Pushing Performance

People | Power | Partnership

HARTING News 2020

75 HARTING Technology Group CREATING THE FUTURE for 75 years

News 2020

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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 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.

Transforming customer wishes into concrete solutions

The HARTING Technology Group is skilled in the fields of electrical, electronic and optical connection, transmission and networking technology, 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/data-networking 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 housing technology and shop systems.

The HARTING Group currently comprises 58 sales companies and production plants worldwide employing a total of about 5,300 staff.

HARTING Subsidiary HARTING Representation

We aspire to top performance.

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

Wherever our customers are, we're there.

Increasing industrialization is creating growing markets that are characterized by widely diverging demands and requirements. What these markets all share in common is the quest for perfection, increasingly efficient processes and reliable technologies. **HARTING** is providing these technologies – in Europe, the Americas and Asia. In order to implement customer requirements in the best possible manner, the **HARTING** professionals at our international subsidiaries engage in up-close, partnership-based interaction with our customers, right from the very early product development phase.

Our on-site staff 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 offer our customers the best possible solutions, on request **HARTING** contributes a great deal more and is tightly integrated into the value-creation process.

From ready-assembled cables through to control racks or ready-to-go control desks. Our aim is to generate maximum benefit for our customers – with no compromises!

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 towards new requirements, which is why **HARTING** is the first company 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 sophisticated network systems. Over the course of many years of close, trust-based cooperation with its customers, the **HARTING** Technology Group has become one of the leading specialists globally for connector technology. We offer individual customers specific and innovative solutions that go beyond the basic standard functionalities. These tailored solutions deliver sustained results, ensure investment security and enable customers to achieve significant added value.

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

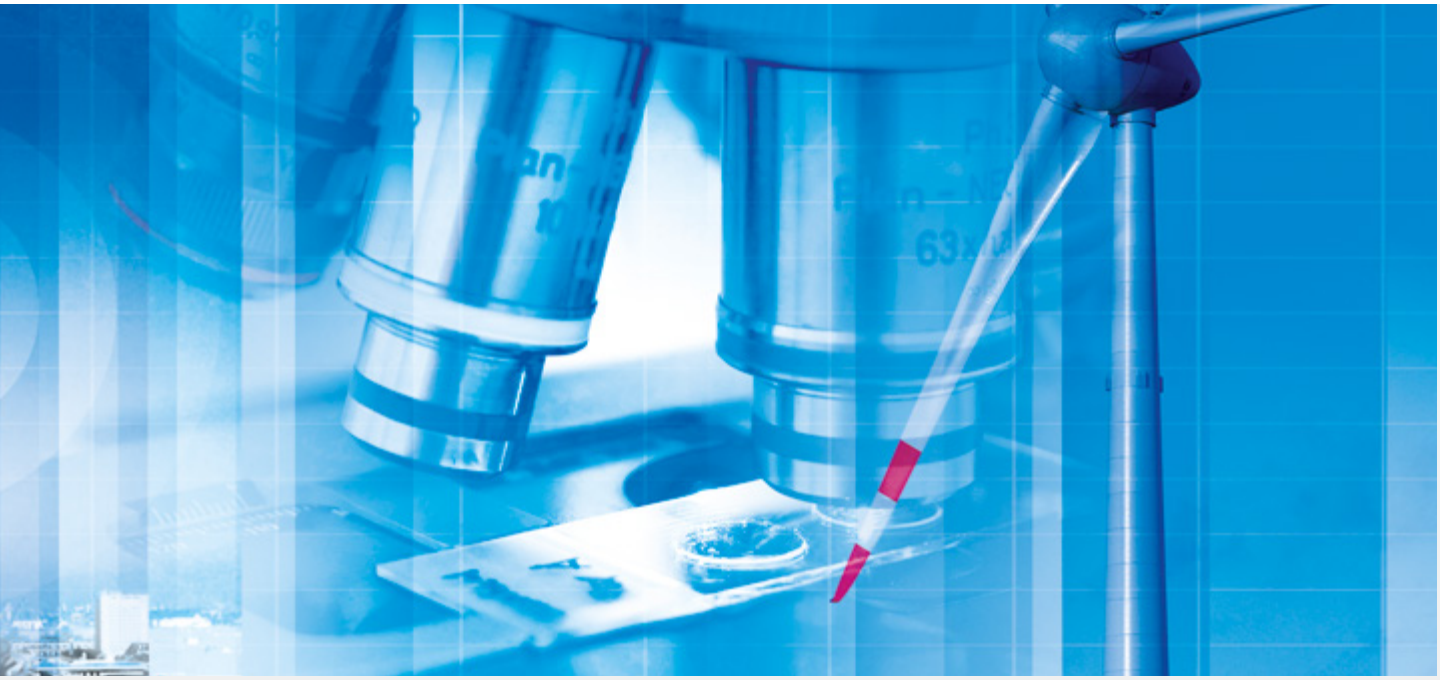
In order to develop and produce connectivity and network solutions serving an exceptionally wide range of connector applications in a professional and cost-effective manner, **HARTING** not only commands the full array of conventional tools and basic technologies. Above and beyond these capabilities, **HARTING** is constantly harnessing and refining its broad base of knowledge and experience to create new solutions that also ensure continuity. To secure its lead in know-how, HARTING draws on a wealth of sources from its in-house research and applications.

Salient examples of these sources of innovative knowledge include microstructure technologies, 3D design and connection technology, high-temperature and ultrahigh-frequency applications that are finding use in telecommunications and 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 and stainless steel.

HARTING overcomes technological limitations.

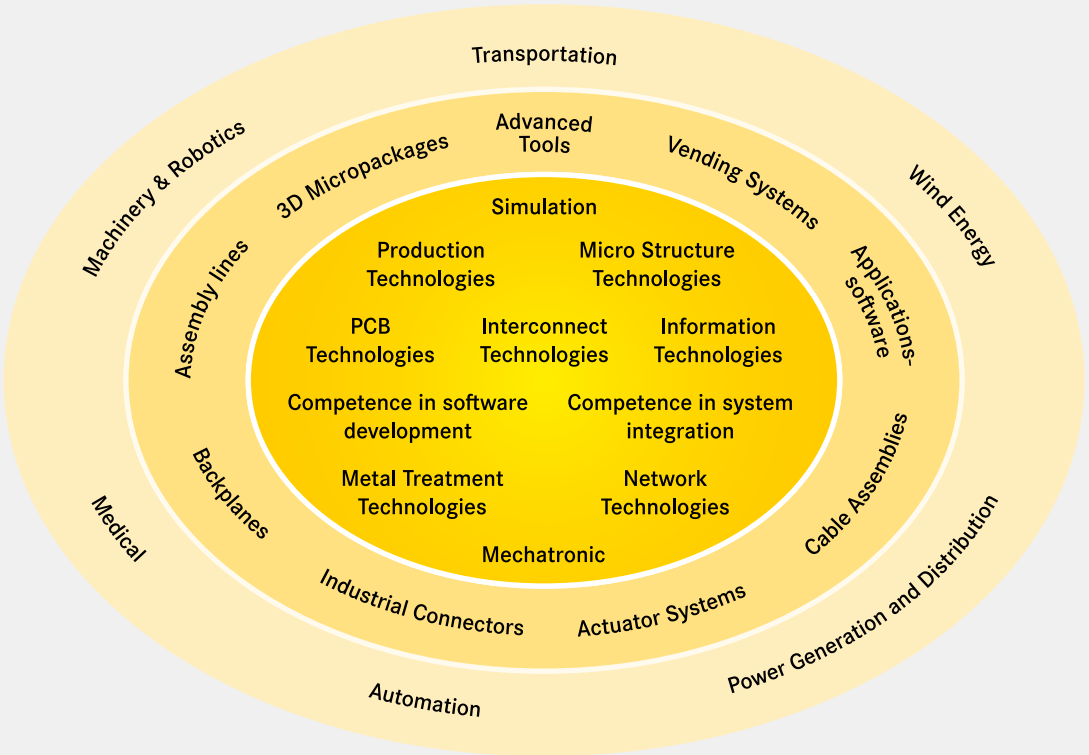
Drawing on the comprehensive resources of the group's technology pool, **HARTING** devises practical solutions for its customers. Whether this involves industrial networks for manufacturing automation, or hybrid interface solutions for wireless telecommunication infrastructures, 3D circuit carriers with microstructures, or cable assemblies for high-temperature applications in the automotive industry – **HARTING** technologies offer not only components, but comprehensive solutions attuned to individual customer requirements and preferences. The range of cost-effective solutions 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) employs simulation tools, as well as experimental, testing and diagnostics facilities all the way to scanning electron microscopes. In addition to product and process suitability considerations, lifecycle and environmental aspects play a key role in the selection of materials and processes.



