



Pushing Performance



People | Power | Partnership

HARTING

M8 / M12 Circular Connectors

Transforming customer wishes into concrete solutions



The HARTING Technology Group is skilled in the fields of electrical, electronic and optical connection, transmission and networking, as well as in manufacturing, mechatronics and software creation. The Group uses these skills to develop customized solutions and products such as connectors for energy and data transmission applications including, for example, mechanical engineering, rail technology, wind energy plants, factory automation and the telecommunications sector. In addition, HARTING also produces electro-magnetic components for the automobile industry and offers solutions in the field of Enclosures and Shop Systems. The HARTING Group currently comprises 37 subsidiary companies and worldwide distributors employing a total of more than 3.800 staff.



HARTING Subsidiary company



HARTING Representatives



We aspire to top performance.

Connectors ensure functionality. As core elements of electrical and optical wiring, connection and infrastructure technologies, they are essential in enabling the modular construction of devices, machines and systems across a very wide range of industrial applications. Their reliability is a crucial factor guaranteeing smooth functioning in the manufacturing area, in telecommunications, applications in medical technology – in fact, connectors are at work in virtually every conceivable application area. Thanks to the consistent further development of our technologies, customers enjoy investment security and benefit from durable, long term functionality.

Always at hand, wherever our customers may be.

Increasing industrialization is creating growing markets characterized by widely diverging demands and requirements. The search for perfection, increasingly efficient processes and reliable technologies is a common factor in all sectors across the globe.

HARTING is providing these technologies – in Europe, America and Asia. The **HARTING** professionals at our international subsidiaries engage in close, partnership based interaction with our customers, right from the very early product development phases, in order to realize customer demands and requirements in the best possible manner.

Our people on location form the interface to the centrally coordinated development and production departments. In this way, our customers can rely on consistently high, superior product quality – worldwide.

Our claim: Pushing Performance.

HARTING provides more than optimally attuned components. In order to serve our customers with the best possible solutions, **HARTING** is able to contribute a great deal more and play a closely integrative role in the value creation process.

From ready assembled cables through to control racks or ready-to-go control desks: Our aim is to generate the maximum benefits for our customers – without compromise!

Quality creates reliability – and warrants trust.

The **HARTING** brand stands for superior quality and reliability – worldwide. The standards we set are the result of consistent, stringent quality management that is subject to regular certifications and audits.

EN ISO 9001, the EU Eco-Audit and ISO 14001:2004 are key elements here. We take a proactive stance to new requirements, which is why **HARTING** ranks among the first companies worldwide to have obtained the new IRIS quality certificate for rail vehicles.



HARTING technology creates added value for customers.

Technologies by **HARTING** are at work worldwide. **HARTING's** presence stands for smoothly functioning systems, powered by intelligent connectors, smart infrastructure solutions and mature network systems. In the course of many years of close, trust-based cooperation with its customers, the **HARTING** Technology Group has advanced to one of the worldwide leading specialists for connector technology. Extending beyond the basic functionalities demanded, we offer individual customers specific and innovative solutions. These tailored solutions deliver sustained effects, provide investment security and enable customers to achieve strong added value.

Opting for HARTING opens up an innovative, complex world of concepts and ideas.

In order to develop connectivity and network solutions serving an exceptionally wide range of connector applications and task scopes in a professional and cost optimized manner, **HARTING** not only commands the full array of conventional tools and basic technologies. Over and beyond these capabilities, **HARTING** is constantly harnessing and refining its broad base of knowledge and experience to create new solutions that ensure continuity at the same time. In securing this know-how lead, **HARTING** draws on a wealth of sources from both in-house research and the world of applications alike.

Salient examples of these sources of innovative knowledge include microstructure technologies, 3D design and construction technology, as well as high temperature

or ultrahigh frequency applications that are finding use in telecommunications or automation networks, in the automotive industry, or in industrial sensor and actuator applications, RFID and wireless technologies, in addition to packaging and housing made of plastics, aluminum or stainless steel.

HARTING solutions extend across technology boundaries.

Drawing on the comprehensive resources of the group's technology pool, **HARTING** devises practical solutions for its customers. Whether this involves industrial networks for manufacturing automation, or hybrid interface solutions for wireless telecommunication infrastructures, 3D circuit carriers with microstructures, or cable assemblies for high-temperature applications in the automotive industry – **HARTING** technologies offer far more than components, and represent mature, comprehensive solutions attuned to individual customer requirements and wishes. The range covers ready-to-use cable configurations, completely assembled backplanes and board system carriers, as well as fully wired and tested control panels.

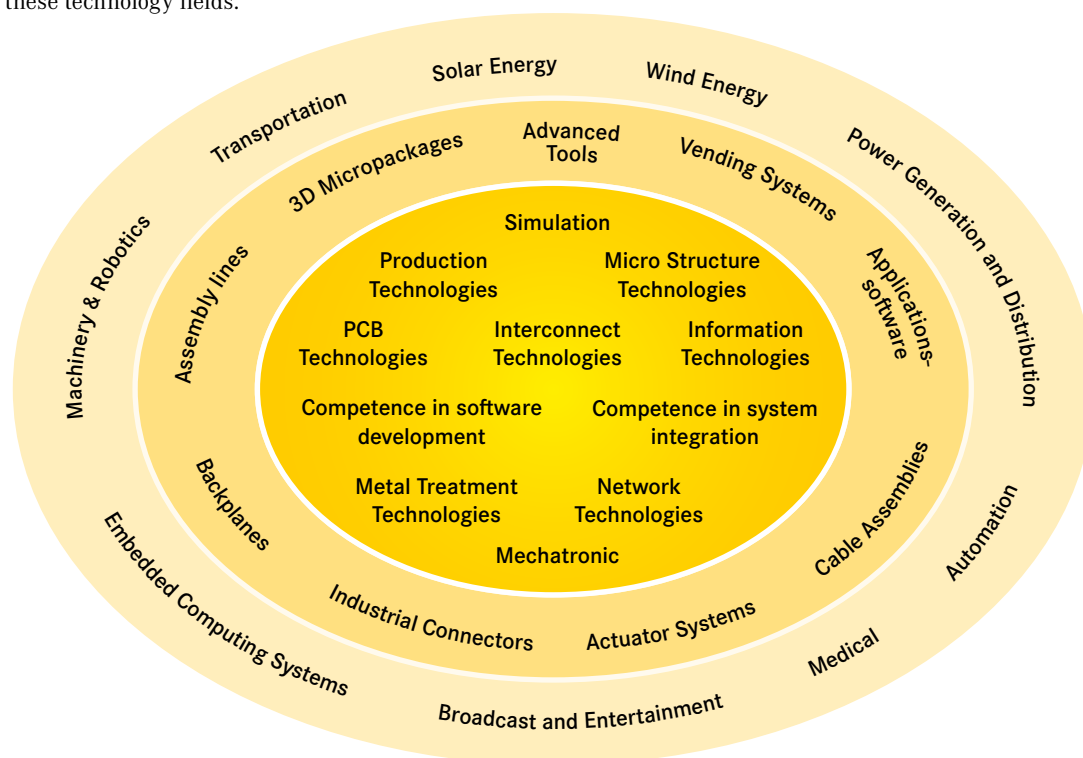
In order to ensure the future proof design of RF- and EMC-compatible interface solutions, the central **HARTING** laboratory (certified to EN 45001) provides simulation tools, as well as experimental, testing and diagnostics facilities all the way through to scanning electron microscopes. In the selection of materials and processes, lifecycle and environmental aspects play a key role, in addition to product and process capability considerations.



HARTING knowledge is practical know-how generating synergy effects.

HARTING commands decades of experience with regard to the applications conditions of connectors in telecommunications, computer and network technologies and medical technologies, as well as industrial automation technologies, such as the mechanical engineering and plant engineering areas, in addition to the power generation industry or the transportation sector. **HARTING** is highly conversant with the specific application areas in all of these technology fields.

The key focus is on applications in every solution approach. In this context, uncompromising, superior quality is our hallmark. Every new solution found will invariably flow back into the **HARTING** technology pool, thereby enriching our resources. And every new solution we go on to create will draw on this wealth of resources in order to optimize each and every individual solution. In this way, **HARTING** is synergy in action.



The **HARTING eCatalogue** is an electronic catalogue with a part configuration and 3D components library.

Here you can choose a connector according to your requirements. Afterwards you are able to send your inquiry directly to a HARTING sales partner.

The drawings to every single part are available in PDF-format.

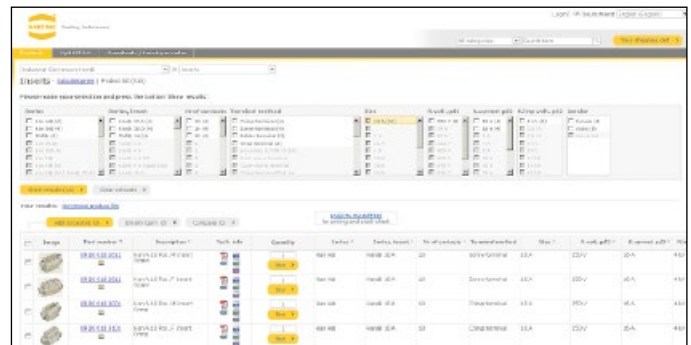
The parts are downloadable in 2D-format (DXF) and 3D-format (IGES, STEP).

The 3D-models can be viewed with a VRML-viewer.

You can find the **HARTING eCatalogue** at **www.HARTING.com**.



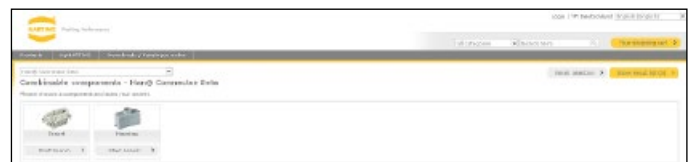
Product overview



Product selection



Product configuration



Product combination

Product samples: Fast-track delivery to your desk, free of charge

The new free express sample service in the HARTING eCatalogue allows customers to order samples immediately, easily and completely free of charge. A broad selection from the device connectivity product portfolio is now available. If a product is unavailable, the system offers alternative products with similar features that can be requested at a mouse click.

The free samples are shipped within 24 hours at no cost to you. This service enables tremendous flexibility, especially in the design phase of projects.

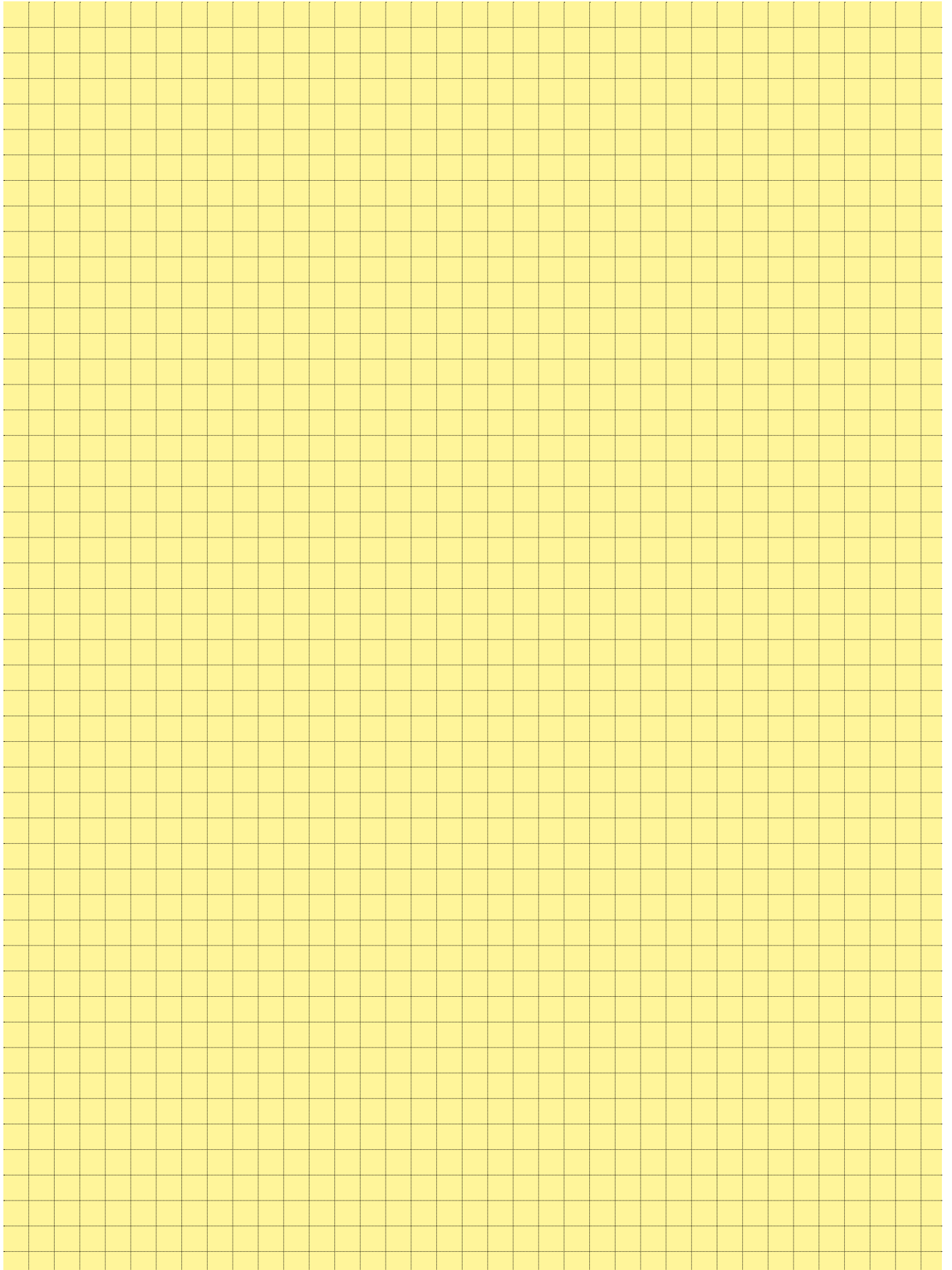
General information

It is the customer's responsibility to check whether the components illustrated in this catalogue also comply with different regulations from those stated in special fields of applications.

We reserve the right to modify designs or substance of content in order to improve quality, keep pace with technological advancement or meet particular requirements in production.

No part of this catalogue may be reproduced in any form (print, photocopy, microfilm or any other process) or processed, duplicated or distributed by means of electronic systems without the prior written consent of HARTING Electronics GmbH, Espelkamp. We are bound by the German version only.

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List of part numbers	Be	Be
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1. General information**01****1.1 Circular connectors 01.02****1.2 Special series features 01.03****1.3 Termination expertise 01.04****1.4 Specifications, approvals, mating faces and pin assignments 01.05**

Standardized circular connectors with M8, M12 and 7/8" thread are in widespread use in the installation of machines and systems. HARTING offers a portfolio of field-assembly angled and straight M8, M12 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 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 *har-speed* M12 connector family. The *har-speed* connectors are optimized for machinery and system applications with high bandwidth as well as for the IP67 infrastructure. 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 IP65 / IP67, 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.



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 overmoulded versions. The range of solutions comprises shielded and non-shielded cables with diverse structures, as required in drag chain applications, for example.



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.

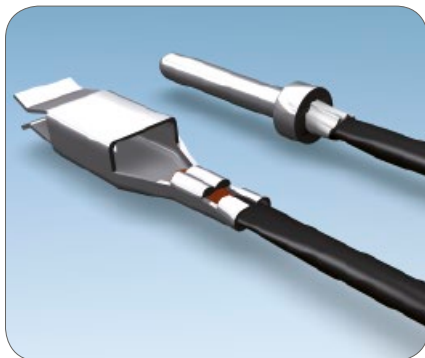




WIRE TERMINATION EXPERTISE

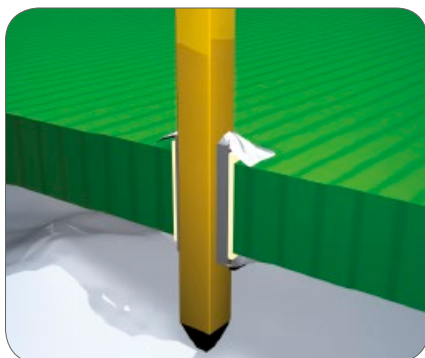
1. IDC INSULATION DISPLACEMENT TERMINALS

IDC (insulation displacement contact) technology facilitates the simple and safe termination of solid and flexible conductors. With IDC technology, a blade cuts through the wire insulation and produces an elastic termination in a single pass. This gas-proof connection provides maximum safety even for the lowest currents and voltages. *HARAX*® Fast termination technology is a special feature offered by HARTING which combines the insulation displacement connector with a wire guide element for conveniently producing on-site field installation without special tools. Technical requirements for IDC technology are standardized in IEC 60352-3.



2. CRIMP TERMINALS

Gas-proof and the miniaturized contact technology are synonymous with crimp technology. The flexible conductor is inserted into the crimp contact and is retained by controlled deformation. This technology is similar to a cold welding process and provides maximum aging resistance and mechanical resistance to shock and vibration. Crimp machines facilitate the efficient, streamlined production of system cable assemblies, and crimp technology can also be deployed for field assemblies using the corresponding hand crimp tools. The technical requirements for crimp technology are standardized in IEC 60352-2.



PCB TERMINATION EXPERTISE

7. THT SOLDERING TECHNOLOGY

Proven over decades, standard soldering technologies deliver maximum stability and process reliability.

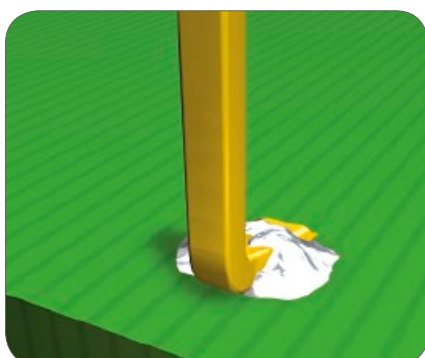
The soldering pins of the connectors are inserted into the through-plated PCB holes and can then be soldered simultaneously with other components in a wave soldering process.



8. SMC SOLDERING TECHNOLOGY

The connector is inserted into through-plated PCB holes similar to standard component assembly for processing with SMC (Surface Mount Compatible) soldering technology. Insertion of these SMT components can be automated by means of Pick & Place assembly in preparation for a reflow soldering process together with the surface-mounted component.

This connection technology is characterized by high mechanical strength and is facilitated by a design that is specially adapted to the reflow soldering process (high-temperature materials).



9. SMT SOLDERING TECHNOLOGY

By contrast to through-plated assembly, the SMT (Surface Mounted Technology) connectors are soldered directly onto the PCB surface by means of soldering pads.

This process represents a uniform connection technology for PCB assembly and offers the advantage of SMT connectors that do not require separate wave soldering.

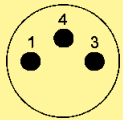
Specifications

IEC 60 352-4, IEC 61076-2-104, IEC 61076-2-101, IEC 61076-2-109,

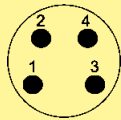


01

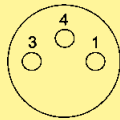
M8 circular connectors, mating face acc. to IEC 61076-2-104



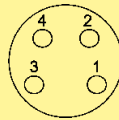
Male, 3 poles



Male, 4 poles



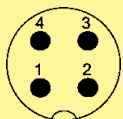
Female, 3 poles



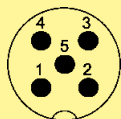
Female, 4 poles

M12 circular connectors, mating face acc. to IEC 61076-2-101

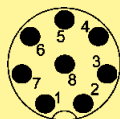
A-coding



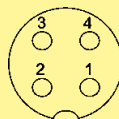
Male, 4 poles



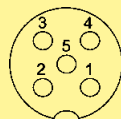
Male, 5 poles



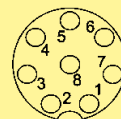
Male, 8 poles



Female, 4 poles

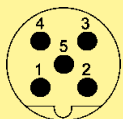


Female, 5 poles

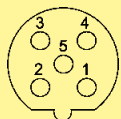


Female, 8 poles

B-coding

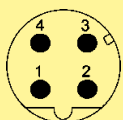


Male, 5 poles

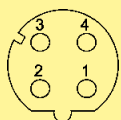


Female, 5 poles

D-coding

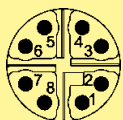


Male, 4 poles



Female, 4 poles

X-coding, mating face acc. to IEC 61076-2-109

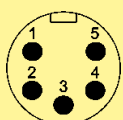


Male, 8 poles

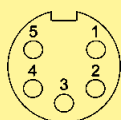


Female, 8 poles

7/8"



Male, 5 poles



Female, 5 poles

X-coding, mating face acc. to IEC 61076-2-109



8 poles pin assignment

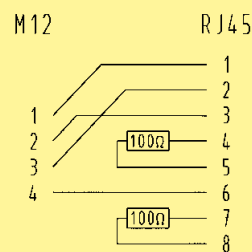
Signals		Pin assignment			Cable		
1/10Gbit	10/100 Mbit	RJ45	M12 D-coded	M12 X-coded	4-wire	568A	568B
BI_DA+	TxData+	1	1	1	yellow	white/green	white/orange
BI_DA-	TxData-	2	3	2	orange	green	orange
BI_DB+	RxData+	3	2	3	white	white/orange	white/green
BI_DC+	-	4	-	8		blue	blue
BI_DC-	-	5	-	7		white/blue	white/blue
BI_DB-	RxData-	6	4	4	blue	orange	green
BI_DD+	-	7	-	5		white/brown	white/brown
BI_DD-	-	8	-	6		brown	brown

Adapter M12/RJ45

4 poles pin assignment

10/100 Mbit	RJ45	M12 D-coded	4-wire
TxData+	1	1	yellow
TxData-	2	3	orange
RxData+	3	2	white
RxData-	6	4	blue

Stromlaufplan
circuit diagram

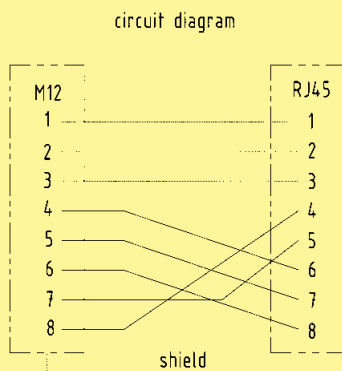


Adapter M12/RJ45

8 poles pin assignment

01

M12	RJ45
1	1
2	2
3	3
4	6
5	7
6	8
7	5
8	4

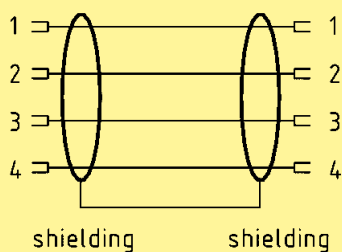


Gender changer

4 poles



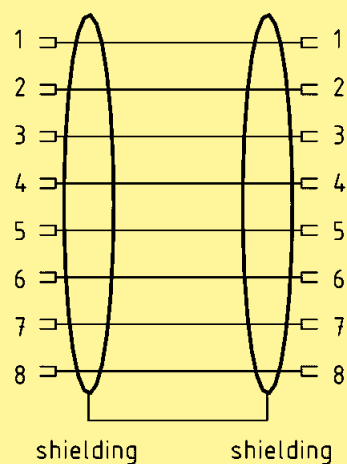
schematic diagram



8 poles



schematic diagram



01

Directory

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2. *M8*2.1 *A-coded – Solutions for actor and sensor applications*

02

o Technical characteristics	02.02
■ Cable connectors	
• HARAX® M8-XS	02.05
• HARAX® M8-S	02.06
• System cables	02.08
o Accessories	02.12

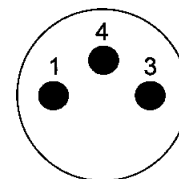
M8 HARAX[®] cable connector



Specifications IEC 60 352-4

Approval 

Mating face



A-coding
Mating face
acc. to IEC 61 076-2-101



Technical characteristics M8 HARAX[®]

Type M8	HARAX [®] M8-XS	HARAX [®] M8-S
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General data

Conductor cross section	0.1 - 0.14 mm ² AWG 27-26	0.14 - 0.34 mm ² AWG 26-22
Diameter of individual strands	≥ 0.05 mm	≥ 0.1 mm
Conductor insulation material	PVC / PP / TPE	PVC / PP / TPE
Conductor diameter	0.6 - 1.0 mm	1.0 - 1.6 mm
Cable diameter	1.9 - 2.5 mm 2.5 - 3.5 mm	2.5 - 5.1 mm
Temperature range	-40 °C ... +85 °C	-40 °C ... +85 °C
Temperature during connection	-5 °C ... +50 °C	-5 °C ... +50 °C
Degree of protection	IP67	IP67
Mating cycles	100	100
Recommended tightening torque / Hexagonal wrench	0.4 Nm / SW 9	0.4 Nm / SW 9

Electrical characteristics

Rated current	2 A	4 A
Rated voltage	32 V	32 V
Rated impulse voltage	1.5 kV	1.5 kV
Contact resistance	10 mΩ	10 mΩ
Insulation resistance	10 ⁸ Ω	10 ⁸ Ω
Pollution degree	3	3
Overvoltage category	3	3
Isolation group	1	1

Materials

Contact material	Copper alloy	Copper alloy
Contact plating	Gold	Gold
Contact carrier material	PA	PA
Housing material	PA, zinc die-cast	PA, zinc die-cast

Technical characteristics – System cables

M8 Circular connectors, 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	-25 °C ... +85 °C (dependant on connected conductor)
Degree of protection	IP67
Number of wires / wire gauge	3 x 0.25 mm ²
Conductor insulation	PP (bn, bu, bk)
Arrangement of insulated strands	32 x 0.1 mm
Sheath	PUR (UL, CSA)
Outer diameter	appr. 4.2 - 5.5 mm
Bending radius	10 x outer diameter
Temperature range (working and storage)	-5 °C ... + 80 °C

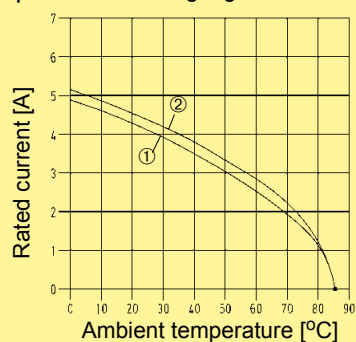
02

Technical characteristics M8

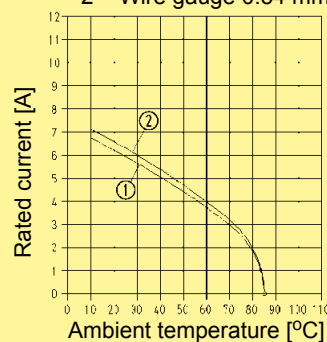
Current carrying capacity The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals. The current capacity-curve is valid for continuous, not interrupted current-loaded contacts of connectors when simultaneous power on all contacts is given,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

Control and test procedures according to DIN IEC 60 512-5.

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

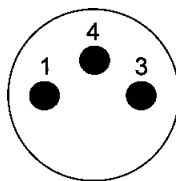


M8-S, 4 poles 1 = Wire gauge 0.25 mm²
2 = Wire gauge 0.34 mm²





Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



02

Applications / Advantages

- Actor and sensor applications
- Unshielded versions
- HARAX® rapid termination
- Overmoulded system cables in various lengths
- Robust design, quick assembly

Identification

Part No.

Drawing

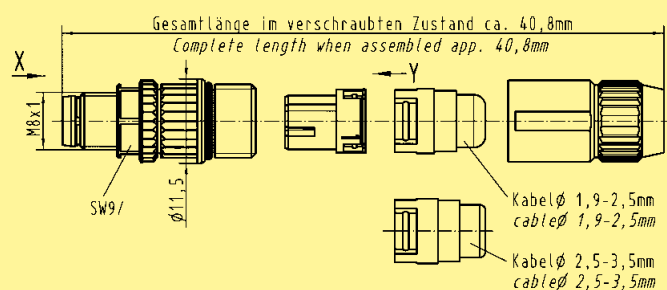
Dimensions in mm

HARAX® M8-XS



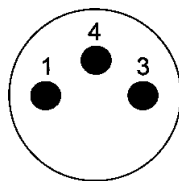
Male
straight version, 3 poles
for 0.1 - 0.14 mm²

21 02 159 1305





Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



02

Identification	Part No.	Drawing	Dimensions in mm
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HARAX® M8-S



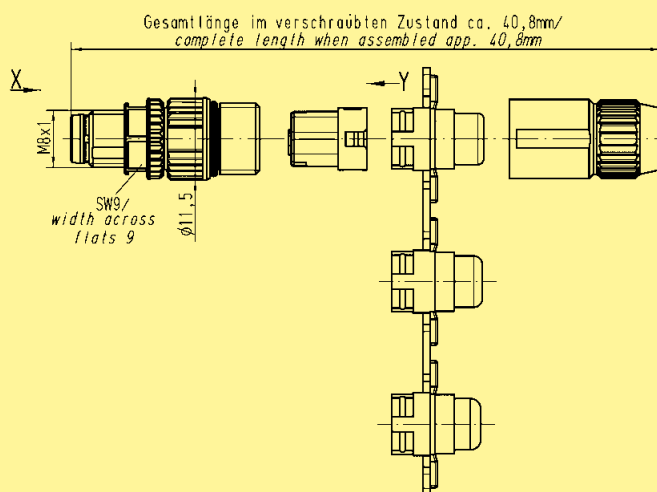
Male
straight version, 3 poles
for 0.14 - 0.34 mm²

21 02 151 1305



Male
straight version, 4 poles
for 0.14 - 0.34 mm²

21 02 151 1405



View mating side:
3 poles, male

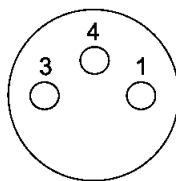


View mating side:
4 poles, male





Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



02

Identification

Part No.

