4 A max.

Optical Data Transceiver for Multimode

Center wave length (λ_C)	1270 nm up to 1380 nm
Output optical power max. (P_0)	-14 dBm
Input optical power min. (P_{SAT})	-31 dBm
Data transmission rate	125 MBit/s in accordance with Fast Ethernet 100 Base FX; IEEE 802.3u

Identification

Part No.

Drawing

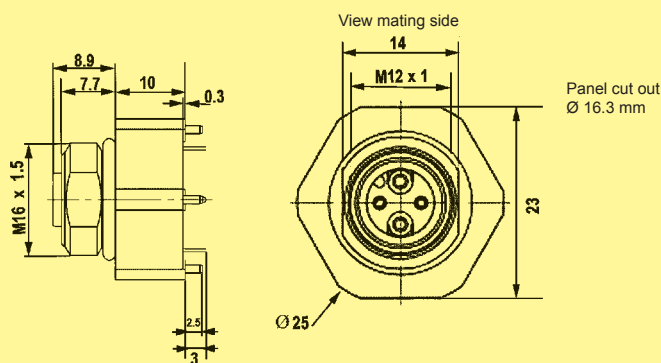
Dimensions in mm

Transceiver

for multimode
with glass fibres,
1300 nm

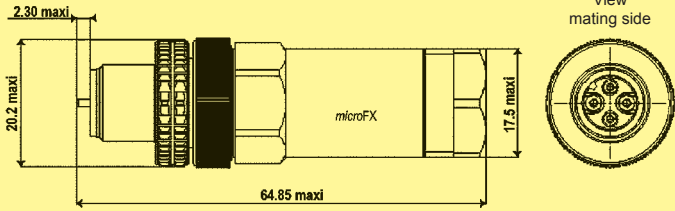
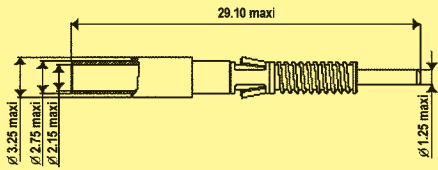
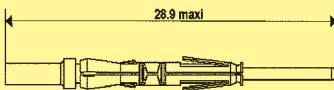
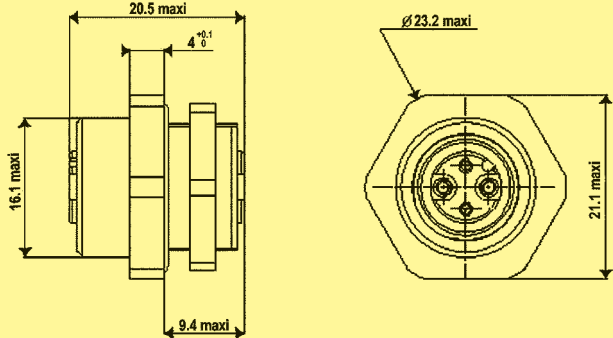
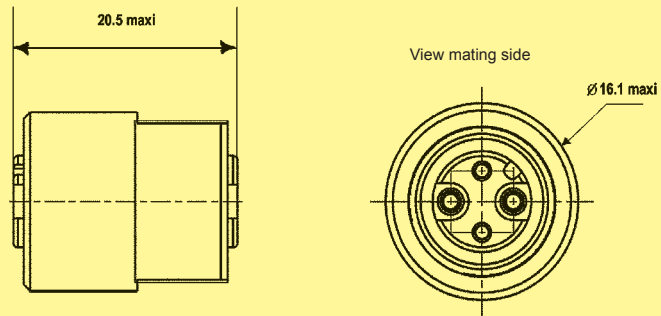
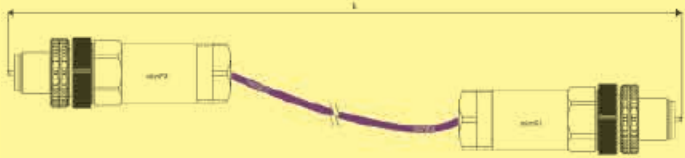