HARTING's knowledge is practical know-how that generates synergy effects.

HARTING commands decades of experience with regard to the applications conditions involved in connections in telecommunications, computer, network and medical technologies, as well as industrial automation technologies, e.g. in the mechanical engineering and plant engineering areas, in addition to the power generation industry and the transportation sector. **HARTING** is highly conversant with the specific application areas in all of these technology fields. In every solution approach, the key focus is on the application. In this context, uncompromising, superior quality is our hallmark. Every new solution found invariably flows 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. **HARTING** is synergy in action.



Contents	Page

HARTING Customised Industrial Connectors

Han

Features

- Full flexibility to place cable entries on three sides of the hood
- Positioning of cable entries from diameter M12 x 1.5 to M40 x 1.5
- Configurations of both complete cable glands as well as single threads are possible
- Eight positions available for laser inscription identifying the component as well as for cable designation
- Direct download option for drawings and 3D models created with the configurator

Benefits

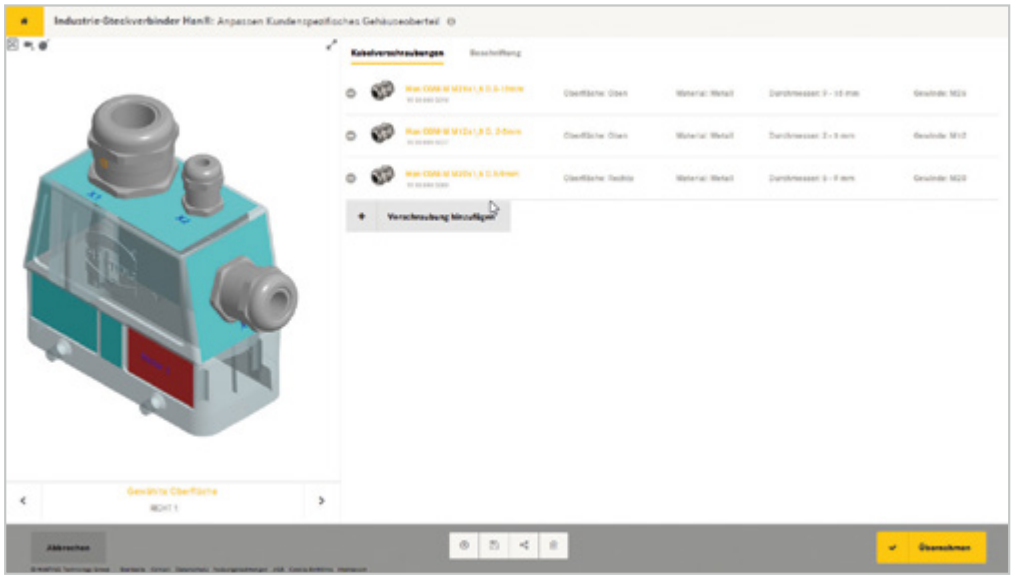
- Perfect fit solutions without compromise due to new customising functions
- Time savings by downloading 3D data of the complete interface, with data available immediately after configuration
- Short delivery time due to fully automated manufacturing of your connector configuration
- Efficient collaboration due to myHARTING dashboard management with save and share functions

Perfect fit interfaces

The Han® Configurator is an online tool for the design of industrial connectors. It enables users to quickly and easily design the optimal interface for their application.

With the new customising function of the Han® Configurator, we are again expanding the scope for tailor-made products based on the Han® portfolio.

The user can define the number, size and position of cable entries. They can also apply individual laser markings to identify cables and equipment. Immediately after completion, the design data is available for download and the user can order the custom-fit solution. Engineering processes will not be interrupted as small quantities, even down to batches of one, are possible.



Learn more:
www.HARTING.com/configurator

New
1
.
2

Automated manufacturing of customised connectors

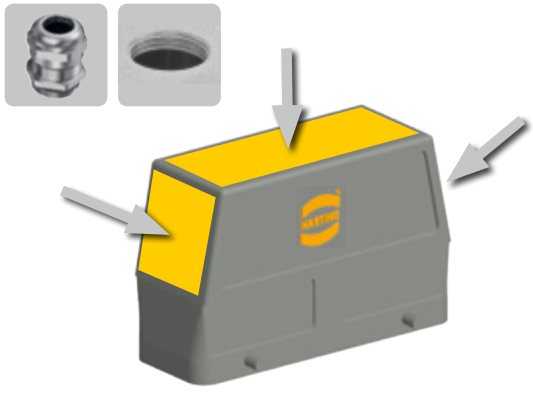
The Han® Configurator represents a continuous process, ranging from design and product development right up to the production environment for the manufacture of the connectors. For the customer, design support shortens the time between design and delivery of the component. HARTING benefits from the “digital twins” of the interfaces that manage their manufacturing processes.

Once the design has been completed, the user receives the 3D data, type sheets and parts lists that make up the created solution, allowing them to transfer it to their own engineering environment.

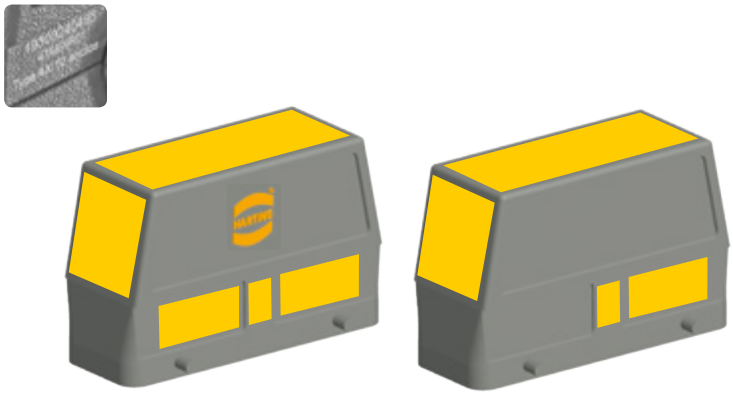
From a customer’s perspective, the Han® Configurator expands the variety of available solutions. The user can be sure that they will receive the best possible product for their task.

Description of possibilities

Cable glands M12 - M40
3 sides of the hood



Laser printing on 8 sides of the hood



Number of contacts

1

200 A   1.500 V   8 kV   2
Connectors for battery storage market
Single locking lever

Features

- Fulfils requirements according to the newest standards of the battery storage market
- Finger safe male and female contacts
- Compact construction type
- Housing 360° rotatable even when mounted

Technical characteristics

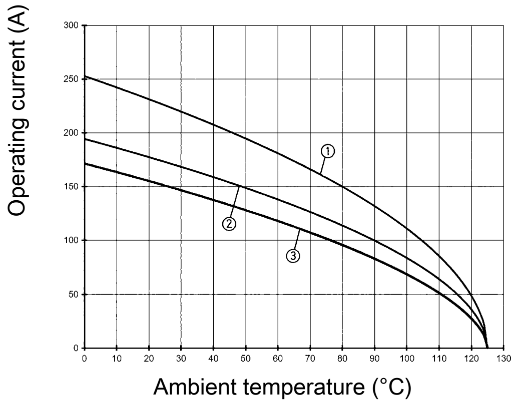
Number of contacts	1
Rated current	200 A
Rated voltage	1500 V
Rated impulse voltage	8 kV
Pollution degree	2
Insulation resistance	$>10^8$ Ω
Contact resistance	≤0.3 mΩ
Limiting temperature	-40 ... +125 °C
Number of relockings	≥500
Degree of protection acc. to IEC 60529	IP20
Material (hood/housing)	Polyamide (PA)
Colour (hood/housing)	RAL 9005 (jet black), RAL 3001 (signal red)
Material (contacts)	Copper alloy
Material (accessories)	Thermoplastic polyurethane (TPU)
Material flammability class acc. to UL 94	V-0

Derating

Current carrying capacity

The current carrying capacity of the connectors is limited by the thermal load capability of the contact element material including the connections and the insulating parts. The derating curve is therefore valid for currents which flow constantly (non-intermittent) through each contact element of the connector evenly, without exceeding the allowed maximum temperature.