Drawing

Dimensions in mm

HARAX® M8-S



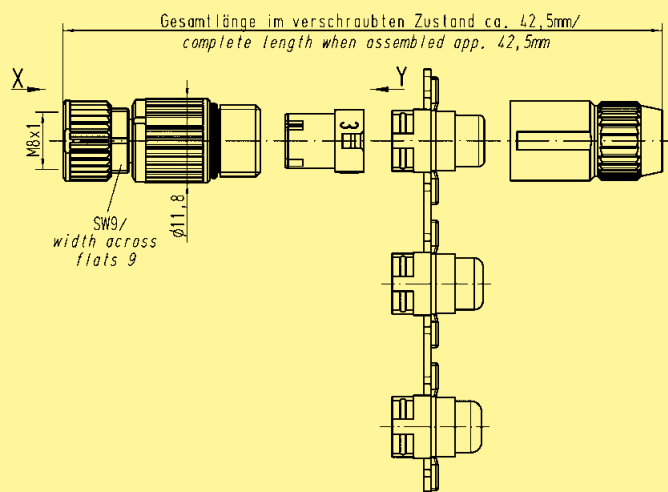
Female
straight version, 3 poles
for 0.14 - 0.34 mm²

21 02 151 2305

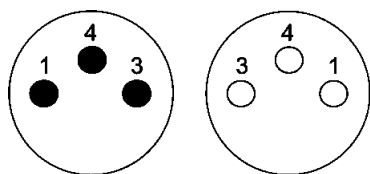


Female
straight version, 4 poles
for 0.14 - 0.34 mm²

21 02 151 2405



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



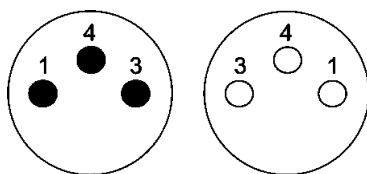
02

Technical characteristics

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	IP67
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. 4.2 - 5.5 mm
Bending radius	10 x outer diameter
Temperature range (working and storage)	-5 °C ... + 80 °C

Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



02

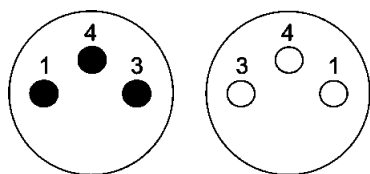
Overview system cables M8

Number of contacts		Male M8 straight		Female M8 angled	
		 Cable material PUR		 Cable material PUR	
Female M8 angled		0.3 m	21 02 454 5301	xxx	
		0.6 m	21 02 454 5302	xxx	
		1.0 m	21 02 454 5303	xxx	
		1.5 m	21 02 454 5304	xxx	
		2.0 m	21 02 454 5305	xxx	
		0.3 m	21 02 454 7301 with LED	xxx	
		0.6 m	21 02 454 7302 with LED	xxx	
		1.0 m	21 02 454 7303 with LED	xxx	
		1.5 m	21 02 454 7304 with LED	xxx	
		2.0 m	21 02 454 7305 with LED	xxx	
Open end		xxx		1.5 m	21 02 554 4301
		xxx		3.0 m	21 02 554 4302
		xxx		5.0 m	21 02 554 4303
		xxx		7.5 m	21 02 554 4304
		xxx		10.0 m	21 02 554 4305
		xxx		1.5 m	21 02 554 7301 with LED
		xxx		3.0 m	21 02 554 7302 with LED
		xxx		5.0 m	21 02 554 7303 with LED
		xxx		7.5 m	21 02 554 7304 with LED
		xxx		10.0 m	21 02 554 7305 with LED

M8 System cables



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

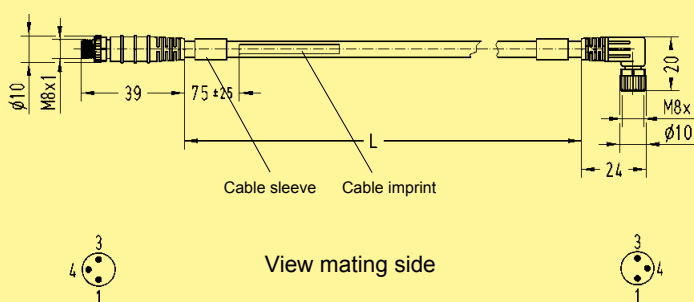
Dimensions in mm

M8 Circular connectors

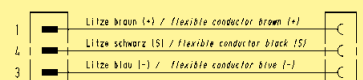
Female angled, male straight

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

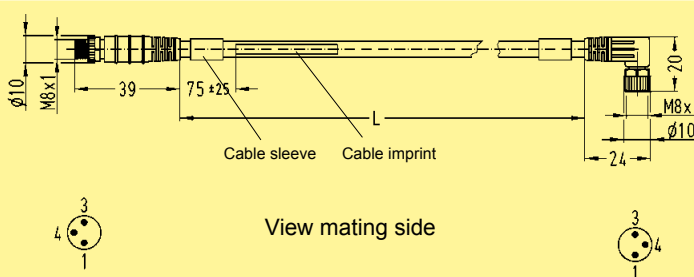


M8 Circular connectors

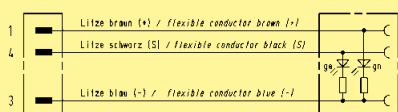
Female angled, with LED
Male straight

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

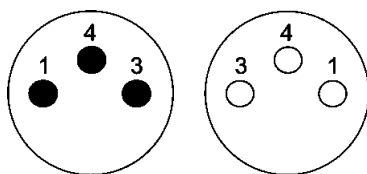
21 02 454 7301
21 02 454 7302
21 02 454 7303
21 02 454 7304
21 02 454 7305



Schematic diagram



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



02

Identification

Part No.

Drawing

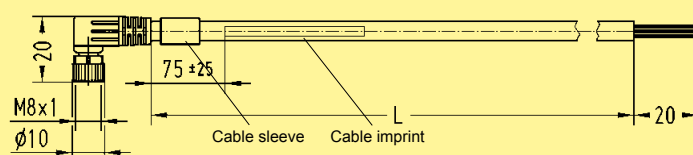
Dimensions in mm

M8 Circular connectors

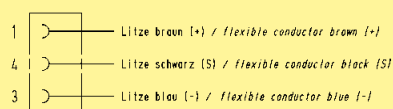
Female angled
pre-assembled on one end

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

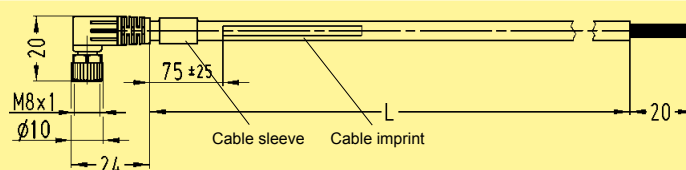


M8 Circular connectors

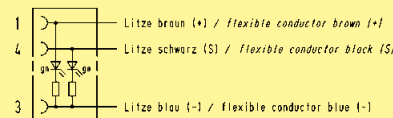
Female angled, with LED
pre-assembled on one end

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



Identification

Part No.

Drawing

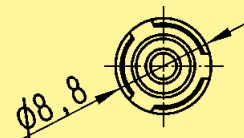
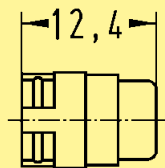
Dimensions in mm

Seal M8

for 1.9 - 2.5 mm cable Ø
for 2.5 - 3.5 mm cable Ø
for 4.2 - 5.4 mm cable Ø



21 01 010 2016
21 01 010 2008
21 01 010 2005

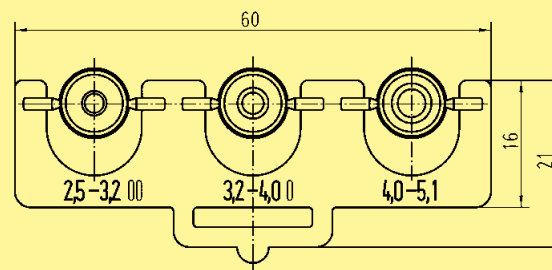


Set of seals for HARAX® M8-S

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



M8 dynamometric screwdriver

Tightening torque 0.4 Nm

SW 9

09 99 000 0380



Directory

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3. M12

3.1 A-coded – Solutions for actor and sensor applications

o Technical characteristics	03.04
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• HARAX® M12 angled	03.10
• HARAX® M12-L unshielded	03.12
• HARAX® M12-L shielded	03.14
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• System cables	03.20
■ Device connectors	
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3.2 B-coded – Solutions for Profibus applications

o Technical characteristics	03.40
■ Cable connectors	
• HARAX® M12 L shielded	03.42
• M12 Crimp	03.44
• System cables	03.46
■ Device connectors	
• Panel feed-through	03.50
• PCB adapter	03.56
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3.3 D-coded – Solutions for Ethernet applications

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■ Cable connectors	
• HARAX® M12 L shielded	03.66
• M12 Crimp	03.68
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3.1 A-coded – Solutions for actor and sensor applications

o Technical characteristics	03.04
■ Cable connectors	
• HARAX® M12-S	03.08
• HARAX® M12 angled	03.10
• HARAX® M12-L unshielded	03.12
• HARAX® M12-L shielded	03.14
• M12 Crimp	03.16
• System cables	03.20
■ Device connectors	
• Panel feed-through	03.26
• PCB adapter	03.32
o Accessories	03.36

M12 A-coding

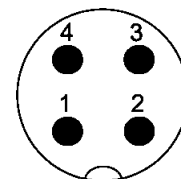


Specifications IEC 60 352-4

Approval 



Mating face



A-coding
Mating face
acc. to IEC 61 076-2-101

Technical characteristics M12 – A-coding

Type M12 A-coded	<i>HARAX</i> ® M12-S	<i>HARAX</i> ® M12 angled	<i>HARAX</i> ® M12 L 3 poles, 4 poles
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General data

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
Diameter of individual strands	≥ 0.1 mm	≥ 0.1 mm	≥ 0.1 mm
Conductor insulation material	PVC / PP / TPE	PVC	PVC
Conductor diameter	1.0 - 1.6 mm	1.2 - 1.6 mm	1.6 - 2.0 mm 2.0 - 2.6 mm
Cable diameter	2.9 - 4.0 mm 4.0 - 5.1 mm	4 - 5.1 mm	6 - 8 mm
Temperature range	-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
Degree of protection	IP67	IP67	IP65 / IP67
Mating cycles	100	100	100
Tightening torque connector / hexagonal wrench	0.6 Nm / SW 13	0.6 Nm / SW 13	0.6 Nm / SW 17

Electrical characteristics

Rated current	4 A	4 A	6 A
Rated voltage	32 V	32 V	50 V
Rated impulse voltage	1.5 kV	1.5 kV	1.5 kV
Contact resistance	10 mΩ	10 mΩ	10 mΩ
Insulation resistance	10 ⁸ Ω	10 ⁸ Ω	10 ⁸ Ω
Pollution degree	3	3	3
Overvoltage category	3	3	3
Isolation group	1	1	1

Materials

Contact material	Brass	Brass	Brass
Contact plating	Gold	Gold	Gold
Contact carrier material	PA reinforced	PA	PA unreinforced
Housing material	PA reinforced	PA	PA unreinforced

M12 A-coding

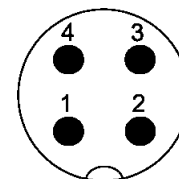


Specifications IEC 60 352-4

Approval 



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101

Technical characteristics M12 – A-coding

03

Type M12 A-coded	HARAX® M12-L 5 poles	HARAX® M12 L shielded	M12 Crimp
------------------	-------------------------	--------------------------	-----------

General data

Conductor cross section	0.34 - 0.5 mm ² AWG 22-20	0.14 - 0.34 mm ² AWG 26-22	0.14 - 0.75 mm ² AWG 26-18
Diameter of individual strands	≥ 0.1 mm	≥ 0.1 mm	X
Conductor insulation material	PVC	PVC	X
Conductor diameter	1.2 - 2.0 mm	1.2 - 1.6 mm	2.0 - 2.3 mm
Cable diameter	6 - 8 mm	4.5 - 8.8 mm	4.5 - 8.8 mm
Temperature range	-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
Degree of protection	IP65 / IP67	IP65 / IP67	IP67
Mating cycles	100	100	500
Tightening torque connector / hexagonal wrench	0.6 Nm / SW 17	0.6 Nm / SW 17	0.5 Nm / SW 17

Electrical characteristics

Rated current	4 A	4 A	4 A
Rated voltage	50 V	50 V	250 V
Rated impulse voltage	1.5 kV	1.5 kV	1.5 kV
Contact resistance	10 mΩ	10 mΩ	10 mΩ
Insulation resistance	10 ⁸ Ω	10 ⁸ Ω	10 ⁸ Ω
Pollution degree	3	3	3
Overvoltage category	3	3	3
Isolation group	1	1	1

Materials

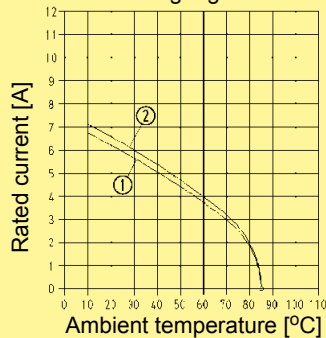
Contact material	Brass	Brass	Brass
Contact plating	Gold	Gold	Gold
Contact carrier material	PA unreinforced	PA unreinforced	PA
Housing material	PA unreinforced	PA unreinforced	PA

Technical characteristics M12 – A-coding

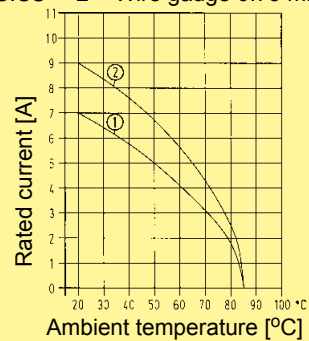
Current carrying capacity The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals. The current capacity-curve is valid for continuous, not interrupted current-loaded contacts of connectors when simultaneous power on all contacts is given,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

Control and test procedures according to DIN IEC 60 512-5.

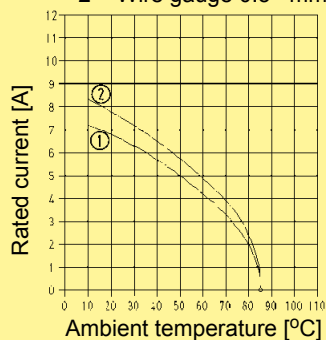
M12-S, 4 poles 1 = Wire gauge 0.25 mm²
2 = Wire gauge 0.34 mm²



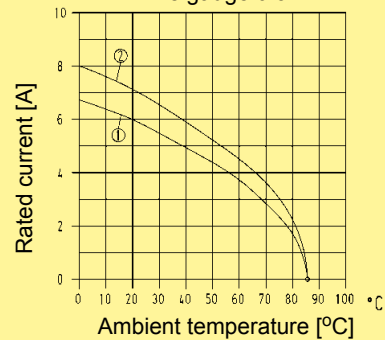
M12-L, 3 poles, 4 poles 1 = Wire gauge 0.34 mm²
2 = Wire gauge 0.75 mm²



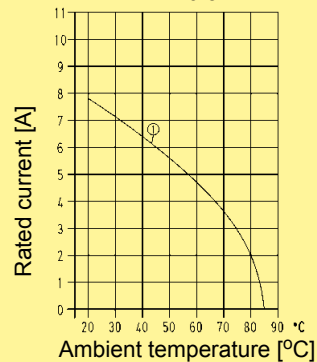
M12, 4 poles, angled 1 = Wire gauge 0.25 mm²
2 = Wire gauge 0.5 mm²



M12L, 5 poles 1 = Wire gauge 0.25 mm²
2 = Wire gauge 0.34 mm²

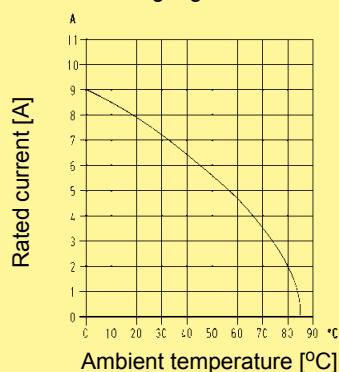


M12, Crimp 1 = Wire gauge 0.34 mm² /
0.5 mm²

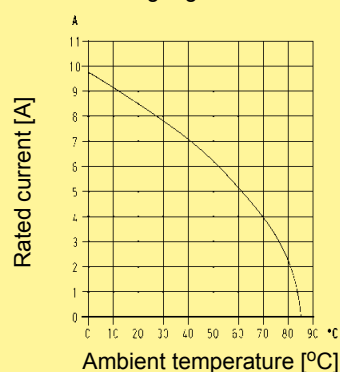


Technical characteristics M12 – A-coding, PCB adapter

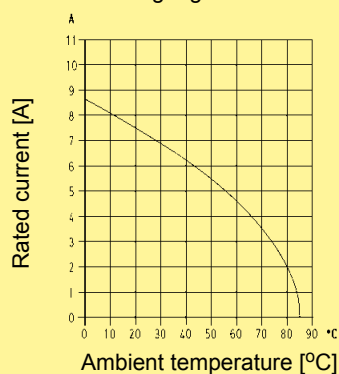
M12, A-coding, straight, male, 4 poles
Wire gauge 0.5 mm²



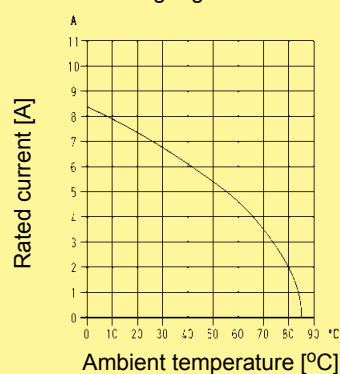
M12, A-coding, straight, female, 4 poles
Wire gauge 0.75 mm²



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

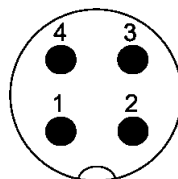


M12, A-coding, straight, male, 5 poles
Wire gauge 0.5 mm²





Mating face

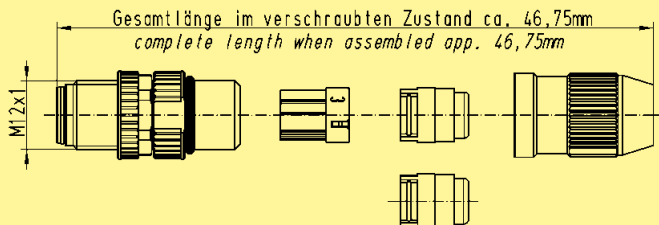
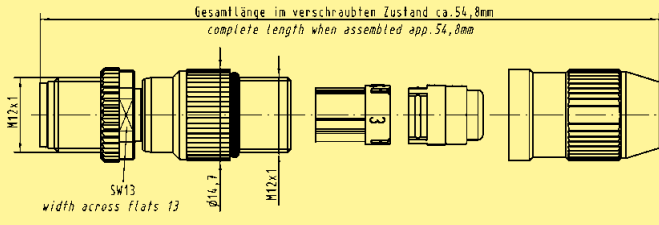


A-coding
Mating face
acc. to IEC 61076-2-101



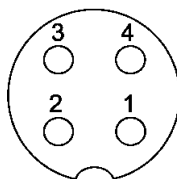
Applications / Advantages

- Actor and sensor applications
- Shielded and unshielded versions
- Available with crimp resp. HARAX® rapid termination, or as overmoulded system cable in various lengths
- Robust design, quick assembly

Identification	Part No.	Drawing	Dimensions in mm
HARAX® M12-S  Male straight version 4 poles, 0.14 - 0.34 mm ²	21 03 111 1405		
Male straight version 4 poles, 0.25 - 0.5 mm ²	21 03 112 1405		



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

Dimensions in mm

HARAX® M12-S

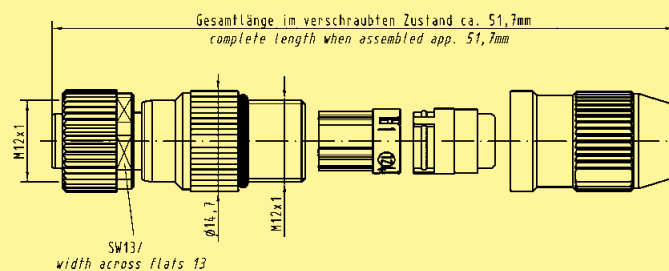
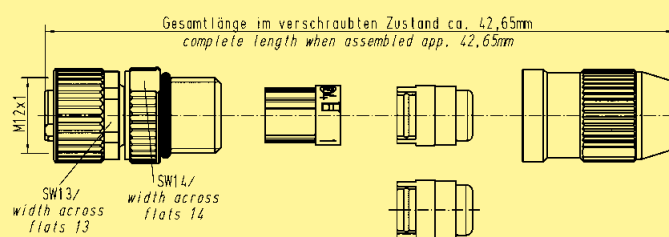


Female
straight version
4 poles, 0.14 - 0.34 mm²

21 03 111 2405

Female
straight version
4 poles, 0.25 - 0.5 mm²

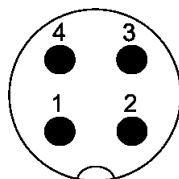
21 03 112 2405



03



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



03

Identification

Part No.

Drawing

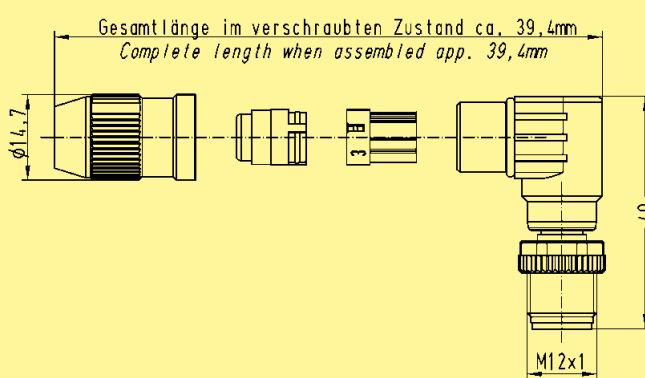
Dimensions in mm

HARAX® M12



Male
angled version
4 poles

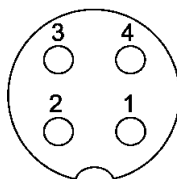
21 01 140 5081



M12 HARAX® A-coded



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

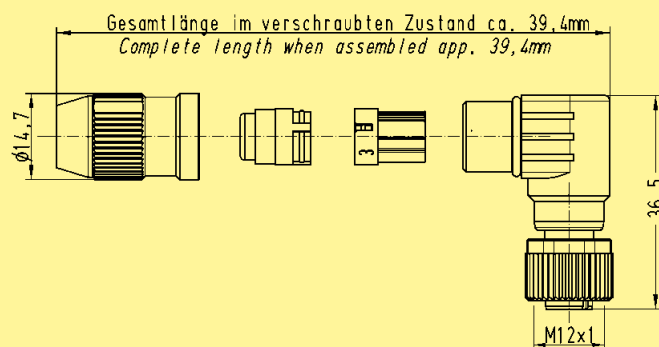
Dimensions in mm

HARAX® M12



Female
angled version
4 poles

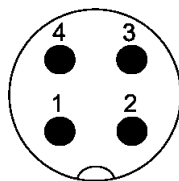
21 01 140 5091



03



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



03

Identification

Part No.

Drawing

Dimensions in mm

HARAX® M12-L, unshielded



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

21 03 212 1400

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

21 03 212 1306

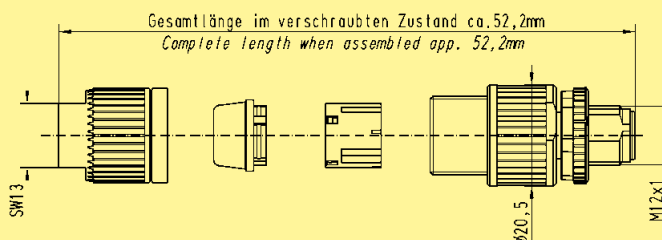
4 poles, A-coding
(assignment 1, 2, 3, 4)

21 03 212 1305

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

21 03 212 1407

0.34 - 0.75 mm²
AWG 22 - 18
Cable diameter: 6 - 8 mm



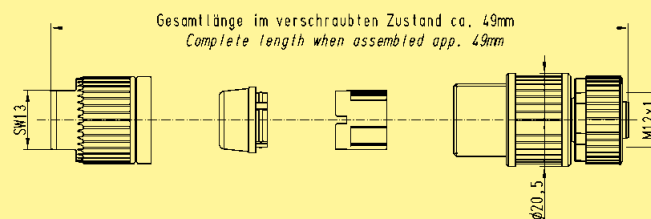
HARAX® M12-L, unshielded



Male
5 poles, A-coding

21 03 272 1505

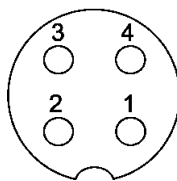
0.34 - 0.5 mm²
AWG 22 - 20
Cable diameter: 6 - 8 mm



03
12



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

Dimensions in mm

HARAX® M12-L, unshielded



Female
3 poles, A-coding
(assignment 3, 4, 5)

21 03 212 2400

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

21 03 212 2306

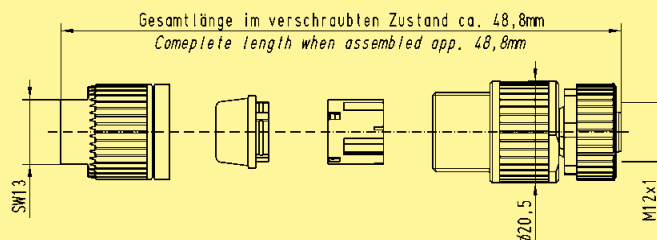
4 poles, A-coding
(assignment 1, 2, 3, 4)

21 03 212 2305

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

21 03 212 2407

0.34 - 0.75 mm²
AWG 22 - 18
Cable diameter: 6 - 8 mm



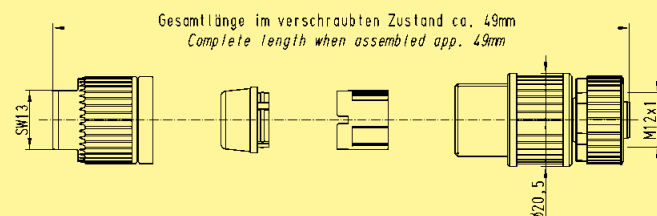
HARAX® M12-L, unshielded



Female
5 poles, A-coding

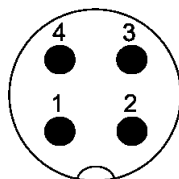
21 03 272 2505

0.34 - 0.5 mm²
AWG 22 - 20
Cable diameter: 6 - 8 mm





Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



03

Identification

Part No.

Drawing

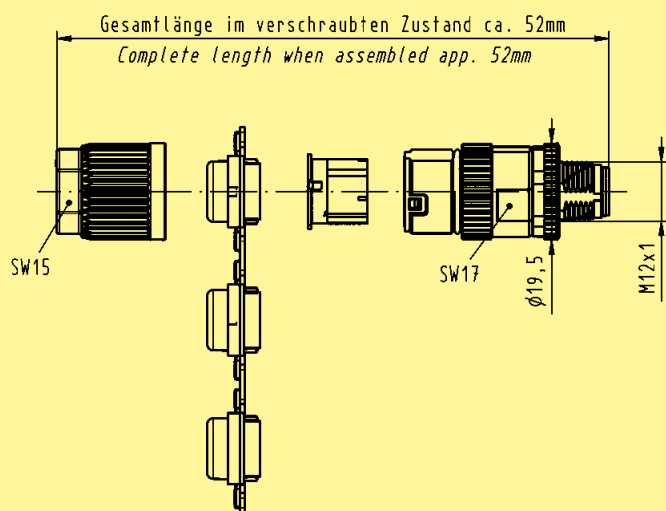
Dimensions in mm

HARAX® M12-L, shielded



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

21 03 221 1405

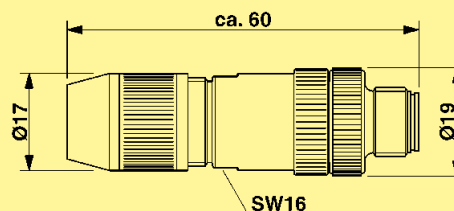


M12 Circular connector



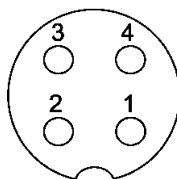
Male
with IDC termination,
8 poles
0.14 - 0.34 mm² / AWG 26 - 22

21 03 121 1801





Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

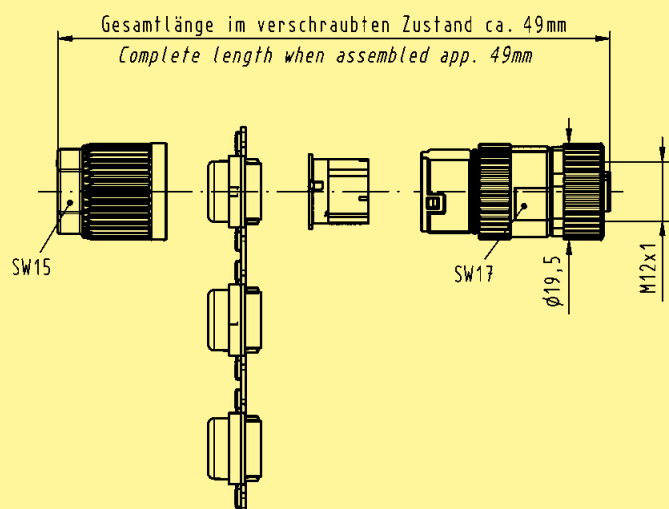
Dimensions in mm

HARAX® M12-L, shielded



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

21 03 221 2405

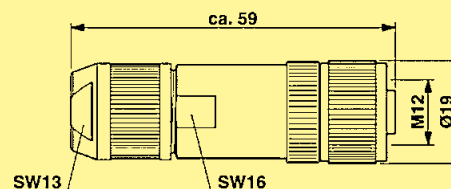


M12 Circular connectors



Female
with IDC termination technology,
8 poles
0.14 - 0.34 mm² / AWG 26 - 22

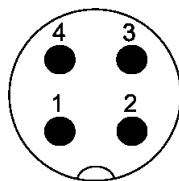
21 03 121 2801



M12 Crimp A-coded



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



03

Identification

Part No.

