



Circular connectors represent a widespread industrial standard for wiring sensors and actuators installed in the field. HARTING offers a portfolio of circular connectors with M8, M12, M23, 7/8" thread and Han-Max® which are attuned to meet the requirements of industrial applications. In addition to the ready-to-use system cables, HARTING offers connectors equipped with HARAX® quick connection technology for in situ field assembly.

In addition, HARTING is continuing the development of enhanced circular connectors for new applications. HARTING is offering the M12 connector for the electrical and optical cabling for Fast Ethernet applications.

Application profile:

CONNECTION TYPE		ENVIRONMENT		APPLICATION						
Board to Board	Cable/Wire to Board	IP 20	IP 65 / IP 67	Data	Signal	Power	high performance			
							Data transfer rate	Shielding	Number of contacts, contact density	Voltage, working current
Cable termination			PCB termination			Application standard				
Han-Quick Lock®	IDC HARAX®	Crimp	THT	SMC	SMT					
Screw	Cage clamp	Axial screw	Press-in			Housing integration				
						Separate housing	Integrated housing			

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Standardized circular connectors with M8, M12, M 23, 7/8" thread and Han-Max® are in widespread use in the installation of machines and systems.

HARTING offers a portfolio of angled and straight M8, M12, Han® R 23 and 7/8" connectors which are attuned to meet all relevant automation requirements. The housings are available as plastic and as metal variant. In addition to the standard circular connectors for sensors/actuators, Harting is offering standardized circular connectors such as the M12 and Han-Max® variants to meet the special requirements of communication technology (Ethernet, Ethernet/IP, PROFINET, PROFIBUS, Devicenet and CAN).

The HARTING product range comprises connectors, ready-to-use patch cables and corresponding accessories.

The easy-to-handle *HARAX*® quick connection technology is available for the in situ assembly of M8 and M12 connectors and does not require the use of special tools. The portfolio of circular connectors is rounded off by the Han® R 23 connector family. HARTING's comprehensive and user-friendly circular connector range enables cost-effective and quick realization of all wiring and communication tasks in automation projects.

APPLIANCE INTEGRATION:

In order to support the implementation of appliances with degree of protection IP 65 / IP 67, Harting offers panel feed-through devices with ready-to use patch cables and female contact modules for direct mounting on PCBs.



QUICK CONNECTION WITH HARAX®:

The HARTING HARAX® quick connection technology is an ideal solution for the in situ assembly of M8/M12 connectors. Users only have to strip the cable insulation, insert the conductors, and screw the connector together in order to produce a gas-proof and vibration resistant connection.

HARAX® is a universal technology deployed in diverse connector series to wire data, signal and power lines and represents the current standard connection for Fieldbus and Fast Ethernet.



M12 FEMALE SOCKETS FOR PCB MOUNTING:

Straight and angled contact inserts are available for direct soldering on PCBs. HARTING has developed special shielded contact inserts category 5 to ISO/IEC 11801 for Ethernet technology which meet the stringent requirements for railway applications.



ASSEMBLED SYSTEM CABLES:

HARTING offers a comprehensive range of ready-to-use M8/M12 system cables for the quick wiring of sensors and actuators. HARTING also offers ready-to-use and tested system cables for special Ethernet communication such as PROFINET and Ethernet/IP.

HARTING also provides custom patch cables which are also available as overmolded versions. The range of solutions comprises shielded and non-shielded cables with diverse structures, as required in drag chain applications, for example.



RJ45-BASED CIRCULAR CONNECTOR HAN-MAX®

The Han-Max® module offers a standard RJ45 connection in a rugged and vibration-proof metal housing with toggle locking (bayonet lock). The IP 65 / IP 67 connector is designed for use in rugged industrial environments.

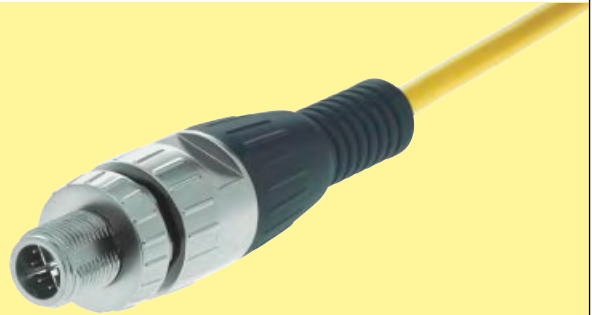
The data connector can be assembled in the field, conforms to category 5 and is approved for Ethernet/IP.



The innovative solution

With *har-speed* M12 HARTING bases the Ethernet network on a sustainable M12 foundation. The *har-speed* M12 differs significantly from today's M12 connectors for Ethernet because it is based on a 4-pair connector face with paired shielding. This allows *har-speed* M12 to be used for Ethernet transfer rates up to 10 Gigabit. The new HARTING *har-speed* M12 connector is, therefore, capable of complying with the high requirements of the transfer class E_A, respectively the Cat. 6_A. For the first time an M12 cabling system can be used for relevantly high data performance and permanent sustainability.

The *har-speed* M12 connectors can be optimally used for applications with bandwidths in machine and facility engineering, but also for the IP 67 infrastructure. The basis for the new development is the new PAS 61076-2-109 that defines a uniform connector face for 8-pole M12 connectors.



The new connector face complies with the following requirements:

- Maximum data rates through the configuration of the contacts in conformance with Ethernet technology.
- Minimal interaction and perfect shielding through paired shielding of the contacts.
- Fault proof connection through coding of the connector face. A connection error with other 8-pole M12's is impossible.

Overmolded versions in different lengths and a crimp connector for the local cabling are the first system components for a comprehensive cabling infrastructure solution by HARTING.

Technical Data

har-speed M12 connector

- Cabling with crimp technology
- Compact, robust design
- Fully shielded
- Transfer class E_A for 1 and 10 Gigabit Ethernet
- AWG 28 to AWG 24
- Temperature range -40 °C ... +85 °C
- Protection class IP 65 / IP 67

har-speed M12 PCB receptacle

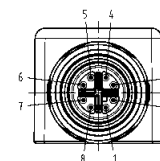
- Stable, industrial standard design
- Fully shielded
- Transfer class E_A for 1 and 10 Gigabit Ethernet
- Temperature range -40 °C ... +70 °C
- Protection class IP 65 / IP 67



Circular Connectors



X-kodiert / X-coded



Identification

Part No.

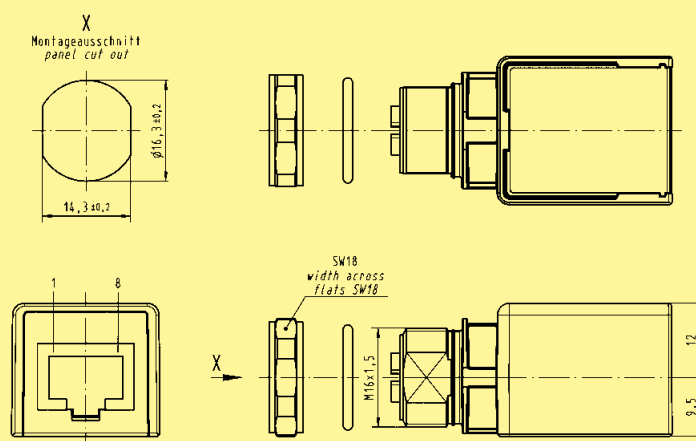
Drawing

Dimensions in mm

har-speed M12
adapter M12-RJ45

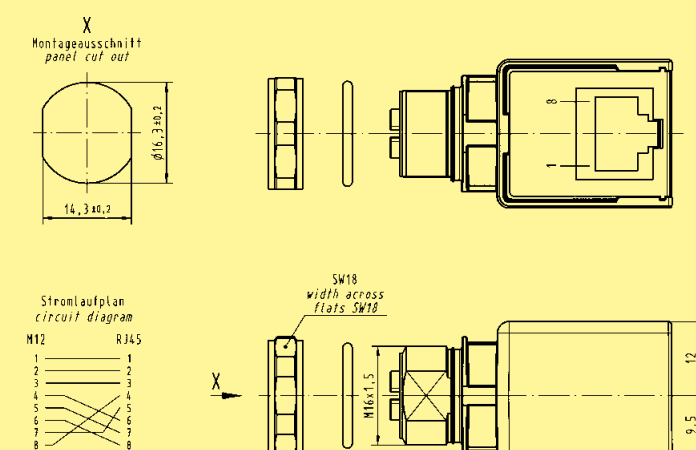
straight, Cat. 6A

21 03 381 2800



angled, Cat. 6A

21 03 381 4800



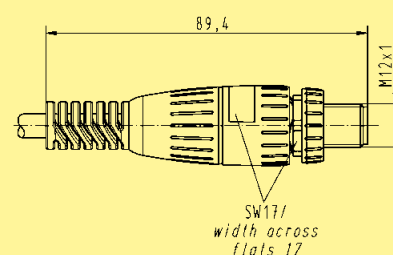
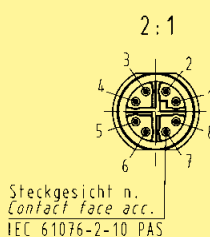


Identification	Part No.	Drawing	Dimensions in mm
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har-speed M12 system cable

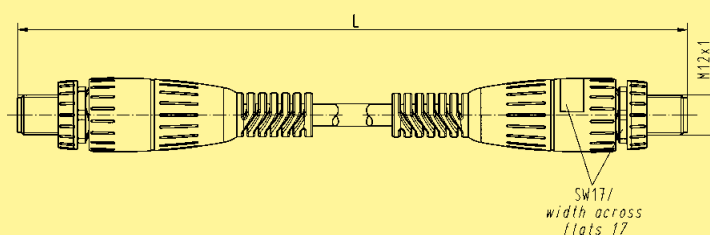
single ended overmoulded
system cable

Length:	1 m	21 03 483 1801
	3 m	21 03 483 1803
	5 m	21 03 483 1805
	7 m	21 03 483 1807
	10 m	21 03 483 1810



double ended overmoulded
system cable

Length:	0.5 m	21 03 483 5850
	1.0 m	21 03 483 5801
	1.5 m	21 03 483 5851
	2.0 m	21 03 483 5802
	2.5 m	21 03 483 5852



Technical characteristics

Specifications

IEC 60352-4
IEC 61076-2-101
IEC 61076-2-104

Approval

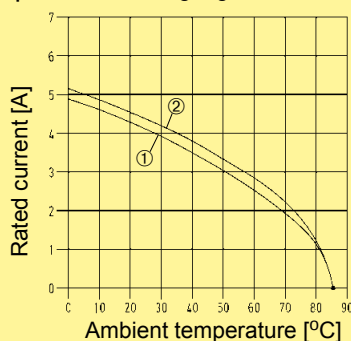


Construction type	HARAX® M8-XS	HARAX® M8-S/ M12-S	HARAX® M12 angled	HARAX® M12-L 3-poles, 4-poles	HARAX® M12-L 5-poles
Rated voltage	32 V	32 V	32 V	50 V	50 V
Rated current (see current carrying capacity)	2 A	4 A	4 A	6 A	4 A
Conductor cross section	0.1 - 0.14 mm ² AWG 27 - 26	0.14 - 0.34 mm ² AWG 26 - 22	0.25 - 0.5 mm ² AWG 24/7 - 20	0.34 - 0.75 mm ² AWG 22 - 18	0.25 - 0.34 mm ² AWG 24 - 22 0.34 - 0.5 mm ² AWG 22 - 20
Diameter of individual strands	≥ 0.05 mm	≥ 0.1 mm	≥ 0.1 mm	≥ 0.1 mm	≥ 0.1 mm
Conductor insulation material	PVC / PP / TPE	PVC / PP / TPE	PVC	PVC	PVC
Conductor diameter	0.6 - 1.0 mm	1.0 - 1.6 mm	1.2 - 1.6 mm	1.6 - 2.0 mm 2.0 - 2.6 mm	1.2 - 2.0 mm
Cable diameter	1.9 - 2.5 mm (transp.) 2.5 - 3.5 mm (grey)	M8-S: 2.5 - 5.1 mm M12-S: 2.9 - 4.0 mm (transp.) 4.0 - 5.1 mm (black)	4 - 5.1 mm	6 - 8 mm	4.7 - 6 mm 6 - 8 mm
Limiting temperatures	-40 °C / +85 °C	-40 °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 67	IP 65 / IP 67	IP 65 / IP 67
Termination cycles with the same cross section	10	10	10	10	10
Recommended tightening torque / Hexagonal wrench	0.4 Nm / SW 9	M8-S: 0.4 Nm / SW 9 M12-S: 0.6 Nm / SW 13	0.6 Nm / SW 13	0.6 Nm / SW 17	0.6 Nm / SW 17

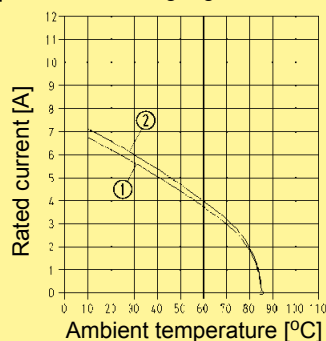
Current carrying capacity The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals. The current capacity-curve is valid for continuous, not interrupted current-loaded contacts of connectors when simultaneous power on all contacts is given,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

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

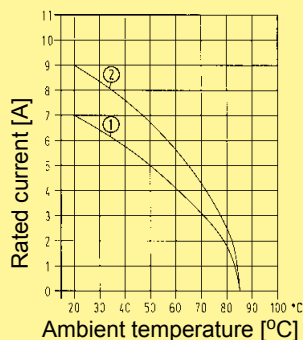
M8-XS, 3-poles 1 = wire gauge 0.1 mm²
M8-S, 3-poles 2 = wire gauge 0.14 mm²



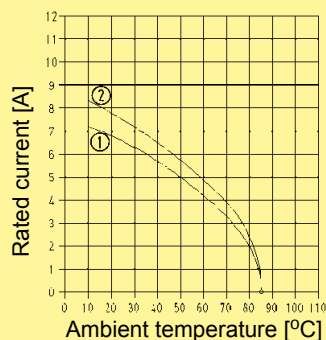
M8-S, 4-poles 1 = wire gauge 0.25 mm²
M12-S, 4-poles 2 = wire gauge 0.34 mm²



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
IEC 61076-2-104

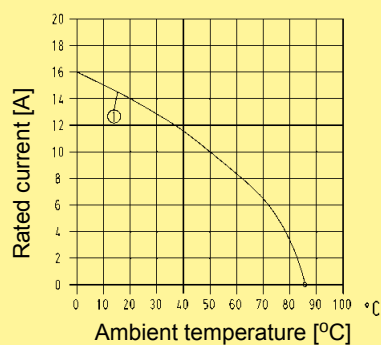
Approval



Construction type	HARAX® M12-XL 5-poles	HARAX® M12-L screened version, A-coded	HARAX® M12-L PROFIBUS	HARAX® M12-L screened version Ethernet	Han® M12 Crimp	HARAX® 7/8"
Rated voltage	50 V	50 V	32 V	50 V	250 V	230 V / 400 V
Rated current (see current carrying capacity)	4 A	4 A	4 A	4 A	4 A	10 A
Conductor cross section	0.5 - 1 mm ² AWG 20 - 16	0.14 - 0.34 mm ² AWG 26 - 22	0.25 - 0.34 mm ² AWG 24- 22	① 0.14 - 0.34 mm ² AWG 26 - 22 ② 0.34 - 0.5 mm ² AWG 22-20	0.34 - 0.5 mm ² AWG 22 - 20	0.75 - 1.5 mm ² AWG 18 - 16
Diameter of individual strands	≥ 0.1 mm	≥ 0.1 mm	≥ 0.1 mm	≥ 0.1 mm		≥ 0.15 mm
Conductor insulation material	PVC, ETFE	PVC	PVC, Zell-PE	PVC / PE		PVC, PP, TPE
Conductor diameter	1.6 - 2.0 mm	1.2 - 1.6 mm	2 - 2.6 mm	1.2 - 2.0 mm	2.0 - 2.3 mm	≤ 2.8 mm
Cable diameter	6 - 9 mm	4.5 - 8.8 mm	7.0 - 8.8 mm	4.5 - 8.8 mm	4-poles: 4.5 - 5.4 mm 7.0 - 8.8 mm 5-poles: 4.5 - 8.8 mm	6.8 - 9.5 mm (black) 9 - 12.5 mm (grey)
Limiting temperatures	-40 °C / +85 °C	-40 °C / +85 °C	-40 °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	-5 °C ... +50 °C
Degree of protection	IP 65 / IP 67	IP 67	IP 67	IP 67	IP 67	IP 65 / IP 67
Termination cycles with the same cross section	10	10	10	10		10
Recommended tightening torque / Hexagonal wrench	0.6 Nm / SW 17	0.6 Nm / SW 17	0.6 Nm / SW 17	0.6 Nm / SW 17	0.5 Nm / SW 17	1.5 Nm / SW 22

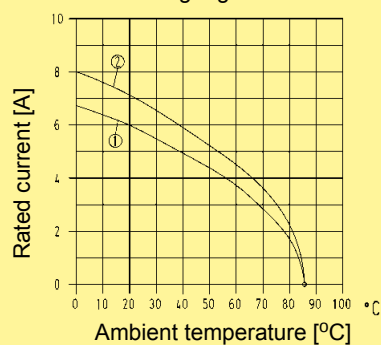
7/8"

1 = wire gauge 0.75 mm² / 1.5 mm²



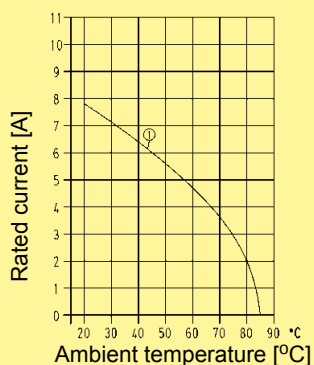
M12L, 5-poles

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



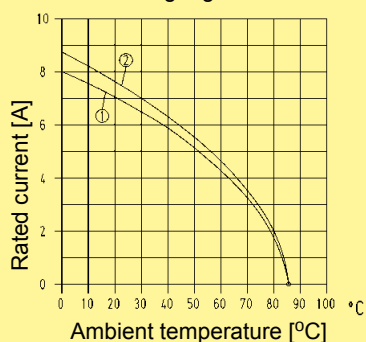
M12, Crimp

1 = wire gauge 0.34 mm² / 0.5 mm²

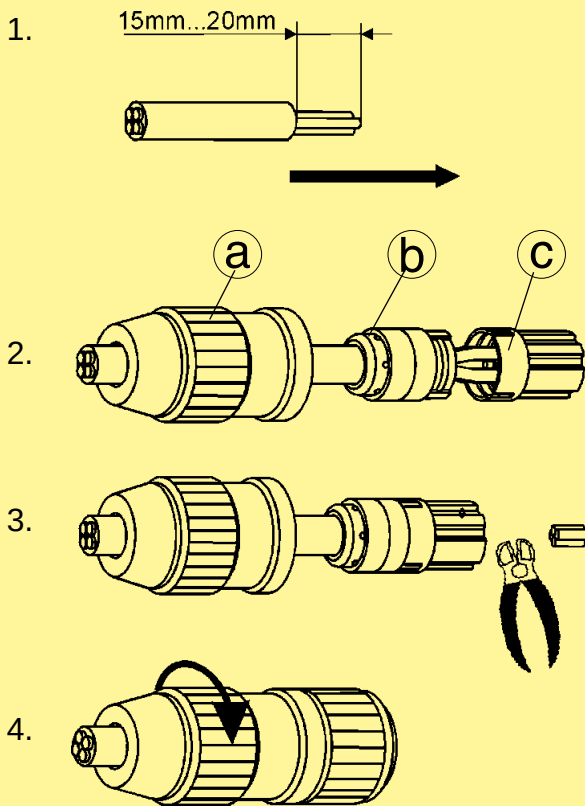


M12L, 5-poles

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



Assembly manual HARAX®, M8-XS, M8-S / M12-S, M12-L, M12-XL unshielded



1. strip cable

2. assemble HARAX® elements

- Ⓐ Nut
- Ⓑ Strain relief
- Ⓒ Insert

3. cut off cable ends

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

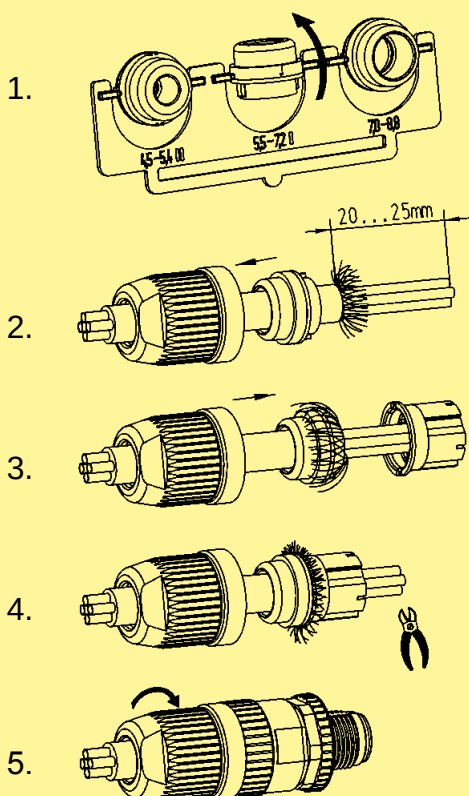
4. screw the connector

Note!