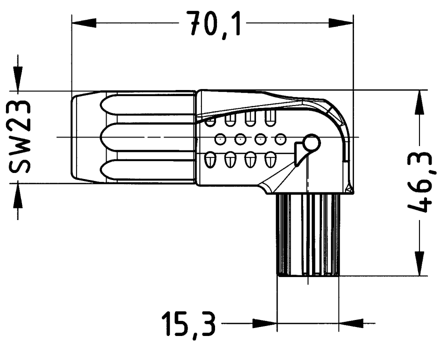
Measuring and testing techniques acc. to IEC 60512-5-2



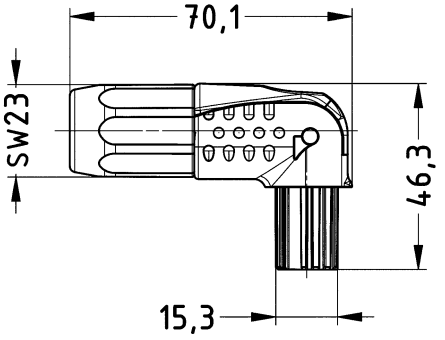
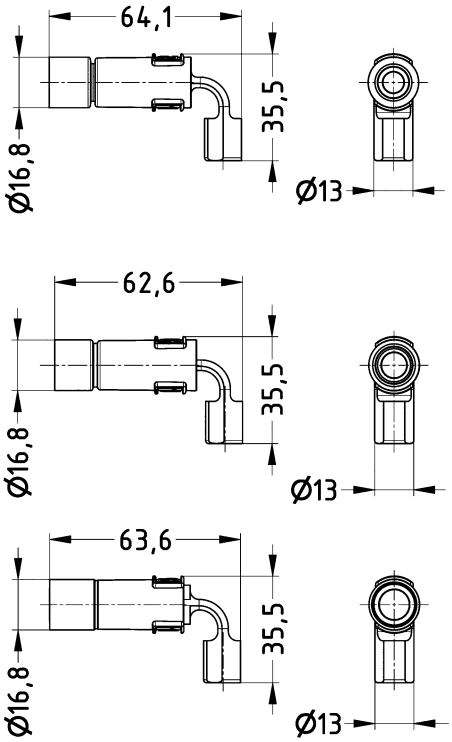
① Han® S 50 mm²
② Han® S 35 mm²
③ Han® S 25 mm²

Specifications and approvals

EN 60664-1
IEC 61984
UL 1973
UL 4128
UL 9540

Identification	Conductor cross-section (mm²)	Part number	Drawing (dimensions in mm)
Han® S, Hood, Angled, Black  Please order crimp contacts separately.	25 ... 50	09 93 001 0501	

New

Identification	Conductor cross-section (mm²)	Part number	Drawing (dimensions in mm)
Han® S, Hood, Angled, Red  Please order crimp contacts separately.	25 ... 50	09 93 001 0502	
Han® S, Crimp contact, Female contact, incl. sealing, Contact surface: Silver plated 	25 35 50	09 93 000 6262 09 93 000 6263 09 93 000 6264	

Han

Number of contacts

1

200 A 1.500 V 8 kV 2
Connectors for battery storage market
Single locking lever

Technical characteristics

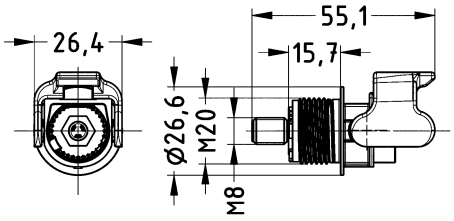
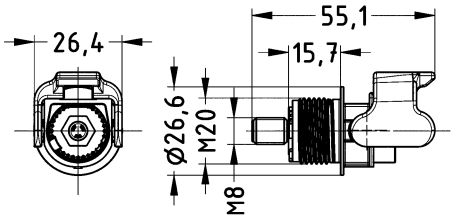
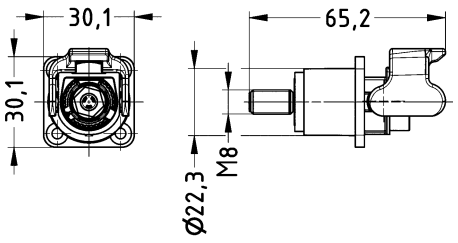
Number of contacts	1
Rated current	200 A
Rated voltage	1500 V
Rated impulse voltage	8 kV
Pollution degree	2
Insulation resistance	>10^8 Ω
Contact resistance	≤0.3 mΩ
Limiting temperature	-40 ... +125 °C
Number of relockings	≥500
Degree of protection acc. to IEC 60529	IP20
Material (hood/housing)	Polyamide (PA)
Colour (hood/housing)	RAL 9005 (jet black), RAL 3001 (signal red)

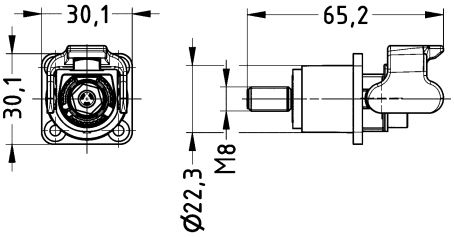
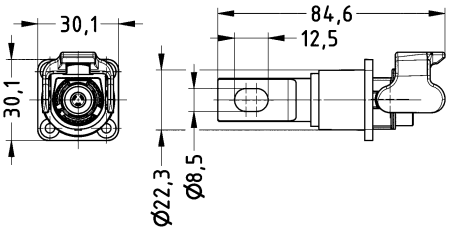
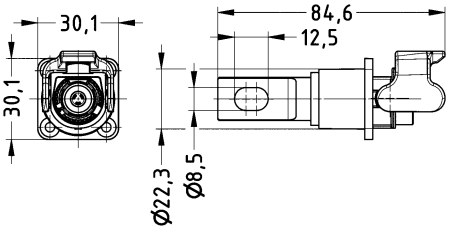
Technical characteristics

Material (contacts)	Copper alloy
Material flammability class acc. to UL 94	V-0

Specifications and approvals

EN 60664-1
IEC 61984
UL 1973
UL 4128
UL 9540

Identification	Part number	Drawing (dimensions in mm)
Han® S, Screw mounted housing, incl. male contact M8, Black Contact surface: Silver plated 	09 93 001 0101	
Han® S, Screw mounted housing, incl. male contact M8, Red Contact surface: Silver plated 	09 93 001 0102	
Han® S, Bulkhead mounted housing, incl. male contact M8, Black Contact surface: Silver plated 	09 93 001 0301	

Identification	Part number	Drawing (dimensions in mm)
Han® S, Bulkhead mounted housing, incl. male contact M8, Red Contact surface: Silver plated 	09 93 001 0302	
Han® S, Bulkhead mounted housing, incl. male contact busbar, Black Contact surface: Silver plated 	09 93 001 0303	
Han® S, Bulkhead mounted housing, incl. male contact busbar, Red Contact surface: Silver plated 	09 93 001 0304	

Features

- High density of contacts
- For requirements up to 250 V / 10 A
- Time saving rapid termination by use of crimping contacts
- Gold and silver contacts available

Technical characteristics

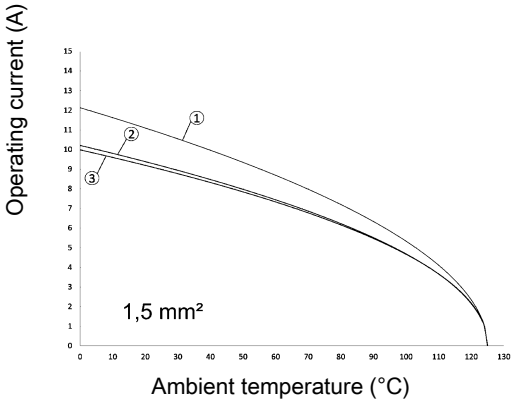
Number of contacts	55, 75, 107
Rated current	10 A
Rated voltage	250 V
Rated impulse voltage	4 kV
Pollution degree	3
Insulation resistance	$>10^{10}$ Ω
Limiting temperature	-40 ... +125 °C
Mating cycles	≥500
Material (insert)	Polycarbonate (PC)
Colour (insert)	RAL 7032 (pebble grey)
Material flammability class acc. to UL 94	V-0

Derating

Current carrying capacity

The current carrying capacity of the connectors is limited by the thermal load capability of the contact element material including the connections and the insulating parts. The derating curve is therefore valid for currents which flow constantly (non-intermittent) through each contact element of the connector evenly, without exceeding the allowed maximum temperature.