Drawing

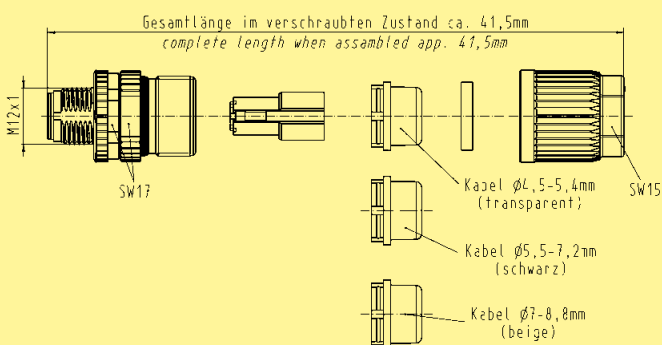
Dimensions in mm

M12 Crimp



Male
4 poles, A-coding

21 03 812 1405

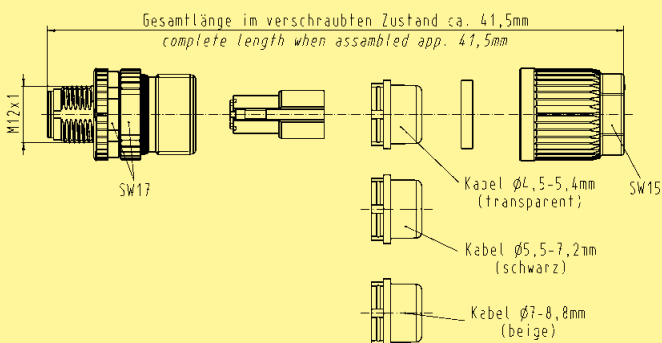


M12 Crimp



Male
5 poles, A-coding

21 03 812 1505*

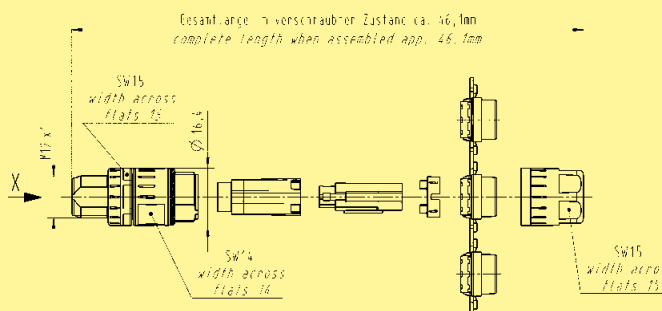


M12 Crimp Slim design



Male
5 poles, A-coding
Cable diameter: 4.5 - 8.8 mm

21 03 821 1505*



03
16

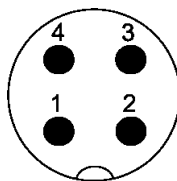
Further information and data sheets see www.HARTING.com

* UL approval is in preparation

M12 Crimp A-coded



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

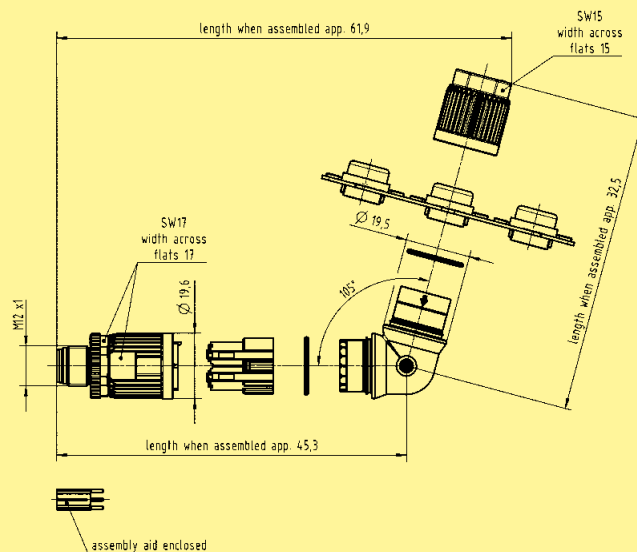
Dimensions in mm

M12 Crimp, angled



Male
5 poles, A-coding

21 03 822 3505*

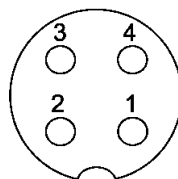


03

M12 Crimp A-coded



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



03

Identification

Part No.

Drawing

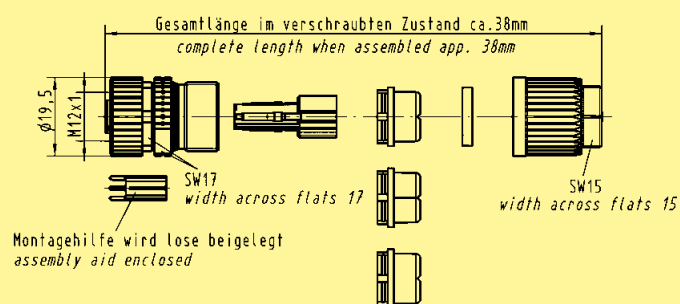
Dimensions in mm

M12 Crimp



Female
4 poles, A-coding

21 03 812 2405

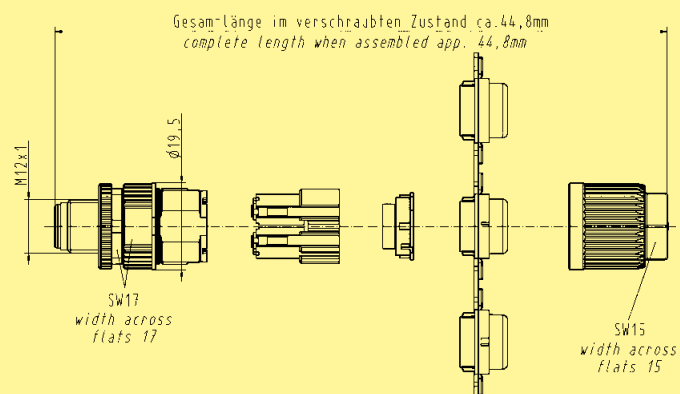


M12 Crimp



Female
5 poles, A-coding

21 03 812 2505*



03
18

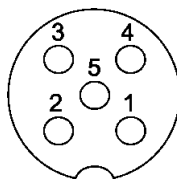
Further information and data sheets see www.HARTING.com

* UL approval is in preparation

M12 Crimp A-coded



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

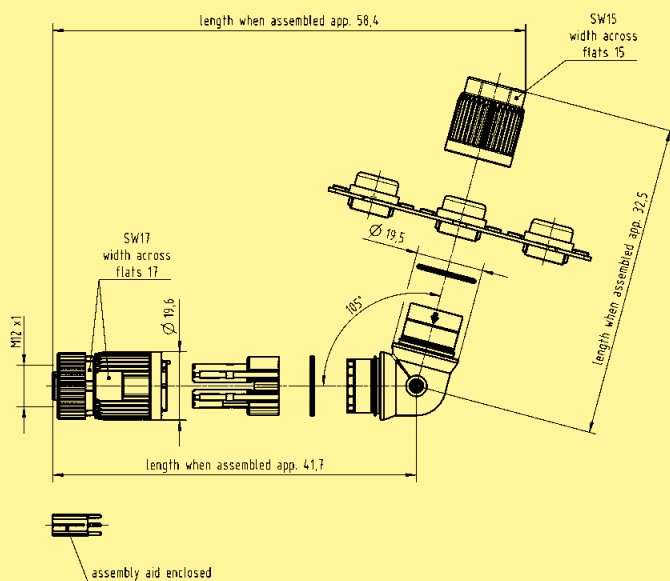
Dimensions in mm

M12 Crimp, angled



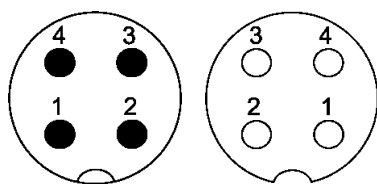
Female
5 poles, A-coding

21 03 822 4505*

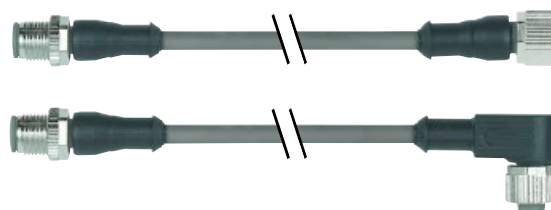


03

Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



Technical characteristics

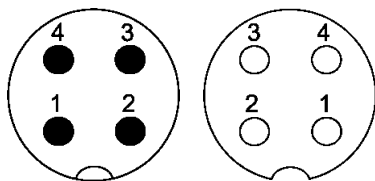
M12 Circular connectors, without PE

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	-25 °C ... +85 °C (dependant on connected conductor)
Degree of protection	IP67
Number of wires / wire gauge	4 x 0.34 mm ²
Conductor insulation	PP (bn, wh, bu, bk)
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

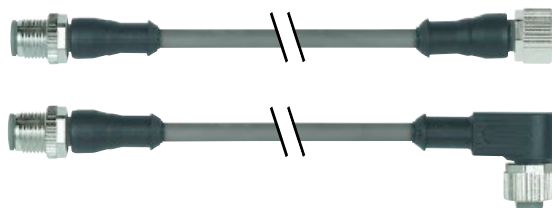
M12 System cables, A-coded



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101

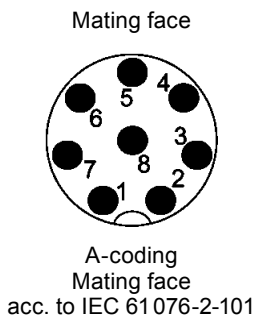


Overview system cables M12

03

			Male M12 A-coding, straight		Female M12 A-coding, angled	
Number of contacts						
			Cable material: PUR		Cable material: PUR	
Female M12	straight		0.3 m	21 03 415 2401	xxx	
			0.6 m	21 03 415 2402	xxx	
			1.0 m	21 03 415 2403	xxx	
			1.5 m	21 03 415 2404	xxx	
			2.0 m	21 03 415 2405	xxx	
	angled		0.3 m	21 03 415 5401	xxx	
			0.6 m	21 03 415 5402	xxx	
			1.0 m	21 03 415 5403	xxx	
			1.5 m	21 03 415 5404	xxx	
			2.0 m	21 03 415 5405	xxx	
			0.3 m	21 03 415 7401 with LED	xxx	
			0.6 m	21 03 415 7402 with LED	xxx	
			1.0 m	21 03 415 7403 with LED	xxx	
			1.5 m	21 03 415 7404 with LED	xxx	
			2.0 m	21 03 415 7405 with LED	xxx	
Open end			xxx		1.5 m	21 03 515 4401
			xxx		3.0 m	21 03 515 4402
			xxx		5.0 m	21 03 515 4403
			xxx		7.5 m	21 03 515 4404
			xxx		10.0 m	21 03 515 4405
			xxx		1.5 m	21 03 515 7401 with LED
			xxx		3.0 m	21 03 515 7402 with LED
			xxx		5.0 m	21 03 515 7403 with LED
			xxx		7.5 m	21 03 515 7404 with LED
			xxx		10.0 m	21 03 515 7405 with LED
M12 cable set for individual assembly incl. HARAX® M12 Male			xxx		1.5 m	21 83 515 4401
			xxx		3.0 m	21 83 515 4402
			xxx		5.0 m	21 83 515 4403
			xxx		7.5 m	21 83 515 4404
			xxx		10.0 m	21 83 515 4405
			xxx		1.5 m	21 83 515 7401 with LED
			xxx		3.0 m	21 83 515 7402 with LED
			xxx		5.0 m	21 83 515 7403 with LED
			xxx		7.5 m	21 83 515 7404 with LED
			xxx		10.0 m	21 83 515 7405 with LED

03
21



03

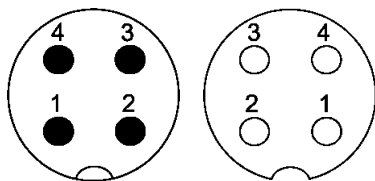
Overview system cables M12

Number of contacts		Male M12 A-coding, straight	
		 Cable material: PUR	
Open end		1.0 m	21 03 514 1801
		2.0 m	21 03 514 1803
		5.0 m	21 03 514 1805

M12 System cables, A-coded



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

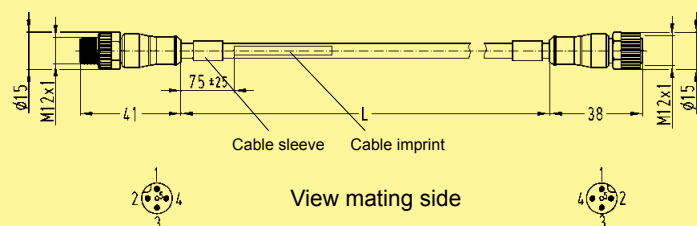
Drawing

Dimensions in mm

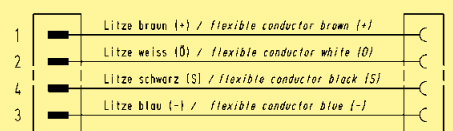
M12 Circular connectors Female straight, male straight

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



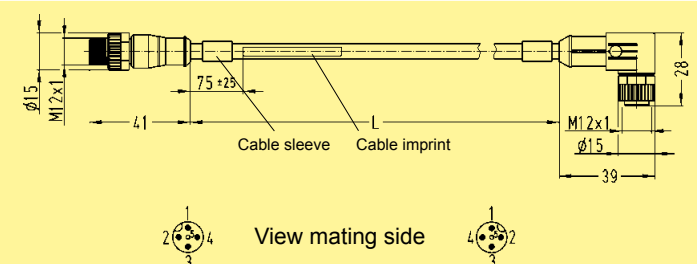
Schematic diagram



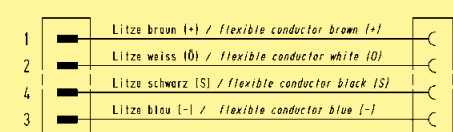
M12 Circular connectors Female angled, male straight

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



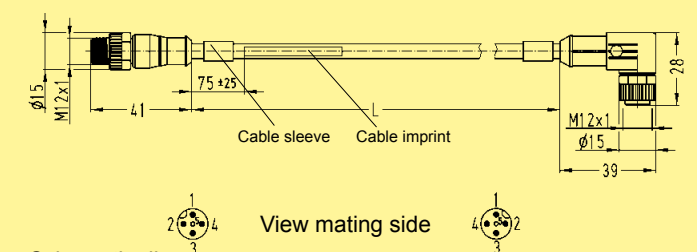
Schematic diagram



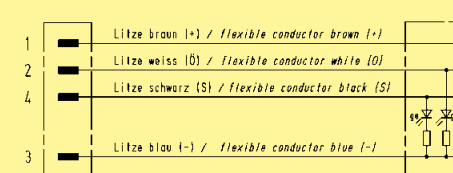
M12 Circular connectors Female angled, with LED, Male straight

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



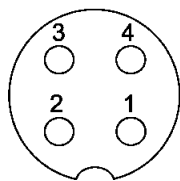
Schematic diagram



M12 System cables, A-coded



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

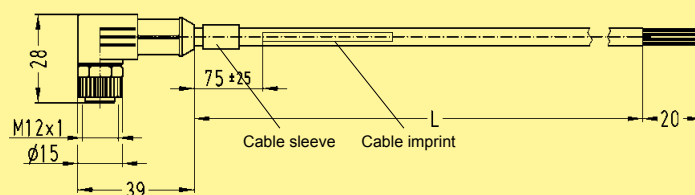
Dimensions in mm

M12 Circular connectors

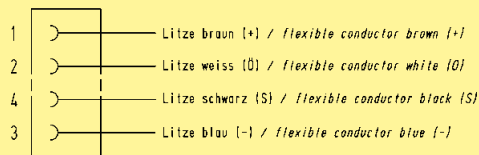
Female angled
pre-assembled on one end

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



Schematic diagram



View mating
side

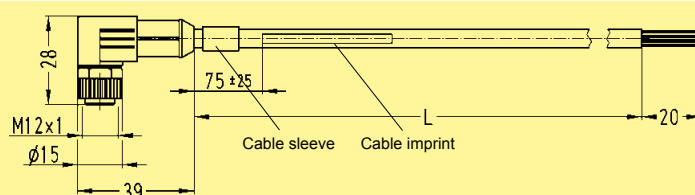


M12 Circular connectors

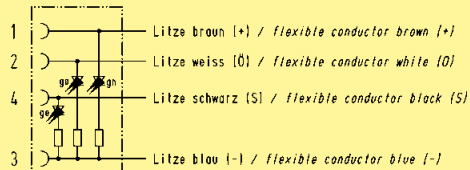
Female angled, with LED
pre-assembled on one end

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



Schematic diagram



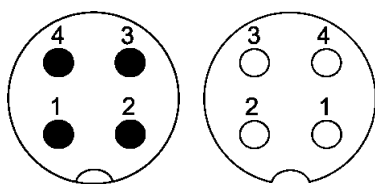
View mating
side



M12 System cables, A-coded



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

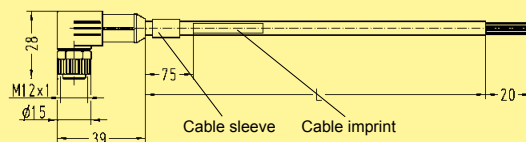
Dimensions in mm

HARAX® M12 Cable set without LED

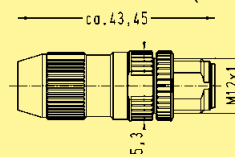
Delivery range: M12 connector with individually adaptable cable and HARAX® M12-S

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-S (21 03 111 1405)

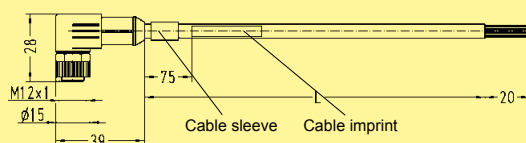


HARAX® M12 Cable set with LED

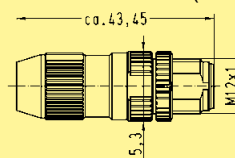
Delivery range: M12 connector with individually adaptable cable and HARAX® M12-S

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-S (21 03 111 1405)

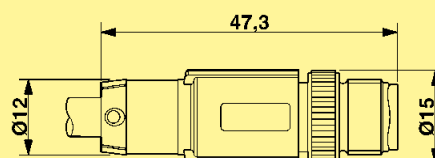


1 x M12 Circular connectors, straight

pre-assembled on one end,
8 poles

Length: 1.0 m
3.0 m
5.0 m

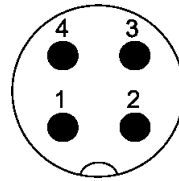
21 03 514 1801
21 03 514 1803
21 03 514 1805



M12 Panel feed-through HARAX® A-coded



Mating face

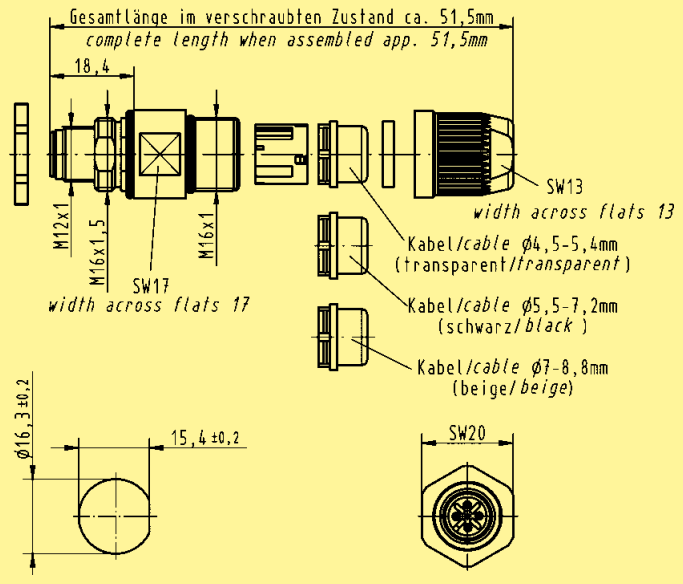


A-coding
Mating face
acc. to IEC 61076-2-101



Applications / Advantages

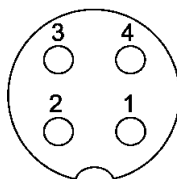
- Actor and sensor applications
- For panel feed-through or PCB, straight version in IP20 or IP67, with or without assembled pigtail
- Available with crimp resp. HARAX® rapid termination
- Quick and easy assembly

Identification	Part No.	Drawing	Dimensions in mm
HARAX® Panel feed-through  Male 4 poles, A-coding 0.14 - 0.34 mm² / AWG 26 - 22 Panel thickness min. 2.5 mm max. 4.5 mm	21 03 321 1425	 Gesamtlänge im verschraubten Zustand ca. 51,5mm complete length when assembled app. 51,5mm 18,4 M12x1 M16x1,5 SW17 M16x1 width across flats 17 SW13 width across flats 13 Kabel/cable ϕ4,5-5,4mm (transparent/transparent) Kabel/cable ϕ5,5-7,2mm (schwarz/black) Kabel/cable ϕ7-8,8mm (beige/beige) ϕ16,3 $\pm$0,2 15,4 $\pm$0,2 SW20	

M12 Panel feed-through HARAX® A-coded



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

Dimensions in mm

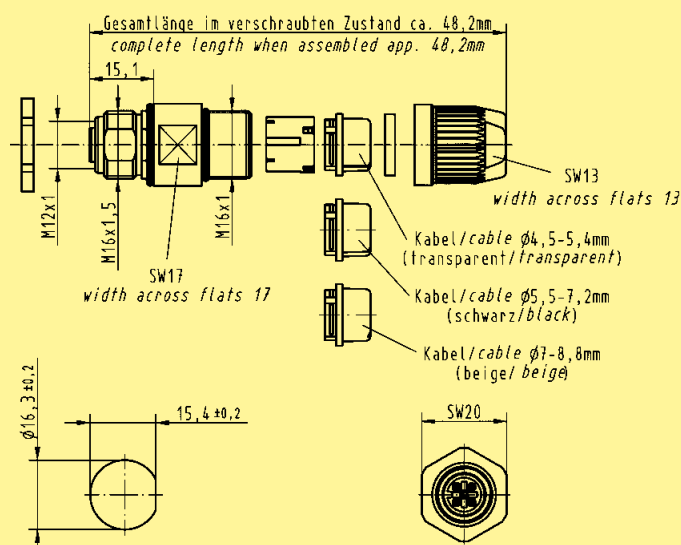
HARAX® Panel feed-through



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

Panel thickness
min. 2.5 mm
max. 4.5 mm

21 03 321 2425

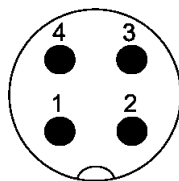


03

M12 Panel feed-through Crimp A-coded



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



03

Identification

Part No.

Drawing

Dimensions in mm

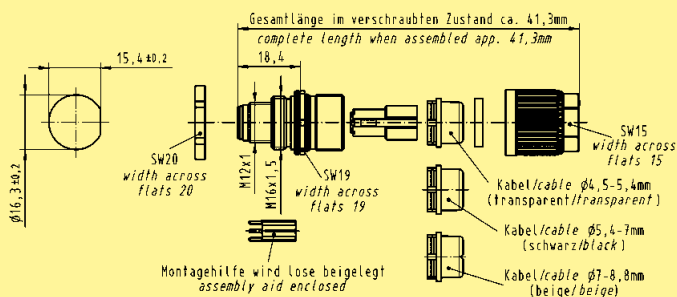
M12 Panel feed-through Crimp



Male
4 poles, A-coding

Panel thickness
min. 2.5 mm
max. 4.5 mm

21 03 822 1425



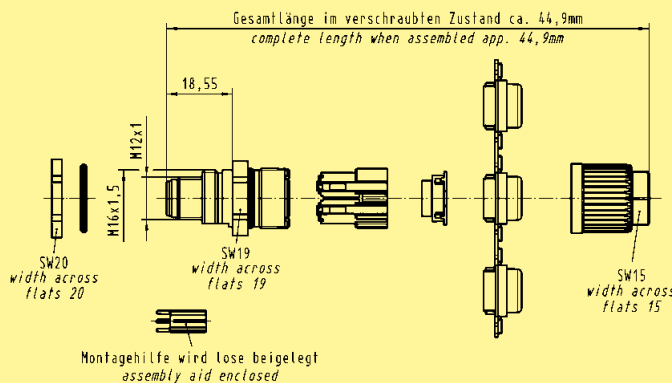
M12 Panel feed-through Crimp



Male
5 poles, A-coding

Panel thickness
min. 2.5 mm
max. 4.5 mm

21 03 822 1525*



03
28

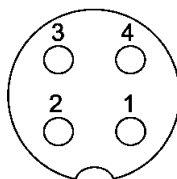
Further information and data sheets see www.HARTING.com

* UL approval is in preparation

M12 Panel feed-through Crimp A-coded



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

Dimensions in mm

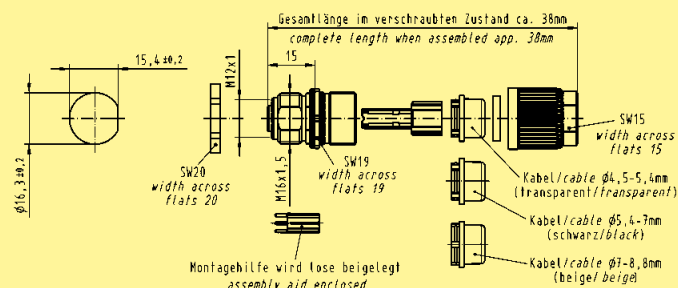
M12 Panel feed-through Crimp



Female
4 poles, A-coding

Panel thickness
min. 2.5 mm
max. 4.5 mm

21 03 822 2425



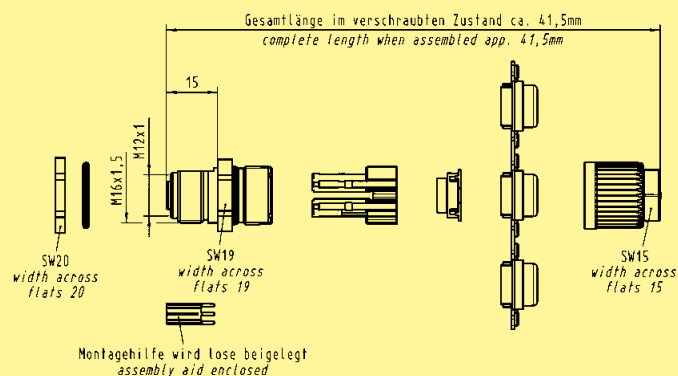
M12 Panel feed-through Crimp



Female
5 poles, A-coding

Panel thickness
min. 2.5 mm
max. 4.5 mm

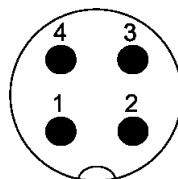
21 03 822 2525*



M12 Panel feed-through A-coded



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



03

Identification

Part No.

Drawing

Dimensions in mm

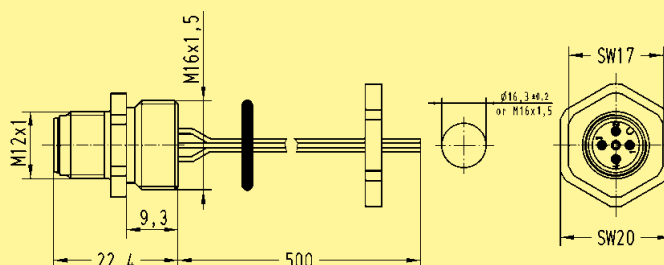
M12 Panel feed-through



Male
A-coding,
50 cm conductors, 0.5 mm², 4 poles

Panel thickness
min. 2.0 mm
max. 5.0 mm

21 03 311 1402



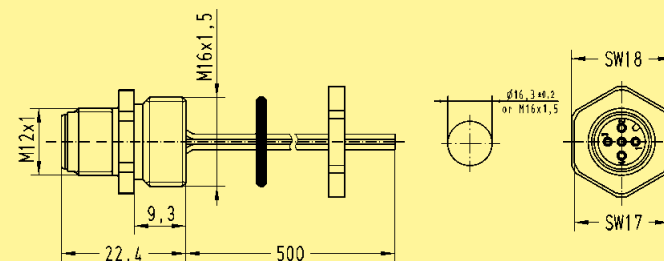
M12 Panel feed-through



Male
A-coding,
50 cm conductors, 0.5 mm², 5 poles

Panel thickness
min. 2.0 mm
max. 5.0 mm

21 03 311 1501

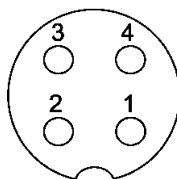


03
30

M12 Panel feed-through A-coded



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

Dimensions in mm

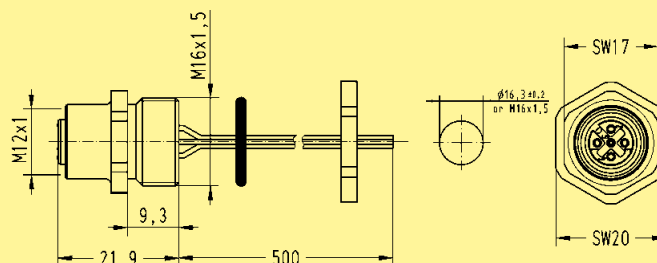
M12 Panel feed-through



Female
A-coding,
50 cm conductors, 0.5 mm², 4 poles

Panel thickness
min. 2.0 mm
max. 5.0 mm

21 03 311 2400



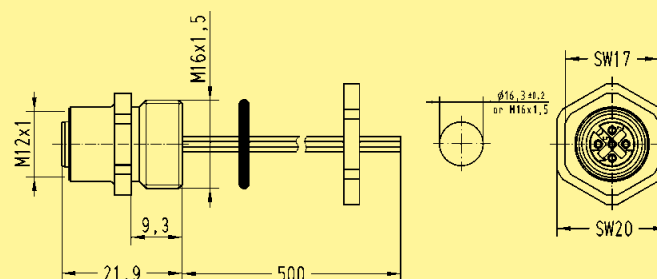
M12 Panel feed-through



Female
A-coding,
50 cm conductors, 0.5 mm², 5 poles

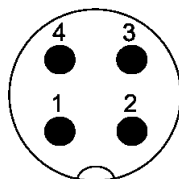
Panel thickness
min. 2.0 mm
max. 5.0 mm

21 03 311 2501





Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



Technical characteristics: M12 PCB adapter

Degree of protection	IP20, IP67 (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
----------------	----------	---------	------------------

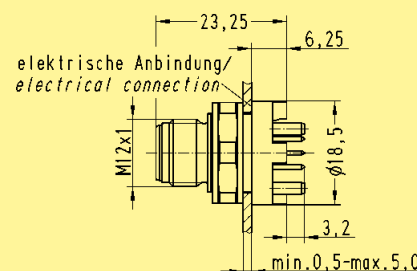
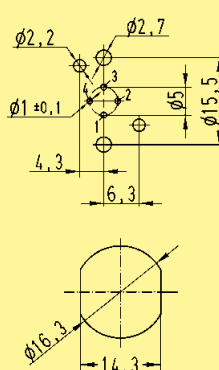
M12 PCB adapter