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

The seal has to be replaced when worn.

Assembly manual HARAX®, M12-L shielded



1. Choose the required seal.

2. Push nut and seal onto the cable.
Remove outer cable sleeve.

3. Slide seal under braid and form as shown.
Push wires through the contact splicing element.

4. Assemble seal and contact splicing element.
Cut off protruding shielding braid and cable ends.

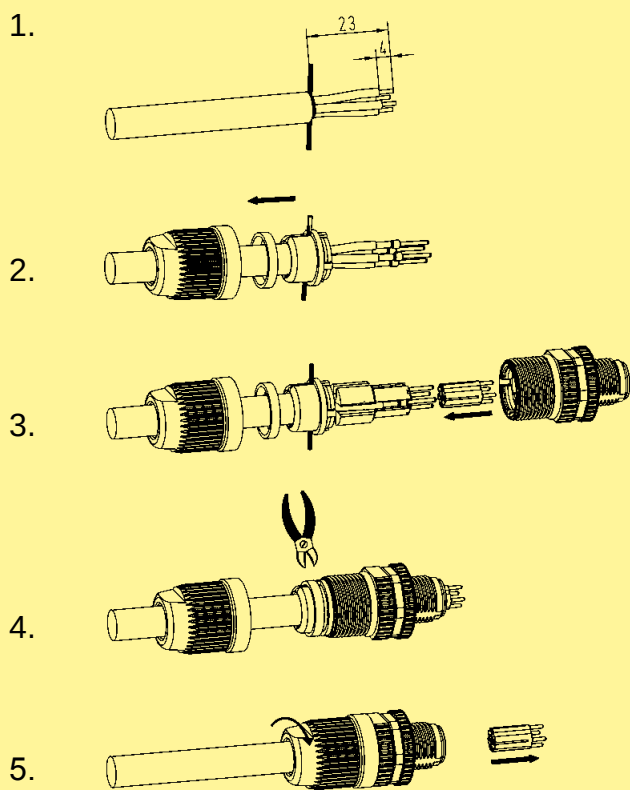
5. Assemble connector.
Screw nut down to the limits.

Note!

For reconnection, cut off the used connector and repeat steps 2 to 5.

The seal has to be replaced when worn.

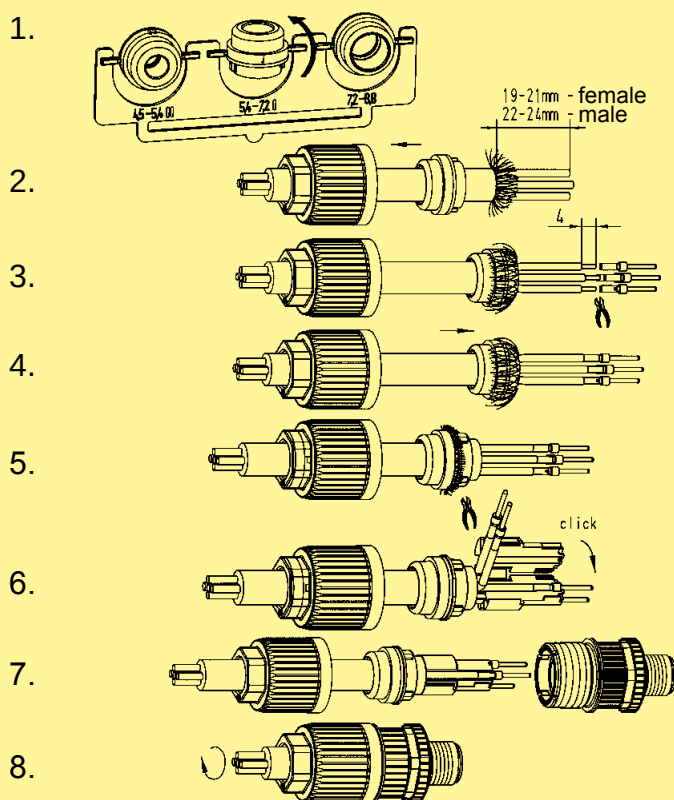
Assembly manual Han® M12 Crimp 4-poles



1. Remove cable jacket and strip cores. Twist screening braid as shown and crimp contacts.
2. Slide screw cap, ring and sealing onto the cable. Push screening braid into the sealing slot.
3. Insert contacts into locator from the side. Fix contacts with the aid of assembly aid. Slide locator into connector, pay attention to the coding.
4. Sealing has to be flush with connector. Slide ring over the sealing and cut off screening braid.
5. Tighten screw cap. Remove assembly aid.

The seal has to be replaced when worn.

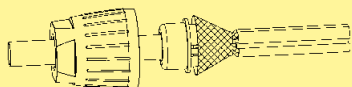
Assembly manual Han® M12 Crimp 5-poles



1. Break out the required seal.
2. Push nut and seal onto the cable. Remove outer cable sleeve.
3. Form braid as shown. Remove foils and cross cables if necessary. Finally strip cable ends and crimp contacts.
4. Slide seal onto the cable until it stops and form as shown.
5. Slide shielding ring over cable ends onto the braid and seal. Cut off excess shielding braid.
6. Place middle contact in the contact element. Push contact elements together until it snaps.
7. Place all other contacts into side cavities. Push preassembled unit of contact element, shielding ring and seal into the connector. Respect the coding!
8. Assemble connector. Screw nut down until it stops.

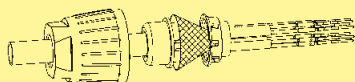
Assembly manual *har-speed* M12

1. - 3.



1. Attach locknut and seal.
2. Remove cable sheath.
3. Pull braid apart.

4. - 7.



4. Attach shield element.
5. Remove pair shielding.
6. Remove wire insulation.
7. Crimp contacts.

8.



Option – Using covers for high performance.

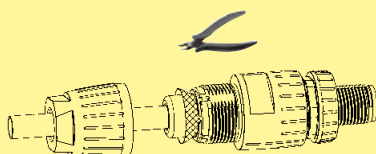
8. Locating of contacts into insulator body, optionally usage of covers.

9.



9. Assembling of insulator body and housing.

10.



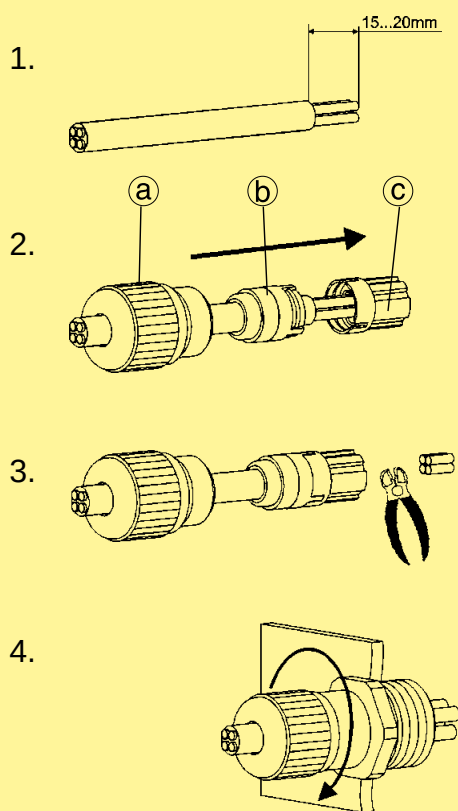
10. Remove excess braid.

11.



11. Tighten locknut.

Assembly manual HARAX® Pg 9 panel feed-through



1. Strip cable jacket

2. Assemble HARAX® elements

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

3. Cut off cable ends

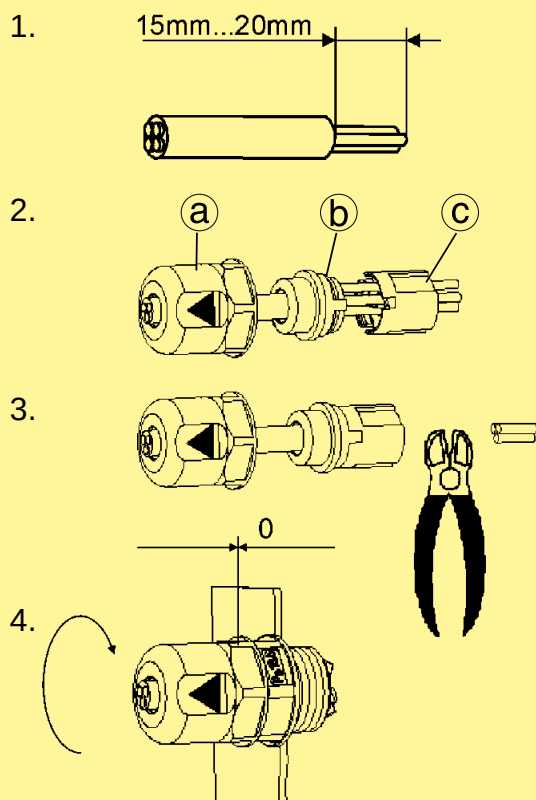
4. Twist the nut onto the insert until a stop is noticeable

Note!

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

The seal has to be replaced when worn.

Assembly manual HARAX® Pg 13.5 / M20 panel feed-through



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

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

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

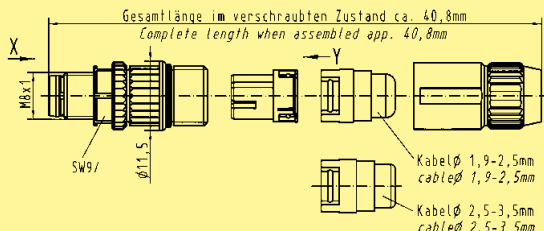
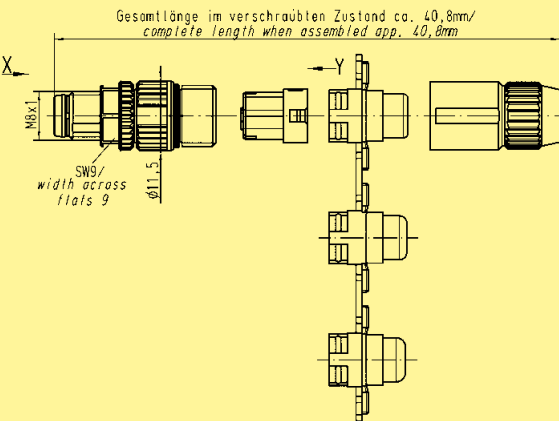
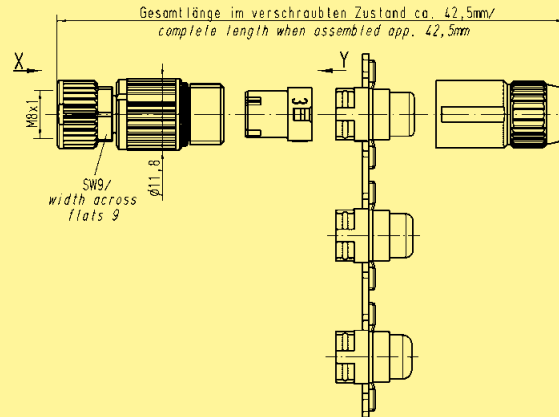
3. HARAX® Pg 13.5 / M20 – 4 contacts – is supplied only with solder termination.

4. 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
	Male	Female		
HARAX® M8-XS straight version, 3-poles for 0,1 - 0,14 mm ² 	21 02 159 1305			
HARAX® M8-S straight version, 3-poles for 0,14 - 0,34 mm ² 	21 02 151 1305			
straight version, 4-poles for 0,14 - 0,34 mm ² 	21 02 151 1405			
straight version, 3-poles for 0,14 - 0,34 mm ² 		21 02 151 2305		
straight version, 4-poles for 0,14 - 0,34 mm ² 		21 02 151 2405		

Stock items in bold type



System cables with
Han® M8 Circular connector

Technical characteristics

Han® M8 Circular connector, without PE

Rated voltage	max. 60 V AC/DC
Rated current/contact	max. 4 A
Locking	Screw locking M8x1, self securing
Recommended torque	0.4 Nm
Temperature range (dependant on connected conductor)	-25 °C ... +85 °C
Degree of protection	IP 67
Number of wires / wire gauge	3 x 0.25 mm ²
Conductor insulation	PP (br, bl, sw)
Arrangement of insulated strands	32 x 0.1 mm
Sheath	PUR (UL, CSA)
Outer diameter	appr. 4.1 mm
Bending radius	10 x outer diameter
Temperature range (working and storage)	-5 °C ... +80 °C



Identification

Part No.

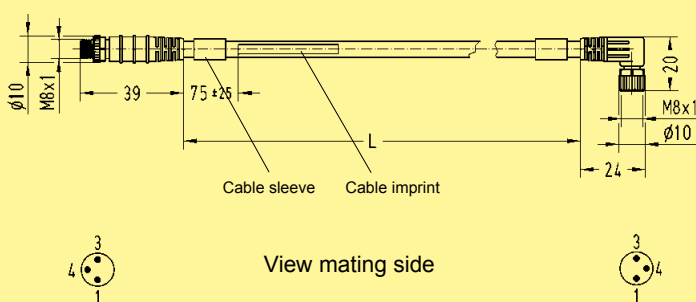
Drawing

Dimensions in mm

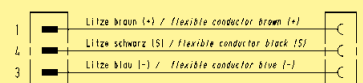
Han® M8 Circular connector Female angled, Male straight

Length: 0.3 m
0.6 m
1.0 m
1.5 m
2.0 m

21 02 454 5301
21 02 454 5302
21 02 454 5303
21 02 454 5304
21 02 454 5305



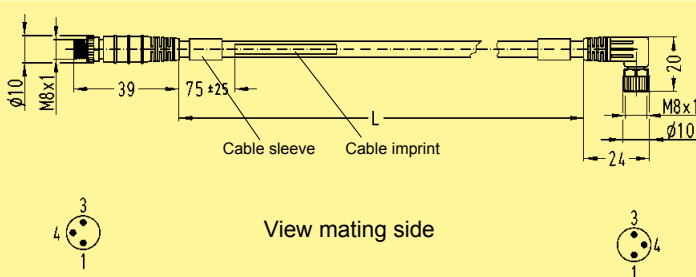
Schematic diagram



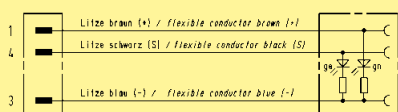
Han® M8 Circular connector Female angled, with LED Male straight

Length: 0.3 m
0.6 m
1.0 m
1.5 m
2.0 m

21 02 454 7301
21 02 454 7302
21 02 454 7303
21 02 454 7304
21 02 454 7305



Schematic diagram





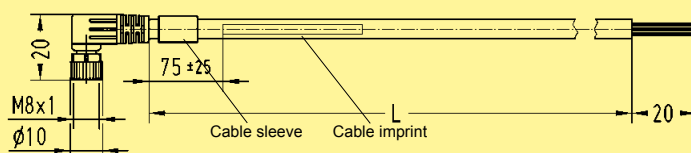
Identification	Part No.	Drawing	Dimensions in mm
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Han® M8 Circular connector

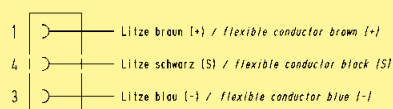
Female angled
pre-assembled on one end

Length: 1.5 m
3.0 m
5.0 m
7.5 m
10.0 m

21 02 554 4301
21 02 554 4302
21 02 554 4303
21 02 554 4304
21 02 554 4305



Schematic diagram



View mating side

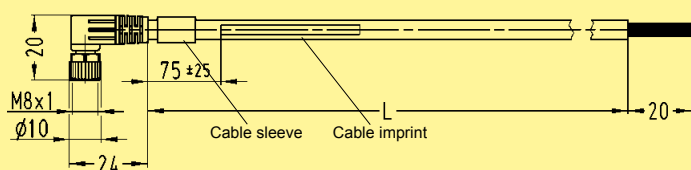


Han® M8 Circular connector

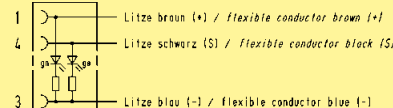
Female angled, with LED
pre-assembled on one end

Length: 1.5 m
3.0 m
5.0 m
7.5 m
10.0 m

21 02 554 7301
21 02 554 7302
21 02 554 7303
21 02 554 7304
21 02 554 7305



Schematic diagram



View mating side

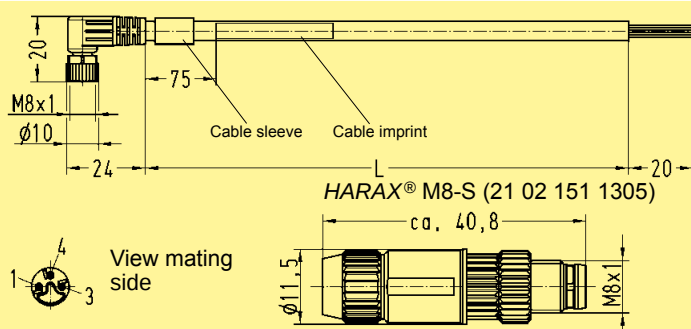


HARAX® M8 cable-Set without LED

Delivery range: Han® M8 connector
with individually adaptable cable and
HARAX® M8-S

Length: 1.5 m
3.0 m
5.0 m
7.5 m
10.0 m

21 82 554 4301
21 82 554 4302
21 82 554 4303
21 82 554 4304
21 82 554 4305



View mating side

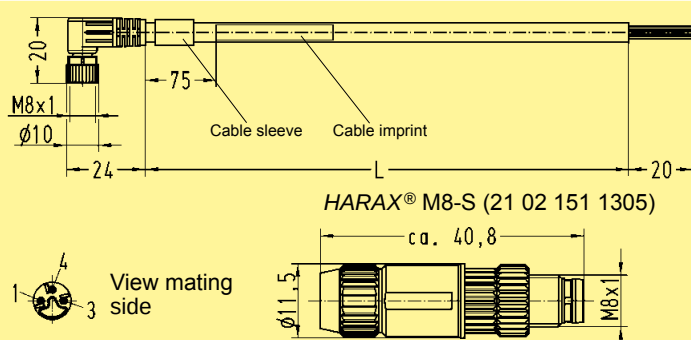


HARAX® M8 cable-Set with LED

Delivery range: Han® M8 connector
with individually adaptable cable and
HARAX® M8-S

Length: 1.5 m
3.0 m
5.0 m
7.5 m
10.0 m

21 82 554 7301
21 82 554 7302
21 82 554 7303
21 82 554 7304
21 82 554 7305



View mating side



Identification

Part No.