Measuring and testing techniques acc. to IEC 60512-5-2



① Han® 55 DDD
② Han® 75 DDD
③ Han® 107 DDD

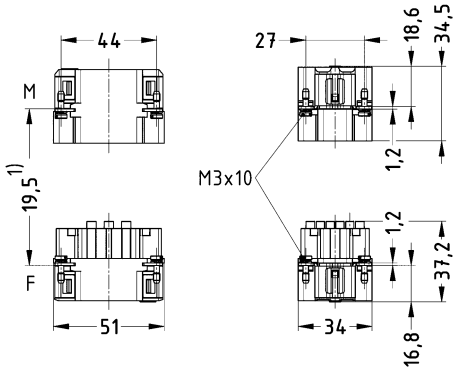
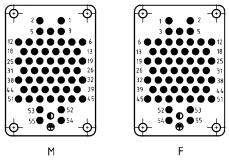
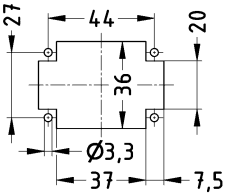
Specifications and approvals

IEC 61984

Number of contacts

55+ ⏚

10 A 250 V 4 kV 3

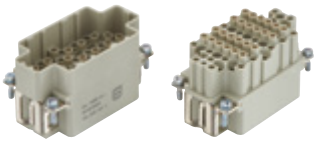
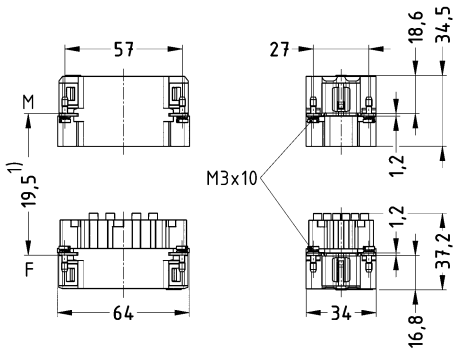
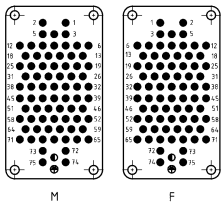
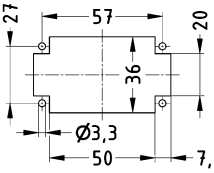
Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Han® DDD, Crimp termination  PE connection with a Han D® crimp contact Please order crimp contacts separately.	0.14 ... 2.5	09 16 055 2001	09 16 055 2101	 1) distance for contact max. 21 mm  Contact arrangement (view from termination side)  Panel cut out for use without Hoods/Housings

Han

Number of contacts

75+ ⏚

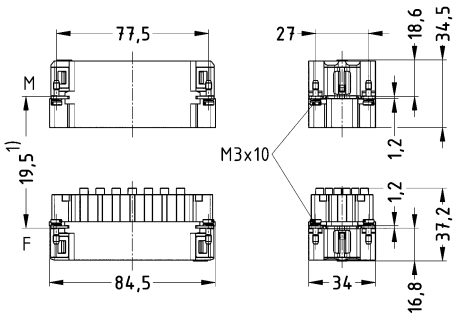
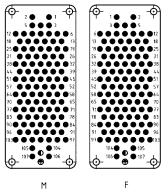
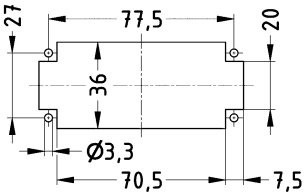
10 A 250 V 4 kV 3

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Han® DDD, Crimp termination  PE connection with a Han D® crimp contact Please order crimp contacts separately.	0.14 ... 2.5	09 16 075 2001	09 16 075 2101	 1) distance for contact max. 21 mm  Contact arrangement (view from termination side)  Panel cut out for use without Hoods/Housings

Number of contacts

107+ ⏚

10 A 250 V 4 kV 3

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Han® DDD, Crimp termination  PE connection with a Han D® crimp contact Please order crimp contacts separately.	0.14 ... 2.5	09 16 107 2001	09 16 107 2101	 1) distance for contact max. 21 mm  Contact arrangement (view from termination side)  Panel cut out for use without Hoods/Housings

Technical characteristics

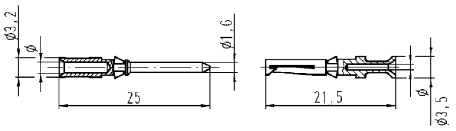
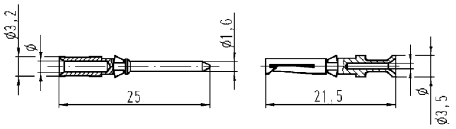
Contact resistance	≤3 mΩ
Material (contacts)	Copper alloy
RoHS	compliant with exemption

Specifications and approvals

EN 60664-1
IEC 61984

Details

Remarks on the crimp technique
The wire gauges mentioned in the catalogue refer to geometric wire gauges of cables.

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Han D®, Crimp contact, Contact surface: Silver plated 	0.14 ... 0.37	09 15 000 6104	09 15 000 6204	
	0.5	09 15 000 6103	09 15 000 6203	
	0.75	09 15 000 6105	09 15 000 6205	
	1	09 15 000 6102	09 15 000 6202	
	1.5	09 15 000 6101	09 15 000 6201	
	2.5	09 15 000 6106	09 15 000 6206	
Han D®, Crimp contact, Contact surface: Gold plated 	0.14 ... 0.37	09 15 000 6124	09 15 000 6224	
	0.5	09 15 000 6123	09 15 000 6223	
	0.75	09 15 000 6125	09 15 000 6225	
	1	09 15 000 6122	09 15 000 6222	
	1.5	09 15 000 6121	09 15 000 6221	
	2.5	09 15 000 6126	09 15 000 6226	

Wire gauge		⌀	Stripping length
0.14-0.37 mm²	AWG 26-22	0.9 mm	8 mm
0.5 mm²	AWG 20	1.1 mm	8 mm
0.75 mm²	AWG 18	1.3 mm	8 mm
1 mm²	AWG 18	1.45 mm	8 mm
1.5 mm²	AWG 16	1.75 mm	8 mm
2.5 mm²	AWG 14	2.25 mm	6 mm

Wire gauge		⌀	Stripping length
0.14-0.37 mm²	AWG 26-22	0.9 mm	8 mm
0.5 mm²	AWG 20	1.1 mm	8 mm
0.75 mm²	AWG 18	1.3 mm	8 mm
1 mm²	AWG 18	1.45 mm	8 mm
1.5 mm²	AWG 16	1.75 mm	8 mm
2.5 mm²	AWG 14	2.25 mm	6 mm

Number of contacts

6+ ⏚

100 A 690 V 8 kV 3
+ 6 additional signal contacts
16 A 400 V 6 kV 3

Features

- Combination of signal and power in one connector
- Crimp termination for power and signal area
- Use of standard Han® TC 100 and Han E® contacts
- 16 coding options

Technical characteristics

Number of contacts	6
Additional contacts	+ 6 additional signal contacts
Rated current	100 A
Rated voltage	690 V
Rated impulse voltage	8 kV
Pollution degree	3
Rated current (signal)	16 A
Rated voltage (signal)	400 V
Rated impulse voltage (signal)	6 kV
Pollution degree (signal)	3
Insulation resistance	$>10^{10}$ Ω
Contact resistance	≤1 mΩ, ≤0.3 mΩ
Limiting temperature	-40 ... +125 °C
Mating cycles	≥500
Wire outer diameter	≤12.8 mm
Material (insert)	Polycarbonate (PC)
Colour (insert)	RAL 7032 (pebble grey)
Material (contacts)	Copper alloy
Material (accessories)	Thermoplastic
Material flammability class acc. to UL 94	V-0
RoHS	compliant, compliant with exemption

Specifications and approvals

EN 60664-1
IEC 61984
DNV GL

Details

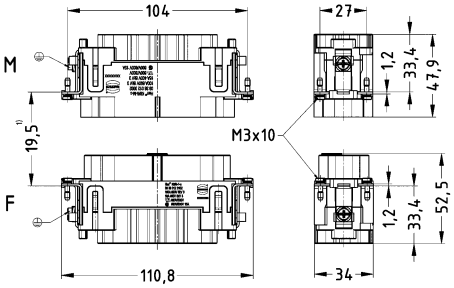
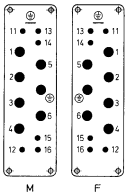
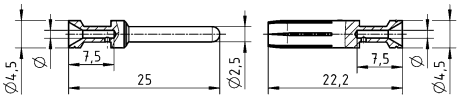
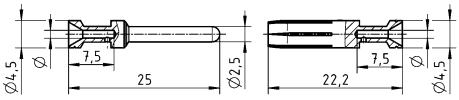
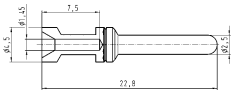
Contact resistance Han E® crimp contact: ≤ 1 mOhm

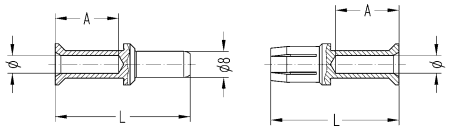
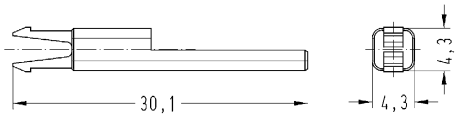
Contact resistance TC 100: ≤ 0.3 mOhm

For more technical details (i.e. number of crimping operations or crimping position) see eCatalogue

Remarks on the crimp technique

The wire gauges mentioned in the catalogue refer to geometric wire gauges of cables.