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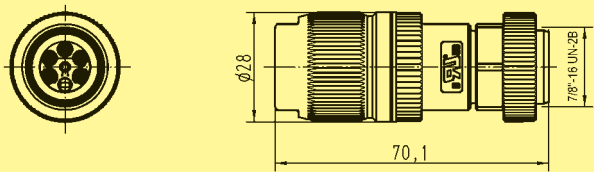
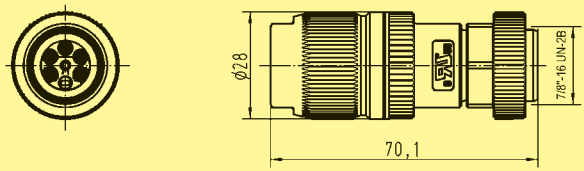
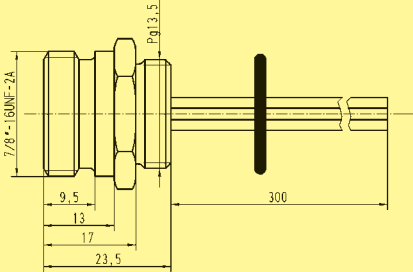
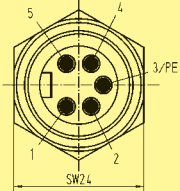
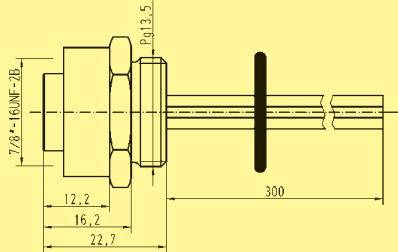
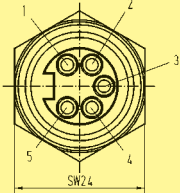
Contact	Function	Description
1	VCCR _X	Receiver supply voltage 3.3 V
2	R _X +	Receiver data output, noninverted, PECL
3	R _X -	Receiver data output, inverted, PECL
4	GND	Ground (Receiver)
5	SD	Signal Defect, PECL
6	RSSI	Receiver signal strength indicator output, analog voltage
7	Res.	Reserved for future use
8	SCL	
9	SDA	
10	TXDIS	
11	GND	Ground (Transmitter)
12	TX-	Transmitter data input, inverted, PECL
13	TX+	Transmitter data input, noninverted, PECL
14	VCCT _X	Transmitter supply voltage 3.3 V

Stock items in bold type

Identification	Part No.	Drawing	Dimensions in mm
Connector order contacts separately 	20 10 004 3411		
Optical Contacts for GI-fibres 50 - 60 / 125 µm	20 10 125 3411		
Electrical Contacts 1 mm² wire gauge	20 10 000 3411		
Panel feed-through	20 80 004 3411		
Coupling unit	20 80 004 3412		
Cordset Length: 1 m 2 m 5 m 10 m	20 25 050 0010 20 25 050 0020 20 25 050 0050 20 25 050 0100		

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Identification	Part No.	Drawing	Dimensions in mm
HARAX® 7/8“ Male 	21 04 116 1505		
HARAX® 7/8“ Female 	21 04 116 2505		
Han® 7/8“ panel feed-through 			
Male	21 04 316 1505		
Female	21 04 316 2505		

Stock items in bold type



Identification	Part No.	Drawing	Dimensions in mm
Han® M12 Crimp			
Male, D-coded			
7 - 8.8 mm	21 03 882 1405		
Male, A-coded			
7 - 8.8 mm	21 03 812 1405		
4.5 - 5.4 mm	21 03 812 1406		
Female, A-coded			
7 - 8.8 mm	21 03 812 2405		
4.5 - 5.4 mm	21 03 812 2406		
Order crimp contacts separately			
Crimping tool	61 03 600 0022		
locator	61 03 600 0023		
Single contacts			
turned male contacts* AWG 22-20 0.33-0.52	61 03 000 0073		
turned female contacts* AWG 22-20 0.33-0.52	61 03 000 0074		

* Performance level 1 as per CECC 75301-802, 500 mating cycles, 10 days 4 mixed gas test – IEC 60512