Drawing

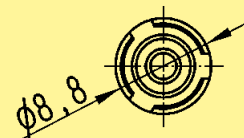
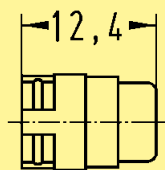
Dimensions in mm

Seal M8

for 1.9 - 2.5 mm cable Ø
for 2.5 - 3.5 mm cable Ø



21 01 010 2016
21 01 010 2008

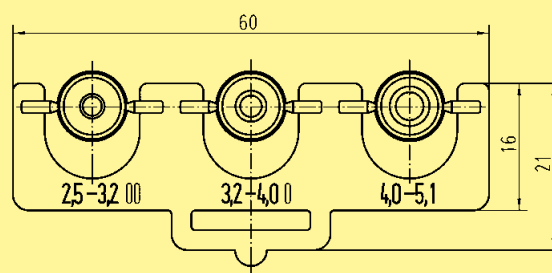


Set of 3 seals for HARAX® M8-S

for 2.5 - 3.2 mm cable Ø
for 3.2 - 4.0 mm cable Ø
for 4.0 - 5.1 mm cable Ø



21 01 010 2013



Han® M8
dynamometric screwdriver
Tightening torque 0.4 Nm

SW 9

09 99 000 0380





Identification	Male	Female	Part No.	Drawing	Dimensions in mm
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HARAX® M12-S

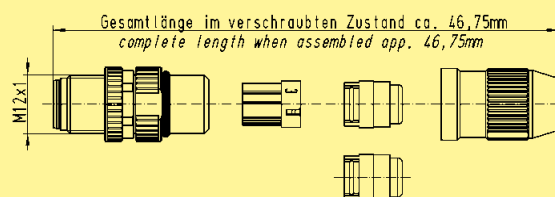
straight version, 4-poles



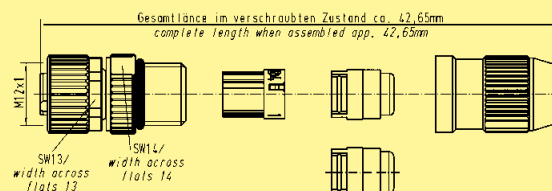
21 03 111 1405



21 03 111 2405



View mating side:



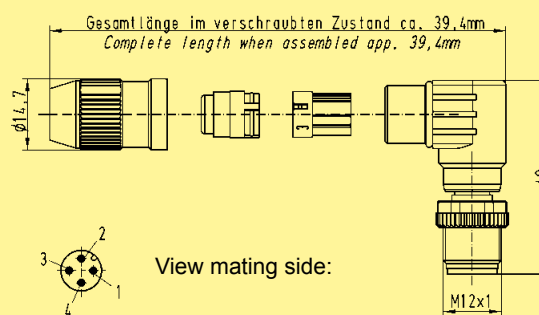
View mating side:

HARAX® M12

angled version, 4-poles



21 01 140 5081

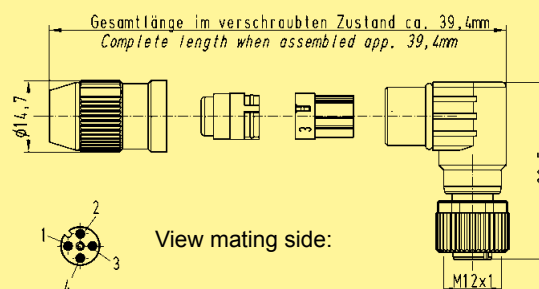


View mating side:

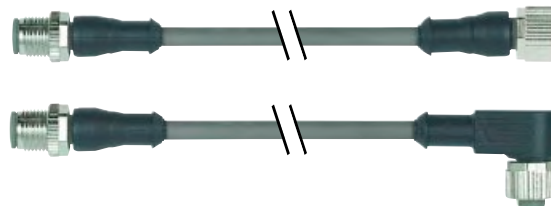
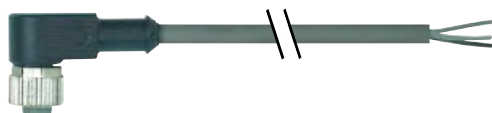
angled version, 4-poles



21 01 140 5091



View mating side:



System cables with
Han® M12 Circular connector, A-coded

Technical characteristics

Han® M12 Circular connector, without PE

Rated voltage	max. 250 V AC/DC, max. 30 V DC (with LED)
Rated current/contact	max. 4 A
Locking	Screw locking M12x1, self securing
Recommended torque	0.6 Nm
Temperature range (dependant on connected conductor)	-25 °C ... +85 °C
Degree of protection	IP 67
Number of wires / wire gauge	4 x 0.34 mm ²
Conductor insulation	PP (br, ws, bl, sw)
Arrangement of insulated strands	42 x 0.1 mm
Sheath	PUR (UL, CSA)
Outer diameter	appr. 4.7 mm
Bending radius	10 x outer diameter
Temperature range (working and storage)	-25 °C ... +80 °C



Identification

Part No.

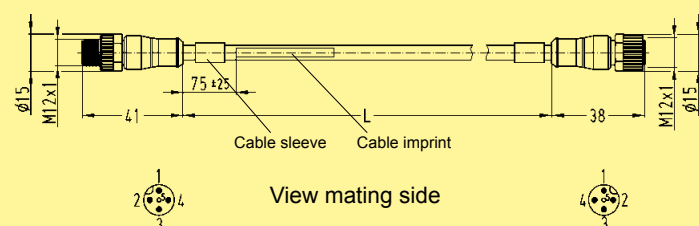
Drawing

Dimensions in mm

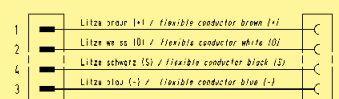
Han® M12 Circular connector Female straight, Male straight

Length: 0.3 m
0.6 m
1.0 m
1.5 m
2.0 m

21 03 415 2401
21 03 415 2402
21 03 415 2403
21 03 415 2404
21 03 415 2405



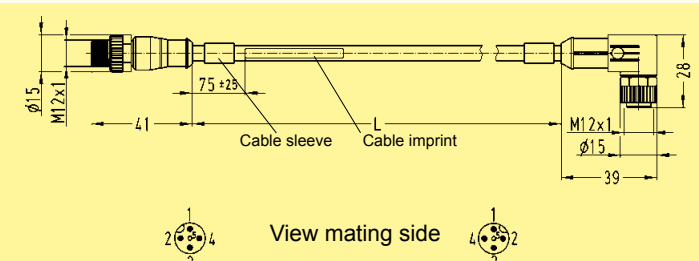
Schematic diagram



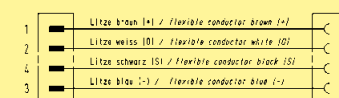
Han® M12 Circular connector Female angled, Male straight

Length: 0.3 m
0.6 m
1.0 m
1.5 m
2.0 m

21 03 415 5401
21 03 415 5402
21 03 415 5403
21 03 415 5404
21 03 415 5405



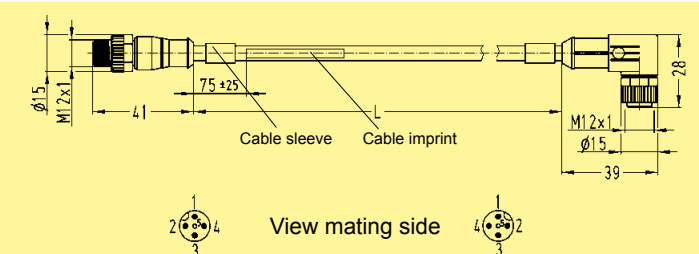
Schematic diagram



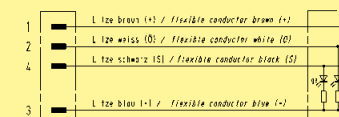
Han® M12 Circular connector Female angled, with LED, Male straight

Length: 0.3 m
0.6 m
1.0 m
1.5 m
2.0 m

21 03 415 7401
21 03 415 7402
21 03 415 7403
21 03 415 7404
21 03 415 7405



Schematic diagram





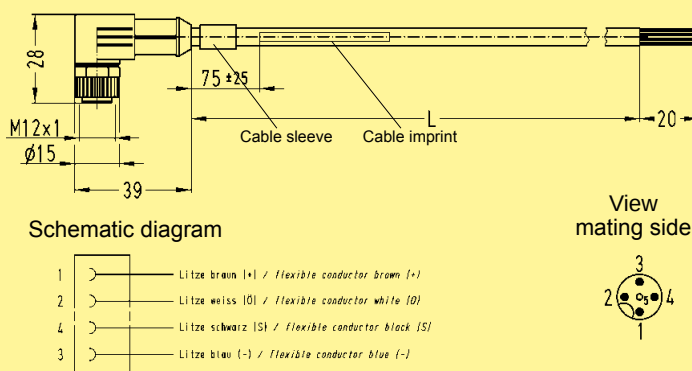
Identification	Part No.	Drawing	Dimensions in mm
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Han® M12 Circular connector

Female angled
pre-assembled on one end

Length: 1.5 m
3.0 m
5.0 m
7.5 m
10.0 m

21 03 515 4401
21 03 515 4402
21 03 515 4403
21 03 515 4404
21 03 515 4405

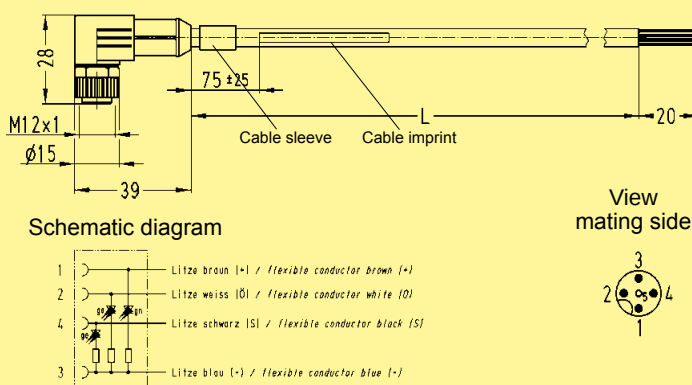


Han® M12 Circular connector

Female angled, with LED
pre-assembled on one end

Length: 1.5 m
3.0 m
5.0 m
7.5 m
10.0 m

21 03 515 7401
21 03 515 7402
21 03 515 7403
21 03 515 7404
21 03 515 7405

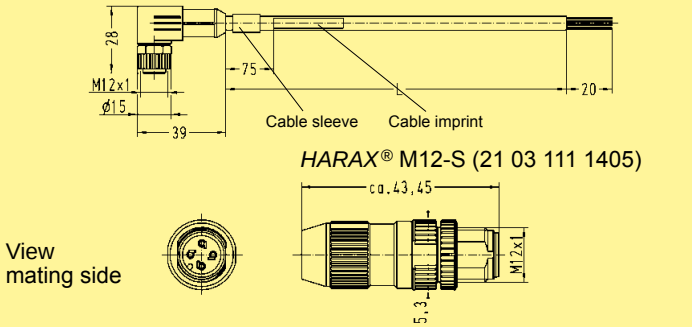


HARAX® M12 cable-Set without LED

Delivery range: Han® M12 connector
with individually adaptable cable and
HARAX® M12-S

Length: 1.5 m
3.0 m
5.0 m
7.5 m
10.0 m

21 83 515 4401
21 83 515 4402
21 83 515 4403
21 83 515 4404
21 83 515 4405

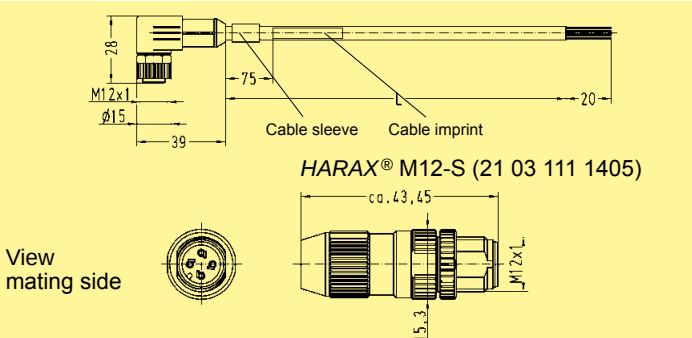


HARAX® M12 cable-Set with LED

Delivery range: Han® M12 connector
with individually adaptable cable and
HARAX® M12-S

Length: 1.5 m
3.0 m
5.0 m
7.5 m
10.0 m

21 83 515 7401
21 83 515 7402
21 83 515 7403
21 83 515 7404
21 83 515 7405



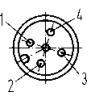
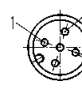


HARAX® M12-L

3-poles with
pre-leading
contact

3-poles

4-poles



Identification

Male

Part No.

Female

Drawing

Dimensions in mm

HARAX® M12-L, unshielded

3-poles, A-coded, with pre-leading contact (assignment 3, 4, 5)

3-poles, A-coded (assignment 1, 3, 4)

4-poles, A-coded (assignment 1, 2, 3, 4)

4-poles, A-coded,
to 2.6 mm core diameter
(assignment 1, 2, 3, 4)

0.34 - 0.75 mm²
AWG 22 - 18



3-poles, A-coded (assignment 3, 4, 5)

3-poles, A-coded (assignment 1, 3, 4)

4-poles, A-coded (assignment 1, 2, 3, 4)

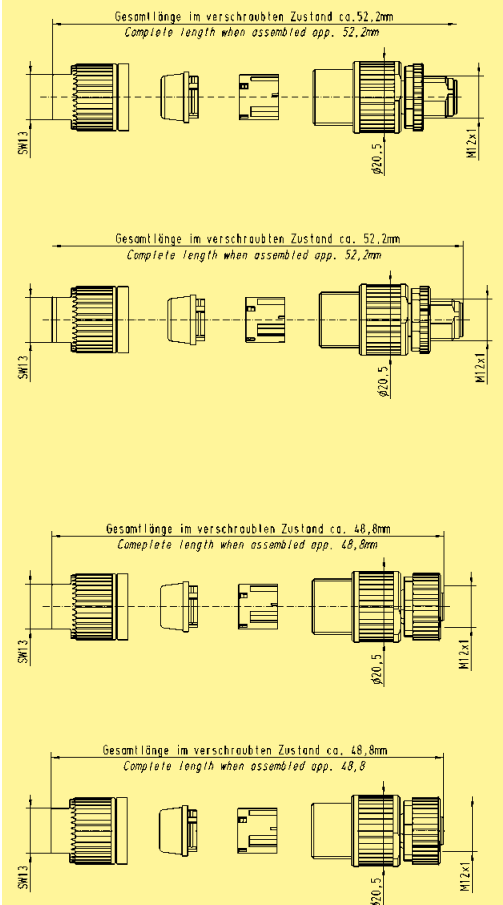
4-poles, A-coded,
to 2.6 mm core diameter
(assignment 1, 2, 3, 4)

0.34 - 0.75 mm²
AWG 22 - 18



21 03 212 1400
21 03 212 1306
21 03 212 1305
21 03 212 1407

21 03 212 2400
21 03 212 2306
21 03 212 2305
21 03 212 2407



HARAX® M12-L, unshielded

5-poles, A-coded

0.34 - 0.5 mm²
AWG 22 - 20

Cable diameter: 6 - 8 mm



21 03 272 1505

21 03 272 2505

HARAX® M12-XL, unshielded

5-poles, A-coded

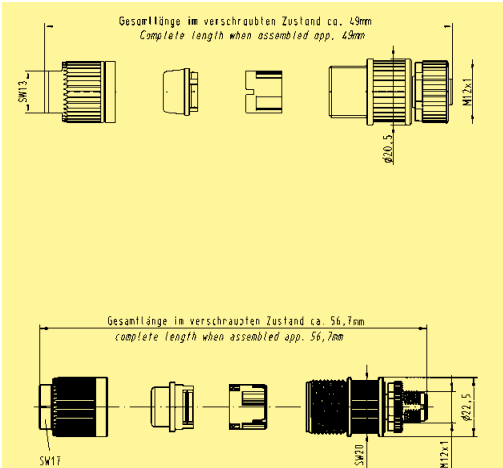
0.5 - 1 mm²
AWG 20 - 18

Cable diameter: 6 - 9 mm



21 03 216 1505

21 03 216 2505





Technical characteristics: Han® M12 panel feed-through

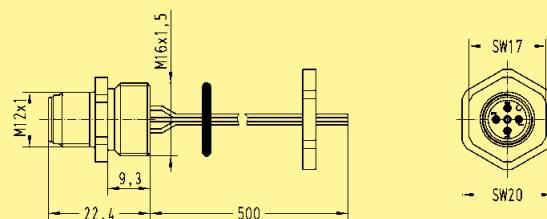
Degree of protection	IP 67 when mated and locked
Rated current	max. 4 A (each contact)
Rated voltage	50 V
Mating cycles	max. 100
Limiting temperature	-25 °C ... +85 °C

Termination	Crimp
Contact material	Copper alloy
Contact plating	Au over Ni
Housing material	Copper alloy
Insulator material	PA