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Han-Com®, Crimp termination  Please order crimp contacts separately. Please order coding pins separately.	10 ... 25, 0.14 ... 2.5 Signal	09 38 012 3002	09 38 012 3102	 1) distance for contact max. 21 mm  Contact arrangement (view from termination side)
Han E®, Crimp contact, Contact surface: Silver plated 	0.5 0.75 1 1.5 2.5 4	09 33 000 6121 09 33 000 6114 09 33 000 6105 09 33 000 6104 09 33 000 6102 09 33 000 6107	09 33 000 6220 09 33 000 6214 09 33 000 6205 09 33 000 6204 09 33 000 6202 09 33 000 6207	 Conductor cross-section / Identification 0.14-0.37 mm² AWG 26-22 — no groove 0.5 mm² AWG 20 — no groove 0.75 mm² AWG 18 — 1 groove* 1 mm² AWG 18 — 1 groove 1.5 mm² AWG 16 — 2 grooves 2.5 mm² AWG 14 — 3 grooves 3 mm² AWG 12 — wide groove 4 mm² AWG 12 — no groove * on the back crimp collar Stripping length 7.5 mm
Han E®, Crimp contact, Contact surface: Gold plated 	0.5 0.75 1 1.5 2.5 4	09 33 000 6122 09 33 000 6115 09 33 000 6118 09 33 000 6116 09 33 000 6123 09 33 000 6119	09 33 000 6222 09 33 000 6215 09 33 000 6218 09 33 000 6216 09 33 000 6223 09 33 000 6221	 Conductor cross-section / Identification 0.14-0.37 mm² AWG 26-22 — no groove 0.5 mm² AWG 20 — no groove 0.75 mm² AWG 18 — 1 groove* 1 mm² AWG 18 — 1 groove 1.5 mm² AWG 16 — 2 grooves 2.5 mm² AWG 14 — 3 grooves 3 mm² AWG 12 — wide groove 4 mm² AWG 12 — no groove * on the back crimp collar Stripping length 7.5 mm
Han E®, Crimp contact, Relay contact, Contact surface: Silver plated 	0.75 ... 1 1.5	09 33 000 6109 09 33 000 6110		 Wire gauge / ø / Stripping length 0.75 - 1 mm² AWG 18 — 1.45 mm — 7.5 mm 1.5 mm² AWG 16 — 1.75 mm — 7.5 mm

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
TC 100, Crimp contact, Contact surface: Silver plated 	10 16 25	09 11 000 6114 09 11 000 6116 09 11 000 6125	09 11 000 6214 09 11 000 6216 09 11 000 6225	
Coding element 		09 12 000 9922		

Wire gauge	∅	Stripping length A
10 mm²	4.3	19 mm
16 mm²	5.5	19 mm
25 mm²	7	19 mm
35 mm²	8.2	16 mm
for stranded wire according to IEC 60 228 Class 5		

Han® 200 A module

Han

Number of contacts

1

200 A 1.000 V 8 kV 3

Features

- Power module for big cross-sections up to 70 mm²
- High rated voltage up to 1300 V
- IP20 protection for female and male module (by using male contacts with protective cap)
- Compatible to the Han® 300 A module
- Easy removal of the contacts

Technical characteristics

Number of contacts	1
Rated current	200 A
Rated voltage	1000 V
Rated impulse voltage	8 kV
Pollution degree	3
Rated voltage	1000 V AC, 1300 V DC
Insulation resistance	$>10^{10}$ Ω
Contact resistance	≤0.3 mΩ
Limiting temperature	-40 ... +125 °C
Mating cycles	≥500
Material (insert)	Polycarbonate (PC)
Colour (insert)	RAL 7032 (pebble grey)
Material (contacts)	Copper alloy
Material flammability class acc. to UL 94	V-0
RoHS	compliant with exemption

Specifications and approvals

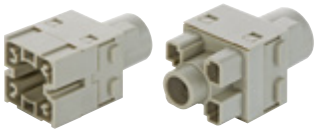
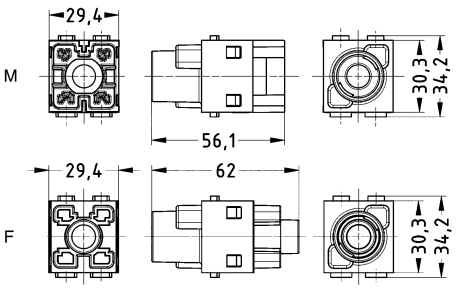
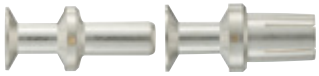
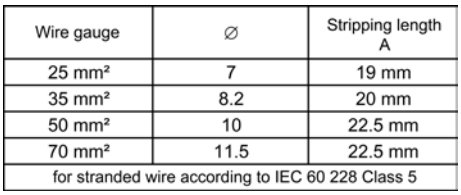
EN 50124-1
EN 60664-1
IEC 61984
DNV GL

Details

For more technical details (i.e. number of crimping operations or crimping position) see eCatalogue

Remarks on the crimp technique

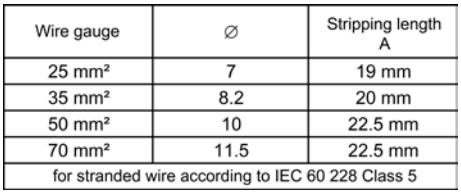
The wire gauges mentioned in the catalogue refer to geometric wire gauges of cables.

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Han-Modular®, Han® 200 A module, With protective insert, Crimp termination  Please order crimp contacts separately.	16 ... 70	09 14 001 3003	09 14 001 3103	
TC 200, Crimp contact, Contact surface: Silver plated 	16 25 35 50 70	09 11 000 6150 09 11 000 6120 09 11 000 6121 09 11 000 6122 09 11 000 6123	09 11 000 6250 09 11 000 6220 09 11 000 6221 09 11 000 6222 09 11 000 6223	

Wire gauge	∅	Stripping length A
25 mm²	7	19 mm
35 mm²	8.2	20 mm
50 mm²	10	22.5 mm
70 mm²	11.5	22.5 mm
for stranded wire according to IEC 60 228 Class 5		

New
1
.
16

Han® 200 A module

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
TC 200, Crimp contact, With protective insert, Contact surface: Silver plated 	25 35 50 70	09 11 000 7120 09 11 000 7121 09 11 000 7122 09 11 000 7123		

Wire gauge	∅	Stripping length A
25 mm²	7	19 mm
35 mm²	8.2	20 mm
50 mm²	10	22.5 mm
70 mm²	11.5	22.5 mm
for stranded wire according to IEC 60 228 Class 5		

Han® 300 A module

Number of contacts

1

300 A 1.000 V 8 kV 3

Features

- Power module for big wire gauges up to 120 mm²
- High rated voltage up to 1300 V
- IP20 protection for female and male module (by using male contacts with protective cap)
- Compatible to the Han® 200 A module
- Short and space saving contacts
- Easy removal of the contacts

Technical characteristics

Number of contacts	1
Rated current	300 A
Rated voltage	1000 V
Rated impulse voltage	8 kV
Pollution degree	3
Rated voltage	1000 V AC, 1300 V DC
Insulation resistance	$>10^{10}\ \Omega$
Contact resistance	≤0.3 mΩ
Limiting temperature	-40 ... +125 °C
Mating cycles	≥500
Material (insert)	Polycarbonate (PC)
Colour (insert)	RAL 7032 (pebble grey)
Material (contacts)	Copper alloy
Material flammability class acc. to UL 94	V-0

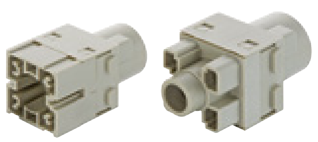
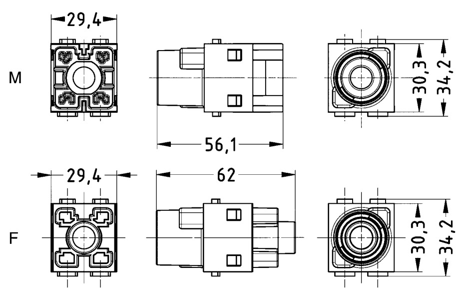
Specifications and approvals

EN 50124-1
EN 60664-1
IEC 61984

Details

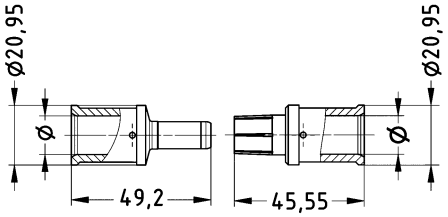
Remarks on the crimp technique

The wire gauges mentioned in the catalogue refer to geometric wire gauges of cables.