Male, A-coding, straight



4 poles, IP20
4 poles, IP67

21 03 321 1410
21 03 321 1420



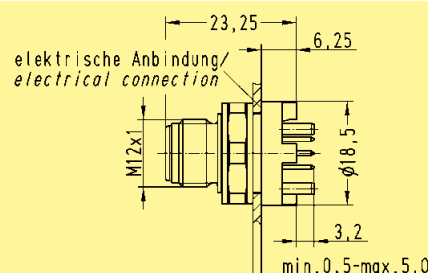
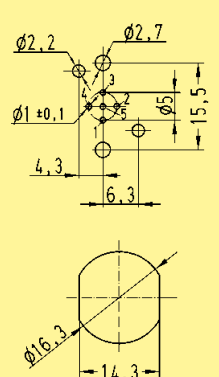
M12 PCB adapter

Male, A-coding, straight



5 poles, IP20
5 poles, IP67

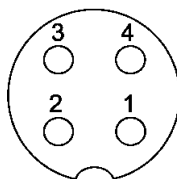
21 03 321 1510
21 03 321 1520



M12 PCB adapter A-coded



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

Dimensions in mm

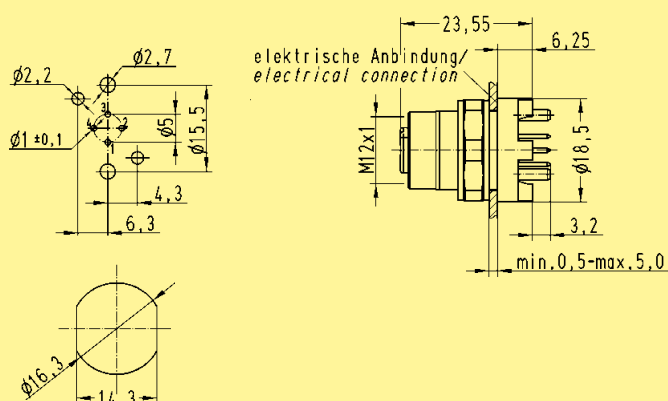
M12 PCB adapter

Female, A-coding,
straight



4 poles, IP20
4 poles, IP67

21 03 321 6410
21 03 321 6420*



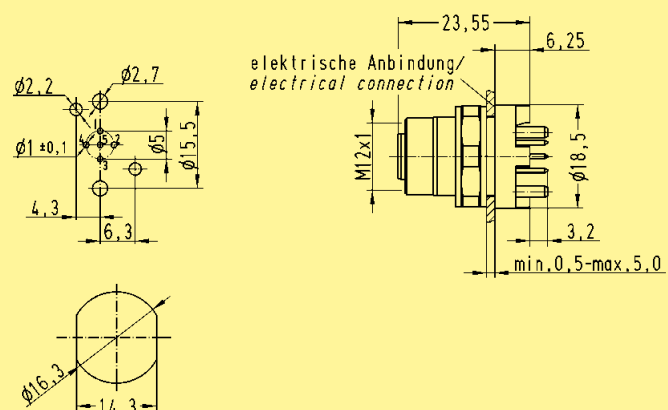
M12 PCB adapter

Female, A-coding,
straight



5 poles, IP20
5 poles, IP67

21 03 321 6510
21 03 321 6520



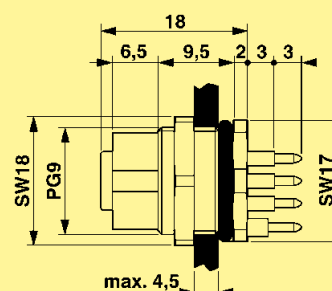
M12 PCB adapter

Female, A-coding,
straight



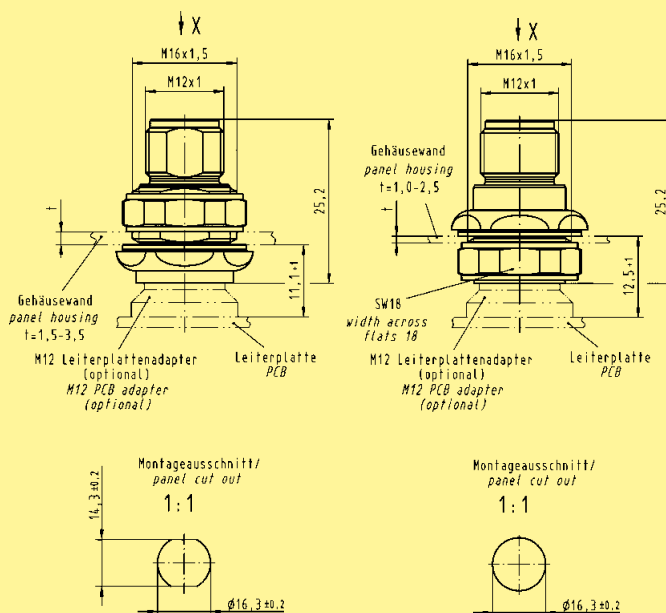
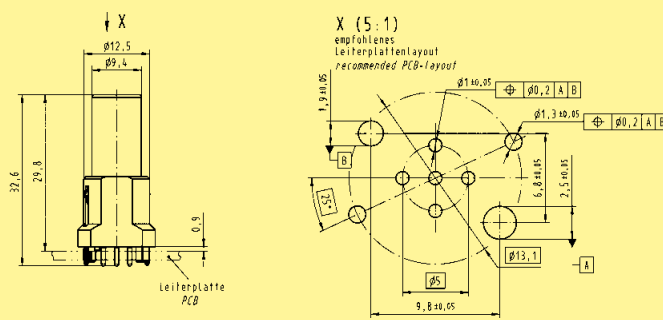
8 poles, IP67

21 03 311 2801





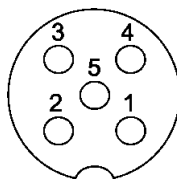
A-coding
Mating face
acc. to IEC 61076-2-101



M12 PCB adapter shielded A-coded



Mating face



A-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

Dimensions in mm

M12 PCB adapter, shielded

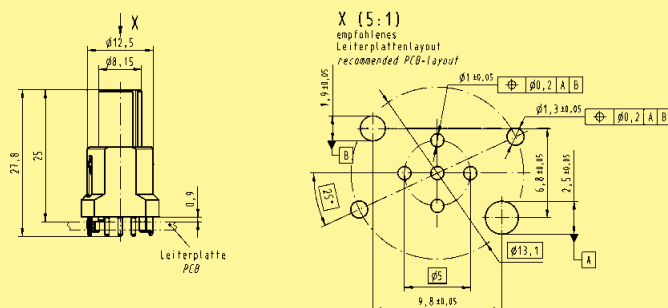


Female
5 poles, A-coding

8 poles, A-coding

21 03 321 2518*

21 03 321 2818*



Housing

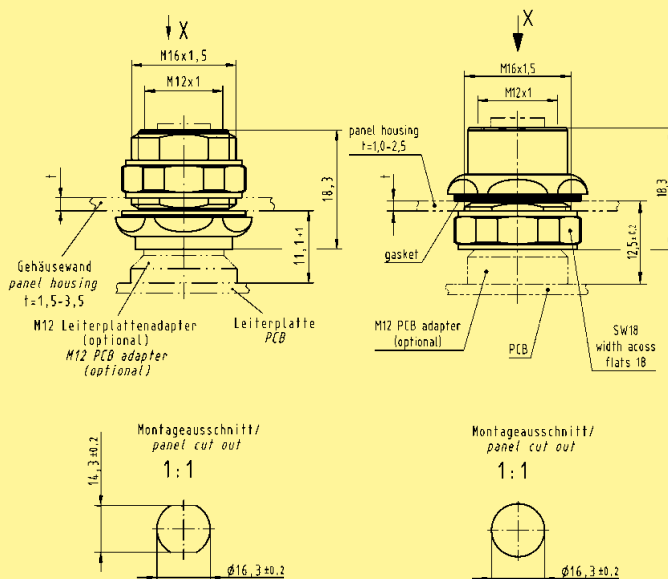


for rear mounting

for front mounting

21 03 301 2000

21 03 301 2001



Identification

Part No.

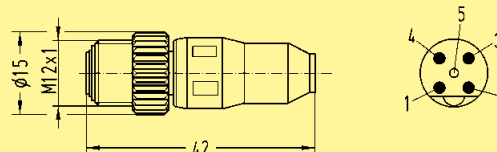
Drawing

M12-male
moving load

A-coding



21 03 030 1400



HARTING M12 T-Coupler

21 03 321 9400



Crimping tool
for M12 Crimp

09 99 000 0501



Accessories M12 Crimp

Locator

09 99 000 0531



D-Sub contacts

Part number	AWG	Tool settings
09 67 000 3x76	18	6
	20	6
	22	5
09 67 000 8x76	20, 22, 24	6
09 67 000 5x76	22, 24, 26	6

D-Sub single contacts
(500 mating cycles)

turned male contacts

AWG 22 - 18 / 0.33 - 0.82 mm²

AWG 24 - 20 / 0.25 - 0.52 mm²

AWG 26 - 22 / 0.13 - 0.33 mm²



09 67 000 3576

09 67 000 8576

09 67 000 5576

turned female contacts

AWG 22 - 18 / 0.33 - 0.82 mm²

AWG 24 - 20 / 0.25 - 0.52 mm²

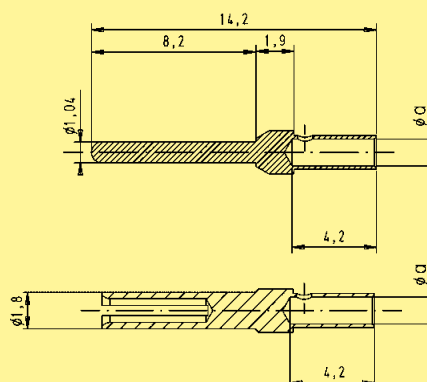
AWG 26 - 22 / 0.13 - 0.33 mm²



09 67 000 3476

09 67 000 8476

09 67 000 5476



	a
AWG 22 - 18	1.34
AWG 24 - 20	1.13
AWG 26 - 22	0.88

M12
dynamometric screwdriver

Tightening torque 0.6 Nm

for M12-S SW 13

09 99 000 0382

for M12 Slim design SW 15

09 99 000 0646

for M12-L SW 17

09 99 000 0384



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		
Set of seals 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 for IP65 / IP67 Seals material Viton Plastic cap for female	21 01 000 0003		
Accessories M12 Lock nut	21 01 000 0018		

Identification

Part No.

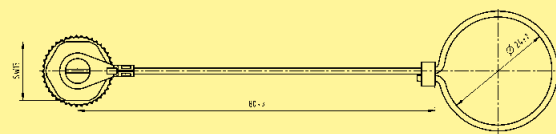
Drawing

Dimensions in mm

Cap metal M12

for IP65 / IP67
M12 metal cap for male side
with cord

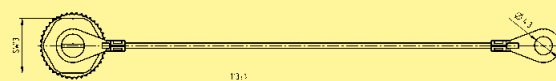
21 01 000 0033



Cap metal M12

for IP65 / IP67
M12 metal cap for male side
with cable clip

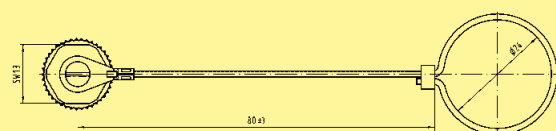
21 01 000 0038



Cap metal M12

for IP65 / IP67
M12 metal cap for female side
with cord

21 01 000 0030



Cap metal M12

for IP65 / IP67
M12 metal cap for female side
with cable clip

21 01 000 0031



Directory

Page

3.2 B-coded – Solutions for Profibus applications

o Technical characteristics	03.40
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• HARAX® M12 L shielded	03.42
• M12 Crimp	03.44
• System cables	03.46
■ Device connectors	
• Panel feed-through	03.50
• PCB adapter	03.56
o Accessories	03.60

M12 B-coding

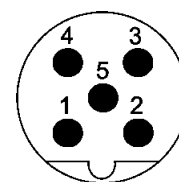


Specifications IEC 60 352-4

Approval 



Mating face



B-coding
Mating face
acc. to IEC 61076-2-101

Technical characteristics M12 – B-coding

Type M12 B-coded	<i>HARAX</i> ® M12 L shielded	M12 Crimp
------------------	----------------------------------	-----------

General data

Conductor cross section	0.25 - 0.34 mm ² AWG 24-22	0.13 - 0.75 mm ² AWG 26-18
Diameter of individual strands	≥ 0.1 mm	X
Conductor insulation material	PVC, Zell-PE	X
Conductor diameter	2 - 2.6 mm	2.0 - 2.3 mm
Cable diameter	7.0 - 8.8 mm	4 poles: 4.5 - 8.8 mm 5 poles: 4.5 - 8.8 mm
Temperature range	-40 °C ... +85 °C	-40 °C ... +85 °C
Temperature during connection	-5 °C ... +50 °C	-5 °C ... +50 °C
Degree of protection	IP65 / IP67	IP67
Mating cycles	100	500
Tightening torque connector / hexagonal wrench	0.6 Nm / SW 17	0.5 Nm / SW 17

Electrical characteristics

Rated current	4 A	4 A
Rated voltage	32 V	250 V
Rated impulse voltage	1.5 kV	1.5 kV
Contact resistance	10 mΩ	10 mΩ
Insulation resistance	10 ⁸ Ω	10 ⁸ Ω
Pollution degree	3	3
Overvoltage category	3	3
Isolation group	1	1

Materials

Contact material	Brass	Brass
Contact plating	Gold	Gold
Contact carrier material	PA unreinforced	PA
Housing material	PA unreinforced	PA

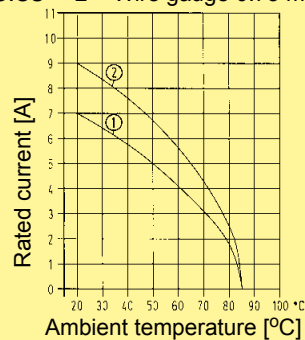
Technical characteristics M12 – B-coding

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.

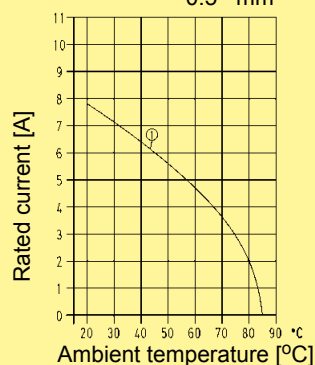
Control and test procedures according to DIN IEC 60 512-5.

M12-L
3 poles, 4 poles

1 = Wire gauge 0.34 mm²
2 = Wire gauge 0.75 mm²

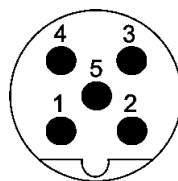


M12, Crimp 1 = Wire gauge 0.34 mm² /
0.5 mm²





Mating face



B-coding
Mating face
acc. to IEC 61076-2-101



Applications / Advantages

- B-coding for field bus systems e.g. Profibus, DeviceNet or CANopen
- Available with crimp resp. HARAX® rapid termination, or as overmoulded system cable in various lengths
- Shielding by the hood
- Easy handling, quick assembly

Identification

Part No.

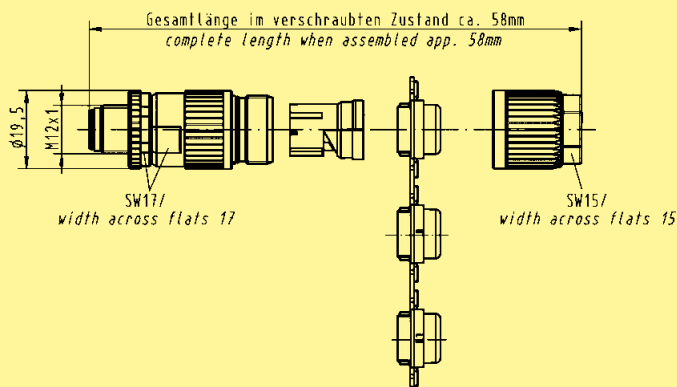
Drawing

Dimensions in mm

HARAX® M12-L, shielded



21 03 241 1301

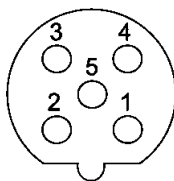


Male
2 poles, B-coding
0.25 - 0.34 mm² / AWG 24 - 22

M12 HARAX® B-coded



Mating face



B-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

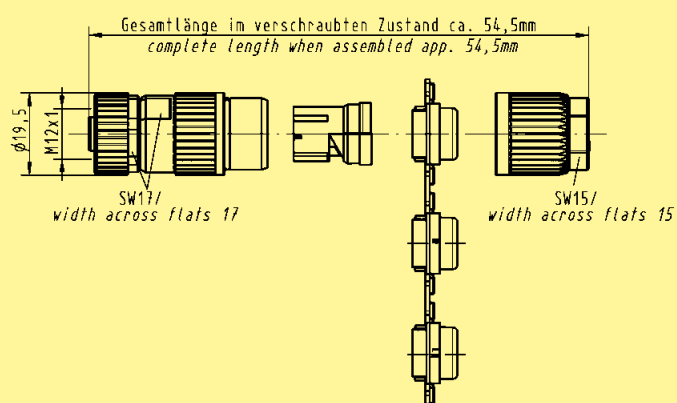
Dimensions in mm

HARAX® M12-L, shielded



21 03 241 2301

Female
2 poles, B-coding
0.25 - 0.34 mm² / AWG 24 - 22

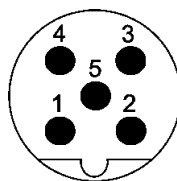


03

M12 Crimp B-coded



Mating face



B-coding
Mating face
acc. to IEC 61076-2-101



03

Identification

Part No.

Drawing

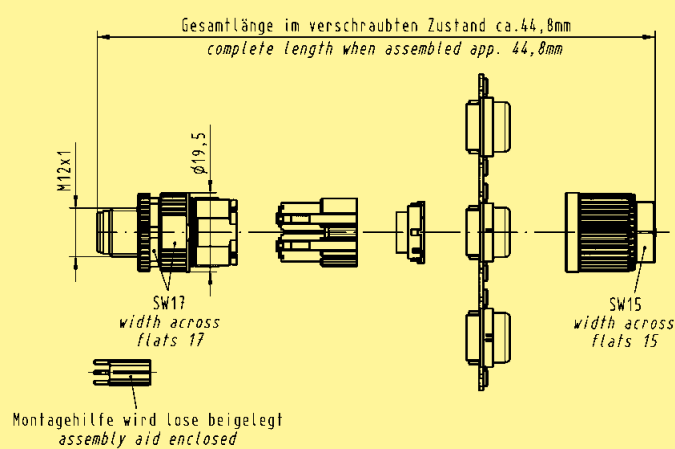
Dimensions in mm

M12 Crimp



Male
5 poles, B-coding

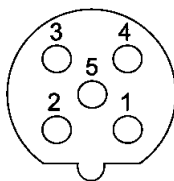
21 03 841 1505



M12 Crimp B-coded



Mating face



B-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

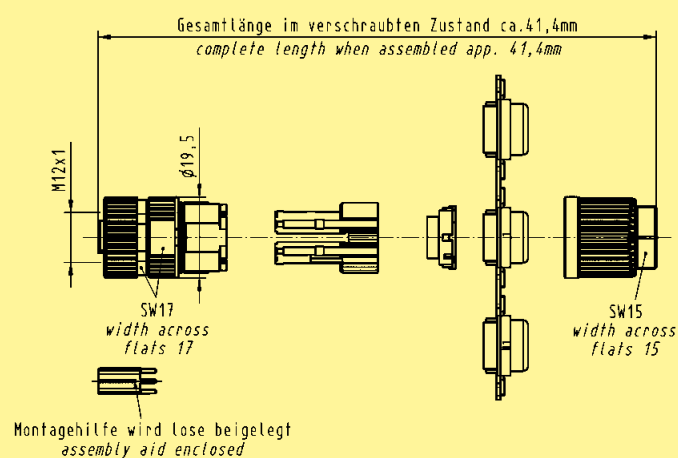
Dimensions in mm

M12 Crimp



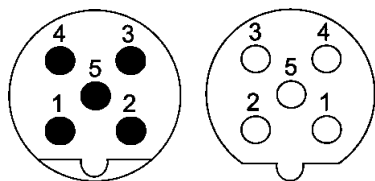
Female
5 poles, B-coding

21 03 841 2505

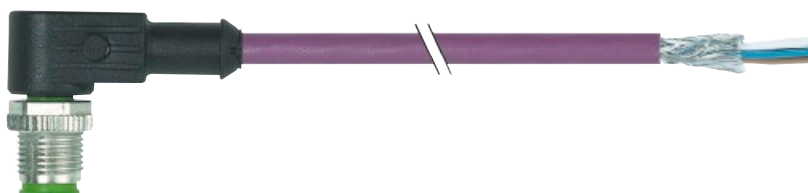


03

Mating face



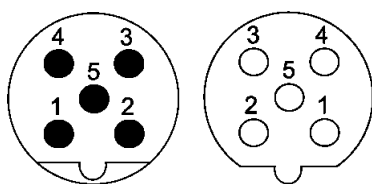
B-coding
Mating face
acc. to IEC 61076-2-101



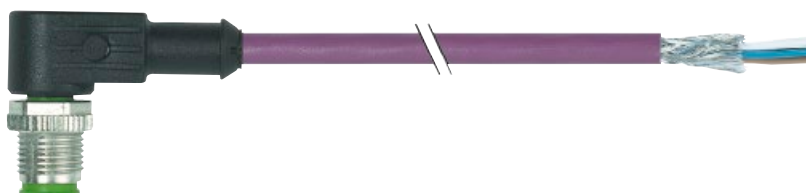
Technical characteristics

Rated voltage	max. 125 V AC/ DC
Rated current / contact	max. 4 A
Locking	Screw locking M12 x 1 mm, self securing
Recommended tightening torque	0.6 Nm
Temperature range (male) °C	-25 °C ... +85 °C, dependant on connected conductor
Degree of protection	IP67
Number of wires / wire gauge	1 x 2 x diameter 0.64 mm
Conductor insulation	PUR (rd, gn)
Arrangement of insulated strands	19 x 0.13 mm
Sheath	PUR (UL/CSA)
Outer diameter	appr. 7.8 mm
Bending radius bewegt	15 x outer diameter
Temperature range °C (applicate with fixed cable)	-30 °C ... + 80 °C

Mating face

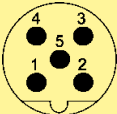
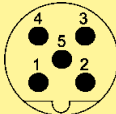
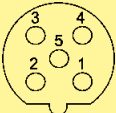
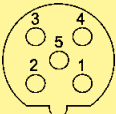


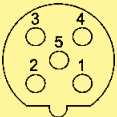
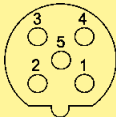
B-coding
Mating face
acc. to IEC 61076-2-101



Overview system cables M12

03

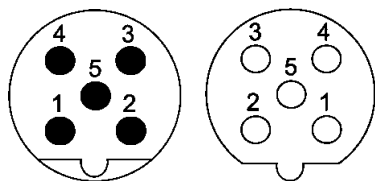
Number of contacts			Male M12 B-coding			
			straight		angled	
						
			Cable material: PUR		Cable material: PUR	
Female M12	straight		0.3 m	21 03 449 4301	xxx	
			0.6 m	21 03 449 4302	xxx	
			1.0 m	21 03 449 4303	xxx	
			1.5 m	21 03 449 4304	xxx	
			2.0 m	21 03 449 4305	xxx	
	angled		xxx		0.3 m	
			xxx		0.6 m	
			xxx		1.0 m	
			xxx		1.5 m	
			xxx		2.0 m	
Open end		1.5 m	21 03 549 1301	1.5 m	21 03 549 3301	
		3.0 m	21 03 549 1302	3.0 m	21 03 549 3302	
		5.0 m	21 03 549 1303	5.0 m	21 03 549 3303	
		7.5 m	21 03 549 1304	7.5 m	21 03 549 3304	
		10.0 m	21 03 549 1305	10.0 m	21 03 549 3305	

Number of contacts			Female M12 B-coding			
			straight		angled	
						
			Cable material: PUR		Cable material: PUR	
Open end		1.5 m	21 03 549 2301	1.5 m	21 03 549 4301	
		3.0 m	21 03 549 2302	3.0 m	21 03 549 4302	
		5.0 m	21 03 549 2303	5.0 m	21 03 549 4303	
		7.5 m	21 03 549 2304	7.5 m	21 03 549 4304	
		10.0 m	21 03 549 2305	10.0 m	21 03 549 4305	

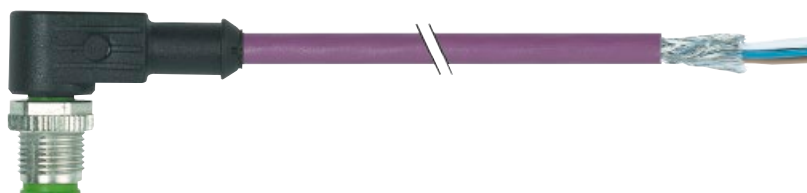
M12 System cables, B-coding



Mating face



B-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Darstellung

M12 Circular connectors, Male, straight

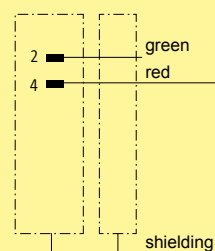
pre-assembled on one end,
useable as trailing cable

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



Schematic diagram



M12 Circular connectors, Male, angled

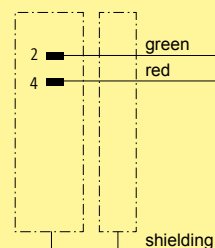
pre-assembled on one end,
useable as trailing cable

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



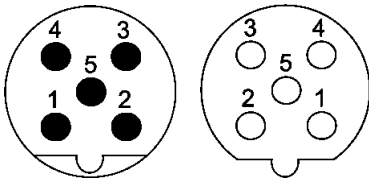
Schematic diagram



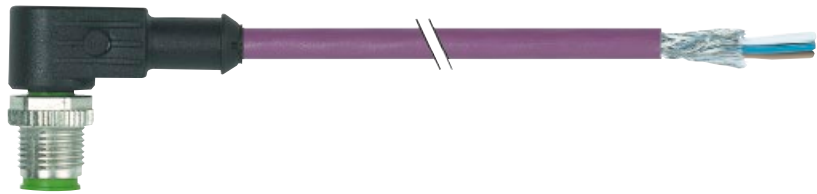
M12 System cables, B-coding



Mating face



B-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

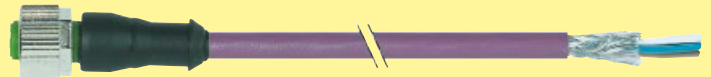
Darstellung

M12 Circular connectors, Female, straight

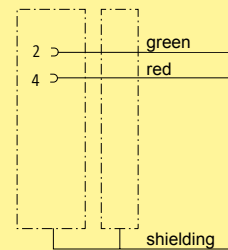
pre-assembled on one end,
useable as trailing cable

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



M12 Circular connectors, Female, angled

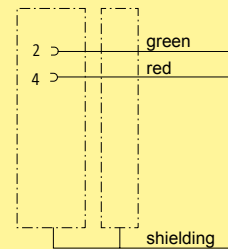
pre-assembled on one end,
useable as trailing cable

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



M12 Circular connectors, Male, straight Female, straight

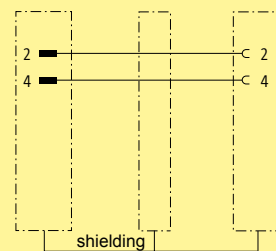
pre-assembled on one end,
useable as trailing cable

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



M12 Circular connectors, Male, angled Female, angled

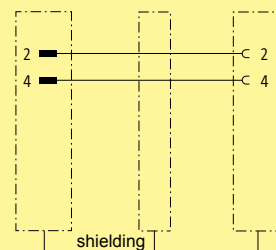
pre-assembled on one end,
useable as trailing cable

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

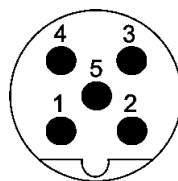


Schematic diagram





Mating face



B-coding
Mating face
acc. to IEC 61076-2-101



Applications / Advantages

- B-coding for field bus systems e.g. Profibus, DeviceNet or CANopen
- For panel feed-through or PCB, straight version in IP20 or IP67, with or without assembled pigtail
- Available with crimp resp. HARAX® rapid termination
- Quick and easy assembly

Identification

Part No.

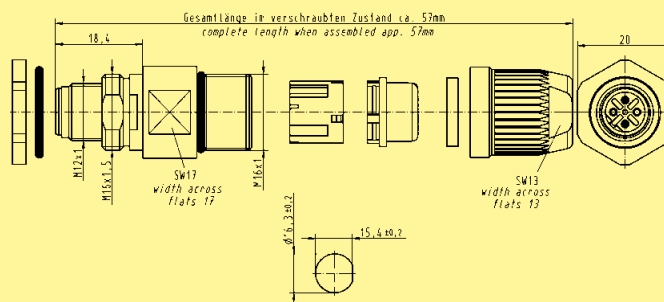
Drawing

Dimensions in mm

HARAX® Panel feed-through



21 03 341 1425



Male
2 poles and shielding, B-coding
0.25 - 0.34 mm² / AWG 24 - 22

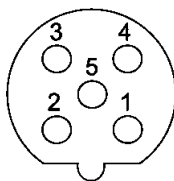
Cable diameter: 7 - 8.8 mm

Panel thickness
min. 2.5 mm
max. 4.5 mm

M12 Panel feed-through HARAX® B-coded



Mating face



B-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

Dimensions in mm

HARAX® Panel feed-through

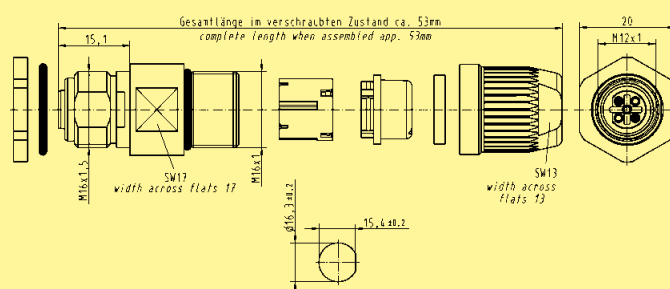


21 03 341 2425

Female
2 poles and shielding, B-coding
0.25 - 0.34 mm² / AWG 24 - 22

Cable diameter: 7 - 8.8 mm

Panel thickness
min. 2.5 mm
max. 4.5 mm

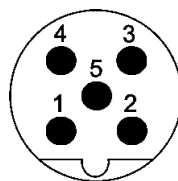


03

M12 Panel feed-through Crimp B-coded



Mating face



B-coding
Mating face
acc. to IEC 61076-2-101



03

Identification

Part No.