Identification	Part No.	Drawing	Dimensions in mm
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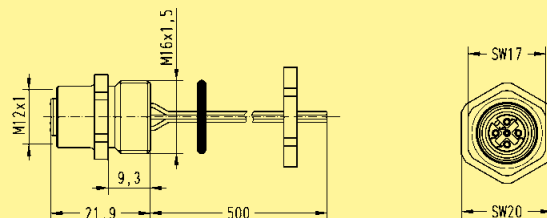
Han® M12 panel feed-through
Male, A-coded,
50 cm conductors, 0.5 mm²

21 03 311 1402



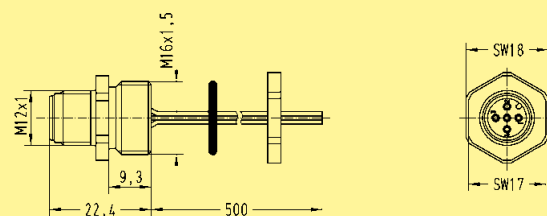
Han® M12 panel feed-through
Female, A-coded,
50 cm conductors, 0.5 mm²

21 03 311 2400



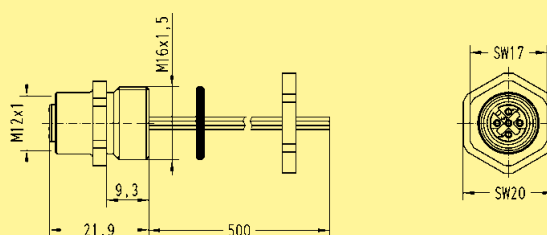
Han® M12 panel feed-through
Male, A-coded,
50 cm conductors,
0.5 mm², 5-poles

21 03 311 1501

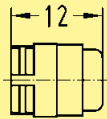
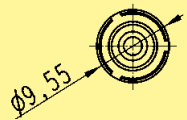
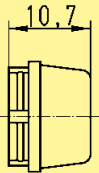
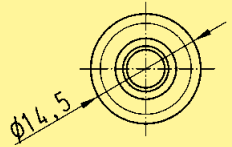
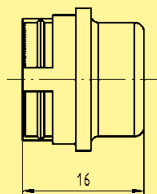
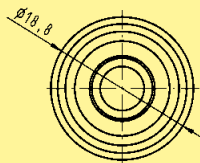
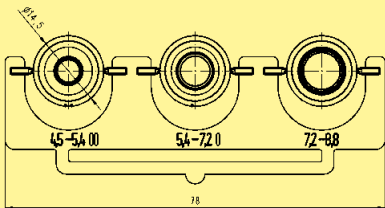
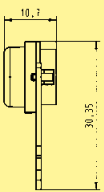
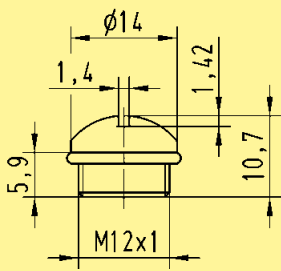
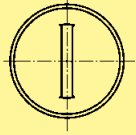


Han® M12 panel feed-through
Female, A-coded,
50 cm conductors,
0.5 mm², 5-poles

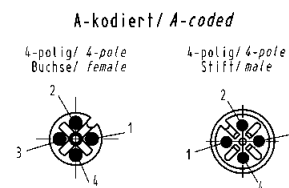
21 03 311 2501



Stock items in bold type

Identification		Part No.	Drawing	Dimensions in mm
Seal M12-S for 2.9 - 4.0 mm cable-Ø for 4 - 5.1 mm cable-Ø		21 01 010 2011 21 01 010 2001		
Seal M12-L unshielded for 4.7 - 6 mm cable-Ø for 6 - 8 mm cable-Ø		21 01 010 2015 21 01 010 2007		
Seal M12-XL unshielded		21 01 010 2019		
Set of seals for M12-L shielded for 4.5 - 5.4 mm cable-Ø for 5.4 - 7.2 mm cable-Ø for 7.2 - 8.8 mm cable-Ø		21 01 010 2017		
Cap M12		21 01 000 0003		
Han® M12 dynamometric screwdriver Tightening torque 0.6 Nm				
	for M12-S SW 13 for M12-L SW 17	09 99 000 0382 09 99 000 0384		

Circular connector M12 shielded, A-coded acc. to IEC 61076-2-101



Identification	Male	Part No.	Female	Drawing	Dimensions in mm
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HARAX® M12-L, screened version

4-poles, A-coded
0.14 - 0.34 mm² / AWG 26 - 22

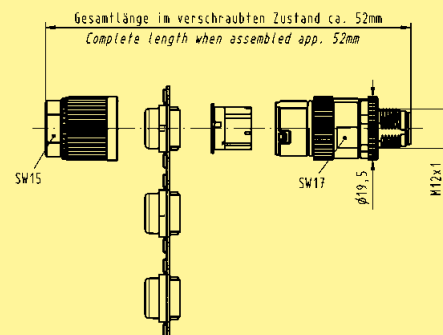


21 03 221 1405

4-poles, A-coded
0.14 - 0.34 mm² / AWG 26 - 22



21 03 221 2405



HARAX® panel feed-through

4-poles, A-coded
0.14 - 0.34 mm² / AWG 26 - 22

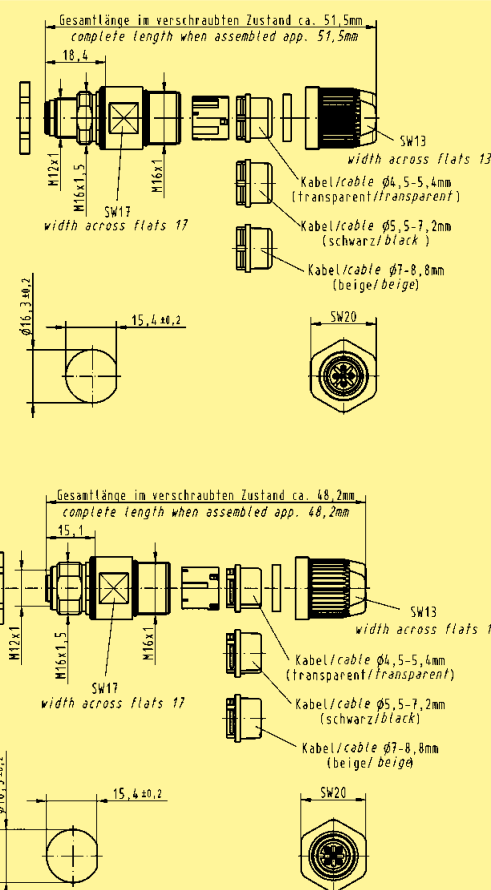


21 03 321 1425

4-poles, A-coded
0.14 - 0.34 mm² / AWG 26 - 22

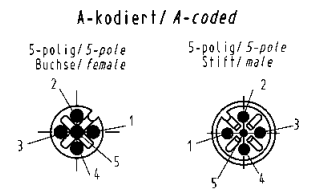


21 03 321 2425



Stock items in bold type

Circular connector M12 shielded, A-coded acc. to IEC 61076-2-101



Identification	Male	Female	Part No.	Drawing	Dimensions in mm
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Han® M12 Crimp

4-poles, A-coded



21 03 812 1405

4-poles, A-coded



21 03 812 2405

5-poles, A-coded

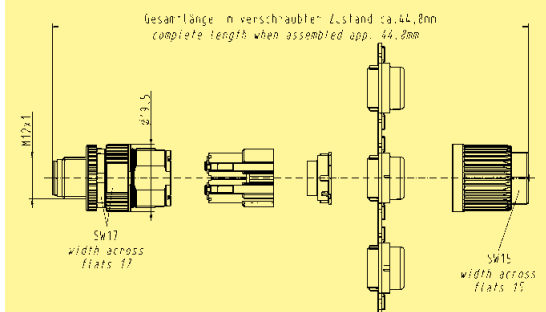
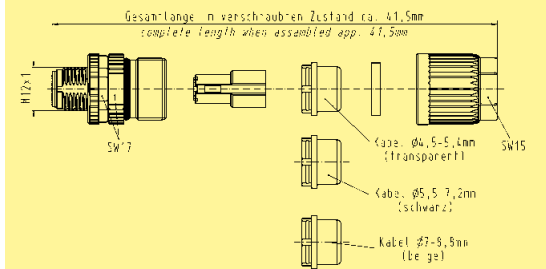


21 03 812 1505

5-poles, A-coded



21 03 812 2505



Han® M12 Crimp panel feed-through

4-poles, A-coded



21 03 822 1425

5-poles, A-coded

21 03 822 1525

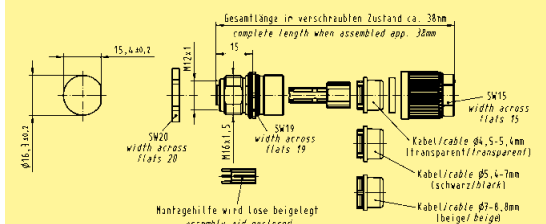
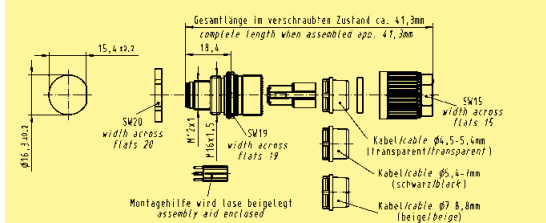
4-poles, A-coded



21 03 822 2425

5-poles, A-coded

21 03 822 2525



Order crimp contacts separately

Stock items in bold type

Circular connector M12 shielded

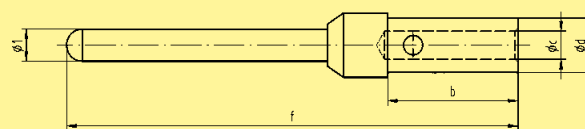


available
August 2012

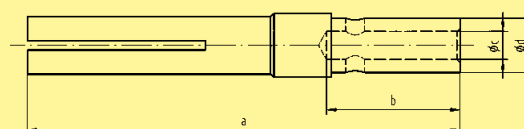


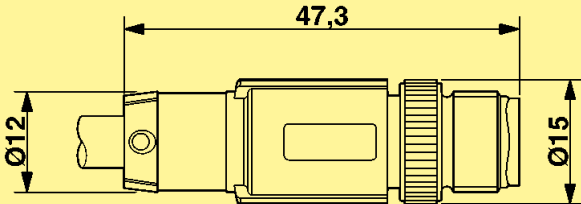
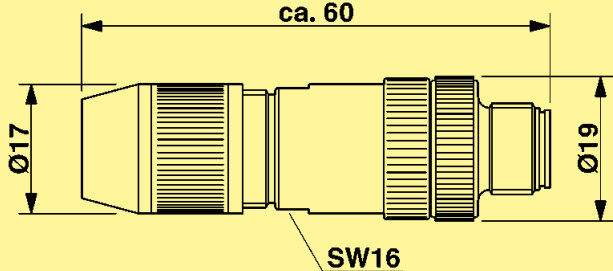
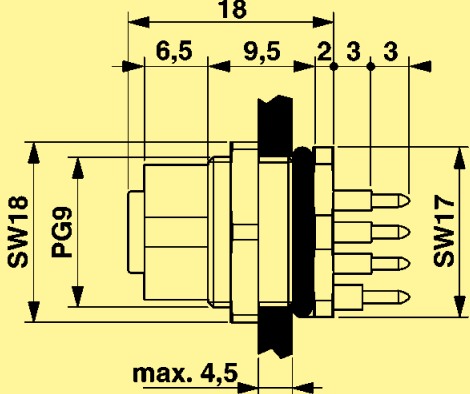
Identification	Male	Part No.	Female	Drawing	Dimensions in mm
Han® M12 Crimp, angled					
5 poles, A-coded		21 03 812 3505			
4 poles, D-coded		21 03 882 3405			
5 poles, A-coded			21 03 812 4505		

Identification	Part No.	Drawing
Crimping tool for M12 Crimp and har-speed M12	09 99 000 0501	
Locator	09 99 000 0531	
Single contacts (500 mating cycles)		
turned male contacts		
AWG 24-20 / 0.25-0.52 mm ²	09 67 000 8576	
AWG 26-22 / 0.13-0.33 mm ²	09 67 000 5576	
turned female contacts		
AWG 24-20 / 0.25-0.52 mm ²	09 67 000 8476	
AWG 26-22 / 0.13-0.33 mm ²	09 67 000 5476	

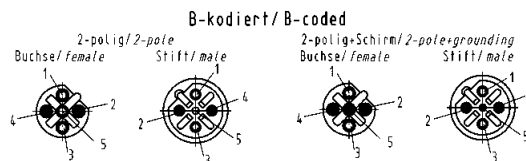


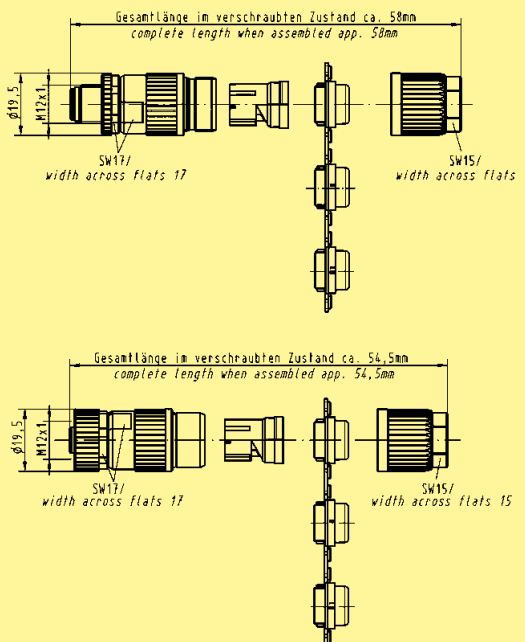
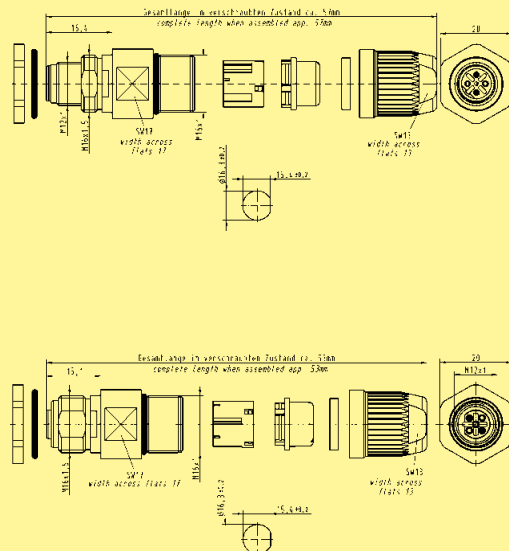
	a	b	c	d	e	f
AWG 26-22	13.6	4.2	0.88	1.7	8.2	14.2
AWG 24-20	13.6	4.2	1.13	1.7	8.2	14.2



Identification	Part No.	Drawing	Dimensions in mm
1 x Han® M12 Circular connector, straight pre-assembled on one end, 8 poles Length: 1.0 m 21 03 514 1801 3.0 m 21 03 514 1803 5.0 m 21 03 514 1805 			
Han® M12 Circular connector with IDC termination technology, 8 poles 	21 03 121 1801		
Han® M12 pcb 8 poles 	21 03 311 2801		

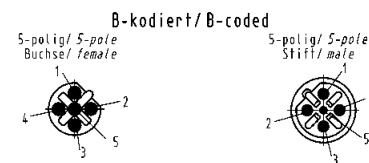
Circular connector M12 shielded, B-coded acc. to IEC 61076-2-101



Identification	Male	Female	Drawing	Dimensions in mm
HARAX® M12-L, screened version 2-poles, B-coded 2-poles and shield, B-coded 0.25 - 0.34 mm ² / AWG 24 - 22  2-poles, B-coded 2-poles and shield, B-coded 0.25 - 0.34 mm ² / AWG 24 - 22 	21 03 241 1301 21 03 241 1300			
HARAX® panel feed-through 2-poles and shield, B-coded 0.25 - 0.34 mm ² / AWG 24 - 22 7 - 8.8 mm  2-poles and shield, B-coded 0.25 - 0.34 mm ² / AWG 24 - 22 7 - 8.8 mm 	21 03 341 1425	21 03 341 2425		

Stock items in bold type

Circular connector M12 shielded, B-coded acc. to IEC 61076-2-101



Identification

Male

Part No.

Female

Drawing

Dimensions in mm

Han® M12 Crimp

5-poles, B-coded

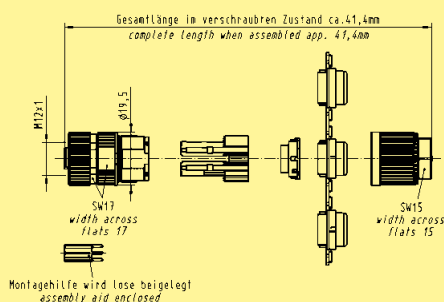
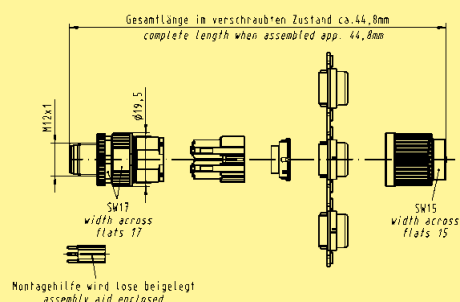


21 03 841 1505

5-poles, B-coded



21 03 841 2505



Han® M12 Crimp
panel feed-through

5-poles, B-coded

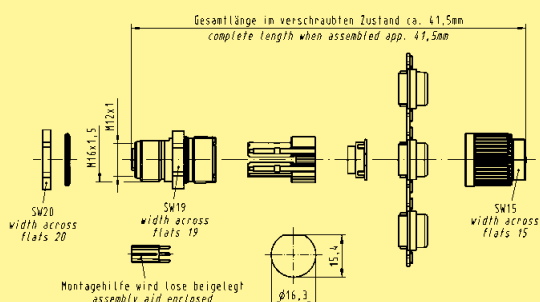
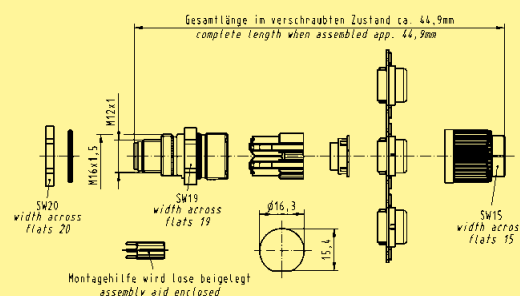


21 03 841 1525

5-poles, B-coded



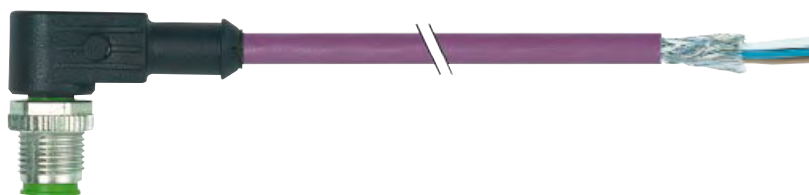
21 03 841 2525



Order crimp contacts separately

Stock items in bold type

Circular
Connectors



Technical characteristics

Rated voltage	max. 125 V AC/ DC
Rated current/contact	max. 4 A
Locking	Screw locking M12 x 1 mm, self securing
Recommended torque	0.6 Nm
Temperature range (male) °C	-25 °C ... +85 °C (dependant on connected conductor)
Degree of protection	IP 67
Number of wires / wire gauge	1 x 2 x diameter 0.64 mm
Conductor insulation	PUR (rt, gn)
Arrangement of insulated strands	19 x 0.13 mm
Sheath	PUR (UL/CSA)
Outer diameter	appr. 7.8 mm
Bending radius	15 x outer diameter
Temperature range °C (applicate with fixed cable)	-30 °C ... +80 °C

Identification

Part No.