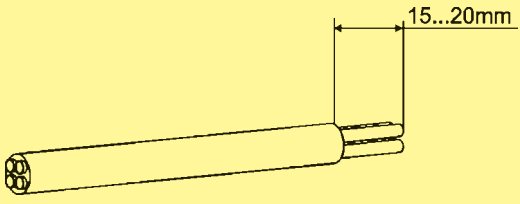
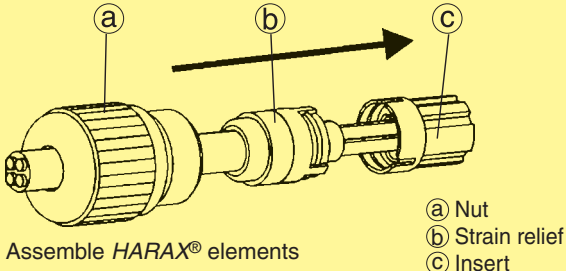
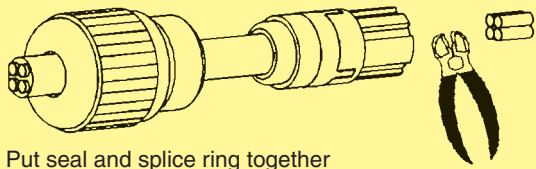
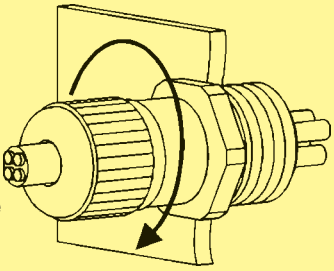
Features

- ❑ The faston blade was chosen acc. to DIN 46 330 - A 2.8
- ❑ Each type is delivered with a termination element consisting of a nut, a seal and a splice ring
- ❑ Splice ring with Pg 9
- ❑ For assembly in openings without threads a Pg 9 locknut is available
- ❑ Diameter of the mounting cutout:
d = 15.5 mm

Technical characteristics

Working voltage	32 V
Working current (see current carrying capacity)	4 A
Wire gauge	0.25 - 0.5 mm ² 24/7 AWG - 22 AWG
Diameter of individual strands	≥ 0.1 mm
Conductor insulation material	PVC
Conductor diameter	1.2 - 1.6 mm
Cable diameter	4.0 - 5.1 mm
Working temperature	- 25 °C ... + 85 °C
Temperature during connection	- 5 °C ... + 50 °C
Degree of protection	IP 67
Termination cycles with the same cross section	10

Assembly manual

1. 
Strip cable jacket
2. 
Assemble HARAX® elements
a) Nut
b) Strain relief
c) Insert
3. 
Put seal and splice ring together
Cut off cable ends
4. 
Twist the nut onto the insert until a stop is noticeable

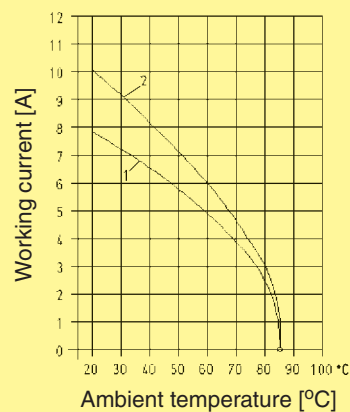
Current carrying capacity

The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals. The current capacity-curve is valid for continuous, not interrupted current-loaded contacts of connectors when simultaneous power on all contacts is given, without exceeding the maximum temperature.

Control and test procedures according to DIN IEC 60 512-3.

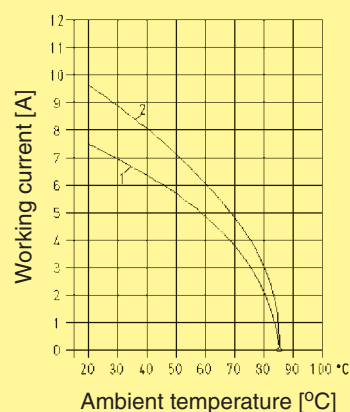
Pg 9, 3 contacts

- 1 = wire gauge
3 x 0.25 mm²
- 2 = wire gauge
3 x 0.5 mm²



Pg 9, 4 contacts

- 1 = wire gauge
4 x 0.25 mm²
- 2 = wire gauge
4 x 0.5 mm²





Identification	Part No.	Drawing	Dimensions in mm
HARAX® Pg 9 panel feed-through 3 contacts, with pre-assembled 0.5 m / 0.5 mm ² pigtail cable	21 01 130 4241		View: Termination side
HARAX® Pg 9 panel feed-through 4 contacts, with pre-assembled 0.5 m / 0.5 mm ² pigtail cable	21 01 140 4341		View: Termination side
HARAX® Pg 9 panel feed-through 3 contacts with faston blades	21 01 130 4011	Faston blade termination acc. to DIN 46330-A 2,8 	View: Termination side