Drawing

Dimensions in mm

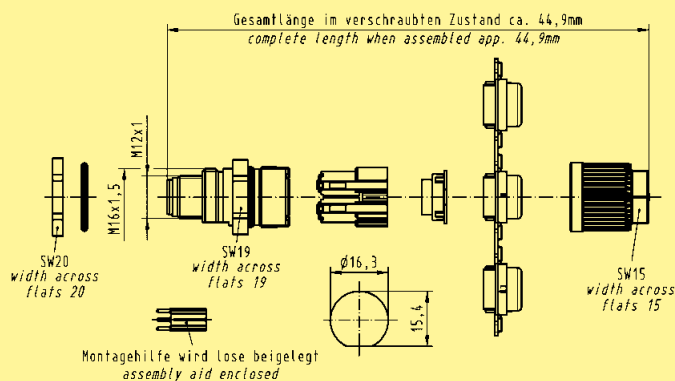
M12 Panel feed-through
Crimp



Male
5 poles, B-coding

Panel thickness
min. 2.5 mm
max. 4.5 mm

21 03 841 1525

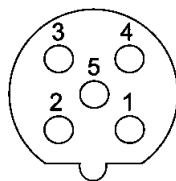


03
52

M12 Panel feed-through Crimp B-coded



Mating face



B-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

Dimensions in mm

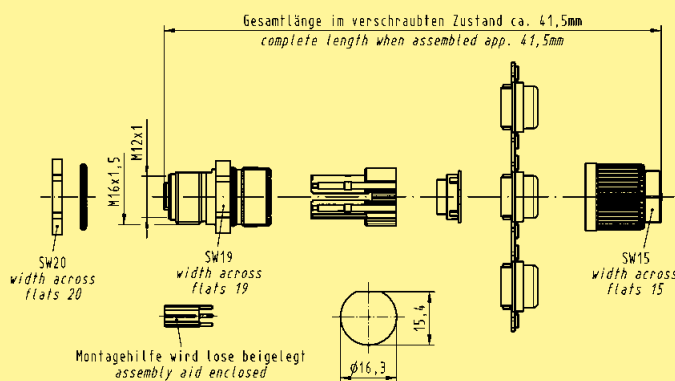
M12 Panel feed-through
Crimp



Female
5 poles, B-coding

Panel thickness
min. 2.5 mm
max. 4.5 mm

21 03 841 2525



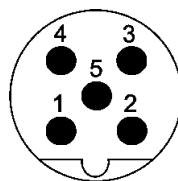
03

03
53

M12 Panel feed-through B-coded



Mating face



B-coding
Mating face
acc. to IEC 61076-2-101



03

Identification

Part No.

Drawing

Dimensions in mm

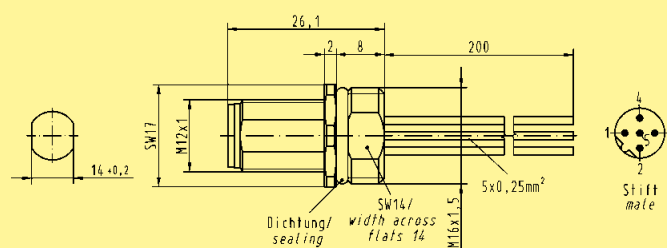
M12 Panel feed-through



Male
B-coding, 20 cm conductors,
0.25 mm²

Panel thickness
min. 2.0 mm
max. 5.0 mm

21 03 339 1301



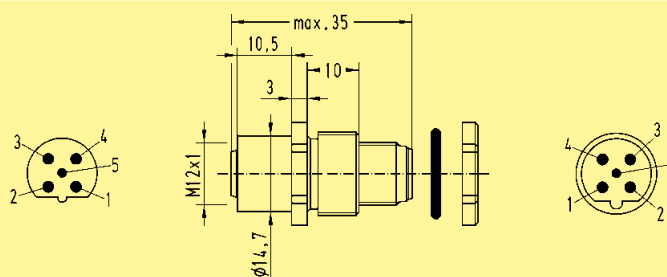
M12-male/female
panel feed-through

B-coding



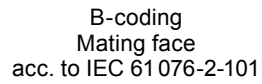
Panel thickness
min. 2.0 mm
max. 5.0 mm

21 03 330 1300



Rated voltage 24 V AC/DC
Thread M16 x 1.5

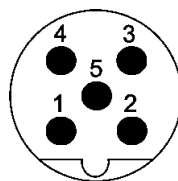
03
54

[illegible]

M12 PCB adapter B-coded



Mating face



B-coding
Mating face
acc. to IEC 61076-2-101



Technical characteristics: M12 PCB adapter

Degree of protection	IP20, IP67 (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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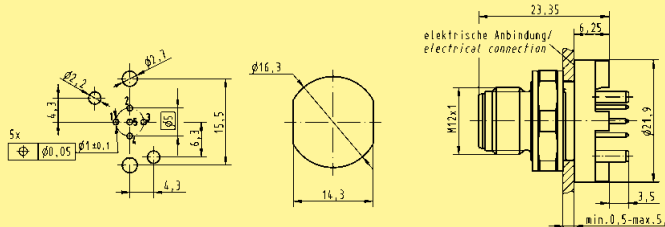
M12 PCB adapter

Male, B-coding,
straight



5 poles, IP20

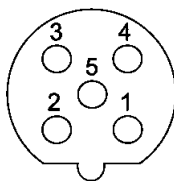
21 03 341 1505



M12 PCB adapter B-coded



Mating face



B-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

Dimensions in mm

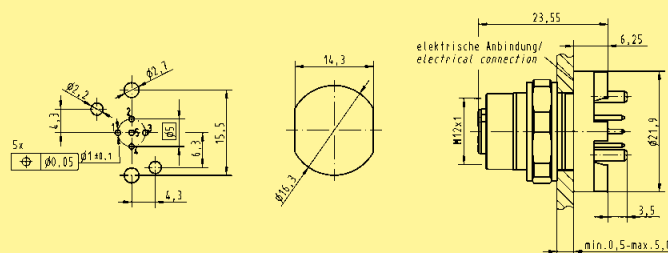
M12 PCB adapter

Female, B-coding,
straight



5 poles, IP20

21 03 341 2505

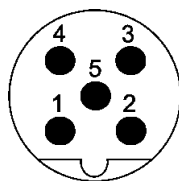


03

M12 PCB adapter shielded B-coded



Mating face



B-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

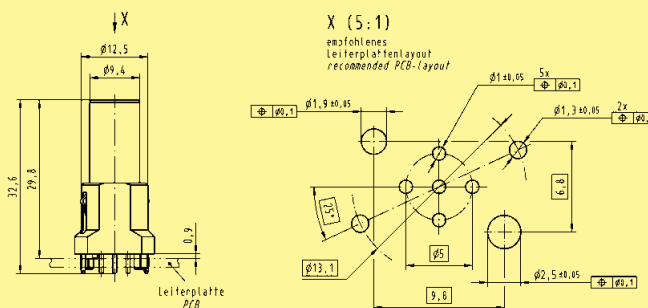
Dimensions in mm

M12 PCB adapter, shielded



Male
5 poles, B-coding

21 03 341 1518*



Housing

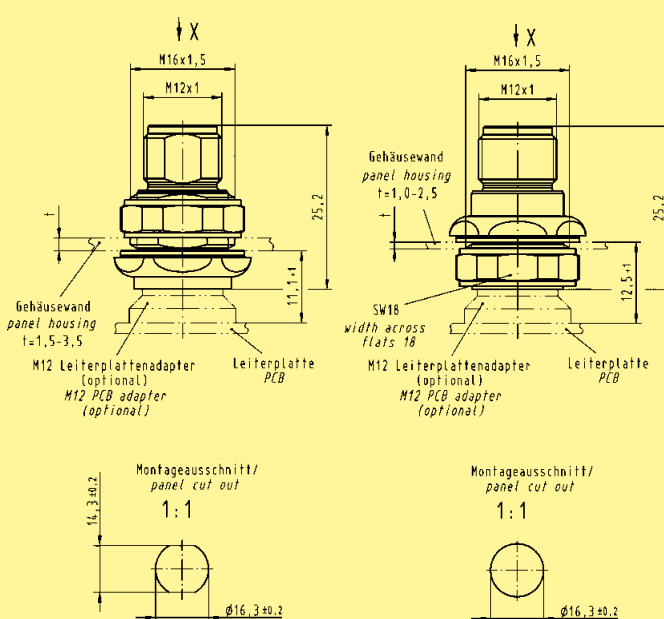


for rear mounting

21 03 301 1000

for front mounting

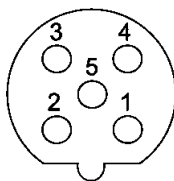
21 03 301 1001



M12 PCB adapter shielded B-coded

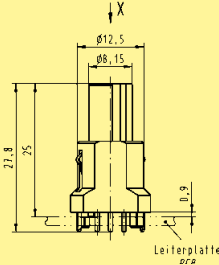
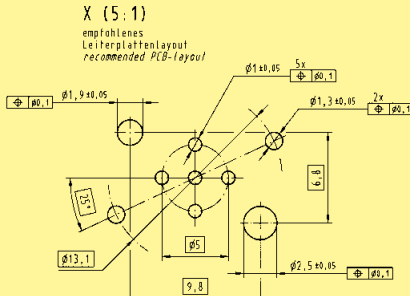
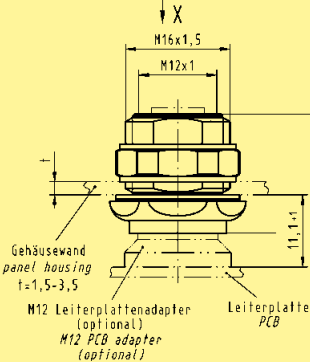
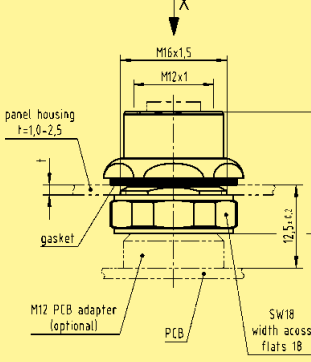


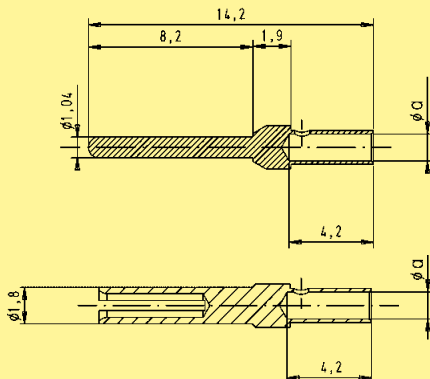
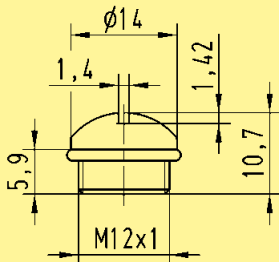
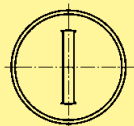
Mating face



B-coding
Mating face
acc. to IEC 61 076-2-101



Identification	Part No.	Drawing	Dimensions in mm
M12 PCB adapter, shielded  Female 5 poles, B-coding	21 03 341 2518*	 	
Housing   for rear mounting for front mounting	21 03 301 2000 21 03 301 2001	 	

Identification	Part No.	Drawing																
Crimping tool for M12 Crimp	09 99 000 0501																	
Accessories M12 Crimp																		
Locator	09 99 000 0531	 <table><caption>D-Sub contacts</caption><thead><tr><th>Part number</th><th>AWG</th><th>Tool settings</th></tr></thead><tbody><tr><td rowspan="3">09 67 000 3x76</td><td>18</td><td>6</td></tr><tr><td>20</td><td>6</td></tr><tr><td>22</td><td>5</td></tr><tr><td>09 67 000 8x76</td><td>20, 22, 24</td><td>6</td></tr><tr><td>09 67 000 5x76</td><td>22, 24, 26</td><td>6</td></tr></tbody></table>	Part number	AWG	Tool settings	09 67 000 3x76	18	6	20	6	22	5	09 67 000 8x76	20, 22, 24	6	09 67 000 5x76	22, 24, 26	6
Part number	AWG	Tool settings																
09 67 000 3x76	18	6																
	20	6																
	22	5																
09 67 000 8x76	20, 22, 24	6																
09 67 000 5x76	22, 24, 26	6																
D-Sub single contacts (500 mating cycles)																		
turned male contacts AWG 22-18 / 0.33-0.82 mm ² AWG 24-20 / 0.25-0.52 mm ² AWG 26-22 / 0.13-0.33 mm ²	09 67 000 3576 09 67 000 8576 09 67 000 5576	 <table><thead><tr><th></th><th>a</th></tr></thead><tbody><tr><td>AWG 22-18</td><td>1.34</td></tr><tr><td>AWG 24-20</td><td>1.13</td></tr><tr><td>AWG 26-22</td><td>0.88</td></tr></tbody></table>		a	AWG 22-18	1.34	AWG 24-20	1.13	AWG 26-22	0.88								
	a																	
AWG 22-18	1.34																	
AWG 24-20	1.13																	
AWG 26-22	0.88																	
turned female contacts AWG 22-18 / 0.33-0.82 mm ² AWG 24-20 / 0.25-0.52 mm ² AWG 26-22 / 0.13-0.33 mm ²	09 67 000 3476 09 67 000 8476 09 67 000 5476																	
M12 dynamometric screwdriver Tightening torque 0.6 Nm																		
for M12-S SW 13	09 99 000 0382																	
for M12-L SW 17	09 99 000 0384																	
Cap M12 for IP65 / IP67 Seals material Viton Plastic cap for female	21 01 000 0003	 																

Identification	Part No.	Drawing	Dimensions in mm
Cap metal M12 for IP65 / IP67 M12 metal cap for male side with cord	21 01 000 0033		03
Cap metal M12 for IP65 / IP67 M12 metal cap for male side with cable clip	21 01 000 0038		
Cap metal M12 for IP65 / IP67 M12 metal cap for female side with cord	21 01 000 0030		
Cap metal M12 for IP65 / IP67 M12 metal cap for female side with cable clip	21 01 000 0031		

Identification

Part No.

Drawing

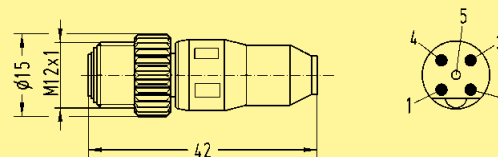
Dimensions in mm

M12-male
moving load

B-coding



21 03 030 1300



HARTING M12 T-Coupler

21 03 341 6401



Seal M12-L unshielded

for 4.7 - 6 mm cable ϕ
for 6 - 8 mm cable ϕ



21 01 010 2015
21 01 010 2007

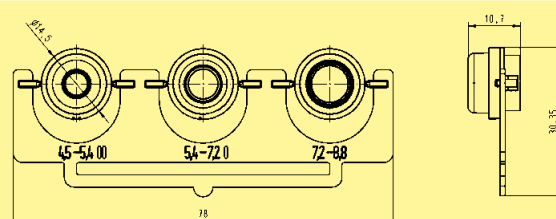


Set of seals M12-L shielded

for 4.5 - 5.4 mm cable ϕ
for 5.4 - 7.2 mm cable ϕ
for 7.2 - 8.8 mm cable ϕ



21 01 010 2017



Accessories M12

Lock nut

21 01 000 0018



Directory

Page

3.3 D-coded – Solutions for Ethernet applications

o Technical characteristics	03.64
■ Cable connectors	
• HARAX® M12 L shielded	03.66
• M12 Crimp	03.68
• M12 preLink®	03.71
• System cables	03.73
■ Device connectors	
• Panel feed-through	03.78
• PCB adapter	03.86
o Accessories	03.91

M12 D-coding

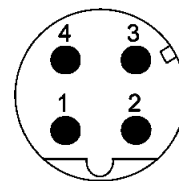


Specifications IEC 60 352-4

Approval 



Mating face



D-coding
Mating face
acc. to IEC 61076-2-101

Technical characteristics M12 – D-coding

Type M12 D-coded	<i>HARAX</i> ® M12 L shielded	M12 Crimp	M12 preLink®
------------------	-------------------------------	-----------	--------------

General data

Conductor cross section	0.14 - 0.34 mm ² AWG 26-22 0.34 - 0.5 mm ² AWG 22-20	0.13 - 0.75 mm ² AWG 26-18	0.10 - 0.34 mm ² AWG 27-22
Diameter of individual strands	≥ 0.1 mm	X	≥ 0.1 mm
Conductor insulation material	PVC/PE	X	PVC/PE
Conductor diameter	1.2 - 2.0 mm	2.0 - 2.3 mm	0.8 - 1.6 mm
Cable diameter	4.5 - 8.8 mm	4 poles: 4.5 - 8.8 mm 5 poles: 4.5 - 8.8 mm	6.3 - 6.7 mm
Temperature range	-40 °C ... +85 °C	-40 °C ... +85 °C	-40 °C ... +85 °C
Temperature during connection	-5 °C ... +50 °C	-5 °C ... +50 °C	–
Degree of protection	IP65 / IP67	IP67	IP65
Mating cycles	100	500	250
Tightening torque connector / Hexagonal wrench	0.6 Nm / SW 17	0.6 Nm / SW 17	0.6 Nm / SW 17

Electrical characteristics

Rated current	4 A	4 A	1 A
Rated voltage	50 V	250 V	48 V
Rated impulse voltage	1.5 kV	1.5 kV	1.5 kV
Contact resistance	10 mΩ	10 mΩ	10 mΩ
Insulation resistance	10 ⁸ Ω	10 ⁸ Ω	10 ⁸ Ω
Pollution degree	3	3	3
Overvoltage category	3	3	3
Isolation group	1	1	–
Transmission performance (Category)	Cat. 5	Cat. 5	Cat. 5

Materials

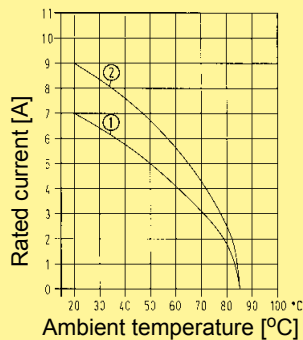
Contact material	Brass	Brass	Brass
Contact plating	Gold	Gold	Gold
Contact carrier material	PA unreinforced	PA	–
Housing material	PA unreinforced	PA	Zinc die-cast

Technical characteristics M12 – D-coding

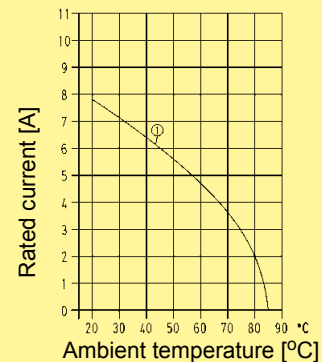
Current carrying capacity The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals. The current capacity-curve is valid for continuous, not interrupted current-loaded contacts of connectors when simultaneous power on all contacts is given,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

Control and test procedures according to DIN IEC 60 512-5.

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

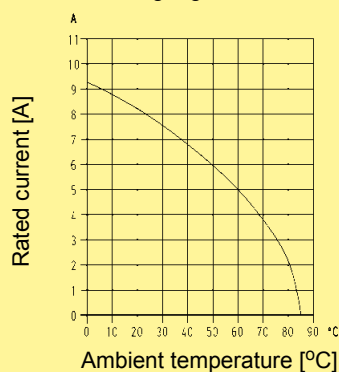


M12, Crimp 1 = Wire gauge 0.34 mm² / 0.5 mm²

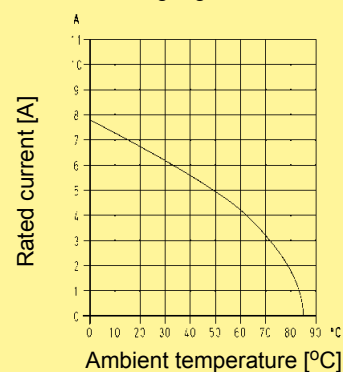


Technical characteristics M12 – D-coding, PCB adapter

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

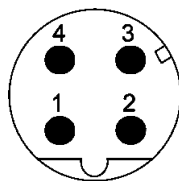


M12, D-coding, angled, female, 4 poles
Wire gauge AWG 22





Mating face



D-coding
Mating face
acc. to IEC 61076-2-101



Applications / Advantages

- D-coding for Ethernet/Profinet applications
- Robust design
- 360° shielding termination
- Transmission performance Cat. 5

Identification

Part No.

Drawing

Dimensions in mm

HARAX® M12-L, shielded

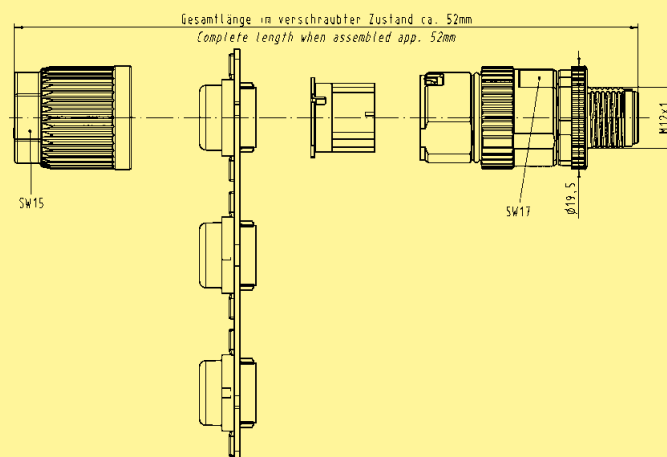


Male
4 poles, D-coding
0.14 - 0.34 mm², AWG 26 - 22

21 03 281 1405

Male
4 poles, D-coding
0.34 - 0.5 mm², AWG 22 - 20

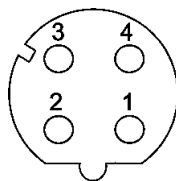
21 03 282 1405



M12 HARAX® D-coded



Mating face



D-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

Dimensions in mm

HARAX® M12-L, shielded

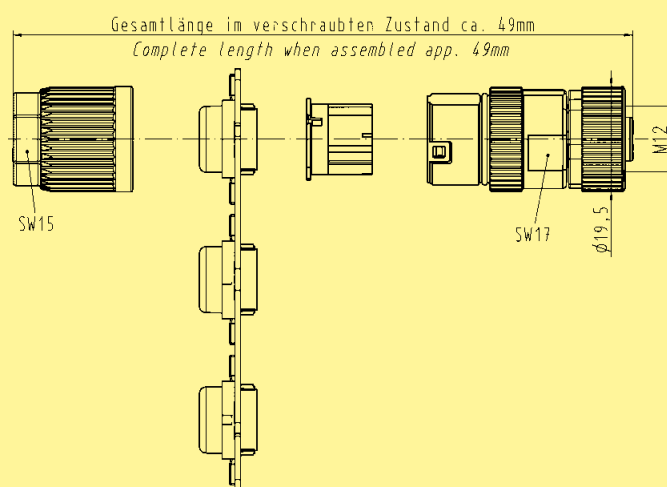


Female
4 poles, D-coding
0.14 - 0.34 mm², AWG 26 - 22

21 03 281 2405

Female
4 poles, D-coding
0.34 - 0.5 mm², AWG 22 - 20

21 03 282 2405

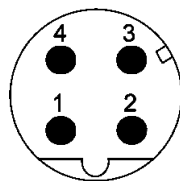


03

M12 Crimp D-coded



Mating face



D-coding
Mating face
acc. to IEC 61076-2-101



03

Identification

Part No.

Drawing

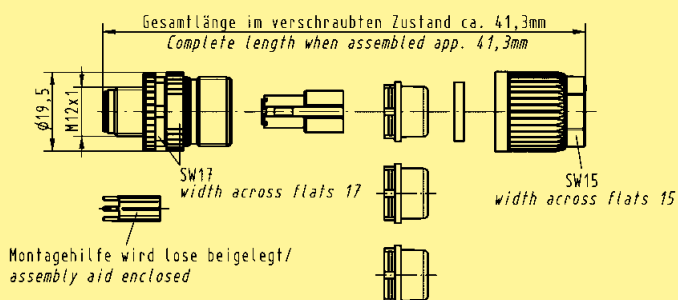
Dimensions in mm

M12 Crimp, shielded



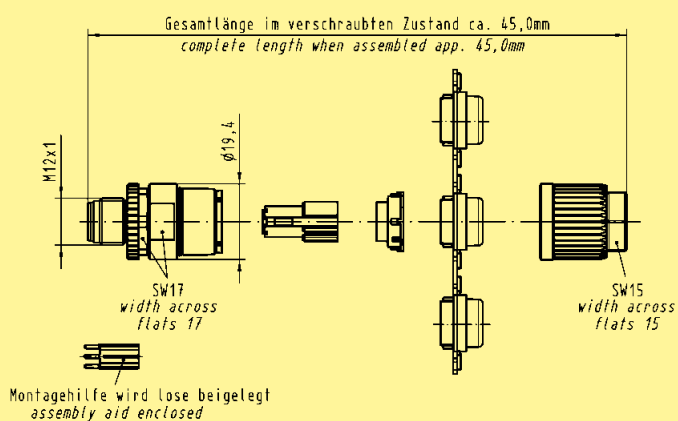
Male
4 poles, D-coding

21 03 882 1405



Male
4 poles, D-coding

21 03 882 1415

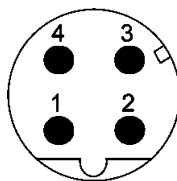


03
68

M12 Crimp D-coded



Mating face



D-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

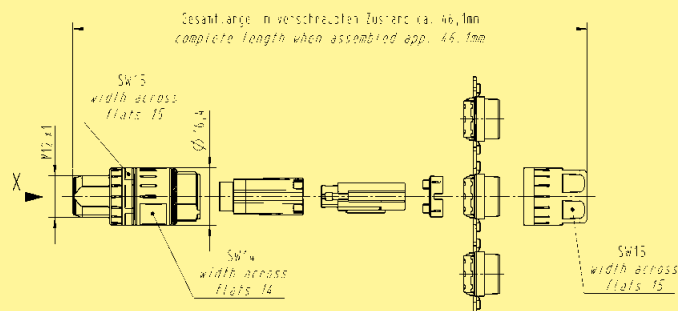
Dimensions in mm

M12 Crimp Slim design, shielded



Male
4 poles, D-coding
Cable: 4.4 - 8.8 mm
outer diameter

21 03 881 1405*

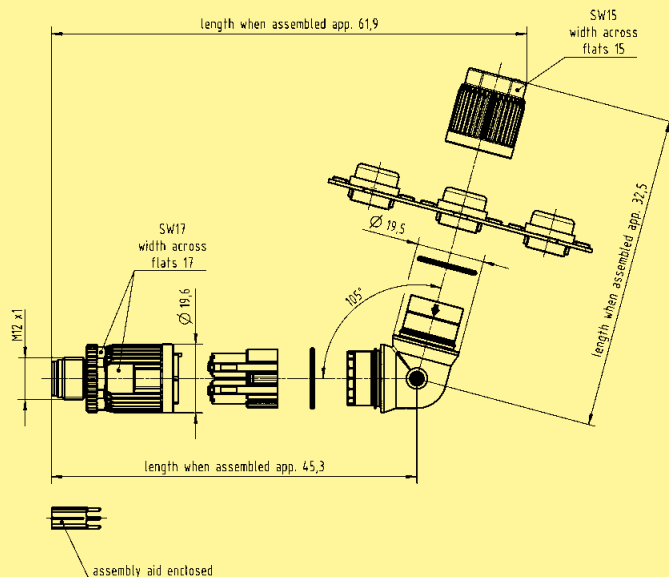


M12 Crimp, shielded



Male
4 poles, D-coding
angled

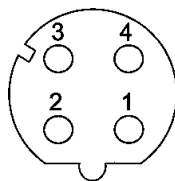
21 03 882 3405*



M12 Crimp D-coded



Mating face



D-coding
Mating face
acc. to IEC 61076-2-101



03

Identification

Part No.

Drawing

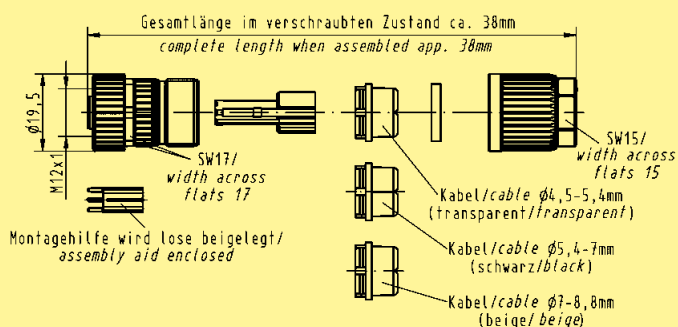
Dimensions in mm

M12 Crimp, shielded



Female
4 poles, D-coding

21 03 882 2405

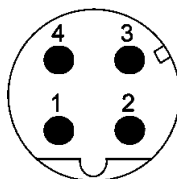


03
70

M12 preLink® D-coded



Mating face



D-coding
Mating face
acc. to IEC 61076-2-101



Identification

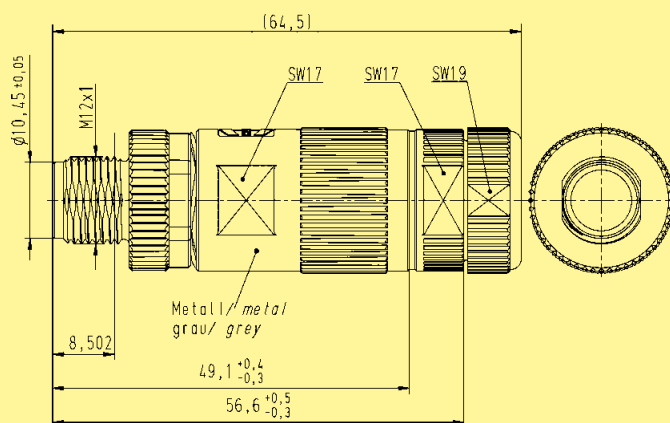
Part No.