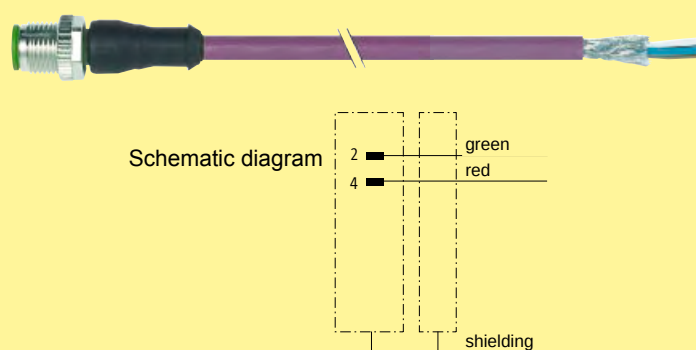
Drawing

Han® M12 Circular connector, Male, straight

pre-assembled on one end,
useable as trailing cable

Length:	1.5 m
	3.0 m
	5.0 m
	7.5 m
	10.0 m

21 03 549 1301
21 03 549 1302
21 03 549 1303
21 03 549 1304
21 03 549 1305

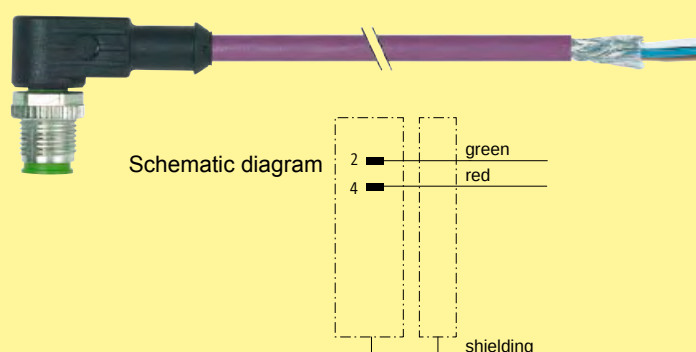


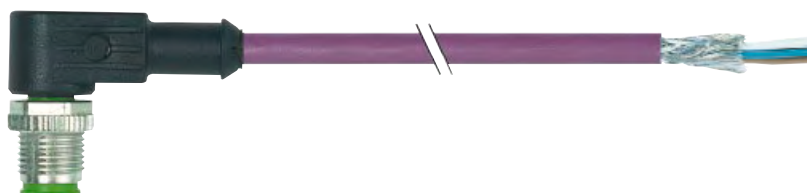
Han® M12 Circular connector, Male, angled

pre-assembled on one end,
useable as trailing cable

Length:	1.5 m
	3.0 m
	5.0 m
	7.5 m
	10.0 m

21 03 549 3301
21 03 549 3302
21 03 549 3303
21 03 549 3304
21 03 549 3305





Identification

Part No.

Drawing

Han® M12 Circular connector, Female, straight

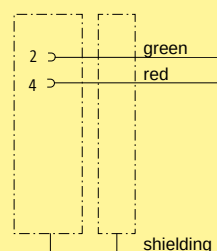
pre-assembled on one end,
useable as trailing cable

Length: 1.5 m
3.0 m
5.0 m
7.5 m
10.0 m

21 03 549 2301
21 03 549 2302
21 03 549 2303
21 03 549 2304
21 03 549 2305



Schematic diagram



Han® M12 Circular connector, Female, angled

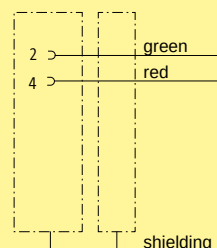
pre-assembled on one end,
useable as trailing cable

Length: 1.5 m
3.0 m
5.0 m
7.5 m
10.0 m

21 03 549 4301
21 03 549 4302
21 03 549 4303
21 03 549 4304
21 03 549 4305



Schematic diagram



Han® M12 Circular connector, Male, straight Female, straight

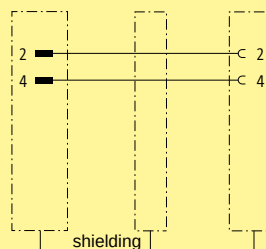
pre-assembled on one end,
useable as trailing cable

Length: 0.3 m
0.6 m
1.0 m
1.5 m
2.0 m

21 03 449 4301
21 03 449 4302
21 03 449 4303
21 03 449 4304
21 03 449 4305



Schematic diagram

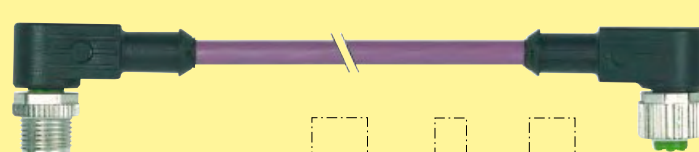


Han® M12 Circular connector, Male, angled Female, angled

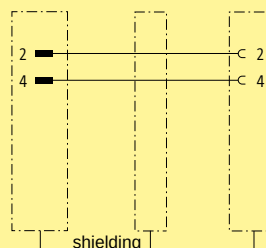
pre-assembled on one end,
useable as trailing cable

Length: 0.3 m
0.6 m
1.0 m
1.5 m
2.0 m

21 03 449 6301
21 03 449 6302
21 03 449 6303
21 03 449 6304
21 03 449 6305

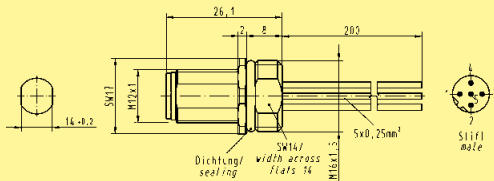
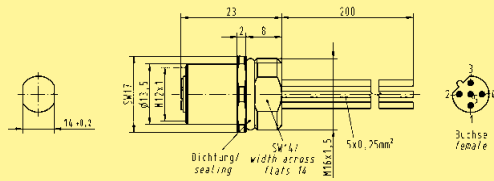
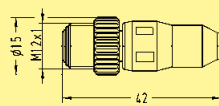
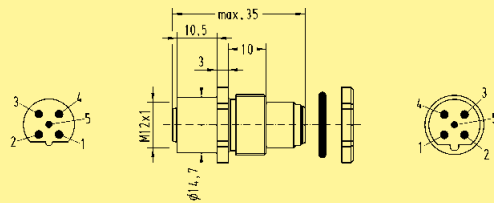


Schematic diagram



Technical characteristics: Han® M12 panel feed-through

Degree of protection	IP 67 in locked position
Rated current	max. 4 A (each contact)
Rated voltage	250 V AC/DC
Mating cycles	max. 100
Limiting temperatures	-25 °C ... +85 °C
Termination	solder, with pigtails (TPE insulation) assembled

Identification	Part No.	Male	Female	Drawing	Dimensions in mm
Han® M12-panel feed-through Male, B-coded, 20 cm conductor, 0.25 mm ² 	21 03 339 1301				
Han® M12-panel feed-through Female, B-coded, 20 cm conductor, 0.25 mm ² 	21 03 339 2301				
Han® M12-male moving load B-coded 	21 03 030 1300				
Han® M12-male/female panel feed-through B-coded 	21 03 330 1300				Rated voltage 24 V AC/DC Thread M16 x 1.5

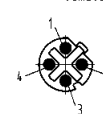
Stock items in bold type

Circular connector M12 shielded, D-coded acc. to IEC 61076-2-101

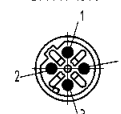


D-kodiert / D-coded

4-polig / 4-pole
Buchse / female



4-polig / 4-pole
Stift / male



Identification

Male

Part No.

Female

Drawing

Dimensions in mm

HARAX® M12-L,
screened version

4-poles, D-coded,
0.14 - 0.34 mm², AWG 26-22
0.34 - 0.5 mm², AWG 22-20



4-poles, D-coded,
0.14 - 0.34 mm², AWG 26-22
0.34 - 0.5 mm², AWG 22-20



21 03 281 1405
21 03 282 1405

21 03 281 2405
21 03 282 2405

HARAX® panel feed-through

D-coded
0.14 - 0.34 mm², AWG 26 - 22

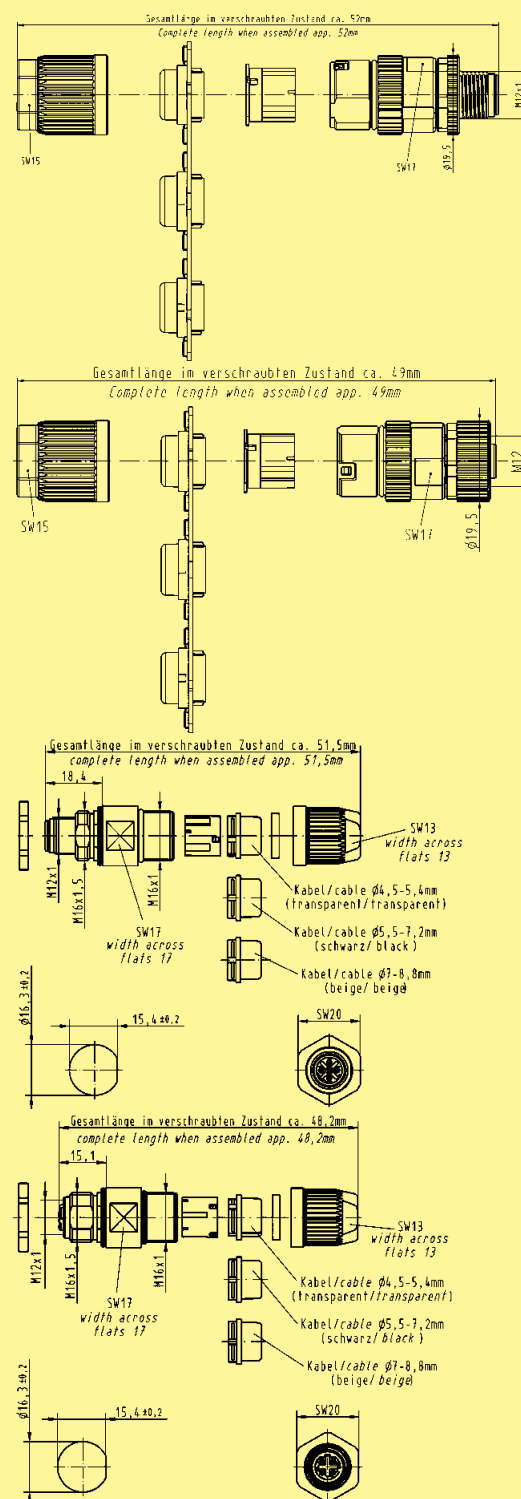


D-coded
0.14 - 0.34 mm², AWG 26 - 22



21 03 381 1425

21 03 381 2425

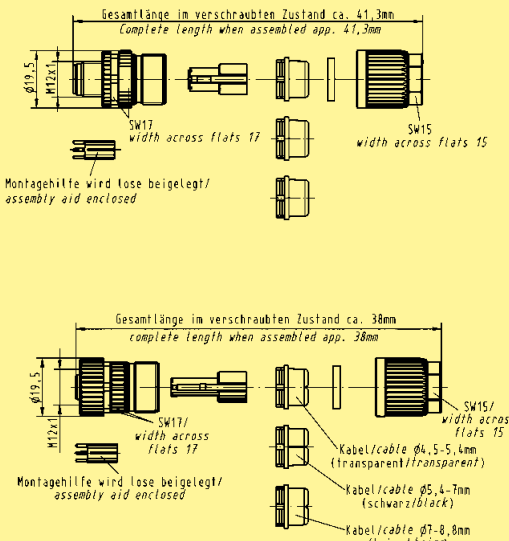
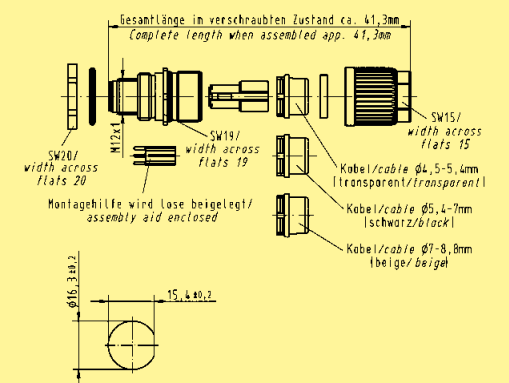
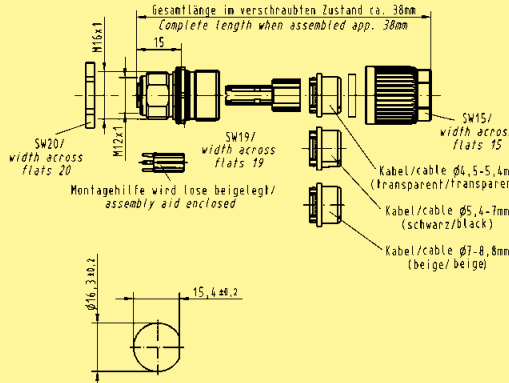


Circular
Connectors

Stock items in bold type

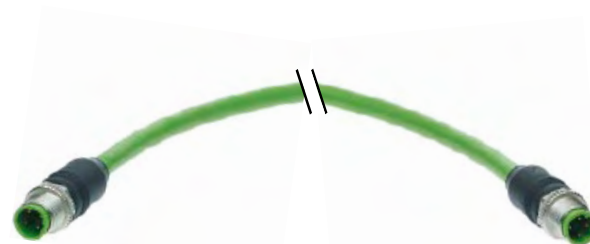
Circular connector M12 shielded, D-coded



Identification	Part No.		Drawing	Dimensions in mm
	Male	Female		
Han® M12 Crimp D-coded  	21 03 882 1405	21 03 882 2405		
Han® M12 panel feed-through Crimp D-coded 	21 03 882 1425			
Han® M12 panel feed-through Crimp D-coded 		21 03 882 2425		

Order crimp contacts separately

Stock items in bold type



Technical characteristics

Pre-assembled and tested system cables

for structured cabling of industrial Ethernet networks, based on Han® M12 Circular connectors, D-coded

Cable type: Shielded Twisted Pair
Standard Cable

Mating interface: M12 D-coded
acc. to IEC 61 076-2-101

Transmission performance
acc. to ISO/IEC 11801:2002: Class D, 100% tested

Degree of protection IP 65 / IP 67 (when mated)

Pin assignment

Signal	Function	Conductor colour PROFINet®	Contact assignment
TD+	Transmission Data+	Yellow	1
TD-	Transmission Data-	Orange	3
RD+	Receiver Data+	White	2
RD-	Receiver Data-	Blue	4

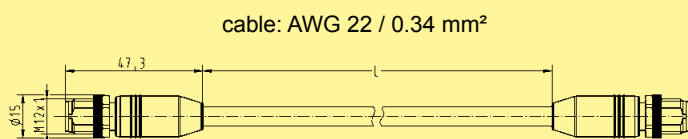


Identification	Part No.	Drawing	Dimensions in mm
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2 x Han® M12
Circular connector,
D-coded,
PUR,
straight

Length*: 1.0 m
1.5 m
3.0 m
5.0 m
7.5 m
10.0 m
20.0 m

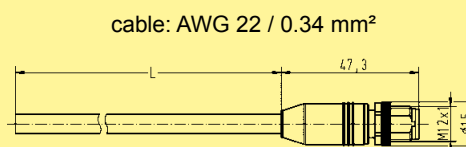
21 03 485 1401
21 03 485 1451
21 03 485 1403
21 03 485 1405
21 03 485 1457
21 03 485 1410
21 03 485 1420



1 x Han® M12
Circular connector,
D-coded,
PUR,
straight

Length*: 1.0 m
1.5 m
3.0 m
5.0 m
7.5 m
10.0 m
20.0 m

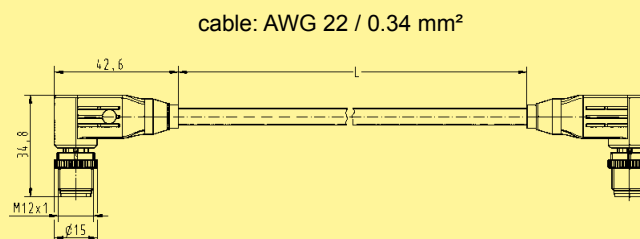
21 03 585 1401
21 03 585 1451
21 03 585 1403
21 03 585 1405
21 03 585 1457
21 03 585 1410
21 03 585 1420



2 x Han® M12
Circular connector,
D-coded,
PUR,
angled

Length*: 1.0 m
1.5 m
3.0 m
5.0 m
7.5 m
10.0 m
20.0 m

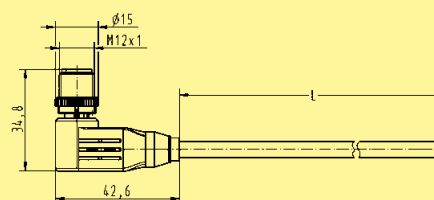
21 03 485 3401
21 03 485 3451
21 03 485 3403
21 03 485 3405
21 03 485 3457
21 03 485 3410
21 03 485 3420



1 x Han® M12
Circular connector,
D-coded,
PUR,
angled

Length*: 1.0 m
1.5 m
3.0 m
5.0 m
7.5 m
10.0 m
20.0 m

21 03 585 3401
21 03 585 3451
21 03 585 3403
21 03 585 3405
21 03 585 3457
21 03 585 3410
21 03 585 3420



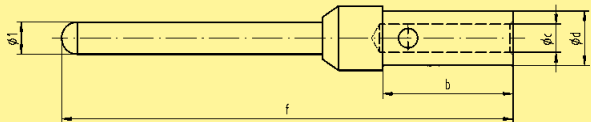
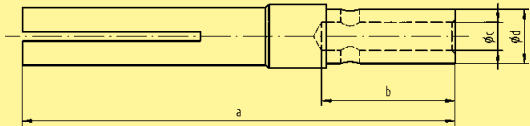