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Han-Modular®, Han® 300 A module, With protective insert, Crimp termination  Please order crimp contacts separately.	95 ... 120	09 14 001 3004	09 14 001 3104	

New

Han® 300 A module

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Crimp contact, Contact surface: Silver plated 	95 120	09 11 000 7536 09 11 000 7537	09 11 000 6636 09 11 000 6637	

Wire gauge	ø	Stripping length
95 mm²	13.55 mm	22.5 mm
120 mm²	15.55 mm	22.5 mm

Han DD® double module

Han

Number of contacts

36

10 A 400 V 6 kV 3

Features

- 36 Han D® contacts up to 400 V
- Suitable for transmitting power (10 A) and signals in one module
- e.g. for three phase AC motors including feedback for all six axes of a robot

Technical characteristics

Number of contacts	36
Rated current	10 A
Rated voltage	400 V
Rated impulse voltage	6 kV
Pollution degree	3
Insulation resistance	>10^{10} Ω
Contact resistance	≤3 mΩ
Limiting temperature	-40 ... +125 °C
Mating cycles	≥500
Mating cycles with other HMC components	≥10000
Material (insert)	Polycarbonate (PC)
Colour (insert)	RAL 7032 (pebble grey)
Material (contacts)	Copper alloy
Material flammability class acc. to UL 94	V-0
RoHS	compliant with exemption

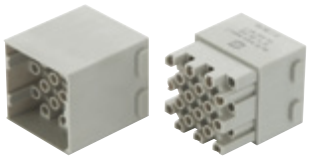
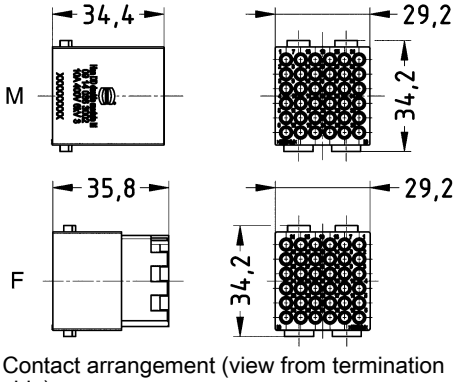
Specifications and approvals

EN 60664-1
IEC 61984

Details

Remarks on the crimp technique

The wire gauges mentioned in the catalogue refer to geometric wire gauges of cables.

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Han-Modular®, Han DD® module, Crimp termination  Please order crimp contacts separately.	0.14 ... 2.5	09 14 036 3002	09 14 036 3102	 Contact arrangement (view from termination side)

New
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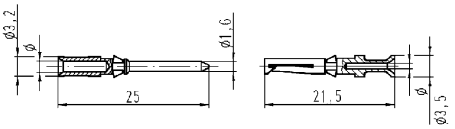
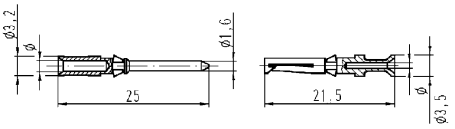
20

Han DD® double module

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Han D®, Crimp contact, Contact surface: Silver plated 	0.14 ... 0.37 0.5 0.75 1 1.5 2.5	09 15 000 6104 09 15 000 6103 09 15 000 6105 09 15 000 6102 09 15 000 6101 09 15 000 6106	09 15 000 6204 09 15 000 6203 09 15 000 6205 09 15 000 6202 09 15 000 6201 09 15 000 6206	
Han D®, Crimp contact, Contact surface: Gold plated 	0.14 ... 0.37 0.5 0.75 1 1.5 2.5	09 15 000 6124 09 15 000 6123 09 15 000 6125 09 15 000 6122 09 15 000 6121 09 15 000 6126	09 15 000 6224 09 15 000 6223 09 15 000 6225 09 15 000 6222 09 15 000 6221 09 15 000 6226	

Wire gauge		⌀	Stripping length
0.14-0.37 mm²	AWG 26-22	0.9 mm	8 mm
0.5 mm²	AWG 20	1.1 mm	8 mm
0.75 mm²	AWG 18	1.3 mm	8 mm
1 mm²	AWG 18	1.45 mm	8 mm
1.5 mm²	AWG 16	1.75 mm	8 mm
2.5 mm²	AWG 14	2.25 mm	6 mm

Wire gauge		⌀	Stripping length
0.14-0.37 mm²	AWG 26-22	0.9 mm	8 mm
0.5 mm²	AWG 20	1.1 mm	8 mm
0.75 mm²	AWG 18	1.3 mm	8 mm
1 mm²	AWG 18	1.45 mm	8 mm
1.5 mm²	AWG 16	1.75 mm	8 mm
2.5 mm²	AWG 14	2.25 mm	6 mm

Han® Shielded module basic

Han

Number of contacts

27

4 A 32 V 0.8 kV 3
+ shielding

Features

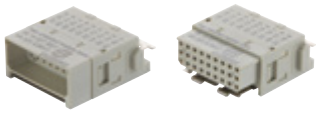
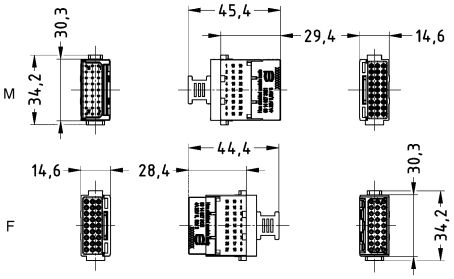
- EMC compatible connection of the cable screen with a large-area shielding plate
- High contact density up to 27 shielded contacts
- Suitable for turned or stamped D-Sub contacts
- Applicable as cost effective shielding connection

Technical characteristics

Number of contacts	27
Additional contacts	+ shielding
Rated current	4 A
Rated voltage	32 V
Rated impulse voltage	0.8 kV
Pollution degree	3
Insulation resistance	>10^{10} Ω
Contact resistance	≤10 mΩ
Limiting temperature	-40 ... +125 °C, -40 ... +105 °C
Mating cycles	≥500
Material (insert)	Polycarbonate (PC)
Colour (insert)	RAL 7032 (pebble grey)
Material (contacts)	Copper alloy
Material (accessories)	Polyamide (PA), Metal
Colour (accessories)	Black
Material flammability class acc. to UL 94	V-0
RoHS	compliant with exemption

Specifications and approvals

EN 60664-1
IEC 61984
DNV GL

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Han-Modular®, Han® Shielded module basic, With 180° shielding element, Crimp termination  Please order crimp contacts separately.	0.09 ... 0.52	09 14 027 3021	09 14 027 3121	

New
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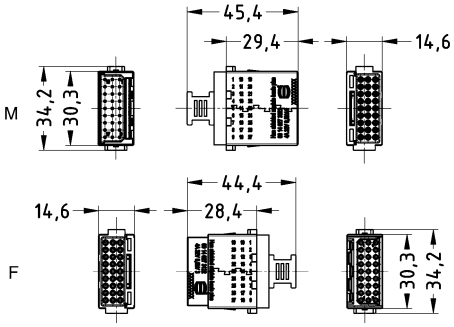
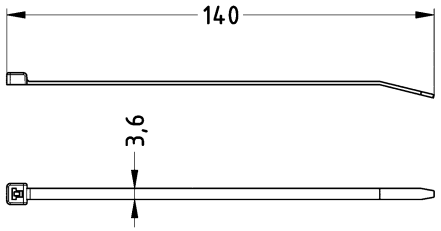
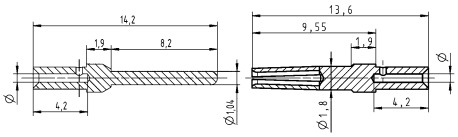
22

Han® Shielded module basic

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Han-Modular®, Han® Shielded module basic plus, With 360° shielding element, Crimp termination  With additional shield connection to the hinged frame Please order crimp contacts separately.	0.09 ... 0.52	09 14 027 3022	09 14 027 3122	
Cable tie, With metal latch, Limiting temperature: -40 ... +105 °C 		09 14 000 9809	09 14 000 9809	
D-Sub, Crimp contact 	0.09 ... 0.25 0.13 ... 0.33 0.25 ... 0.52	09 67 000 7576 09 67 000 5576 09 67 000 8576	09 67 000 7476 09 67 000 5476 09 67 000 8476	