Technical characteristics

Specifications	IEC 60352-4 DIN 61984 VDE	
Approval		
Construction type	Pg 13,5 3 poles	Pg 13,5 / M20 4 poles
Working voltage	250 V 4 kV 3 with faston terminals with insulation cap	230/400 V 4 kV 3
acc. to UL/CSA	600 V	600 V
Working current (see current carrying capacity)	16 A	16 A
Testing voltage	4 kV (1.2/50)	4 kV (1.2/50)
Conductor cross section	0.75 - 1.5 mm ²	0.75 - 1.5 mm ²
Diameter of individual strands	≥ 0.2 mm	≥ 0.2 mm
Outer cable diameter	6.0 - 9.0 mm	6.0 - 9.0 mm
Termination cycles with the same cross section	10	10
Limiting temperature	- 25 / + 85 °C	- 25 / + 85 °C
Temperature during connection	- 5 ... + 50 °C	- 5 ... + 50 °C
Degree of protection	IP 67	IP 67
Conductor insulation material	PVC	PVC
Max. tightening torque	8 Nm	8 Nm

Current carrying capacity

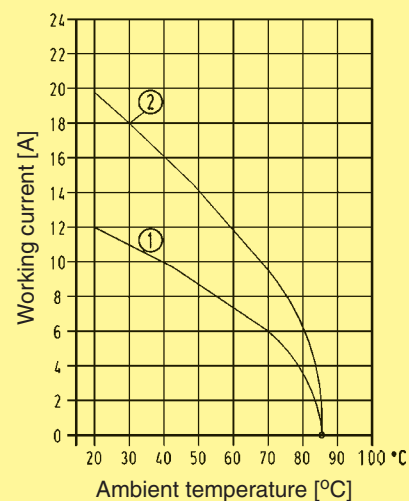
The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals. The current capacity-curve is valid for continuous, not interrupted current-loaded contacts of connectors when simultaneous power on all contacts is given, without exceeding the maximum temperature.

Control and test procedures according to DIN IEC 60512-3.

Pg 13,5 3 contacts

1 = wire gauge
0.75 mm²

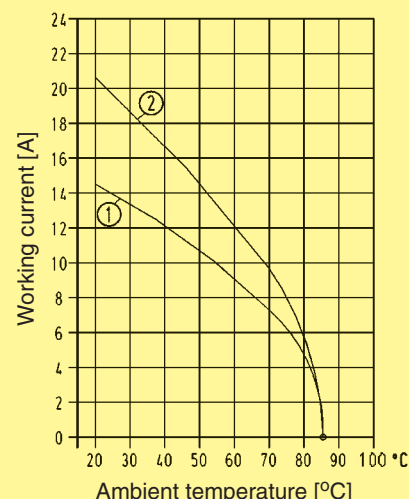
2 = wire gauge
1.5 mm²



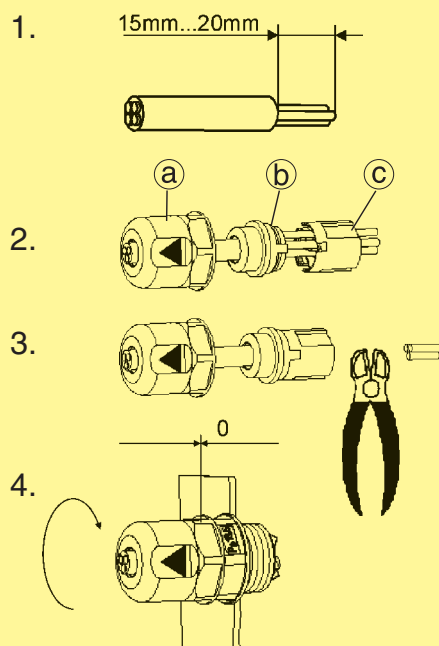
Pg 13,5 / M20 4 contacts

1 = wire gauge
0.75 mm²

2 = wire gauge
1.5 mm²



Assembly manual



Connection and disconnection of the cable must only be performed by suitably qualified persons when supply is isolated.

- (a) Nut
- (b) Strain relief
- (c) Insert

HARAX® Pg 13.5 – 3 contacts – is supplied with either faston blades or solder terminals.

HARAX® Pg 13.5 / M20 – 4 contacts – is supplied only with solder termination.

The nut must be tightened completely down so that the notches engage on the contact carrier.

The opening of the gland always requires a wrench.

Note: For reconnection cut off the used cable ends and repeat steps 1 to 4.