Identification	Part No.	Drawing	Dimensions in mm
2 x Han® M12 Circular connector, D-coded, PVC, straight	Length*: 1.0 m 1.5 m 3.0 m 5.0 m 7.5 m 10.0 m 20.0 m	09 47 222 2002 09 47 222 2003 09 47 222 2005 09 47 222 2006 09 47 222 2022 09 47 222 2011 09 47 222 2013	cable: AWG 22 / 0.34 mm ²
1 x Han® M12 Circular connector, D-coded, PVC, straight	Length*: 1.0 m 1.5 m 3.0 m 5.0 m 7.5 m 10.0 m 20.0 m	09 47 220 0002 09 47 220 0003 09 47 220 0005 09 47 220 0006 09 47 220 0022 09 47 220 0011 09 47 220 0013	cable: AWG 22 / 0.34 mm ²
2 x Han® M12 Circular connector, D-coded, PVC, angled	Length*: 1.0 m 1.5 m 3.0 m 5.0 m 7.5 m 10.0 m 20.0 m	09 47 808 0002 09 47 808 0003 09 47 808 0005 09 47 808 0006 09 47 808 0022 09 47 808 0011 09 47 808 0013	cable: AWG 22 / 0.34 mm ²
1 x Han® M12 Circular connector, D-coded, PVC, angled	Length*: 1.0 m 1.5 m 3.0 m 5.0 m 7.5 m 10.0 m 20.0 m	09 47 800 0002 09 47 800 0003 09 47 800 0005 09 47 800 0006 09 47 800 0022 09 47 800 0011 09 47 800 0013	cable: AWG 22 / 0.34 mm ²

RJ45 acc. to IEC 60 603 – Technical characteristics see page 03.26

Identification	Part No.	Drawing	Dimensions in mm
Han® M12 panel feed-through Male, D-coded, 50 cm conductors, AWG 22, 4-poles	21 03 371 1403		
Han® M12 panel feed-through Female, D-coded, 50 cm conductors, AWG 22, 4-poles	21 03 371 2403		
Han® M12 female-RJ45 panel feed-through 4-poles, D-coded, angled	21 03 381 4400		
Han® M12 female-RJ45 panel feed-through 4-poles, D-coded, straight	21 03 381 2400		
Han® M12 male-RJ45 adapter 4-poles, D-coded, straight	21 03 371 1420		
Han® M12 Gender Changer 4-poles, D-coded	21 03 381 6405		

Stock items in bold type

Identification	Part No.	Drawing																					
Crimping tool for M12 Crimp and <i>har</i> -speed M12	09 99 000 0501																						
Accessories M12 Crimp																							
Locator	09 99 000 0531																						
Single contacts (500 mating cycles) turned male contacts AWG 24-20 / 0.25-0.52 mm ² AWG 26-22 / 0.13-0.33 mm ²	09 67 000 8576 09 67 000 5576	 <table border="1" data-bbox="772 1108 1495 1202"><thead><tr><th></th><th>a</th><th>b</th><th>c</th><th>d</th><th>e</th><th>f</th></tr></thead><tbody><tr><td>AWG 26-22</td><td>13.6</td><td>4.2</td><td>0.88</td><td>1.7</td><td>8.2</td><td>14.2</td></tr><tr><td>AWG 24-20</td><td>13.6</td><td>4.2</td><td>1.13</td><td>1.7</td><td>8.2</td><td>14.2</td></tr></tbody></table>		a	b	c	d	e	f	AWG 26-22	13.6	4.2	0.88	1.7	8.2	14.2	AWG 24-20	13.6	4.2	1.13	1.7	8.2	14.2
	a	b	c	d	e	f																	
AWG 26-22	13.6	4.2	0.88	1.7	8.2	14.2																	
AWG 24-20	13.6	4.2	1.13	1.7	8.2	14.2																	
turned female contacts AWG 24-20 / 0.25-0.52 mm ² AWG 26-22 / 0.13-0.33 mm ²	09 67 000 8476 09 67 000 5476																						
Accessories <i>har</i> -speed M12																							
Locator	09 99 000 0525																						
Single contacts (500 mating cycles) <i>har</i> -speed M12 contacts AWG 28-24 / 0.08-0.25 mm ²	21 01 100 9014																						
Accessories M12																							
Locknut	21 01 000 0018																						

HARAX® 7/8" Circular connector



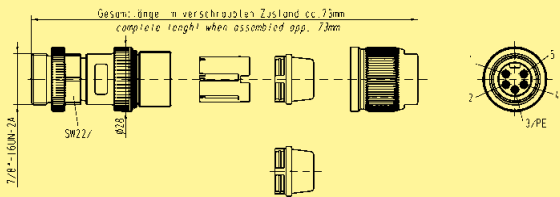
Circular
Connectors

Identification	Male	Female	Drawing	Dimensions in mm
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HARAX® 7/8" Male



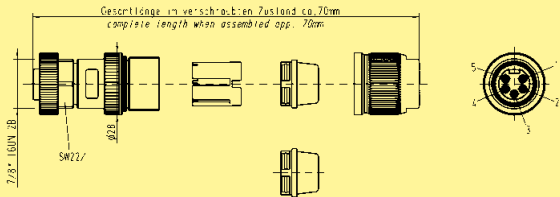
21 04 116 1505

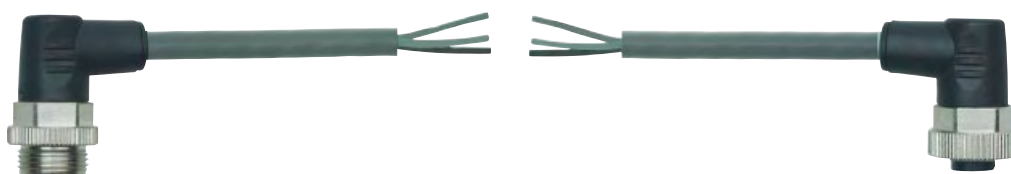


HARAX® 7/8" Female



21 04 116 2505





Overmolded cordsets 7/8"

Technical characteristics

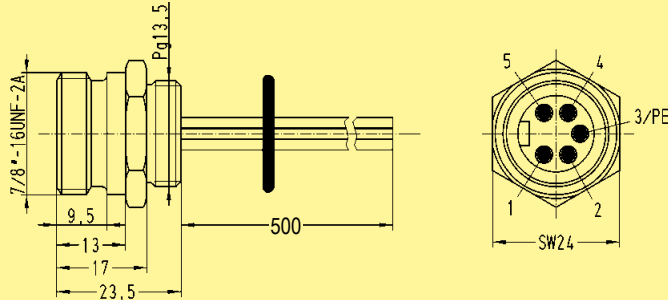
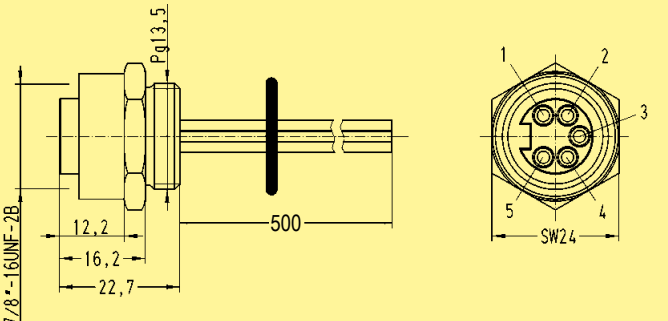
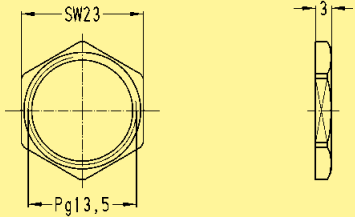
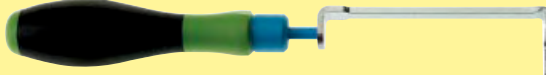
Degree of protection	IP 67
Temperature range	
applies to moved cable	-20 °C ... +80 °C
cables permanently installed	-50 °C ... +80 °C
Rated current	max. 8 A every contact (+40 °C)
Rated voltage	230 / 400 V
Rated impulse voltage	3 kV
Pollution degree	3
Material group	Category I acc. to IEC 60664-1
Cable data	
Jacket material	PUR
Jacket colour	grey
Wire isolation	TPM
Wire colours	brown, white, blue, black, green/yellow
Wire gauge	5 x 1.5 mm ²
Standards	UL / CSA



Overmolded cordsets 7/8"

Identification	Part No.	Drawing	Dimensions in mm
Overmolded cordsets 7/8" Female straight 5 pin Length: 1.5 m 3.0 m 5.0 m 7.5 m 10.0 m	21 04 516 2501 21 04 516 2502 21 04 516 2503 21 04 516 2504 21 04 516 2505	 Schematic diagram View mating side	
Overmolded cordsets 7/8" Female angled 5 pin Length: 1.5 m 3.0 m 5.0 m 7.5 m 10.0 m	21 04 516 4501 21 04 516 4502 21 04 516 4503 21 04 516 4504 21 04 516 4505	 Schematic diagram View mating side	
Overmolded cordsets 7/8" Male-Female straight 5 pin Length: 0.3 m 0.6 m 1.0 m 1.5 m 2.0 m	21 04 416 1501 21 04 416 1502 21 04 416 1503 21 04 416 1504 21 04 416 1505	 Schematic diagram View mating side	
Overmolded cordsets 7/8" Male-Female angled 5 pin Length: 0.3 m 0.6 m 1.0 m 1.5 m 2.0 m	21 04 416 3501 21 04 416 3502 21 04 416 3503 21 04 416 3504 21 04 416 3505	 Schematic diagram View mating side	

Stock items in bold type

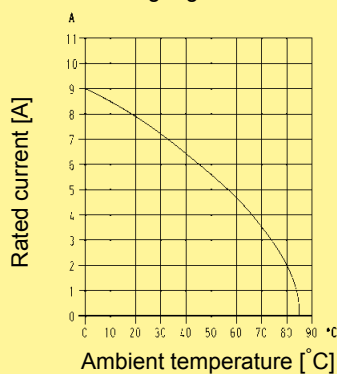
Identification	Part No.	Drawing	Dimensions in mm
Han® 7/8" panel feed-through 50 cm conductors, 0.75 mm², 5-poles Male 	21 04 316 1505		
Han® 7/8" panel feed-through 50 cm conductors, 0.75 mm², 5-poles Female 	21 04 316 2505		
Lock nut Pg 13.5 nickel plated 	21 01 000 0020		
Han® 7/8" dynamometric screwdriver Tightening torque 1.5 Nm for 7/8" SW 23	09 99 000 0395		

Current carrying capacities

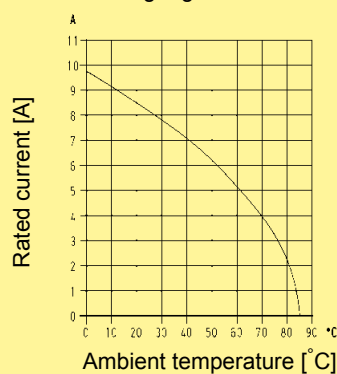
The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals. The current capacity-curve is valid for continuous, not interrupted current-loaded contacts of connectors when simultaneous power on all contacts is given, without exceeding the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

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

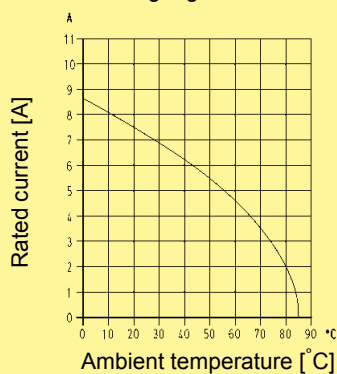
M12, A-coding, straight, male, 4-poles
wire gauge 0.5 mm²



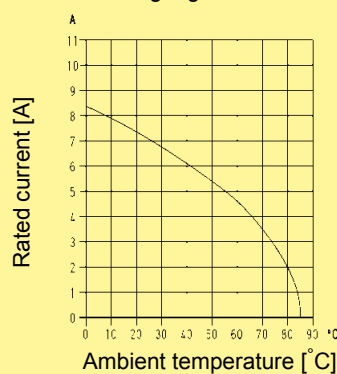
M12, A-coding, straight, female, 4-poles
wire gauge 0.75 mm²



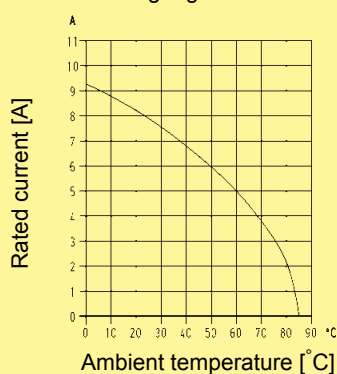
M12, A-coding, straight, female, 5-poles
wire gauge 0.5 mm²



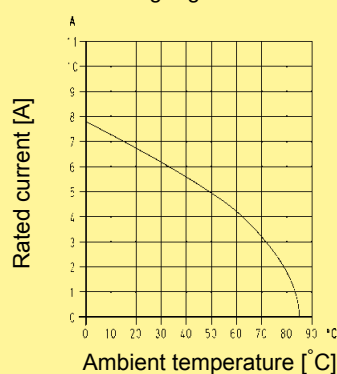
M12, A-coding, straight, male, 5-poles
wire gauge 0.5 mm²



M12, D-coding, straight, female, 4-poles
wire gauge 0.5 mm²



M12, D-coding, angled, female, 4-poles
wire gauge AWG 22



Technical characteristics: Han® M12 pcb

Degree of protection	IP 20, IP 67 (mated and locked)	Temperature during connection	-5 °C ... +50 °C
Rated current	max. 4 A (dependant on pcb layout)	Termination	PIH
Rated voltage	50 V	Contact material	Copper alloy
Mating cycles	max. 100	Contact plating (mating side)	Au over Ni
Limiting temperature	-40 °C ... +85 °C	Insulator material	PA

Identification	Part No.	Drawing	Dimensions in mm
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Han® M12

Male, A-coded, straight



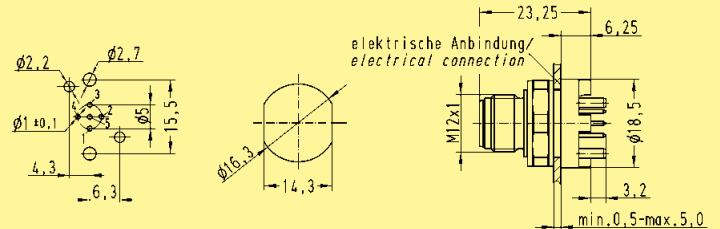
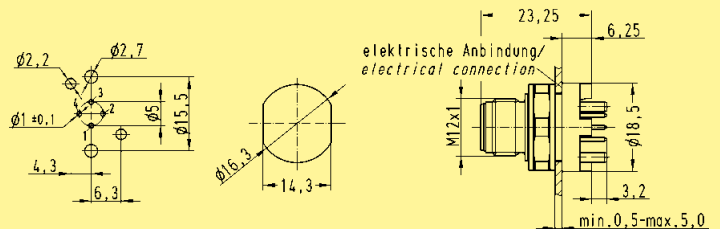
4-poles, IP 20
4-poles, IP 67

21 03 321 1410
21 03 321 1420



5-poles, IP 20
5-poles, IP 67

21 03 321 1510
21 03 321 1520



Han® M12

Female, A-coded, straight



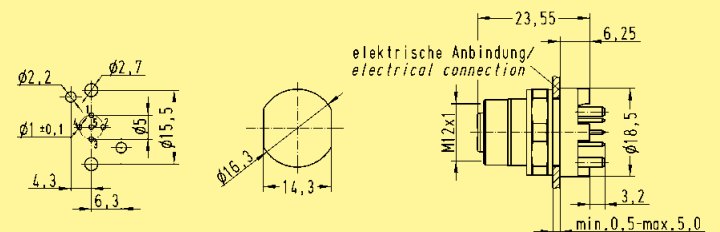
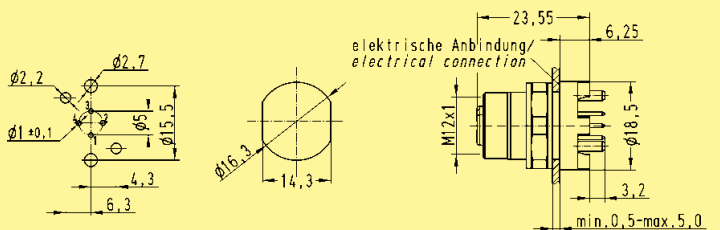
4-poles, IP 20
4-poles, IP 67

21 03 321 6410
21 03 321 6420

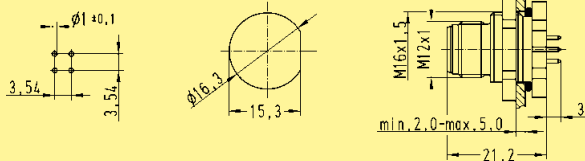
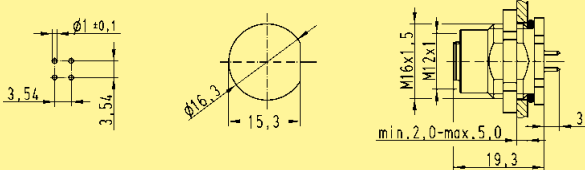
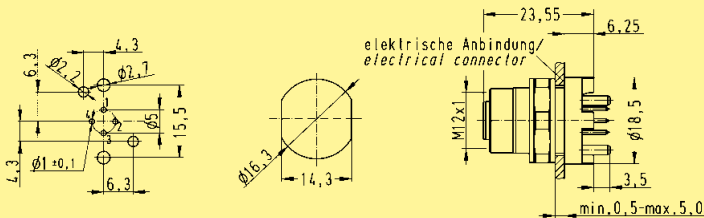


5-poles, IP 20
5-poles, IP 67

21 03 321 6510
21 03 321 6520





Identification	Part No.	Drawing	Dimensions in mm
Han® M12 Male, D-coded, straight, 4-poles  IP 67	21 03 371 1400		
Han® M12 Female, D-coded, straight, 4-poles  IP 67	21 03 371 2415		
IP 20 IP 67	21 03 381 6410 21 03 381 6420		

M12 PCB adapter shielded



available
June 2012



Identification	Part No.		Drawing	Dimensions in mm
	Male	Female		
M12 PCB adapter, screened version				
5 poles, A-coded	21 03 321 1518			
		21 03 321 2518		
5 poles, B-coded	21 03 341 1518			
		21 03 341 2518		
4 poles, D-coded	21 03 381 1418			
		21 03 381 2418		

available
June 2012

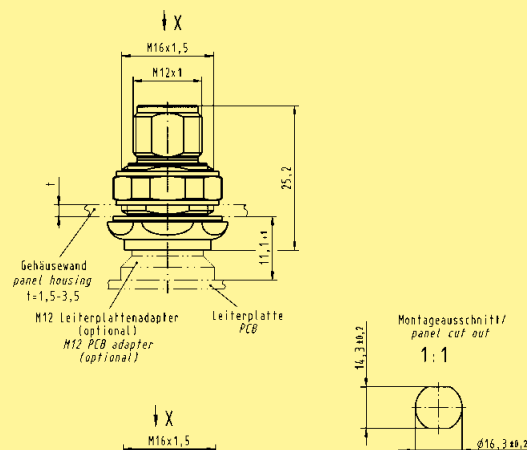


Identification	Male	Part No.	Female	Drawing	Dimensions in mm
----------------	------	----------	--------	---------	------------------

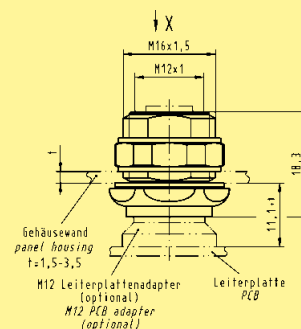
Housing

for rear mounting

21 03 301 1000

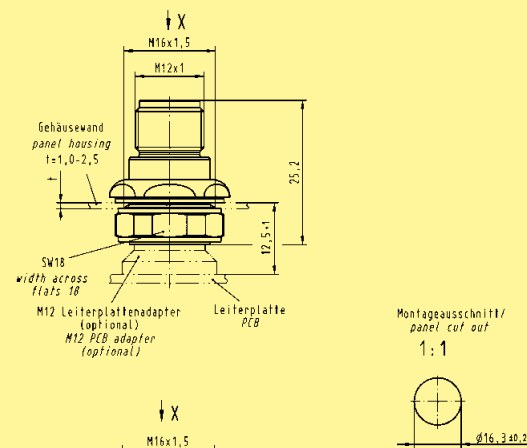


21 03 301 2000

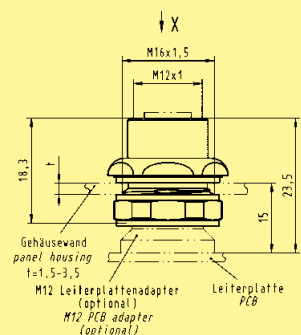


for front mounting

21 03 301 1001



21 03 301 2001



Temperature during connection	-5 °C ... +50 °C
Termination	Reflow
Contact material	Copper alloy
Contact plating (mating side)	Au over Ni
Insulator material	LCP



Technical characteristics: HARAX® Pg 9 panel feed-through

Rated voltage	32 V
Rated current	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



Identification

Part No.