Wire gauge	ø	Stripping length
0.09-0.25 mm²	0.64 mm	4 mm
0.13-0.33 mm²	0.88 mm	4 mm
0.25-0.52 mm²	1.13 mm	4 mm
0.33-0.82 mm²	1.34 mm	4 mm
for stranded wire according IEC 60228 Class 5		

Han® Shielded power module

Han

Number of contacts

4

16 A 400 V 4 kV 3
+ 2 additional signal contacts + shielding
10 A 400 V 4 kV 3

Features

- Interface for typical motor applications such as frequency-controlled drives
- 4 power contacts (pin 4 is pre-leading to be used as a PE)
- 2 signal contacts for temperature monitoring or breaks
- EMC compatible connection of the cable screen with a large-area shielding plate
- Shielded power cables can now be connectorised in combination with other cables

Technical characteristics

Number of contacts	4
Additional contacts	+ 2 additional signal contacts, + shielding
Rated current	16 A
Rated voltage	400 V
Rated impulse voltage	4 kV
Pollution degree	3
Rated current (signal)	10 A
Rated voltage (signal)	400 V
Rated impulse voltage (signal)	4 kV
Pollution degree (signal)	3
Insulation resistance	>10^{10} Ω
Contact resistance	≤3 mΩ, ≤1 mΩ
Limiting temperature	-40 ... +125 °C
Mating cycles	≥500
Material (insert)	Polycarbonate (PC)
Colour (insert)	RAL 7032 (pebble grey)
Material (contacts)	Copper alloy
Material flammability class acc. to UL 94	V-0
RoHS	compliant with exemption

Specifications and approvals

EN 60664-1
IEC 61984
DNV GL

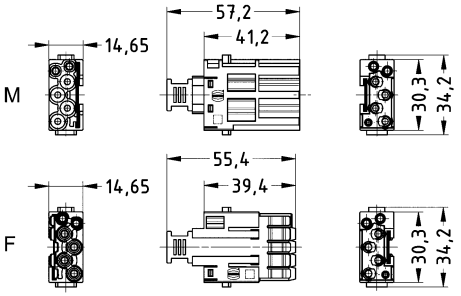
Details

Contact resistance Han D® crimp contact: ≤ 3 mOhm

Contact resistance Han E® crimp contact: ≤ 1 mOhm

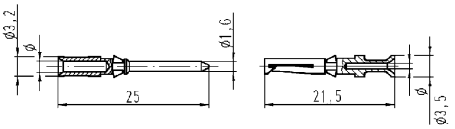
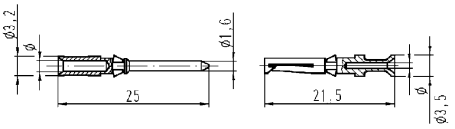
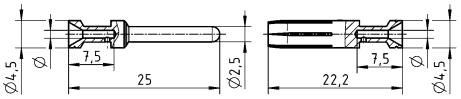
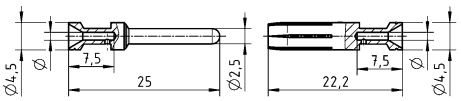
Remarks on the crimp technique

The wire gauges mentioned in the catalogue refer to geometric wire gauges of cables.

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Han-Modular®, Han® Shielded power module, With shielding plate, Crimp termination  Please order crimp contacts separately. 4x Han E® 2x Han D®	0.14 ... 4	09 14 006 3021	09 14 006 3121	 Contact arrangement (view from termination side)

New 1.24

Han® Shielded power module

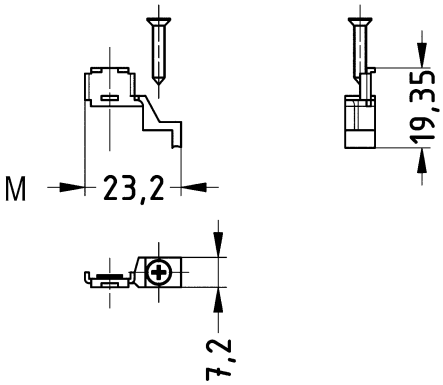
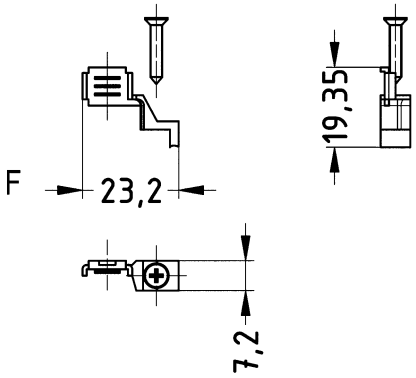
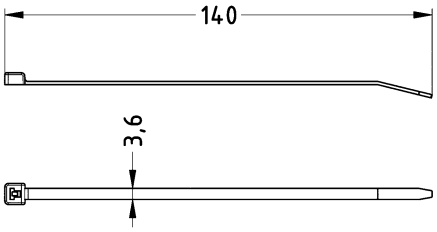
Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Han D®, Crimp contact, Contact surface: Silver plated 	0.14 ... 0.37 0.5 0.75 1 1.5 2.5	09 15 000 6104 09 15 000 6103 09 15 000 6105 09 15 000 6102 09 15 000 6101 09 15 000 6106	09 15 000 6204 09 15 000 6203 09 15 000 6205 09 15 000 6202 09 15 000 6201 09 15 000 6206	 Wire gauge / Ø / Stripping length 0.14-0.37 mm² AWG 26-22 — 0.9 mm — 8 mm 0.5 mm² AWG 20 — 1.1 mm — 8 mm 0.75 mm² AWG 18 — 1.3 mm — 8 mm 1 mm² AWG 18 — 1.45 mm — 8 mm 1.5 mm² AWG 16 — 1.75 mm — 8 mm 2.5 mm² AWG 14 — 2.25 mm — 6 mm
Han D®, Crimp contact, Contact surface: Gold plated 	0.14 ... 0.37 0.5 0.75 1 1.5 2.5	09 15 000 6124 09 15 000 6123 09 15 000 6125 09 15 000 6122 09 15 000 6121 09 15 000 6126	09 15 000 6224 09 15 000 6223 09 15 000 6225 09 15 000 6222 09 15 000 6221 09 15 000 6226	 Wire gauge / Ø / Stripping length 0.14-0.37 mm² AWG 26-22 — 0.9 mm — 8 mm 0.5 mm² AWG 20 — 1.1 mm — 8 mm 0.75 mm² AWG 18 — 1.3 mm — 8 mm 1 mm² AWG 18 — 1.45 mm — 8 mm 1.5 mm² AWG 16 — 1.75 mm — 8 mm 2.5 mm² AWG 14 — 2.25 mm — 6 mm
Han E®, Crimp contact, Contact surface: Silver plated 	0.14 ... 0.37 0.5 0.75 1 1.5 2.5 3 4	09 33 000 6127 09 33 000 6121 09 33 000 6114 09 33 000 6105 09 33 000 6104 09 33 000 6102 09 33 000 6106 09 33 000 6107	09 33 000 6227 09 33 000 6220 09 33 000 6214 09 33 000 6205 09 33 000 6204 09 33 000 6202 09 33 000 6206 09 33 000 6207	 Conductor cross-section / Identification 0.14-0.37 mm² AWG 26-22 — no groove 0.5 mm² AWG 20 — no groove 0.75 mm² AWG 18 — 1 groove* 1 mm² AWG 18 — 1 groove 1.5 mm² AWG 16 — 2 grooves 2.5 mm² AWG 14 — 3 grooves 3 mm² AWG 12 — wide groove 4 mm² AWG 12 — no groove * on the back crimp collar Stripping length 7.5 mm
Han E®, Crimp contact, Contact surface: Gold plated 	0.14 ... 0.37 0.5 0.75 1 1.5 2.5 4	09 33 000 6117 09 33 000 6122 09 33 000 6115 09 33 000 6118 09 33 000 6116 09 33 000 6123 09 33 000 6119	09 33 000 6217 09 33 000 6222 09 33 000 6215 09 33 000 6218 09 33 000 6216 09 33 000 6223 09 33 000 6221	 Conductor cross-section / Identification 0.14-0.37 mm² AWG 26-22 — no groove 0.5 mm² AWG 20 — no groove 0.75 mm² AWG 18 — 1 groove* 1 mm² AWG 18 — 1 groove 1.5 mm² AWG 16 — 2 grooves 2.5 mm² AWG 14 — 3 grooves 3 mm² AWG 12 — wide groove 4 mm² AWG 12 — no groove * on the back crimp collar Stripping length 7.5 mm