Drawing

Dimensions in mm

preLink® M12 housing

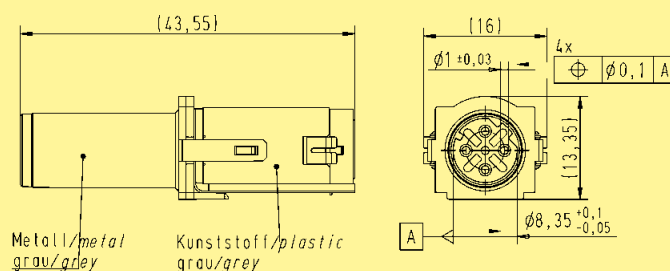
20 82 000 1210



preLink® M12 male module

20 82 005 1214

Male
4 poles, D-coding



preLink® terminal module

(Pack with 10 pieces)
terminal block with IDC termination

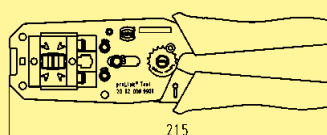
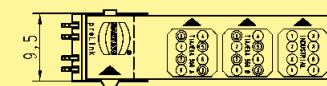
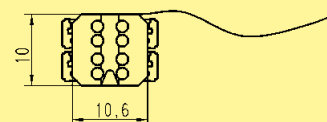
Number of contacts: 8

Conductor cross section: AWG 22/23 (24)
solid and
stranded
Conductor diameter: Ø 1.3 - 1.6 mm
Colour: yellow

20 82 000 0001

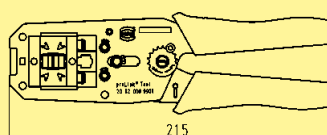
Conductor cross section: AWG 26/27
solid and
stranded
Conductor diameter: Ø 0.8 - 1.1 mm
Colour: white

20 82 000 0003

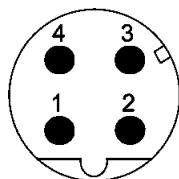


Assembly tool

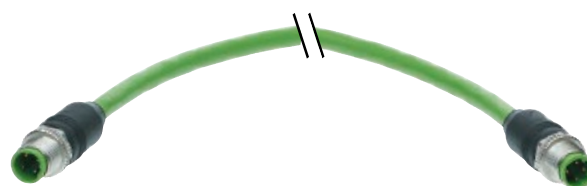
20 82 000 9901



Mating face



D-coding
Mating face
acc. to IEC 61076-2-101



Technical characteristics

Pre-assembled and tested system cables

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

Cable type: Shielded Twisted Pair
Standard Cable

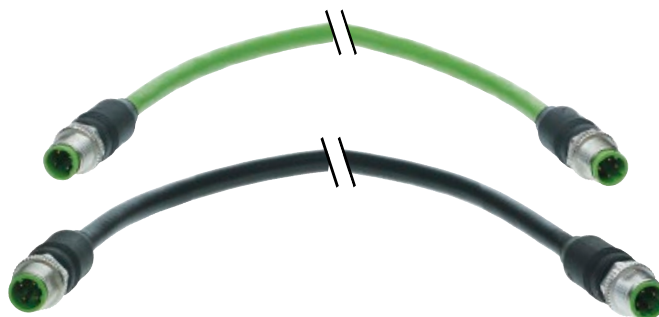
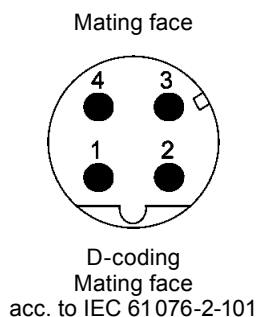
Mating interface: M12 D-coded
acc. to IEC 61 076-2-101

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

Degree of protection IP65 / IP67 (when mated)

Pin assignment

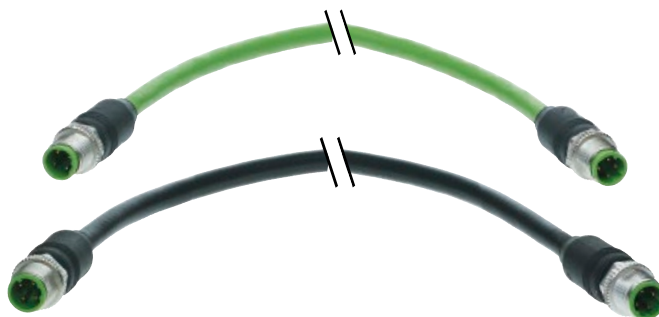
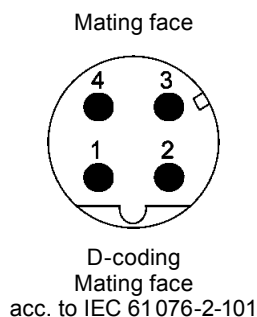
Signal	Function	Conductor colour PROFINet®	Contact assignment
TD+	Transmission Data+	Yellow	1
TD-	Transmission Data-	Orange	3
RD+	Receiver Data+	White	2
RD-	Receiver Data-	Blue	4



Overview system cables M12

Number of contacts			Male M12 D-coding straight			
			Cable material: PUR		Cable material: PVC	
Male M12	straight		1.0 m	21 03 485 1401 09 48 222 2004 010*	1.0 m	09 47 222 2002 09 48 222 2003 010*
			1.5 m	21 03 485 1451 09 48 222 2004 015*	1.5 m	09 47 222 2003 09 48 222 2003 015*
			3.0 m	21 03 485 1403 09 48 222 2004 030*	3.0 m	09 47 222 2005 09 48 222 2003 030*
			5.0 m	21 03 485 1405 09 48 222 2004 050*	5.0 m	09 47 222 2006 09 48 222 2003 050*
			7.5 m	21 03 485 1457 09 48 222 2004 075*	7.5 m	09 47 222 2022 09 48 222 2003 075*
			10.0 m	21 03 485 1410 09 48 222 2004 100*	10.0 m	09 47 222 2011 09 48 222 2003 100*
			20.0 m	21 03 485 1420 09 48 222 2004 200*	20.0 m	09 47 222 2013 09 48 222 2003 200*
Open end			1.0 m	21 03 585 1401 09 48 220 0004 010*	1.0 m	09 47 220 0002 09 48 220 0003 010*
			1.5 m	21 03 585 1451 09 48 220 0004 015*	1.5 m	09 47 220 0003 09 48 220 0003 015*
			3.0 m	21 03 585 1403 09 48 220 0004 030*	3.0 m	09 47 220 0005 09 48 220 0003 030*
			5.0 m	21 03 585 1405 09 48 220 0004 050*	5.0 m	09 47 220 0006 09 48 220 0003 050*
			7.5 m	21 03 585 1457 09 48 220 0004 075*	7.5 m	09 47 220 0022 09 48 220 0003 075*
			10.0 m	21 03 585 1410 09 48 220 0004 100*	10.0 m	09 47 220 0011 09 48 220 0003 100*
			20.0 m	21 03 585 1420 09 48 220 0004 200*	20.0 m	09 47 220 0013 09 48 220 0003 200*

* Mid 2014 the part numbers beginning with 21 03 ... or 09 47 ... will be replaced by the part numbers beginning with 09 48 ...
The former part numbers will be set to status inactive.
Please use only the part numbers beginning with 09 48 ... for your order.

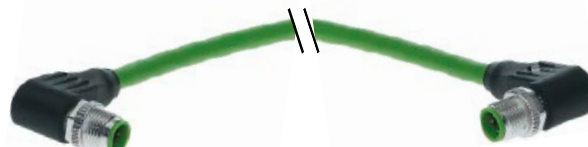
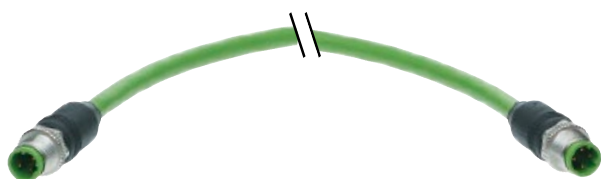


Overview system cables M12

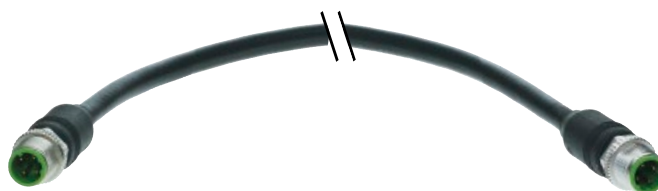
03

Number of contacts			Male M12 D-coding angled			
			Cable material: PUR		Cable material: PVC	
Male M12	angled		1.0 m	21 03 485 3401 09 48 808 0004 010*	1.0 m	09 47 808 0002 09 48 808 0003 010*
			1.5 m	21 03 485 3451 09 48 808 0004 015*	1.5 m	09 47 808 0003 09 48 808 0003 015*
			3.0 m	21 03 485 3403 09 48 808 0004 030*	3.0 m	09 47 808 0005 09 48 808 0003 030*
			5.0 m	21 03 485 3405 09 48 808 0004 050*	5.0 m	09 47 808 0006 09 48 808 0003 050*
			7.5 m	21 03 485 3457 09 48 808 0004 075*	7.5 m	09 47 808 0022 09 48 808 0003 075*
			10.0 m	21 03 485 3410 09 48 808 0004 100*	10.0 m	09 47 808 0011 09 48 808 0003 100*
			20.0 m	21 03 485 3420 09 48 808 0004 200*	20.0 m	09 47 808 0013 09 48 808 0003 200*
Open end			1.0 m	21 03 585 3401 09 48 800 0004 010*	1.0 m	09 47 800 0002 09 48 800 0003 010*
			1.5 m	21 03 585 3451 09 48 800 0004 015*	1.5 m	09 47 800 0003 09 48 800 0003 015*
			3.0 m	21 03 585 3403 09 48 800 0004 030*	3.0 m	09 47 800 0005 09 48 800 0003 030*
			5.0 m	21 03 585 3405 09 48 800 0004 050*	5.0 m	09 47 800 0006 09 48 800 0003 050*
			7.5 m	21 03 585 3457 09 48 800 0004 075*	7.5 m	09 47 800 0022 09 48 800 0003 075*
			10.0 m	21 03 585 3410 09 48 800 0004 100*	10.0 m	09 47 800 0011 09 48 800 0003 100*
			20.0 m	21 03 585 3420 09 48 800 0004 200*	20.0 m	09 47 800 0013 09 48 800 0003 200*

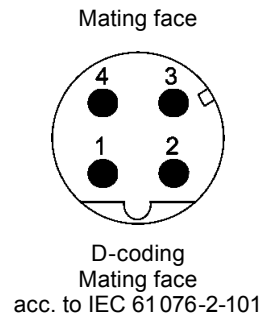
* Mid 2014 the part numbers beginning with 21 03 ... or 09 47 ... will be replaced by the part numbers beginning with 09 48 ...
The former part numbers will be set to status inactive.
Please use only the part numbers beginning with 09 48 ... for your order.



Identification	Part No.	Drawing	Dimensions in mm
2 x M12 Circular connectors, D-coding, 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	Cable: AWG 22 / 0.34 mm ²
1 x M12 Circular connectors, D-coding, 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	Cable: AWG 22 / 0.34 mm ²
2 x M12 Circular connectors, D-coding, 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	Cable: AWG 22 / 0.34 mm ²
1 x M12 Circular connectors, D-coding, 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	Cable: AWG 22 / 0.34 mm ²

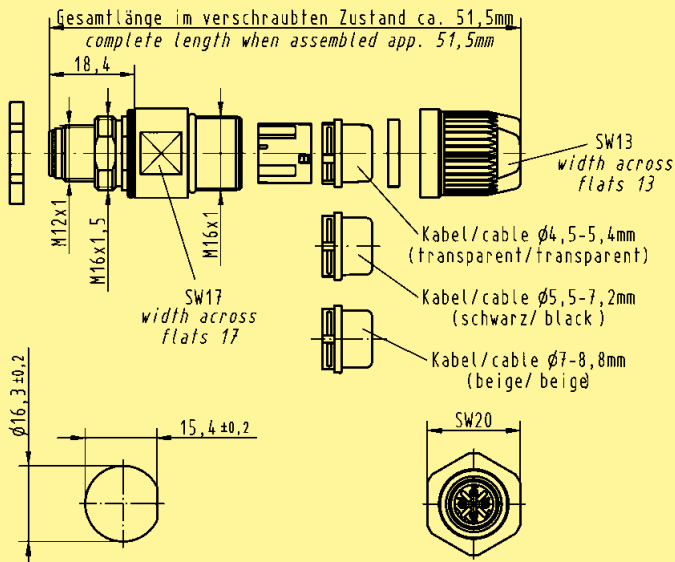


Identification	Part No.	Drawing	Dimensions in mm
2 x M12 Circular connectors, D-coding, PVC, straight	Length*: 1.0 m 1.5 m 3.0 m 5.0 m 7.5 m 10.0 m 20.0 m	09 47 222 2002 09 47 222 2003 09 47 222 2005 09 47 222 2006 09 47 222 2022 09 47 222 2011 09 47 222 2013	Cable: AWG 22 / 0.34 mm²
1 x M12 Circular connectors, D-coding, 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 mm²
2 x M12 Circular connectors, D-coding, 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 mm²
1 x M12 Circular connectors, D-coding, 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 mm²



Applications / Advantages

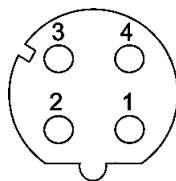
- D-coding for Ethernet/Profinet applications
- Patent HARAX® fast termination
- Robust design
- 360° shielding termination
- Transmission performance Cat. 5

Identification	Part No.	Drawing	Dimensions in mm
HARAX® Panel feed-through  Male 4 poles, D-coding 0.14 - 0.34 mm² / AWG 26 - 22 Panel thickness min. 2.5 mm max. 4.5 mm	21 03 381 1425	 Gesamtlänge im verschraubten Zustand ca. 51,5mm complete length when assembled app. 51,5mm 18,4 M12x1 M16x1,5 M16x1 SW17 width across flats 17 SW13 width across flats 13 Kabel/cable ø4,5-5,4mm (transparent/transparent) Kabel/cable ø5,5-7,2mm (schwarz/black) Kabel/cable ø7-8,8mm (beige/beige) SW20 ø16,3 ±0,2 15,4 ±0,2	

M12 Panel feed-through HARAX® D-coded



Mating face



D-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

Dimensions in mm

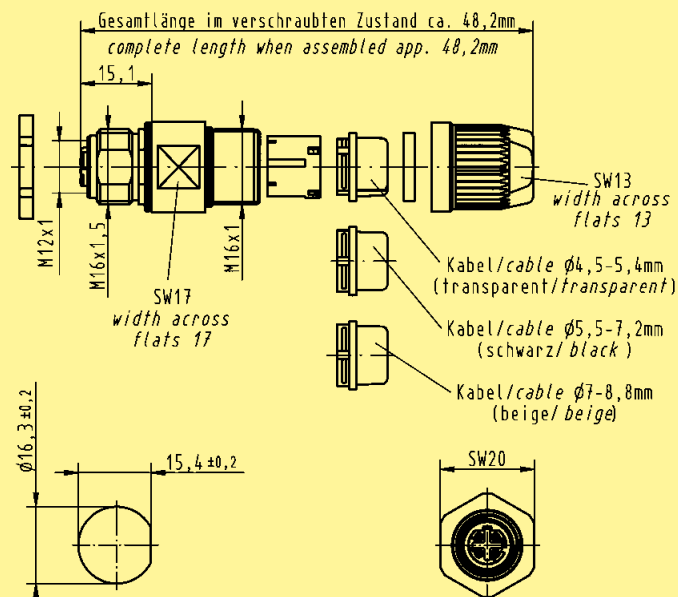
HARAX® Panel feed-through



Female
4 poles, D-coding
0.14 - 0.34 mm² / AWG 26 - 22

Panel thickness
min. 2.5 mm
max. 4.5 mm

21 03 381 2425

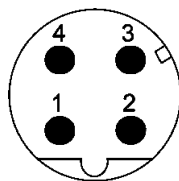


03

M12 Panel feed-through Crimp D-coded



Mating face



D-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

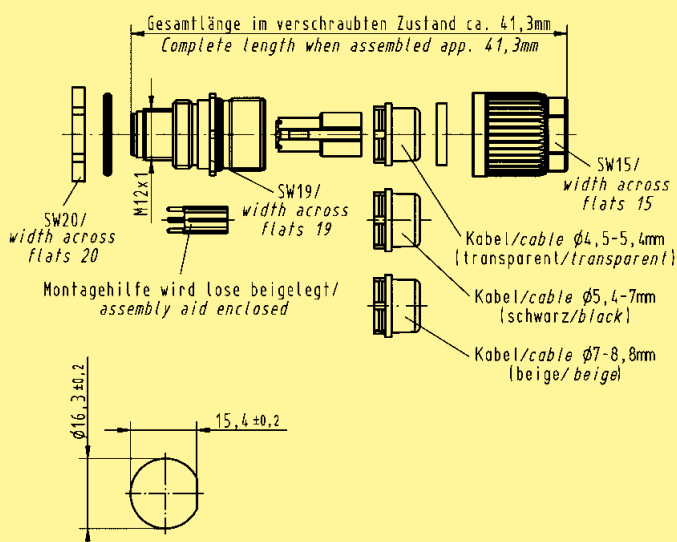
Drawing

Dimensions in mm

M12 Panel feed-through Crimp



21 03 882 1425



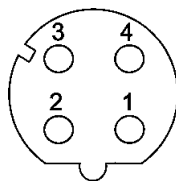
Male
4 poles, D-coding

Panel thickness
min. 2.5 mm
max. 4.5 mm

M12 Panel feed-through Crimp D-coded



Mating face



D-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

Dimensions in mm

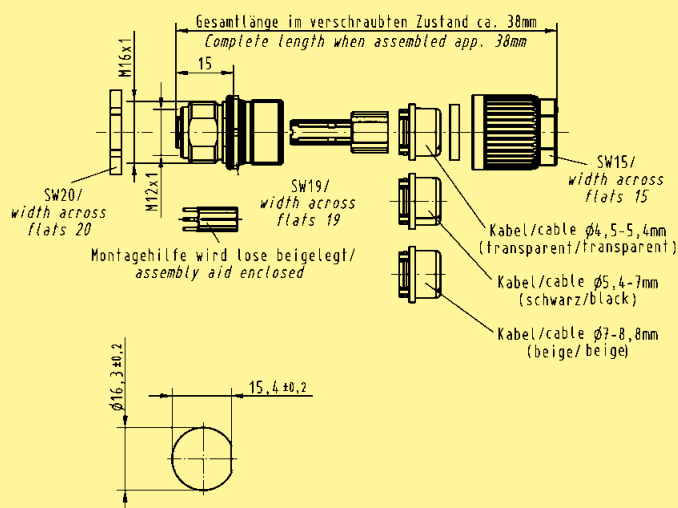
M12 Panel feed-through Crimp



Female
4 poles, D-coding

Panel thickness
min. 2.5 mm
max. 4.5 mm

21 03 882 2425

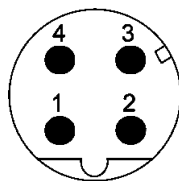


03

M12 Panel feed-through D-coded



Mating face



D-coding
Mating face
acc. to IEC 61076-2-101



03

Identification

Part No.

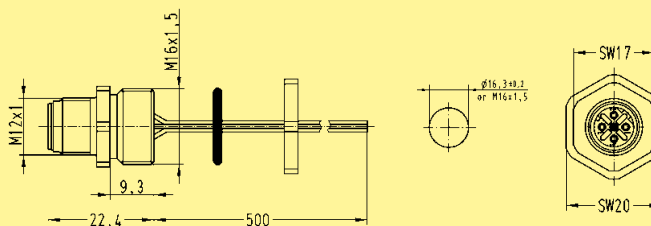
Drawing

Dimensions in mm

M12 Panel feed-through



21 03 371 1403



Male
D-coding
50 cm conductors, AWG 22, 4 poles

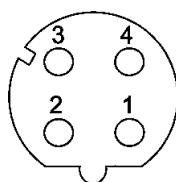
Panel thickness
min. 2.0 mm
max. 5.0 mm

03
82

M12 Panel feed-through D-coded



Mating face



D-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

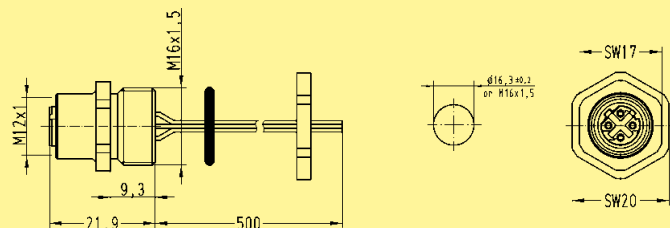
Drawing

Dimensions in mm

M12 Panel feed-through



21 03 371 2403



Female
D-coding
50 cm conductors, AWG 22, 4 poles

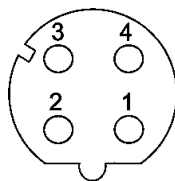
Panel thickness
min. 2.0 mm
max. 5.0 mm

03

M12 Panel feed-through D-coded



Mating face



D-coding
Mating face
acc. to IEC 61076-2-101



03

Identification

Part No.

Drawing

Dimensions in mm

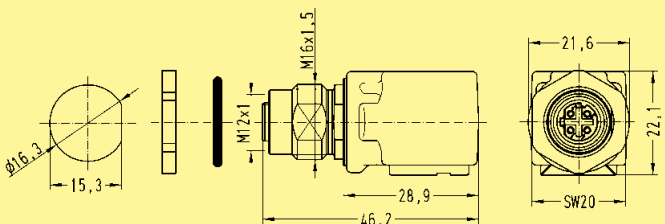
M12 Female-RJ45 Panel feed-through



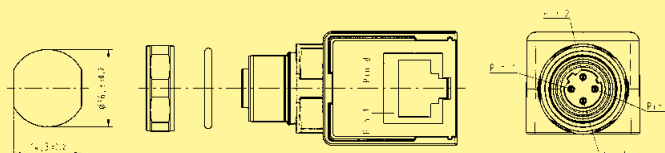
4 poles, D-coding
angled

Panel thickness
min. 2.1 mm
max. 4.5 mm

21 03 381 4400



21 03 381 4401*



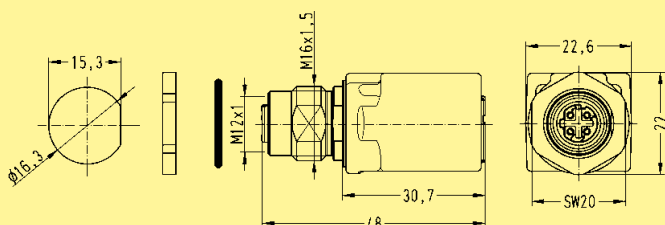
M12 Female-RJ45 Panel feed-through



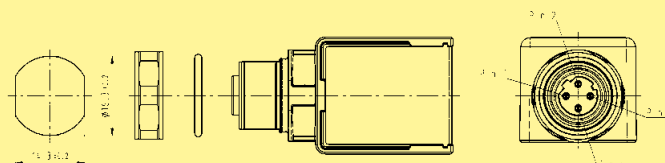
4 poles, D-coding
straight

Panel thickness
min. 2.1 mm
max. 4.5 mm

21 03 381 2400



21 03 381 2401*

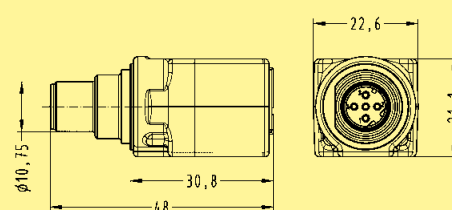


M12 Male-RJ45 Adapter



4 poles, D-coding
straight
(coupler, without thread in the
termination area)

21 03 371 1420



03
84

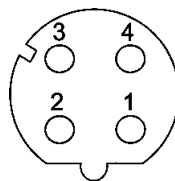
Further information and data sheets see www.HARTING.com

* UL approval is in preparation

M12 Panel feed-through D-coded



Mating face



D-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

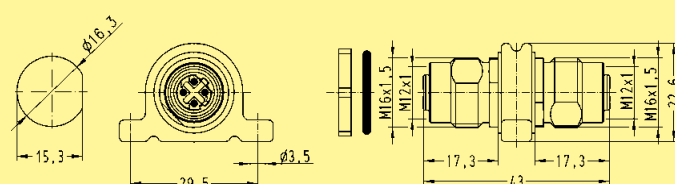
Dimensions in mm

M12 Gender Changer
Female-Female



4 poles, D-coding
Cat. 5

21 03 381 6405

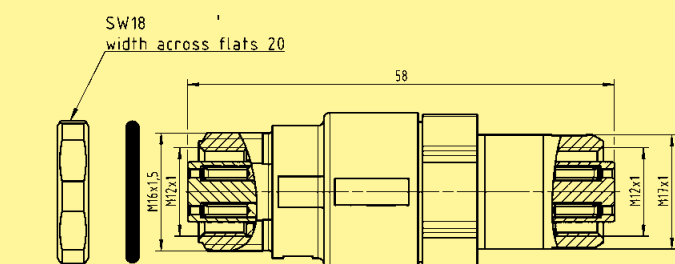


M12 Gender Changer
Female-Female

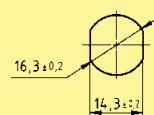


4 poles, D-coding
Cat. 5

21 03 381 6401*



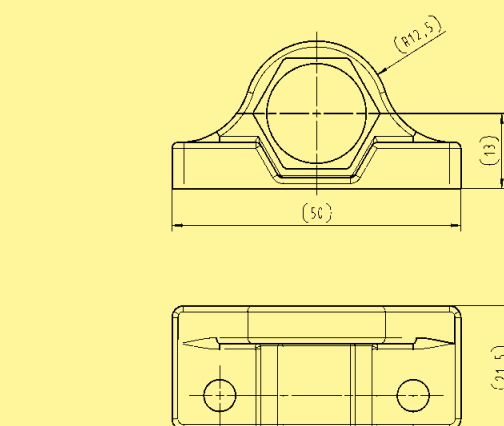
Panel cut out
(1:1)



Wall bracket



21 01 000 0036



Further information and data sheets see www.HARTING.com

* UL approval is in preparation

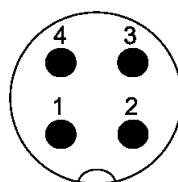
03

03
85

M12 PCB adapter D-coded



Mating face



D-coding
Mating face
acc. to IEC 61076-2-101



Technical characteristics: M12 PCB adapter D-coded angled

Degree of protection	IP20, IP67 (mated and locked)	Temperature during connection	-5 °C ... +50 °C
Rated current	max. 4 A (dependant on PCB layout)	Termination	Reflow
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	LCP

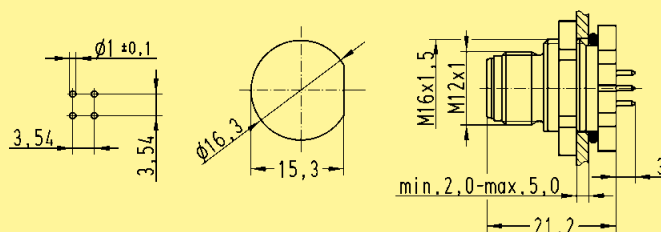
Identification	Part No.	Drawing	Dimensions in mm
----------------	----------	---------	------------------

M12 PCB adapter
Male, D-coding,
straight



4 poles, IP67

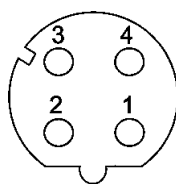
21 03 371 1400



M12 PCB adapter D-coded



Mating face



D-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

Dimensions in mm

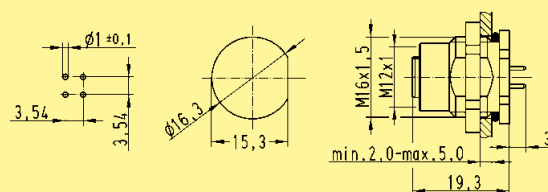
M12 PCB adapter

Female, D-coding,
straight



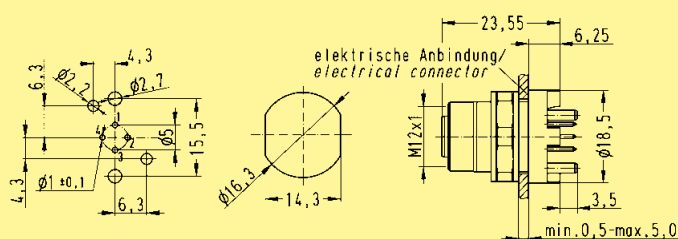
4 poles, IP67

21 03 371 2415



4 poles, IP20
4 poles, IP67

21 03 381 6410
21 03 381 6420

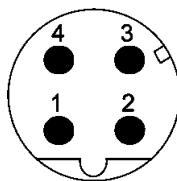




M12 PCB adapter shielded D-coded

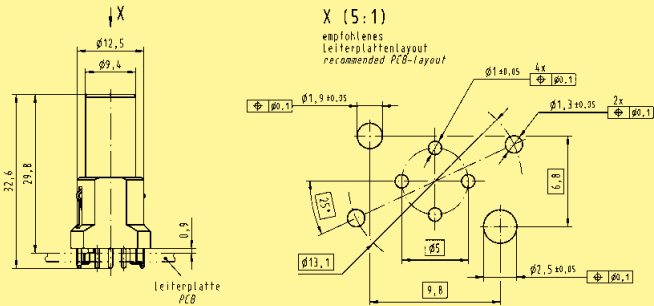
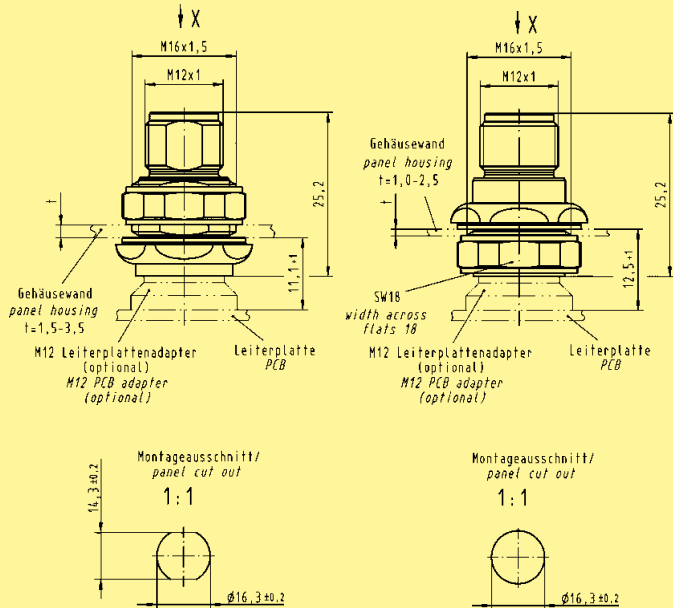


Mating face



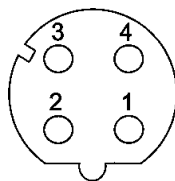
D-coding
Mating face
acc. to IEC 61 076-2-101



Identification	Part No.	Drawing	Dimensions in mm
M12 PCB adapter, shielded  Male 4 poles, D-coding	21 03 381 1418*		
Housing   for rear mounting for front mounting	21 03 301 1000 21 03 301 1001		



Mating face



D-coding
Mating face
acc. to IEC 61 076-2-101



03

Identification

Part No.