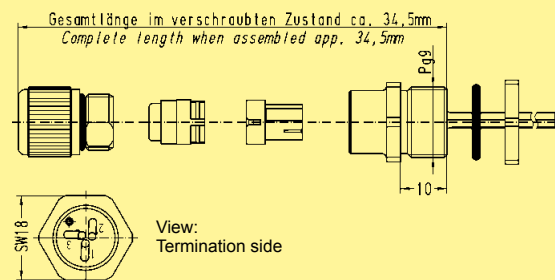
Drawing

Dimensions in mm

HARAX® Pg 9 panel feed-through

3 contacts, with pre-assembled
0.5 m / 0.5 mm² pigtail cable

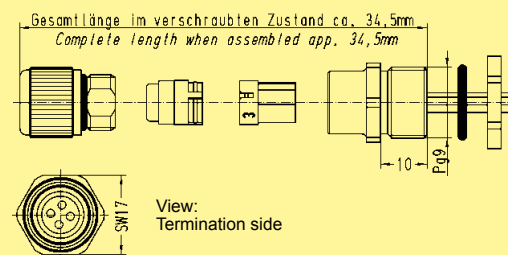
21 01 130 4241



HARAX® Pg 9 panel feed-through

4 contacts, with pre-assembled
0.5 m / 0.5 mm² pigtail cable

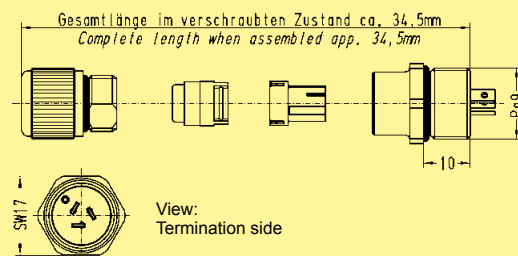
21 01 140 4341



HARAX® Pg 9 panel feed-through

3 contacts
with faston blades

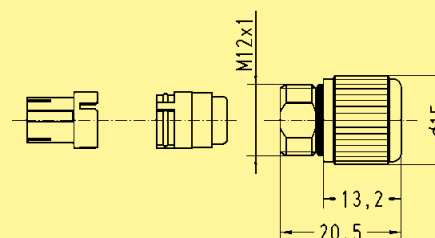
21 01 130 4011



Termination element M12 HARAX® 3 contacts

Screw cap, splice ring, seal

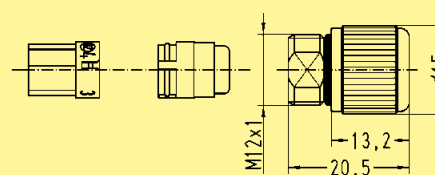
21 01 010 0001



Termination element M12 HARAX® 4 contacts

Screw cap, splice ring, seal

21 01 010 0006



Stock items in bold type

Technical characteristics

Specifications IEC 60 352-4
DIN 61 984

Approval VDE

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

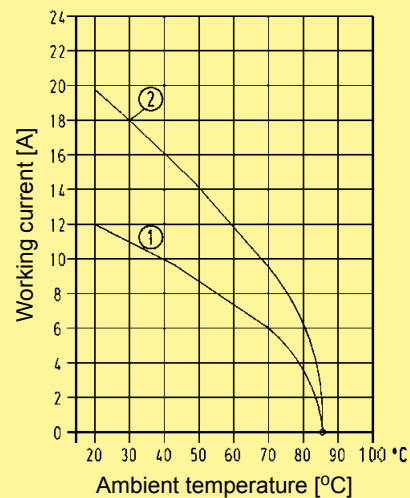
The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals. The current capacity-curve is valid for continuous, not interrupted current-loaded contacts of connectors when simultaneous power on all contacts is given, without exceeding the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

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

Pg 13.5 3 contacts

1 = wire gauge
0.75 mm²

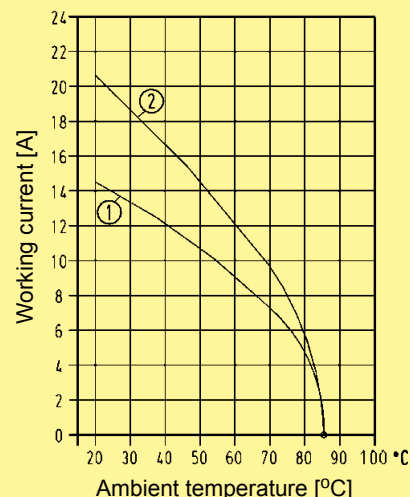
2 = wire gauge
1.5 mm²



Pg 13.5 / M20 4 contacts

1 = wire gauge
0.75 mm²

2 = wire gauge
1.5 mm²



HARAX® Pg 13.5 / M20 panel feed-through



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

Advantages

- IP 65 / IP 67 RJ45 connector with toggle locking acc. to IEC 61 076-3-106 variant 1
- Robust zinc die cast housing, nickel plated
- Vibration and shock resistant
- Min. 500 mating cycles
- Shielded and unshielded versions
- Suitable for PoE (IEEE 802.3af) and PoE+ (IEEE 802.3at)
- ODVA approval

Technical characteristics device side

Han-Max®	
Connector type	RJ45 acc. to IEC 60 603-7
Number of contacts	8
Transmission performance	Category 5 / class D up to 100 MHz acc. to ISO/IEC 11801:2002; EN 50173-1
Transmission rate	10/100/1.000 Mbit/s
Shielding	unshielded / shielded
Mounting	field-assembly
Termination	with IDC contacts
Connectable cables	
- Conductor cross section	AWG 22 ... AWG 24 solid / stranded
Temperature range	-25 °C ... +70 °C

Technical characteristics cable side

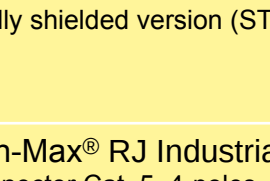
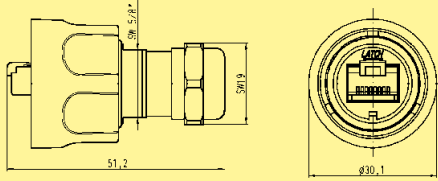
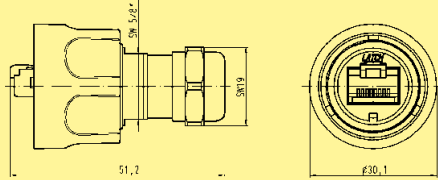
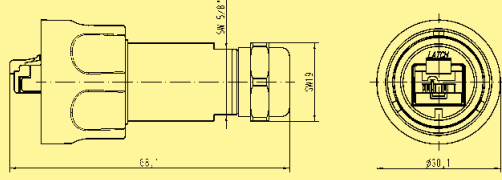
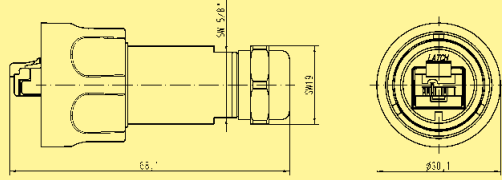
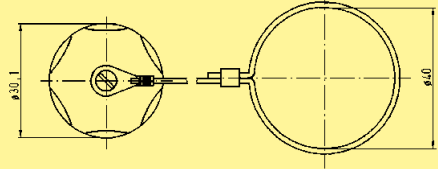
	Han-Max®	Han-Max® RJ Industrial	Han-Max® RJ Industrial 10G
Connector type	RJ45 acc. to IEC 60 603-7	RJ45 acc. to IEC 60 603-7	RJ45 acc. to IEC 60 603-7
Number of contacts	8	4	8
Transmission performance	Category 5 / class D up to 100 MHz acc. to ISO/IEC 11801:2002; EN 50173-1	Category 5 / class D up to 100 MHz acc. to ISO/IEC 11801:2002; EN 50173-1	Category 6 / class E _A up to 250 MHz acc. to ISO/IEC 11801:2002; EN 50173-1
Transmission rate	10/100/1.000 Mbit/s	10/100 Mbit/s	10/100 Mbit/s resp. 1/10 Gbit/s
Shielding	unshielded / shielded	fully shielded, 360° shielding contact	fully shielded, 360° shielding contact
Mounting	field-assembly	no tools needed, field-assembly	no tools needed, field-assembly
Termination	with piercing contacts	with IDC contacts	with IDC contacts
Connectable cables			
- Conductor cross section	AWG 26/7 ... AWG 24/7 stranded	AWG 24/7 ... AWG 22/7 stranded AWG 23/1 ... AWG 22/1 solid	AWG 27/7 ... AWG 22/7 stranded AWG 24/1 ... AWG 22/1 solid
- Conductor diameter	max. 1.0 mm (including insulation)	max. 1.6 mm (including insulation)	max. 1.6 mm (including insulation)
- Cable diameter	4 ... 8 mm	4 ... 8 mm	4 ... 8 mm
Temperature range	-25 °C ... +70 °C	-40 °C ... +70 °C	-40 °C ... +70 °C



Circular Connectors



Cable side

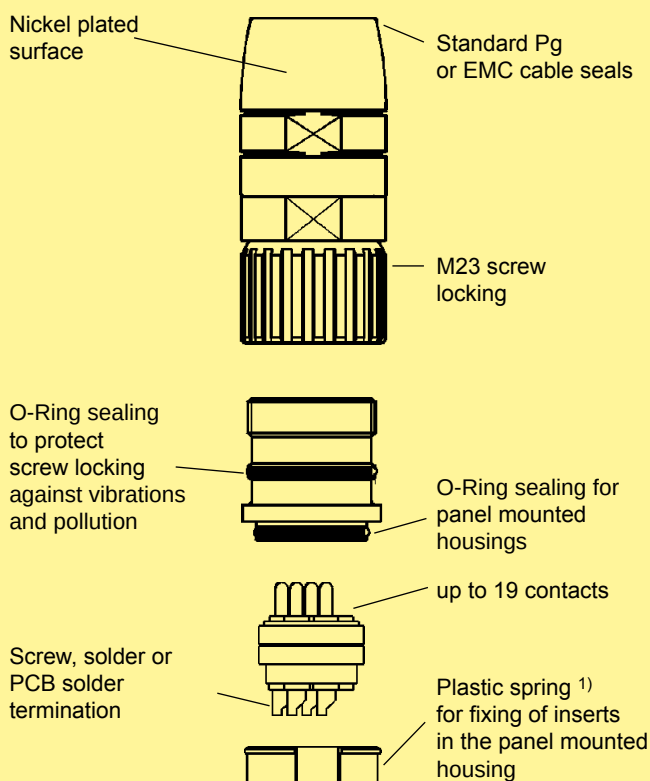
Identification	Part No.	Drawing	Dimensions in mm
Han-Max® Connector Cat. 5, 8-poles, piercing termination unshielded version (UTP)  fully shielded version (STP) 	09 15 300 0401 09 15 300 0402	 	
Han-Max® RJ Industrial Connector Cat. 5, 4-poles, IDC termination 	09 15 300 0412		
Han-Max® RJ Industrial 10G Connector Cat. 6, 8-poles, IDC termination 	09 15 300 0431		
Han-Max® Protection cover Cable side 	09 15 300 5401		



Features

- Size R 23
- Outer diameter 26 mm
- High contact density
- Very robust hoods and housings
- Corrosion resistant
- Excellent EMC properties (with continuous shielding)
- Quick and easy assembly
- Vibration resistant screw locking system
- Up to 19 contacts, 25 V~ / 60 V-
- Ideal for applications such as measurement and automatic control

Description



¹⁾ is part of delivery range of bulkhead mounted housings
Part-number of spare part: 09 15 200 9901



Technical characteristics

Specifications DIN VDE 0110
DIN EN 61 984

Hoods and Housings

Material Copper zinc alloy
Surface Nickel plated
Flat sealing NBR
O-Ring sealing FPM
Temperature range -40 °C ... +115 °C
Protection degree in locked position IP 67

Inserts

Number of contacts	6	9	12	17	19
Rated current					
- power contact	15A	1x15A			3 x 10A
- signal contact		8 x 7A	7A	7A	16 x 7A
(see Derating Diagram)					
Rated voltage ¹⁾	25 V~ / 60 V-				
Degree of pollution	3				
Test voltage U_{rms}	1.5 kV				
Insulation resistance	$\geq 10^{12} \Omega$				
Material	Thermoplastic polyester (PBT)				
Temperature range	-40 °C ... +115 °C				
Flammability acc. to UL 94	V 0				

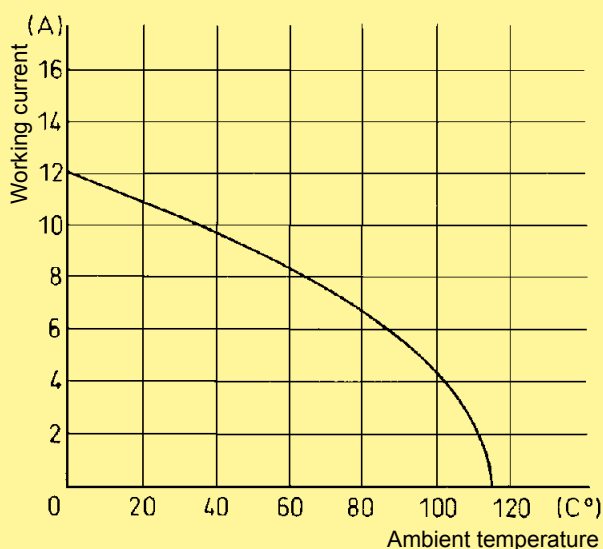
Contacts

Material	Copper alloy
Surface	Gold plated
Contact resistance	$\leq 5 m\Omega$
Screw termination	
- power contact	0.14 - 1.0 mm ² / AWG 26 - 16
- signal contact	0.14 - 0.75 mm ² / AWG 26 - 18
Solder termination	
- power contact	0.14 - 2.5 mm ² / AWG 26 - 14
- signal contact	0.14 - 1.0 mm ² / AWG 26 - 16
Crimp termination	
- D-Sub contact	see catalogue Interface Connectors
PCB solder termination	
- power contact	$\varnothing 1.5 mm$
- signal contact	$\varnothing 0.6 mm$
- reference to bulkhead mounted housing	3.5 mm



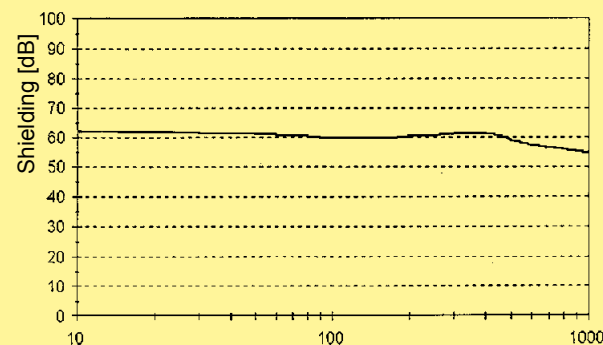
1) Acc. to DIN VDE 0627 metallic parts which may be touched by a person and may have voltages present under fault conditions, must have integral protection. Therefore this R 23 connector is limited for use up to 25 V~/60 V-.