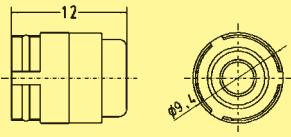
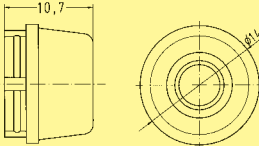
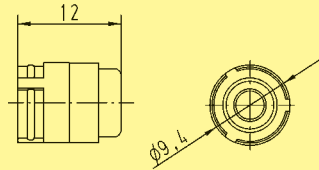
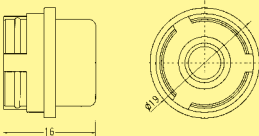
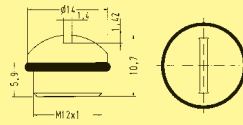
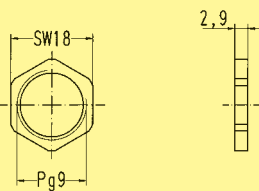
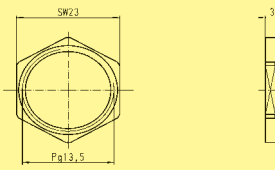
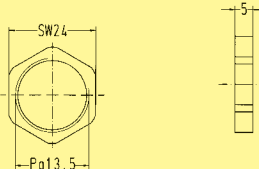
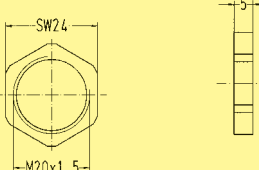
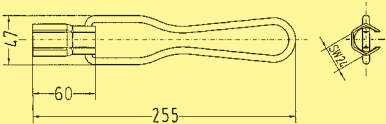


Identification	Part No.	Drawing	Dimensions in mm
HARAX® Pg 13.5 / 3 contacts with faston blades	21 01 130 1013		View: Mating side SW 24
HARAX® Pg 13.5 / 3 contacts with solder termination	21 01 130 1023		
HARAX® Pg 13.5 / 3 contacts with pre-assembled pigtail cable, l = 500 mm, 1.5 mm²	21 01 130 1223		
HARAX® Pg 13.5 / 2 + PE with faston blades	21 01 130 3013		View: Mating side SW 24
HARAX® Pg 13.5 / 2 + PE with solder termination	21 01 130 3023		
HARAX® Pg 13.5 / 2 + PE with pre-assembled pigtail cable, l = 500 mm, 1.5 mm²	21 01 130 3233		
HARAX® Pg 13.5 / 4 contacts with solder termination	21 01 140 1023		View: Mating side SW 24
HARAX® Pg 13.5 / 3 + PE with solder termination	21 01 140 3023		
HARAX® Pg 13.5 / 4 contacts with pre-assembled strand, l = 500 mm, 1.5 mm²	21 01 140 3333		
HARAX® Pg 13.5 / 3 + PE with pre-assembled strand, l = 500 mm, 1.5 mm²	21 01 140 3333		
HARAX® M20 / 4 contacts with solder termination	21 01 141 1023		View: Mating side SW 24
HARAX® M20 / 3 + PE with solder termination	21 01 141 3023		
HARAX® M20 / 4 contacts with pre-assembled strand, l = 500 mm, 1.5 mm²	21 01 141 1323		
HARAX® M20 / 3 + PE with pre-assembled strand, l = 500 mm, 1.5 mm²	21 01 141 3333		

Other length on request

Stock items in bold type

HARAX

Identification		Part No.	Drawing	Dimensions in mm
Seal M12 4 - 5.1 mm		21 01 010 2001		
Seal M12-L 3 poles: 5.5 - 7.2 mm 4 + 5 poles: 6 - 8 mm		21 01 010 2003 21 01 010 2007		
Seal M8 for 2.5 - 3.5 mm cable Ø for 3.2 - 4.4 mm cable Ø for 4.2 - 5.4 mm cable Ø		21 01 010 2008 21 01 010 2004 21 01 010 2005		
Seal Pg 13.5 / M20 6 - 9 mm		21 01 010 2002		
Cap M12		21 01 000 0003		
Lock nut Pg 9 nickel plated		21 01 000 0008		
Lock nut Pg 13.5 nickel plated		21 01 000 0020		
Lock nut Pg 13.5		21 01 000 0007		
Lock nut M20		21 01 000 0009		
Socket wrench		21 01 000 0001		

Stock items in bold type