Drawing

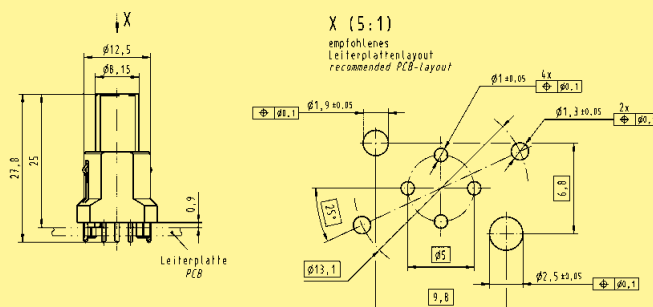
Dimensions in mm

M12 PCB adapter,
shielded



Female
4 poles, D-coding

21 03 381 2418*



Housing

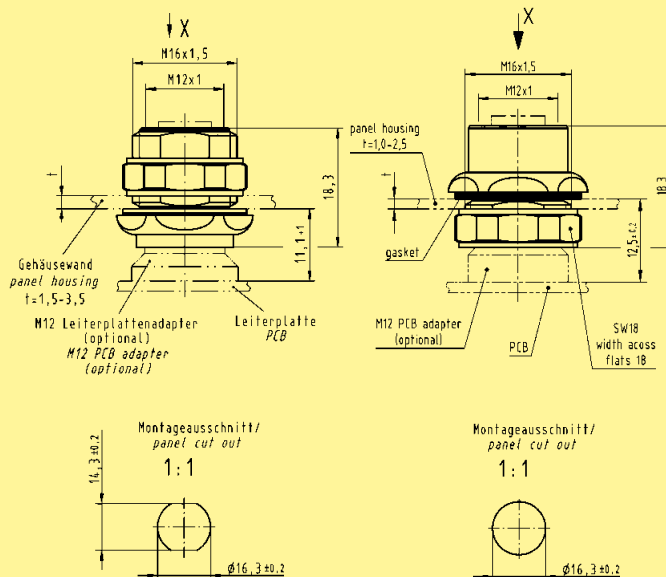


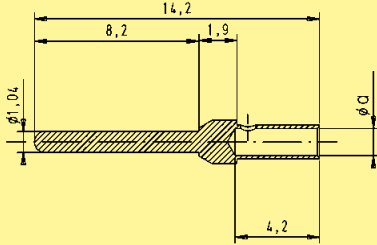
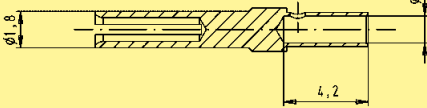
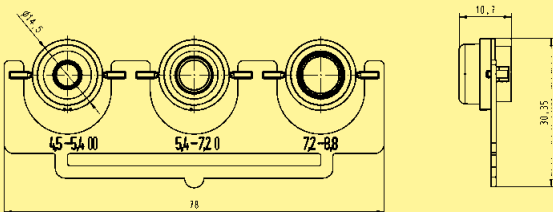
for rear mounting

21 03 301 2000

for front mounting

21 03 301 2001



Identification	Part No.	Drawing																			
Crimping tool for M12 Crimp	09 99 000 0501																				
Accessories M12 Crimp																					
Locator	09 99 000 0531	 <table><tr><th colspan="3">D-Sub contacts</th></tr><tr><th>Part number</th><th>AWG</th><th>Tool settings</th></tr><tr><td rowspan="3">09 67 000 3x76</td><td>18</td><td>6</td></tr><tr><td>20</td><td>6</td></tr><tr><td>22</td><td>5</td></tr><tr><td>09 67 000 8x76</td><td>20, 22, 24</td><td>6</td></tr><tr><td>09 67 000 5x76</td><td>22, 24, 26</td><td>6</td></tr></table>	D-Sub contacts			Part number	AWG	Tool settings	09 67 000 3x76	18	6	20	6	22	5	09 67 000 8x76	20, 22, 24	6	09 67 000 5x76	22, 24, 26	6
D-Sub contacts																					
Part number	AWG	Tool settings																			
09 67 000 3x76	18	6																			
	20	6																			
	22	5																			
09 67 000 8x76	20, 22, 24	6																			
09 67 000 5x76	22, 24, 26	6																			
D-Sub single contacts (500 mating cycles)																					
turned male contacts AWG 22-18 / 0.33-0.82 mm² AWG 24-20 / 0.25-0.52 mm² AWG 26-22 / 0.13-0.33 mm²	09 67 000 3576 09 67 000 8576 09 67 000 5576	 <table><tr><th></th><th>a</th></tr><tr><td>AWG 22-18</td><td>1.34</td></tr><tr><td>AWG 24-20</td><td>1.13</td></tr><tr><td>AWG 26-22</td><td>0.88</td></tr></table>		a	AWG 22-18	1.34	AWG 24-20	1.13	AWG 26-22	0.88											
	a																				
AWG 22-18	1.34																				
AWG 24-20	1.13																				
AWG 26-22	0.88																				
turned female contacts AWG 22-18 / 0.33-0.82 mm² AWG 24-20 / 0.25-0.52 mm² AWG 26-22 / 0.13-0.33 mm²	09 67 000 3476 09 67 000 8476 09 67 000 5476																				
M12 dynamometric screwdriver Tightening torque 0.6 Nm																					
for M12 Slim design SW 15	09 99 000 0646																				
for M12-L SW 17	09 99 000 0384																				
Set of seals 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	 																			
Accessories M12																					
Lock nut	21 01 000 0018																				

Identification	Part No.	Drawing	Dimensions in mm
Cap metal M12 for IP65 / IP67 M12 metal cap for male side with cord	21 01 000 0033		
Cap metal M12 for IP65 / IP67 M12 metal cap for male side with cable clip	21 01 000 0038		
Cap metal M12 for IP65 / IP67 M12 metal cap for female side with cord	21 01 000 0030		
Cap metal M12 for IP65 / IP67 M12 metal cap for female side with cable clip	21 01 000 0031		
Cap M12 for IP65 / IP67 Seals material Viton Plastic cap for female	21 01 000 0003		

Directory

Page

4. *har*-speed M12 data connectors**4.1 X-coded – Solutions for high-speed applications**

o Technical characteristics	04.02
■ Cable connectors	
• <i>har</i> -speed M12 connector	04.05
• System cables	04.06
■ Device connectors	
• <i>har</i> -speed M12 Panel feed-through	04.07
• <i>har</i> -speed PCB connector	04.09
o Accessories	04.13

M12 X-coding

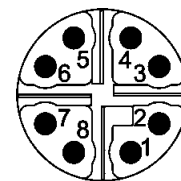


Specifications IEC 60 352-4

Approval 



Mating face



X-coding
Mating face
acc. to IEC 61076-2-101

Technical characteristics M12 – X-coding

Type M12 X-coded

har-speed M12
har-speed M12 Slim design

General data

Conductor cross section	0.08 - 0.25 mm ² AWG 28-23
Diameter of individual strands	–
Conductor insulation material	–
Conductor diameter	0.33 - 0.61 mm
Cable diameter	4.5 - 8.8 mm
Temperature range	-40 °C ... +85 °C
Temperature during connection	-5 °C ... +50 °C
Degree of protection	IP65 / IP67
Mating cycles	500
Tightening torque connector / hexagonal wrench	0.6 Nm / SW 15

Electrical characteristics

Rated current	0.5 A
Rated voltage	48 V
Rated impulse voltage	1.5 kV
Contact resistance	15 mΩ
Insulation resistance	10 ⁸ Ω
Pollution degree	3
Overvoltage category	3
Isolation group	1
Transmission performance (Category)	Cat. 6 _A

Materials

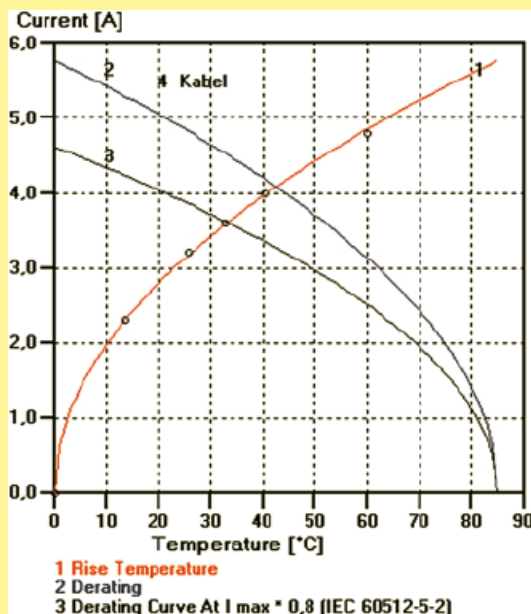
Contact material	Brass
Contact plating	Gold
Contact carrier material	LCP
Housing material	ZP410

Technical characteristics M12 – X-coding

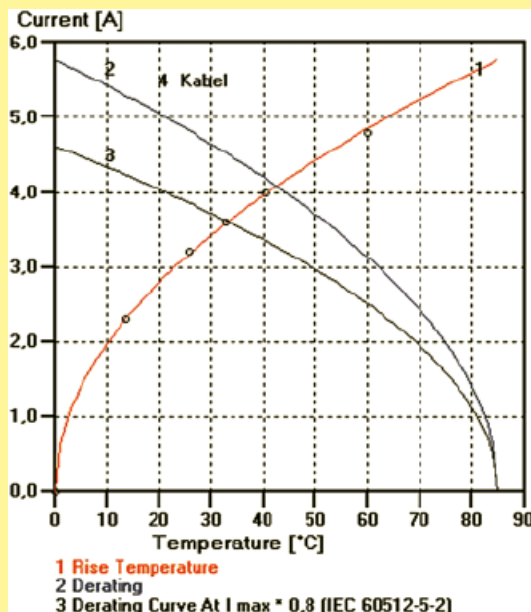
Current carrying capacity The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals. The current capacity-curve is valid for continuous, not interrupted current-loaded contacts of connectors when simultaneous power on all contacts is given,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

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

har-speed M12
8 poles

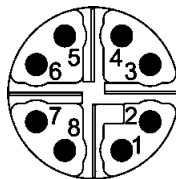


har-speed M12
PCB adapter





Mating face



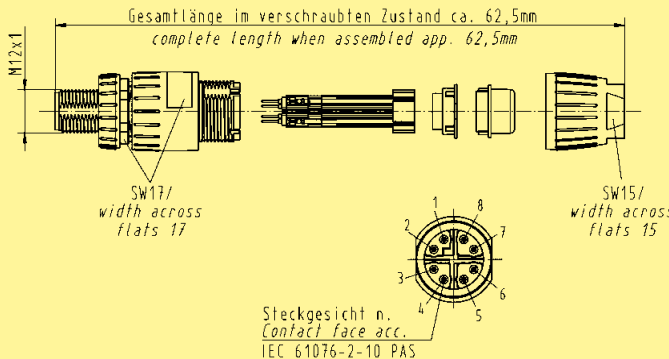
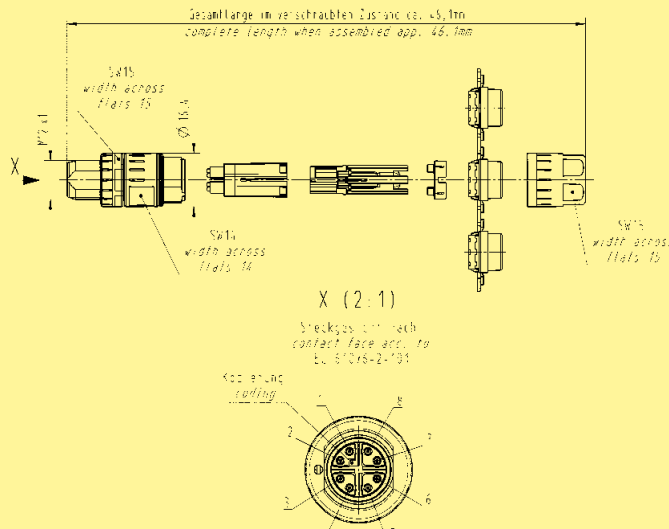
X-coding
Mating face
acc. to IEC 61076-2-101



Applications / Advantages

- High-Speed Ethernet applications for process automatization, e.g. camera system for process control in the production
- Maximum data rates through the configuration of the contacts in conformance with Ethernet technology. Transfer class E_A for 1 and 10 Gigabit
- Perfect shielding through paired shielding of the contacts
- Overmoulded system cables in various lengths

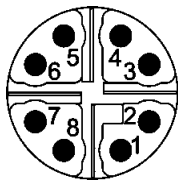
04

Identification	Part No.	Drawing	Dimensions in mm
har-speed M12  Male straight version 8 poles, Cat. 6 _A Cable diameter: 4.5 - 8.8 mm	21 03 881 5805	 Gesamtlänge im verschraubten Zustand ca. 62,5mm complete length when assembled app. 62,5mm M12x1 SW17/ width across flats 17 SW15/ width across flats 15 Steckgesicht n. Contact face acc. IEC 61076-2-10 PAS	
har-speed M12 Slim design  Male straight version 8 poles, Cat. 6 _A Cable diameter: 4.5 - 8.8 mm	21 03 881 1805	 Gesamtlänge im verschraubten Zustand ca. 45,1mm complete length when assembled app. 45,1mm M12x1 SW15/ width across flats 15 SW14/ width across flats 14 SW15/ width across flats 15 X (2:1) Steckgesicht n. Contact face acc. to IEC 61076-2-101 600 BRONZE plating	

har-speed M12 System cables X-coded



Mating face



X-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

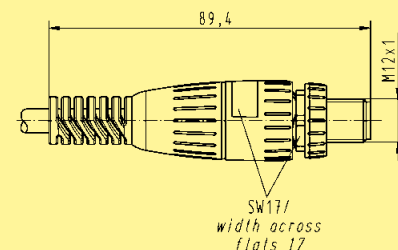
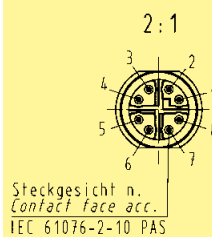
Dimensions in mm

har-speed M12
System cables

single ended overmoulded
system cable

Length: 1 m
3 m
5 m
7 m
10 m

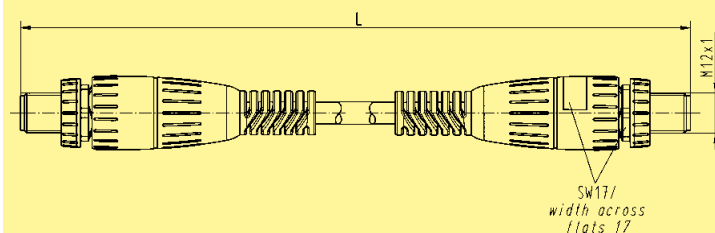
21 03 483 1801
21 03 483 1803
21 03 483 1805
21 03 483 1807
21 03 483 1810



double ended overmoulded
system cable

Length: 0.5 m
1.0 m
1.5 m
2.0 m
2.5 m

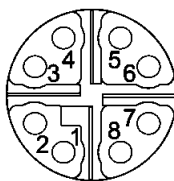
21 03 483 5850
21 03 483 5801
21 03 483 5851
21 03 483 5802
21 03 483 5852



har-speed M12 Panel feed-through X-coded



Mating face



X-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

Dimensions in mm

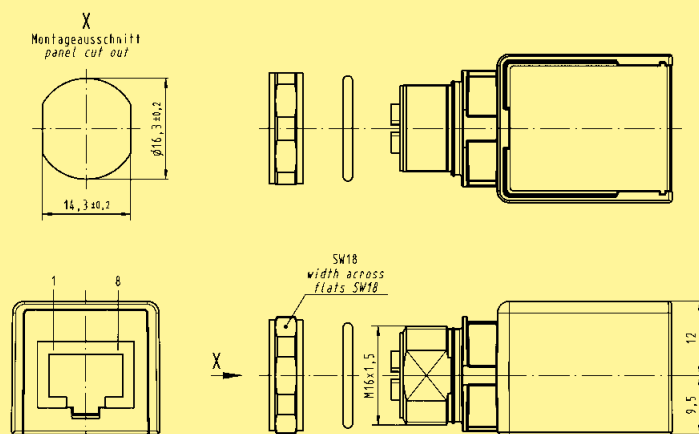
har-speed M12 Adapter M12-RJ45



straight, Cat. 6A

Panel thickness
min. 2.1 mm
max. 4.5 mm

21 03 381 2800



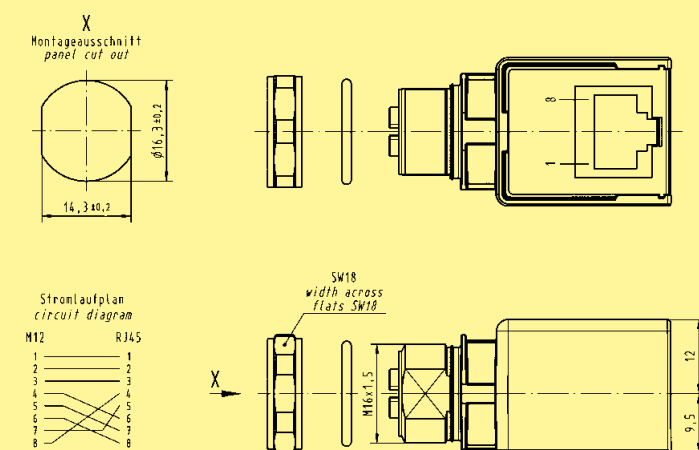
04



angled, Cat. 6A

Panel thickness
min. 2.1 mm
max. 4.5 mm

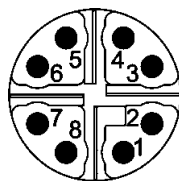
21 03 381 4800



04
07



Mating face



X-coding
Mating face
acc. to IEC 61076-2-101

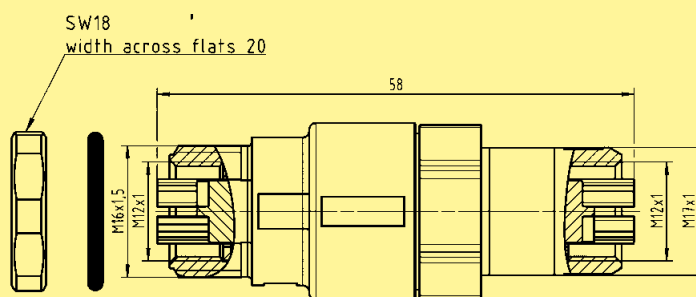


Identification	Part No.	Drawing	Dimensions in mm
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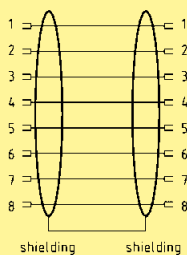
Gender changer, Cat. 6A



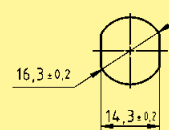
21 03 381 6815



schematic diagram



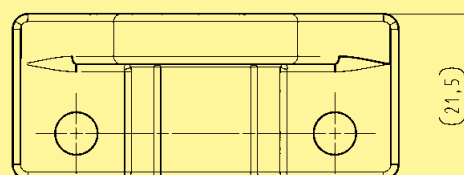
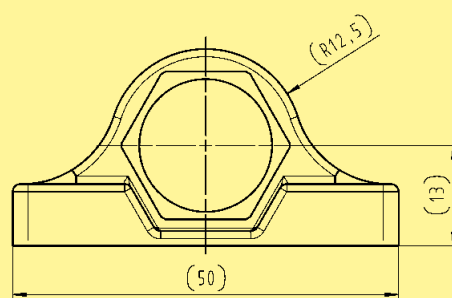
Panel cut out
(1:1)



Wall bracket



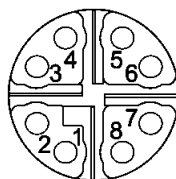
21 01 000 0036



har-speed M12 PCB adapter X-coded



Mating face



X-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

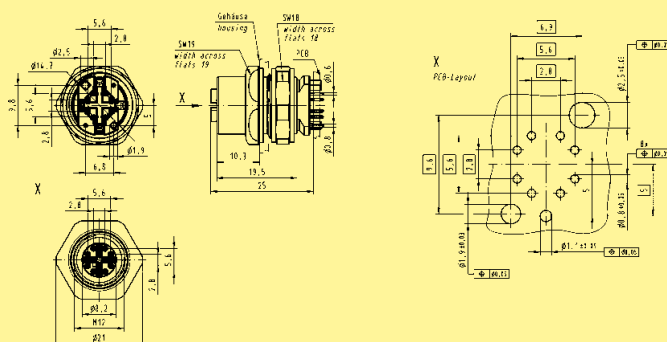
Dimensions in mm

har-speed M12 PCB adapter

Female, X-coding,
straight, Cat. 6_A
for front mounting



21 03 381 2802

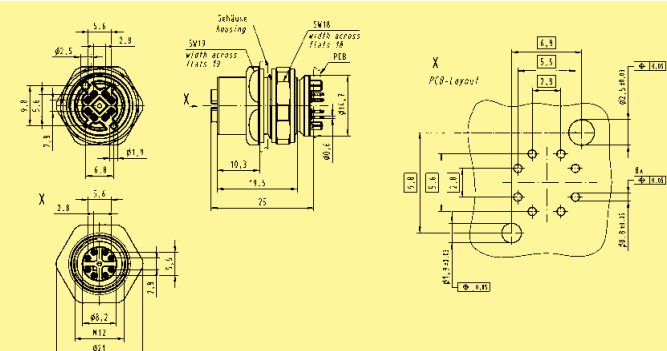


har-speed M12 PCB adapter

Female, X-coding,
straight, Cat. 5
for front mounting



21 03 381 2803

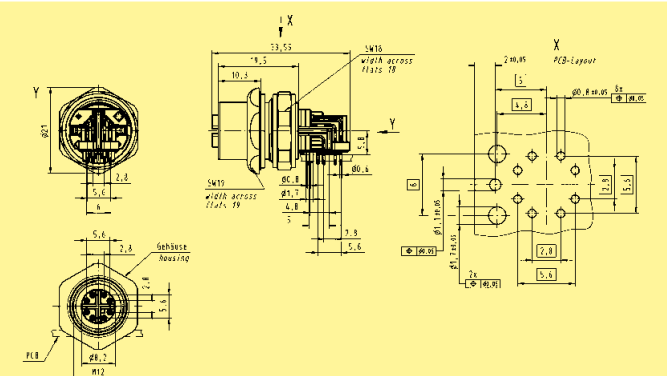


har-speed M12 PCB adapter

Female, X-coding,
angled, Cat. 6_A
for front mounting



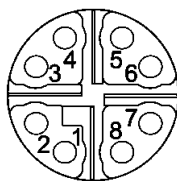
21 03 381 4802



har-speed M12 PCB adapter X-coded



Mating face



X-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

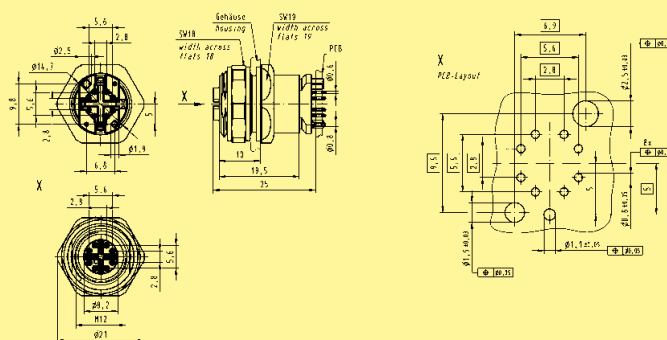
Dimensions in mm

har-speed M12 PCB adapter

Female, X-coding,
straight, Cat. 6_A
for rear mounting



21 03 381 2804

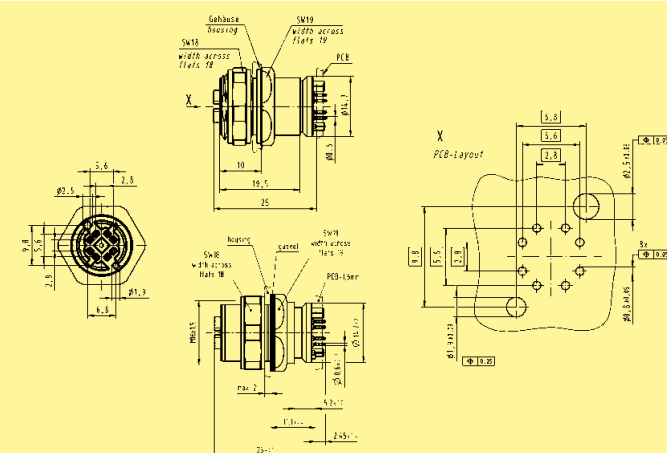


har-speed M12 PCB adapter

Female, X-coding,
straight, Cat. 5
for rear mounting



21 03 381 2805

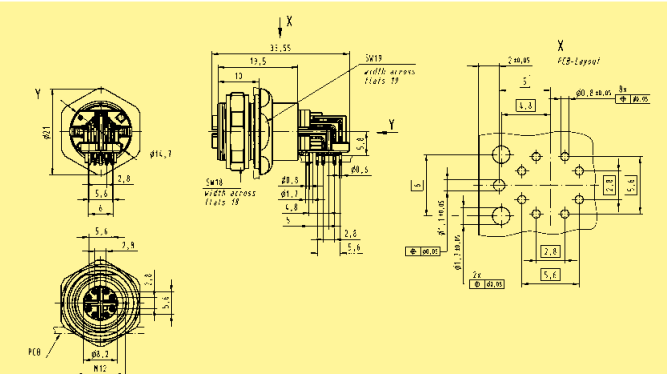


har-speed M12 PCB adapter

Female, X-coding,
angled, Cat. 6_A
for rear mounting



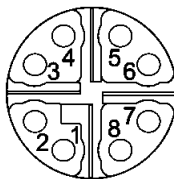
21 03 381 4804



har-speed M12 PCB adapter X-coded



Mating face



X-coding
Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

Dimensions in mm

har-speed M12
PCB adapter

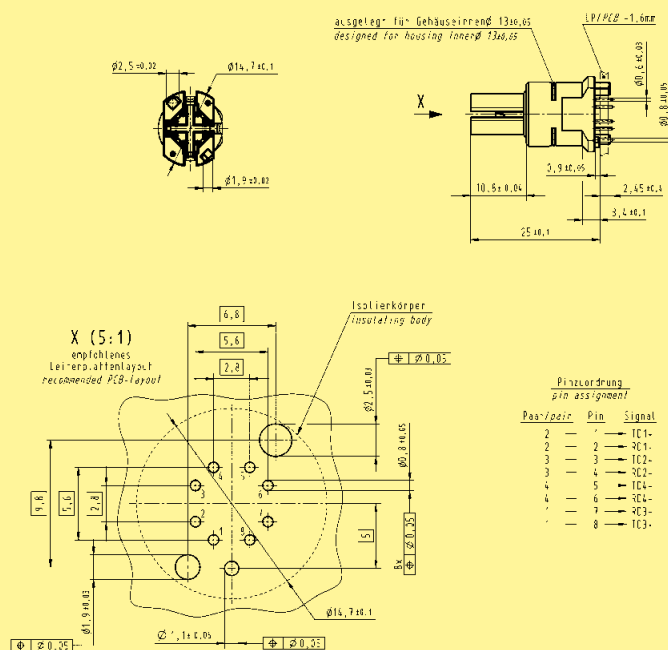


Female
8 poles, X-coding
Cat. 6A

21 03 381 2806

Female
8 poles, X-coding
Cat. 5

21 03 381 2807



04

Housing

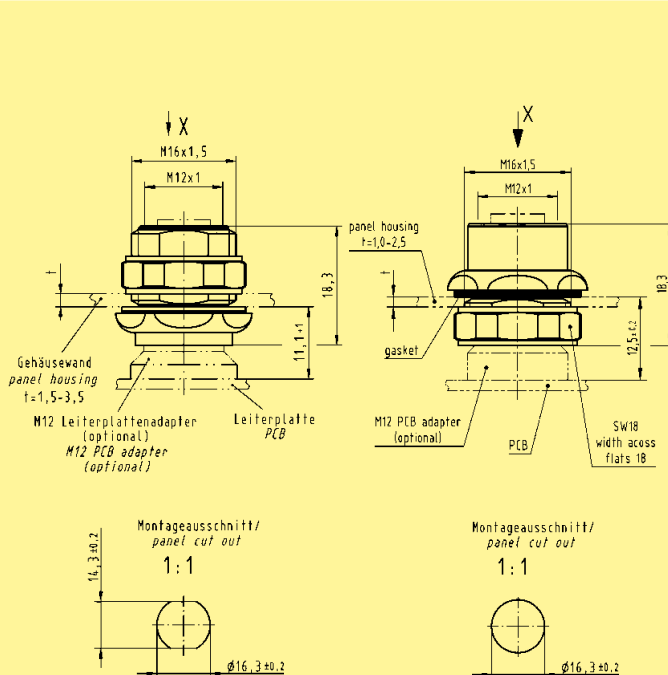


for rear mounting

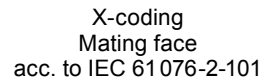
21 03 301 2000

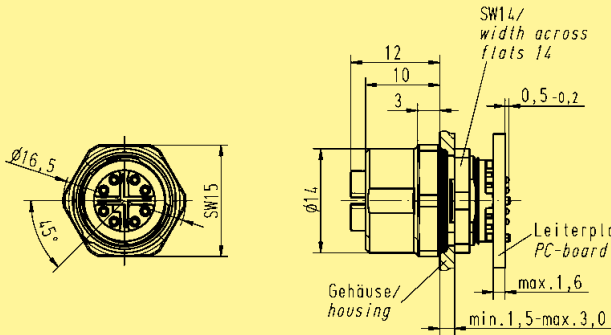
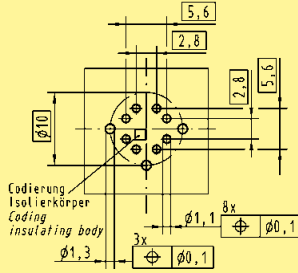
for front mounting

21 03 301 2001



04
11



Identification	Part No.	Drawing	Dimensions in mm
har-speed M12 PCB adapter Female, X-coding, straight, Cat. 6A for front mounting 	21 03 381 2801	 Bohrplan/drilling plan Bestückungsseite (Frontansicht) plug-in side (front view) 	

Identification

Part No.