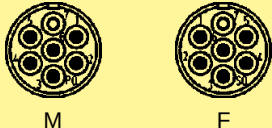
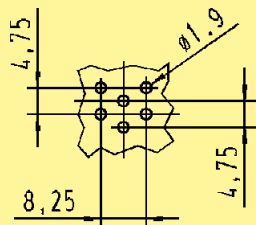
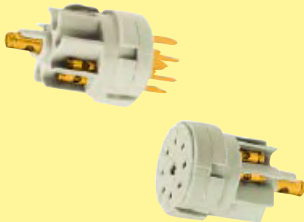
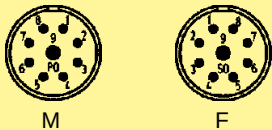
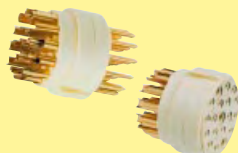
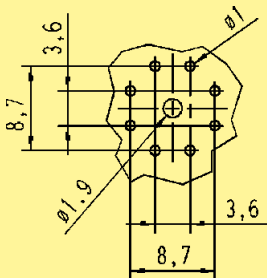
Derating Diagramm



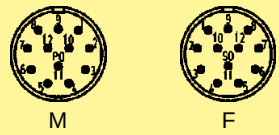
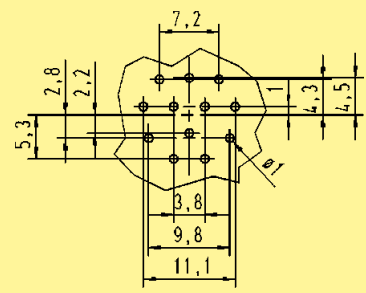
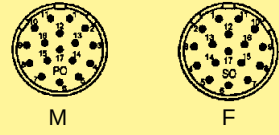
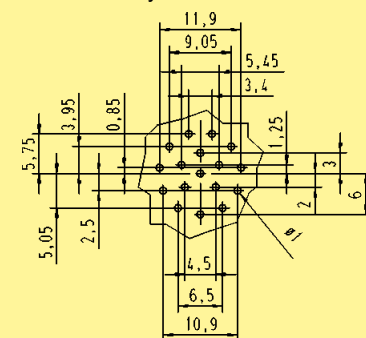
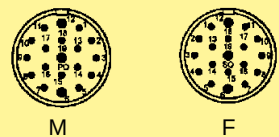
Insert: 12 pins
Wire gauge: 1 mm² (AWG 18)

Shielding of the EMC housings



Identification	Number of contacts	Part No. Male insert (M)	Part No. Female insert (F)	Drawing	Dimensions in mm
Screw terminal 	6	09 15 206 2601	09 15 206 2701	Contact arrangement: mating side 	
Solder terminal 	6	09 15 206 2603	09 15 206 2703		
PCB solder termination²⁾ 	6	09 15 206 2604	09 15 206 2704	PCB layout 	2) Suitable only for bulkhead mounted housings 09 15 200 0311, 09 15 200 0313 and 09 15 200 0301
Screw terminal 	9	09 15 209 2601	09 15 209 2701	Contact arrangement: mating side (numbering in opposite direction on request) 	
Solder terminal 	9	09 15 209 2603	09 15 209 2703		
PCB solder termination²⁾ 	9	09 15 209 2604	09 15 209 2704	PCB layout 	2) Suitable only for bulkhead mounted housings 09 15 200 0311, 09 15 200 0313 and 09 15 200 0301

Stock items in bold type

Identification	Number of contacts	Part No.		Drawing	Dimensions in mm
Solder terminal  Crimp terminal for D-Sub contacts PCB solder termination²⁾	12	09 15 212 2603	09 15 212 2703	Contact arrangement: mating side (numbering in opposite direction on request)  PCB layout  2) Suitable only for bulkhead mounted housings 09 15 200 0311, 09 15 200 0313 and 09 15 200 0301	
	12	09 15 212 2602	09 15 212 2702		
	12	09 15 212 2604	09 15 212 2704		
Solder terminal  Crimp terminal for D-Sub contacts PCB solder termination²⁾	17	09 15 217 2603	09 15 217 2703	Contact arrangement: mating side (numbering in opposite direction on request)  PCB layout  2) Suitable only for bulkhead mounted housings 09 15 200 0311, 09 15 200 0313 and 09 15 200 0301	
	17	09 15 217 2602	09 15 217 2702		
	17	09 15 217 2604	09 15 217 2704		
Solder terminal 	19	09 15 219 2603	09 15 219 2703	Contact arrangement: mating side 	

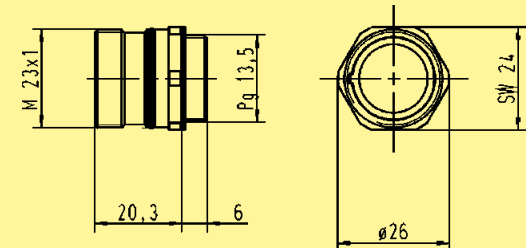
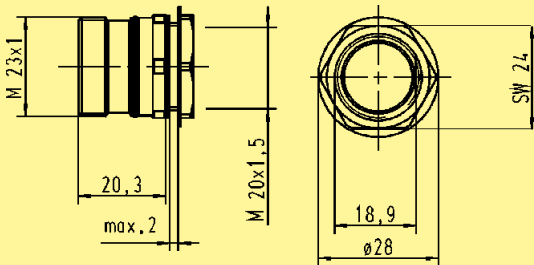
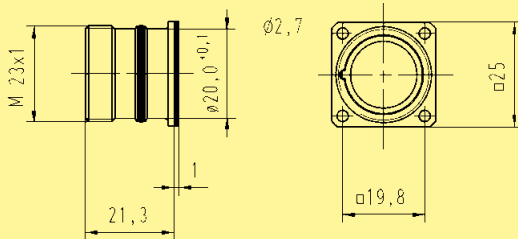
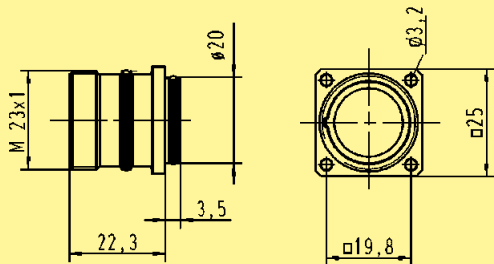
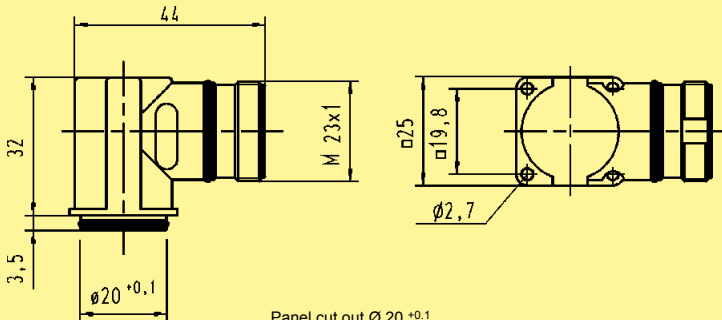
Identification	Part No.	Pg	Drawing	Dimensions in mm
Hoods top-entry	09 15 200 0402 09 15 200 0403	9 11		
Hood top-entry EMC version	09 15 200 0451	—		
Hood entry 90°	09 15 200 0603	11		

Identification	Part No.	Drawing	Dimensions in mm
Screw cover for hoods with tether	09 15 200 5421		

Order inserts separately see pages 03.64 - 03.65

Corresponding hoods and housing see pages 03.67 - 03.69

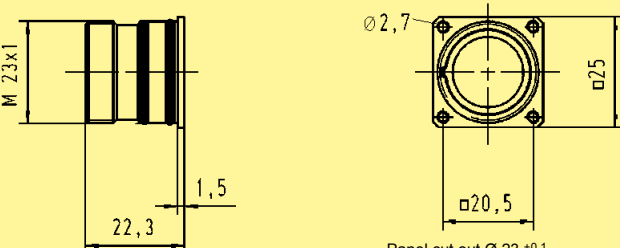
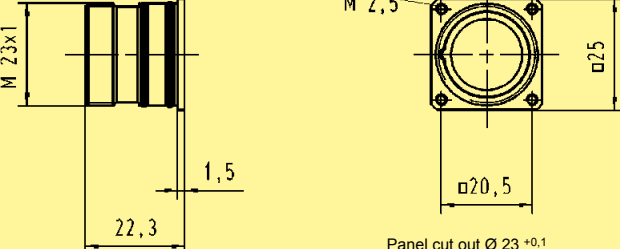
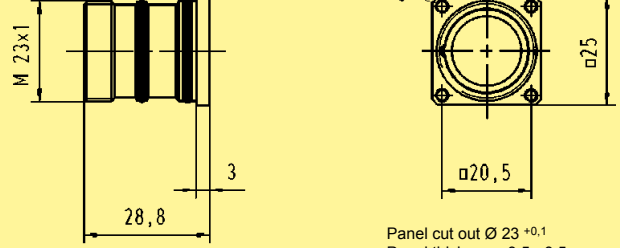
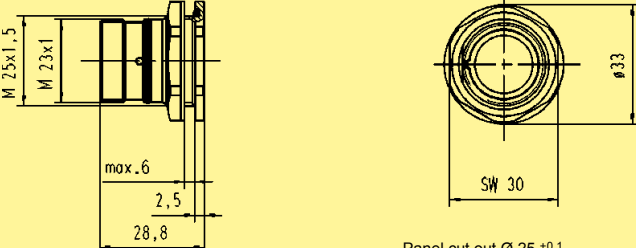
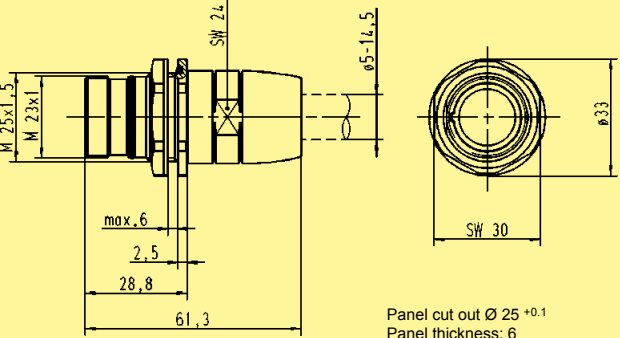
Stock items in bold type

Identification	Part No.	Drawing	Dimensions in mm
Bulkhead mounting housing front wall assembly with central locking Pg 13.5 	09 15 200 0324	 Panel cut out Pg 13.5	
Bulkhead mounting housing front wall assembly with central locking M20 	09 15 200 0303	 Panel cut out Ø 20 ^{+0.1}	
Bulkhead mounting housing front wall assembly with flat sealing 	09 15 200 0301	 Panel cut out Ø 20 ^{+0.1}	
Bulkhead mounting housing front wall assembly with O-ring sealing 	09 15 200 0305	 Panel cut out Ø 20 ^{+0.1}	
Bulkhead mounting housing front wall assembly with O-ring sealing 	09 15 200 0901	 Panel cut out Ø 20 ^{+0.1}	

Order inserts separately see pages 03.64 - 03.65

Corresponding hoods and housing see page 03.66

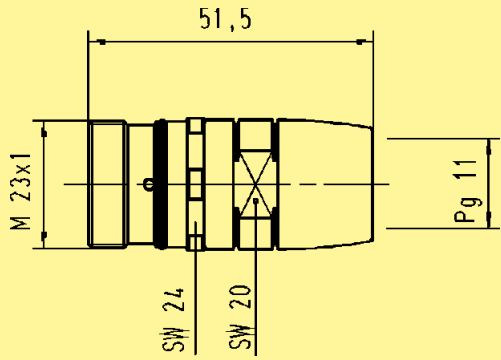
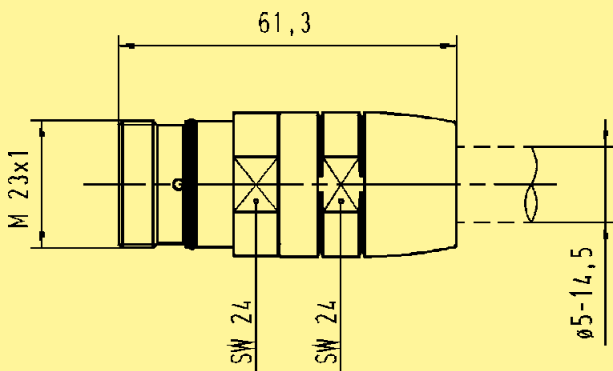
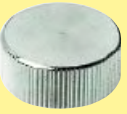
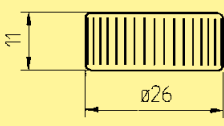
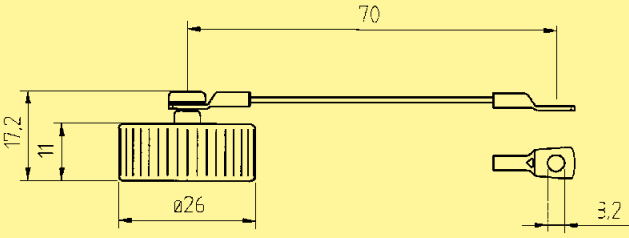
Stock items in bold type

Identification	Part No.	Drawing	Dimensions in mm
Bulkhead mounting housing back wall assembly with O-ring sealing 	09 15 200 0313	 Panel cut out $\varnothing 23^{+0,1}$ Panel thickness: 2.7 - 3.5 when using counter sunk screws	
Bulkhead mounting housing back wall assembly with O-ring sealing 	09 15 200 0311	 Panel cut out $\varnothing 23^{+0,1}$ Panel thickness: 2.7 - 3.5 when using counter sunk screws	
Bulkhead mounting housing back wall assembly with O-ring sealing 	09 15 200 0312	 Panel cut out $\varnothing 23^{+0,1}$ Panel thickness: 3.5 - 8.5 when using counter sunk screws	
Bulkhead mounting housing back wall assembly with central locking M25 	09 15 200 0314	 Panel cut out $\varnothing 25^{+0,1}$ Panel thickness: 6	
Cable to cable housing back wall assembly with central locking M25 	09 15 200 0351	 Panel cut out $\varnothing 25^{+0,1}$ Panel thickness: 6	

Order inserts separately see pages 03.64 - 03.65

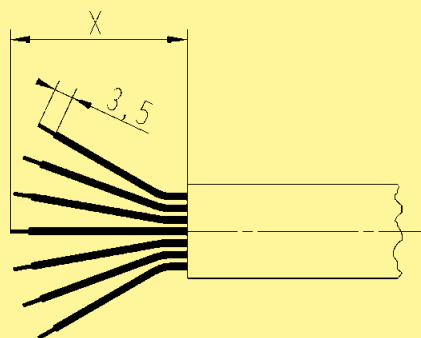
Corresponding hoods and housing see page 03.66

Stock items in bold type

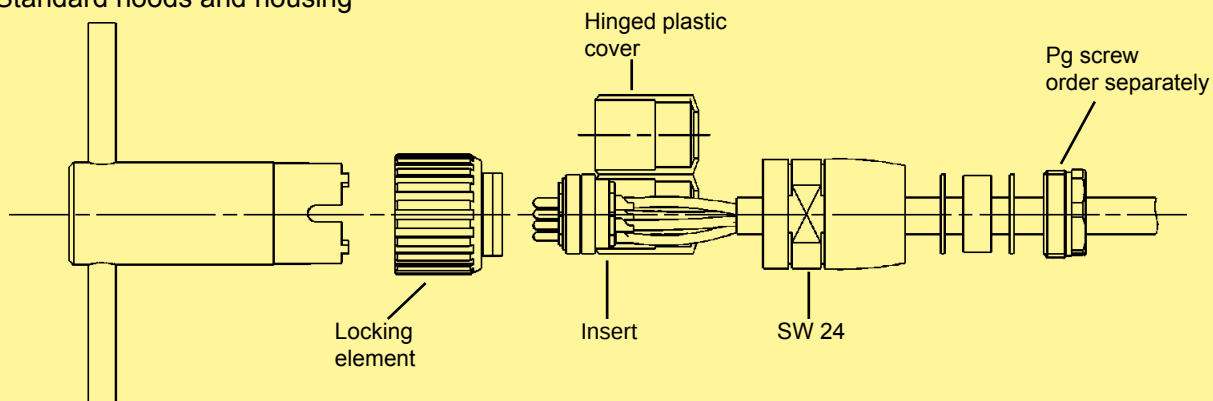
Identification	Part No.	Pg	Drawing	Dimensions in mm
Cable to cable housing top-entry 	09 15 200 0703	11		
Cable to cable housing top-entry EMC version 	09 15 200 0751	—		
Identification	Part No.	Drawing	Dimensions in mm	
Screw cover for bulkhead mounted and cable to cable housings 	09 15 200 5401			
Screw cover for bulkhead mounted and cable to cable housings, with tether 	09 15 200 5411			

Assembly manuals

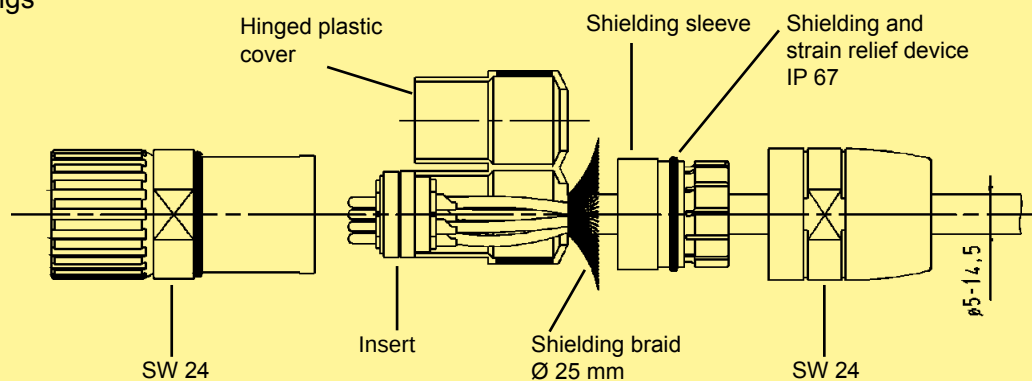
Hoods and Housings	Cable stripping length x
09 15 200 0351	26 mm
09 15 200 0403	20 mm
09 15 200 0451	26 mm
09 15 200 0603	30 mm
09 15 200 0703	20 mm
09 15 200 0751	26 mm
09 15 200 0901	30 mm



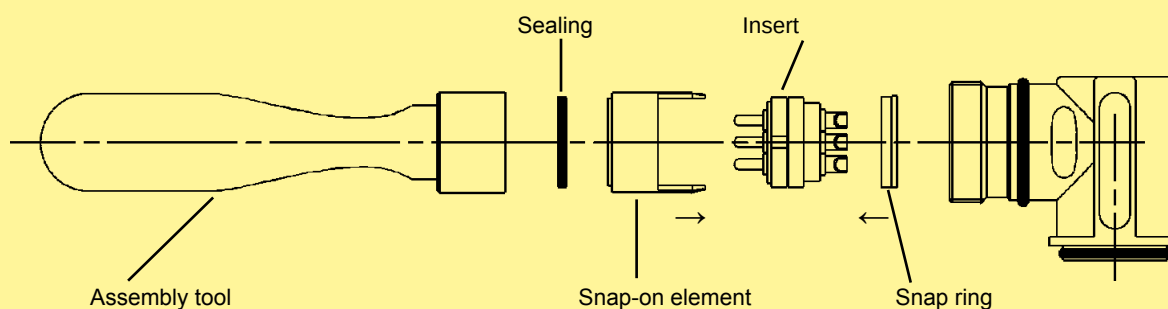
Standard hoods and housing

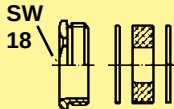
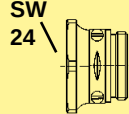
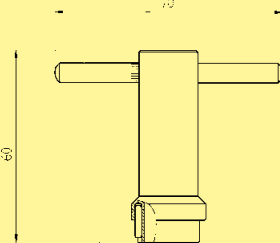
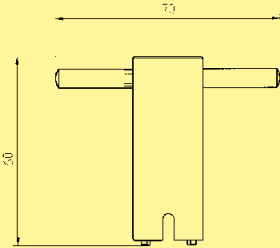


EMC housings



Right angled bulkhead mounted housing



Identification	Part No.	Pg	Drawing	Dimensions in mm
Cable seal metal (IP 65) with normal seal 	09 00 000 5113	11	Suitable cable-Ø 10 - 12	
with multiple seal 	09 00 000 5013	11	6.5 - 12	
Special cable clamp metal (IP 65) with strain relief and bell-mouth 	09 00 000 5191	11	Suitable cable-Ø 8 - 12	
with normal seal order separately 	09 00 000 5020	11	10 - 12	
with strain relief and bell-mouth order separately 	09 00 000 5027	11	6.5 - 12	
Identification	Part No.	Drawing	Dimensions in mm	
Assembly tool for angled bulkhead mounted housings 	09 99 000 0324			
Assembly tool for bulkhead mounted and cable to cable housings and hoods 	09 99 000 0325		As an alternative a screw driver can be used.	
Assembly tool for hoods 	09 99 000 0326		Alternatively for the assembly of the EMC version a screw driver can be used.	