Drawing

Crimping tool
for *har-speed* M12

09 99 000 0501



Accessories *har-speed* M12

Locator

09 99 000 0525



Single contacts
(500 mating cycles)

har-speed M12 contacts
AWG 28-24 / 0.08-0.22 mm²



21 01 100 9014

har-speed M12 contacts
AWG 26-23 / 0.13-0.25 mm²

21 01 100 9019

har-speed contacts

Part number	AWG	Tool settings
21 01 100 9014	28	3
	26	4
	24	5
21 01 100 9019	26	4
	24	5
	23	5

Accessories M12

Lock nut

21 01 000 0018



M12
dynamometric screwdriver
Tightening torque 0.6 Nm

for M12 Slim design SW 15

09 99 000 0646



Identification	Part No.	Drawing	Dimensions in mm
Cap metal M12 for IP65 / IP67 M12 metal cap for male side with cord	21 01 000 0033		
Cap metal M12 for IP65 / IP67 M12 metal cap for male side with cable clip	21 01 000 0038		
Cap metal M12 for IP65 / IP67 M12 metal cap for female side with cord	21 01 000 0030		
Cap metal M12 for IP65 / IP67 M12 metal cap for female side with cable clip	21 01 000 0031		
Cap M12 for IP65 / IP67 Seals material Viton Plastic cap for female	21 01 000 0003		

Directory

Page

5. 7/8" HARAX®

5.1 7/8" HARAX®-Power-Circular connectors

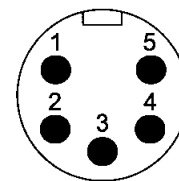
o Technical characteristics	05.02
■ Cable connectors	
• 7/8" HARAX® Male	05.04
• 7/8" HARAX® Female	05.05
• System cables	05.06
■ Device connectors	
• Panel feed-through	05.10
o Accessories	05.12

Specifications IEC 60 352-4
DIN 61984

Approval , VDE



Mating face



Mating face
acc. to IEC 61076-2-101

Technical characteristics 7/8" HARAX®

Type	7/8" HARAX®
------	-------------

General data

Conductor cross section	0.75 - 1.5 mm ² AWG 18-16
Diameter of individual strands	≥ 0.15 mm
Conductor insulation material	PVC, PP, TPE
Conductor diameter	≤ 2.8 mm
Cable diameter	6.8 - 9.5 mm (black) 9 - 12.5 mm (grey)
Temperature range	-40 °C ... +85 °C
Temperature during connection	-5 °C ... +50 °C
Degree of protection	IP65 / IP67
Mating cycles	100
Recommended tightening torque / Hexagonal wrench	1.5 Nm / SW 22

Electrical characteristics

Rated current	10 A
Rated voltage	230 V / 400 V
Rated impulse voltage	4.8 kV
Contact resistance	10 mΩ
Insulation resistance	10 ⁸ Ω
Pollution degree	3
Overvoltage category	3
Isolation group	1

Materials

Contact material	Copper alloy
Contact plating	Gold
Contact carrier material	TPU, PA
Housing material	TPU, zinc die-cast, PA

Technical characteristics – System cables, 7/8" HARAX®

Degree of protection	IP67
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

05

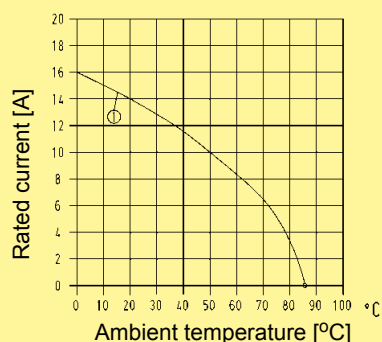
Technical characteristics 7/8" HARAX®

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.

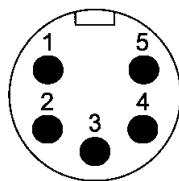
7/8"

1 = Wire gauge 0.75 mm² /
1.5 mm²





Mating face



Mating face
acc. to IEC 61076-2-101



Applications / Advantages

- The reliable connector for power applications
- Patent HARAX® fast termination
- Overmoulded system cables in various lengths
- Robust design, quick assembly

Identification

Part No.

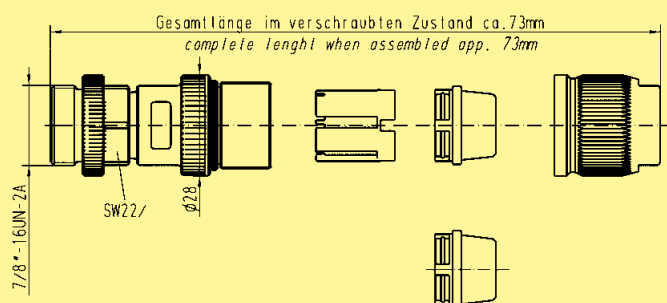
Drawing

Dimensions in mm

7/8" HARAX® Male

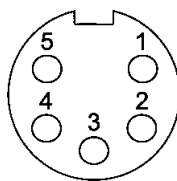


21 04 116 1505





Mating face



Mating face
acc. to IEC 61076-2-101



Identification

Part No.

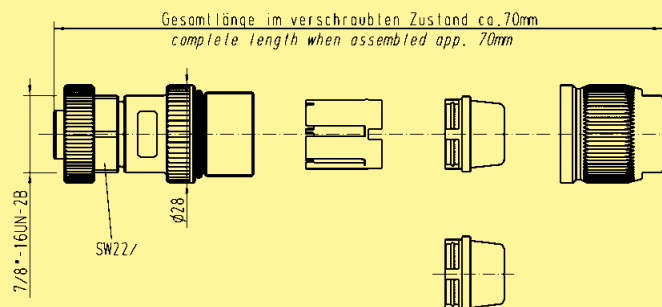
Drawing

Dimensions in mm

7/8" HARAX® Female



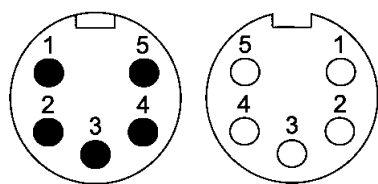
21 04 116 2505



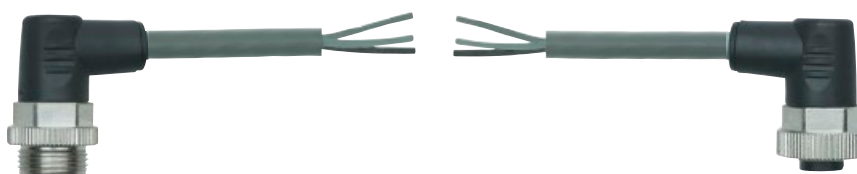
05

05
05

Mating face



Mating face
acc. to IEC 61076-2-101



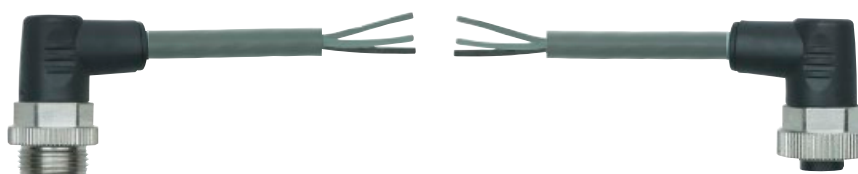
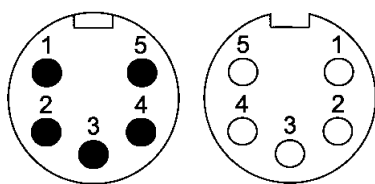
Technical characteristics

Degree of protection	IP67
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

7/8" System cables



Mating face



Mating face
acc. to IEC 61076-2-101

Overview system cables 7/8"

Number of contacts			Male 7/8"			
			straight		angled	
			 Cable material: PUR		 Cable material: PUR	
Female 7/8"	straight		0.3 m	21 04 416 1501	xxx	
			0.6 m	21 04 416 1502	xxx	
			1.0 m	21 04 416 1503	xxx	
			1.5 m	21 04 416 1504	xxx	
			2.0 m	21 04 416 1505	xxx	
	angled		xxx		0.3 m	21 04 416 3501
			xxx		0.6 m	21 04 416 3502
			xxx		1.0 m	21 04 416 3503
			xxx		1.5 m	21 04 416 3504
			xxx		2.0 m	21 04 416 3505

Number of contacts			Female 7/8"			
			straight		angled	
			 Cable material: PUR		 Cable material: PUR	
Open end		1.5 m	21 04 516 2501	1.5 m	21 04 516 4501	
		3.0 m	21 04 516 2502	3.0 m	21 04 516 4502	
		5.0 m	21 04 516 2503	5.0 m	21 04 516 4503	
		7.5 m	21 04 516 2504	7.5 m	21 04 516 4504	
		10.0 m	21 04 516 2505	10.0 m	21 04 516 4505	



Identification	Part No.	Drawing	Dimensions in mm
Overmoulded cordsets 7/8" Female straight 3 poles Length: 2.0 m	21 04 516 2302	Schematic diagram View mating side	
Overmoulded cordsets 7/8" Male straight 4 poles Length: 2.0 m	21 04 516 1402	Schematic diagram View mating side	

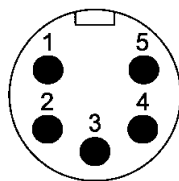


Identification	Part No.	Drawing	Dimensions in mm
Overmoulded cordsets 7/8" Female straight 5 poles Length: 1.5 m 3.0 m 5.0 m 7.5 m 10.0 m	21 04 516 2501 21 04 516 2502 21 04 516 2503 21 04 516 2504 21 04 516 2505	Schematic diagram View mating side	
Overmoulded cordsets 7/8" Female angled 5 poles Length: 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	
Overmoulded cordsets 7/8" Male-Female straight 5 poles 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	
Overmoulded cordsets 7/8" Male-Female angled 5 poles 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	

7/8" Panel feed-through



Mating face



Mating face
acc. to IEC 61076-2-101



Identification

Part No.

Drawing

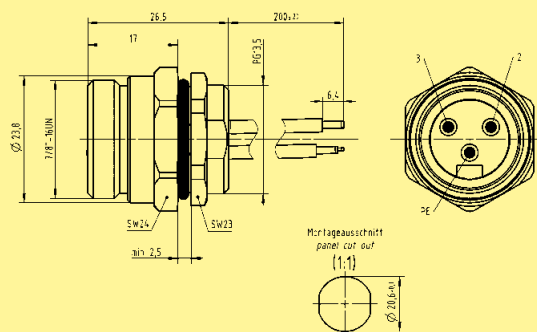
Dimensions in mm

7/8" Panel feed-through

20 cm conductors, AWG 18, 1 mm², 3 poles

Male

21 04 316 1305

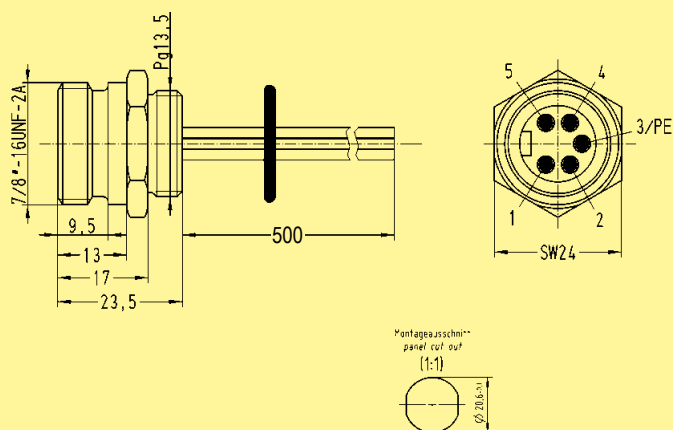


7/8" Panel feed-through

50 cm conductors, AWG 18, 1 mm², 5 poles

Male

21 04 316 1505



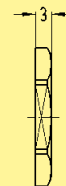
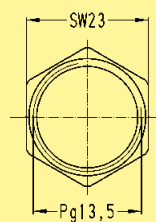


Identification	Part No.	Drawing	Dimensions in mm
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Lock nut Pg 13.5
nickel plated



21 01 000 0020

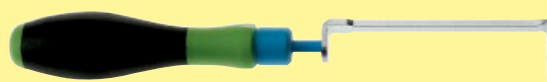


7/8"
dynamometric screwdriver
Tightening torque 1.5 Nm

for 7/8"

SW 23

09 99 000 0395



Directory

Page

6. **HARAX® Panel feed-through**6.1 **HARAX® Panel feed-through**

o Technical characteristics	06.02
■ Cable connectors	
• HARAX® Pg 13.5 / M20 Panel feed-through	06.04
o Accessories	06.05

06

HARAX® Panel feed-through



Specifications IEC 60 352-4
DIN 61984

Approval , VDE



Technical characteristics Panel feed-through

Type	HARAX® Pg 13.5/M20 Panel feed-through
------	---------------------------------------

General data

Conductor cross section	0.75 - 1.5 mm ² AWG 18 - 16
Diameter of individual strands	≥ 0.2 mm
Conductor insulation material	PVC, PP, TPE
Conductor diameter	≤ 2.8 mm
Cable diameter	6 - 9 mm
Temperature range	-25 °C ... +85 °C
Temperature during connection	-5 °C ... +50 °C
Degree of protection	IP67
Mating cycles	100
Recommended tightening torque	8 Nm

Electrical characteristics

Rated current	16 A
Rated voltage	230 V / 400 V
Rated impulse voltage	4 kV
Contact resistance	10 mΩ
Insulation resistance	10 ⁸ Ω
Pollution degree	3
Overvoltage category	3
Isolation group	1

Materials

Contact material	Copper alloy
Contact plating	Gold
Contact carrier material	TPU, PA
Housing material	TPU, PA

Technical characteristics Panel feed-through

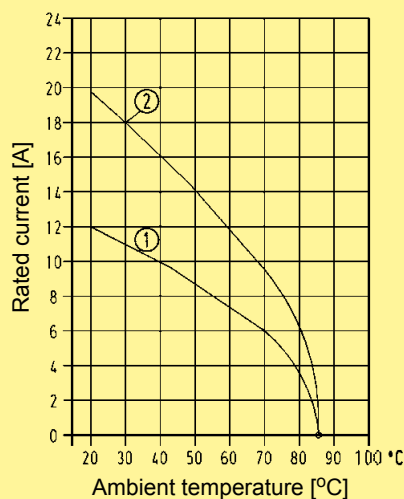
Current carrying capacity The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals. The current capacity-curve is valid for continuous, not interruptet current-loaded contacts of connectors when simultaneous power on all contacts is given,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

Control and test procedures according to DIN IEC 60 512-5.

Pg 13.5
3 poles

1 = Wire gauge
0.75 mm²

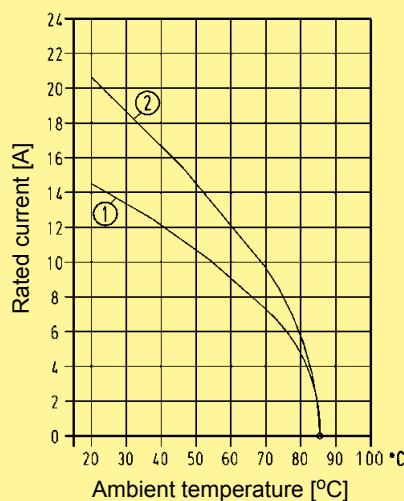
2 = Wire gauge
1.5 mm²



Pg 13.5 / M20
4 poles

1 = Wire gauge
0.75 mm²

2 = Wire gauge
1.5 mm²





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 mm²

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 mm²

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 pigtail cable, l = 500 mm, 1.5 mm²

21 01 140 1323

HARAX® Pg 13.5 / 3 + PE
with pre-assembled pigtail cable, l = 500 mm, 1.5 mm²

21 01 140 3333

HARAX® M20 / 4 contacts
with solder termination

21 01 141 1023

HARAX® M20 / 3 + PE
with solder termination

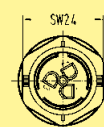
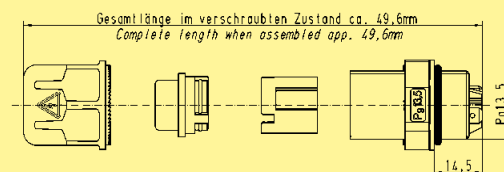
21 01 141 3023

HARAX® M20 / 4 contacts
with pre-assembled pigtail cable, l = 500 mm, 1.5 mm²

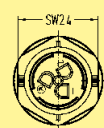
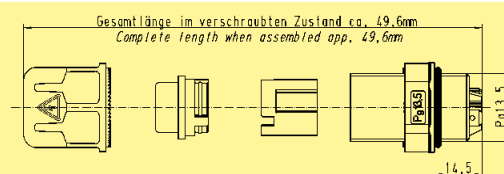
21 01 141 1323

HARAX® M20 / 3 + PE
with pre-assembled pigtail cable, l = 500 mm, 1.5 mm²

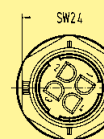
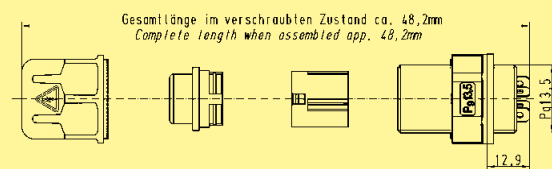
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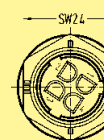
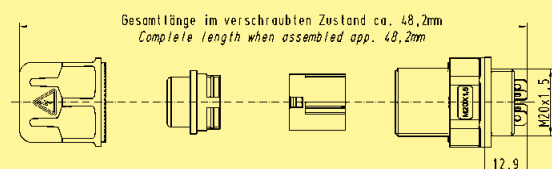
View:
Mating side



View:
Mating side



View:
Mating side



View:
Mating side

Identification	Part No.	Drawing	Dimensions in mm
Termination element M12 HARAX® Pg 9 Screw cap, splice ring, seal 3 contacts	21 01 010 0001		
Termination element M12 HARAX® Pg 9 Screw cap, splice ring, seal 4 contacts	21 01 010 0006		
Lock nut Pg 9 Lock nut Pg 13.5, SW 27 Lock nut Pg 13.5, SW 24	21 01 000 0008 21 01 000 0007 21 01 000 0039		

Directory

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7. INOX – Solutions for extreme demands**7.1 M12 INOX**

o Technical characteristics **07.02**

■ Cable connectors

• M12-L INOX **07.04**

Specifications IEC 60 352-4
IEC 60 068-2-52:1996, severity level 4



Technical characteristics M12 INOX

Type M12 INOX V4A	HARAX® M12-L 4 poles	M12 Crimp
-------------------	-------------------------	-----------

General data

Conductor cross section	0.34 - 0.75 mm ² AWG 22 - 18	0.14 - 0.75 mm ² AWG 26 - 18
Diameter of individual strands	≥ 0.1 mm	X
Conductor insulation material	PVC	X
Conductor diameter	1.6 - 2.0 mm 2.0 - 2.6 mm	2.0 - 2.3 mm
Cable diameter	6 - 8 mm	4.5 - 8.8 mm
Temperature range	-40 °C ... +85 °C	-40 °C ... +85 °C
Temperature during connection	-5 °C ... +50 °C	-5 °C ... +50 °C
Degree of protection	IP65 / IP67	IP67
Mating cycles	100	500
Tightening torque connector / hexagonal wrench	0.6 Nm / SW 17	0.6 Nm / SW 17

Electrical characteristics

Rated current	6 A	4 A
Rated voltage	50 V	250 V
Rated impulse voltage	1.5 kV	1.5 kV
Contact resistance	10 mΩ	10 mΩ
Insulation resistance	10 ⁸ Ω	10 ⁸ Ω
Pollution degree	3	3
Overvoltage category	3	3
Isolation group	1	1

Materials

Contact material	Brass	Brass
Contact plating	Gold	Gold
Contact carrier material	PA unreinforced	PA
Housing material	V4A	V4A

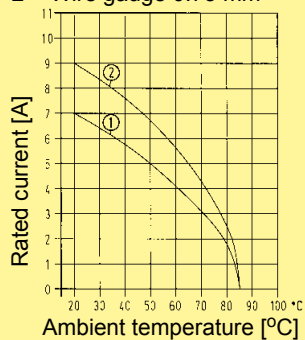
Technical characteristics M12 INOX

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.

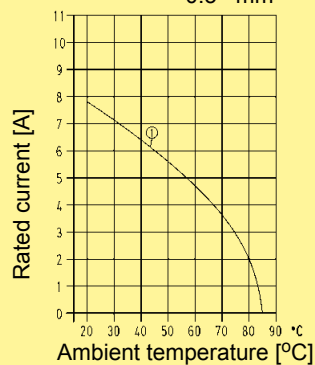
Control and test procedures according to DIN IEC 60 512-5.

M12-L
4 poles

1 = Wire gauge 0.34 mm²
2 = Wire gauge 0.75 mm²

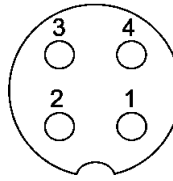


M12, Crimp 1 = Wire gauge 0.34 mm² /
0.5 mm²

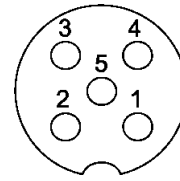




Mating faces



A-coding
4 poles
Mating faces acc. to IEC 61076-2-101



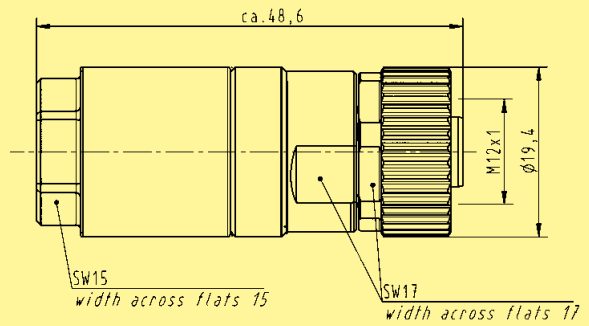
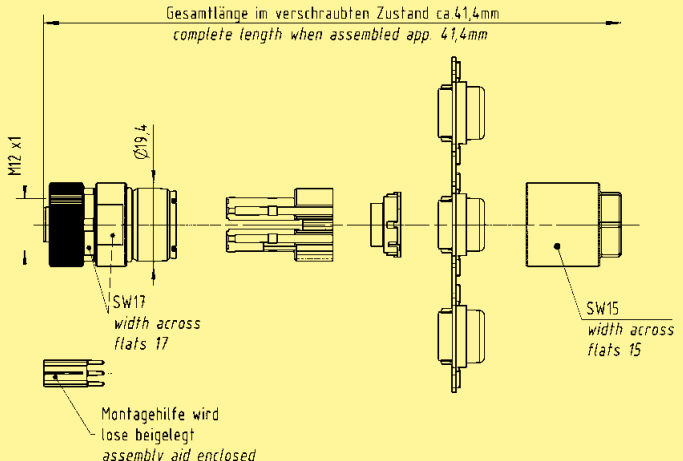
A-coding
5 poles



Applications / Advantages

- Designed for rough outdoor applications in harsh environments
- Material V4A
- Available with crimp resp. **HARAX®** rapid termination
- Extreme robust design, quick assembly

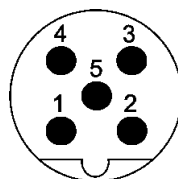
07

Identification	Part No.	Drawing	Dimensions in mm
HARAX® M12-L INOX  Female, A-coding, straight version 4 poles	21 03 222 2435		
M12-L Crimp INOX  Female, A-coding, straight version 5 poles	21 03 822 2535		

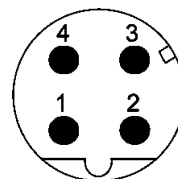
07
04



Mating faces



B-coding



D-coding

Mating faces acc. to IEC 61076-2-101



Identification

Part No.

Drawing

Dimensions in mm

M12-L Crimp INOX



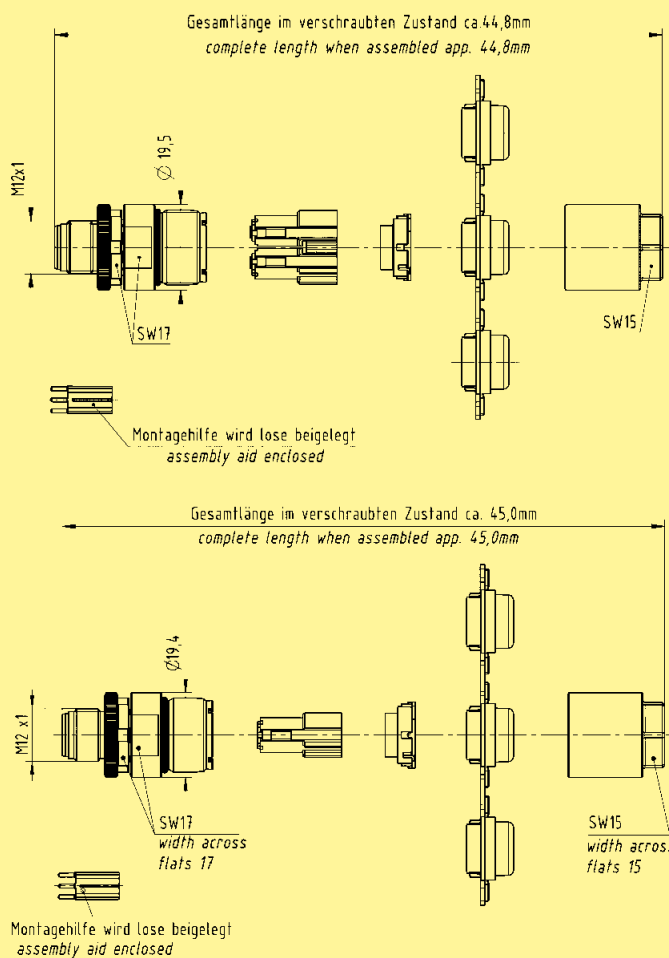
Male, B-coding,
straight version
5 poles

21 03 841 1535



Male, D-coding,
straight version
4 poles

21 03 882 1435



List of part numbers



Part No.	Page	Part No.	Page	Part No.	Page	Part No.	Page	Part No.	Page
09 47 220 0002	03.74	09 48 220 0004 075	03.74	09 99 000 0382	03.60	21 01 010 2017	03.62	21 02 554 7305	02.09
09 47 220 0002	03.77	09 48 220 0004 100	03.74	09 99 000 0384	03.36	21 01 010 2017	03.91	21 02 554 7305	02.11
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09 47 220 0005	03.74	09 48 222 2003 010	03.74	09 99 000 0395	05.12	21 01 100 9019	04.13	21 03 030 1300	03.62
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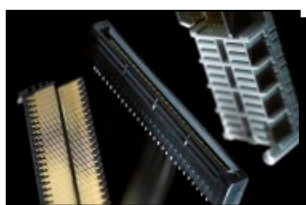
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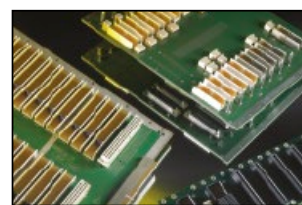
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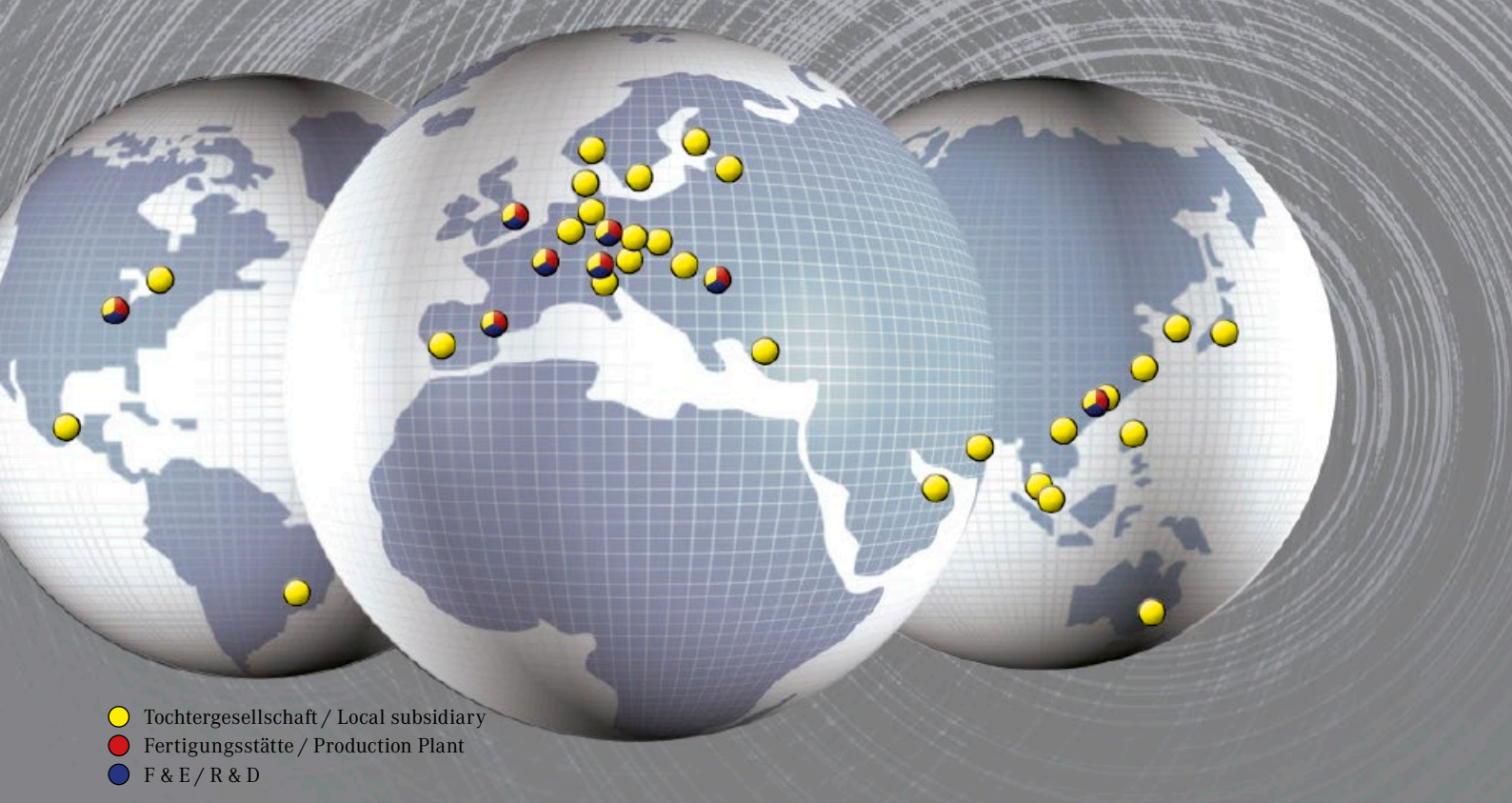
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