Features

- Optional Shielding termination to the hinged frames with the GND adapter

Technical characteristics

Limiting temperature	-40 ... +105 °C
Material (accessories)	Metal, Polyamide (PA)
Colour (accessories)	Black

Identification	Part number Male	Part number Female	Drawing (dimensions in mm)
Han® Shielded power module, GND Adapter 	09 14 000 9807	09 14 000 9808	 
Cable tie, With metal latch, Limiting temperature: -40 ... +105 °C 	09 14 000 9809	09 14 000 9809	

Han-Smart® ID Profinet module

Number of contacts

7

Features

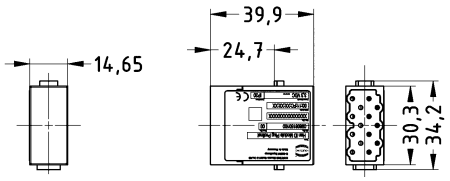
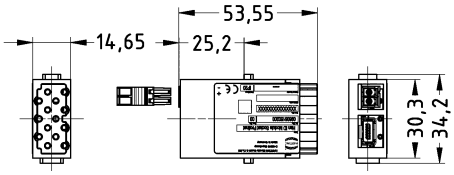
- Module for identifying industrial components
- Profinet I/O communication protocol conformance class B
- SNMP enabled (V1, V2C)

Technical characteristics

Number of contacts	7
Operating temperature	-40 ... +70 °C
Storage temperature	-40 ... +70 °C
Mating cycles	≥500
Degree of protection acc. to IEC 60529	IP20
Nominal voltage	24 V DC ±10 %
Power consumption	<2 W
Memory	32 KByte Flash
Diagnostic display	Connection (Link), Power connection
Material (insert)	Polycarbonate (PC), Liquid crystal polymer (LCP)
Colour (insert)	RAL 7032 (pebble grey), White
Material flammability class acc. to UL 94	V-0

Specifications and approvals

IEC 60721-3-3
EN 50102
EN 61000-4-2 Electrostatic discharge (ESD)
EN 61000-4-3 Electromagnetic field
EN 61000-4-4 Rapid transients (burst)
EN 61000-4-5 Surge voltages
EN 61000-4-6 conducted disturbances
IEC 61158 PROFINET

Identification	Part number Male	Part number Female	Drawing (dimensions in mm)
Han-Modular®, ID Profinet, Memory module / CPU  GSD software file and operating instructions can be downloaded from the eCatalogue.	09 80 615 0100		
Han-Modular®, ID Profinet, Power supply, Data interface with HARTING ix Industrial® (Typ A)  GSD software file and operating instructions can be downloaded from the eCatalogue.		09 80 615 0200	

Han-Smart® HEM module

Han

Number of contacts

4

Optional PE contact module and signal module

Features

- Continuously voltage and current measurement
- Data interval 1 second
- Communication via MODBus TCP or RTU
- Analysing up to 25th harmonics per phase
- Power factor, frequency, active-, reactive-, apparent power calculation
- THD U and THD I each phase

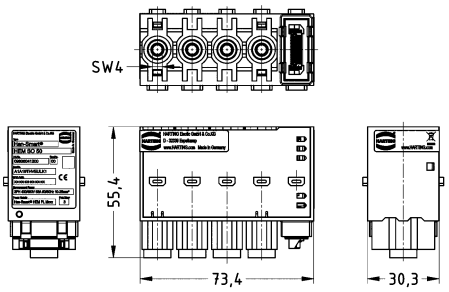
Technical characteristics

Number of contacts	4
Additional contacts	Optional PE contact module and signal module
Rated current	≤63 A
Rated voltage	230 V / 400 V
Pollution degree	2
Input voltage	24 V DC ±10 %
Current consumption	100 mA
Voltage measuring range	20 ... 277 V AC @ 50 / 60 Hz
Current measurement range	5 ... 50 A AC @ 50 / 60 Hz
Measurement accuracy	±2 %
Measurement category	III
Limiting temperature	-20 ... +55 °C
Relative humidity	5 ... 95 %
Material (insert)	Polycarbonate (PC)
Colour (insert)	RAL 7032 (pebble grey)
Material flammability class acc. to UL 94	V-0

Specifications and approvals

EN 61000-6-2
EN 61000-6-4
EN 61010-1
EN 61010-2-030
EN 61326-1

CE

Identification	Conductor cross-section (mm²)	Part number Female	Drawing (dimensions in mm)
Han-Modular®, HEM module, Connector with integrated AC voltage and current detection for energy measurement, Axial screw termination 	10 ... 25	09 80 504 1200	

New
1
.
28

Number of contacts

1

100 A 830 V 8 kV 3

Features

- Crimp or axial screw termination available
- Unlock of contacts with a screw driver from mating side
- Separate axial screw contacts can be terminated without any special tools directly to the wire

Technical characteristics

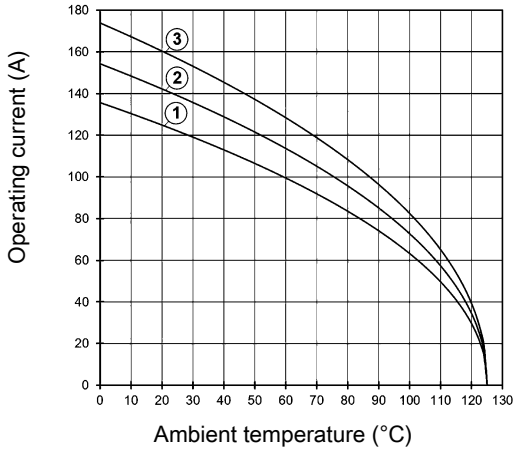
Number of contacts	1
Rated current	100 A
Rated voltage	830 V
Rated impulse voltage	8 kV
Pollution degree	3
Rated voltage acc. to UL	600 V
Insulation resistance	>10^{10} Ω
Contact resistance	≤0.3 mΩ
Limiting temperature	-40 ... +125 °C
Mating cycles	≥500
Material (insert)	Polycarbonate (PC)
Colour (insert)	RAL 7032 (pebble grey)
Material (contacts)	Copper alloy
Material flammability class acc. to UL 94	V-0
RoHS	compliant, compliant with exemption

Derating

Current carrying capacity

The current carrying capacity of the connectors is limited by the thermal load capability of the contact element material including the connections and the insulating parts. The derating curve is therefore valid for currents which flow constantly (non-intermittent) through each contact element of the connector evenly, without exceeding the allowed maximum temperature.

Measuring and testing techniques acc. to IEC 60512-5-2



① Conductor cross-section 16 mm²
② Conductor cross-section 25 mm²
③ Conductor cross-section 35 mm²

Specifications and approvals

EN 60664-1
IEC 61984
UL 1977 ECBT2.E235076
UL 2237 PVVA2.E318390
CSA-C22.2 No. 182.3 PVVA8.E318390
DNV GL

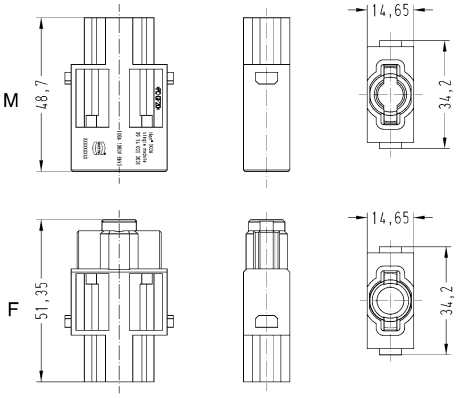
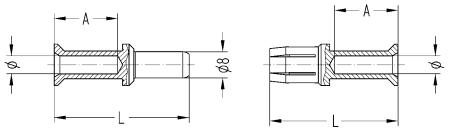
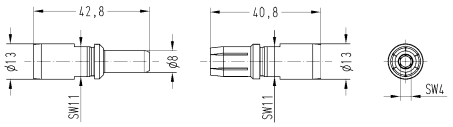
Details

Remarks on the axial screw technique

The wire gauges mentioned in the catalogue refer to geometric wire gauges of cables.

Remarks on the crimp technique

The wire gauges mentioned in the catalogue refer to geometric wire gauges of cables.

Identification	Conductor cross-section (mm²)	Part number Male	Drawing (dimensions in mm)
Han-Modular®, Han® 100 A module, Single module  Please order contacts separately.	10 ... 35	09 14 001 3031	
TC 100, Crimp contact, Contact surface: Silver plated 	10 16 25	09 11 000 6114 09 11 000 6116 09 11 000 6125	 Wire gauge / ∅ / Stripping length A 10 mm² / 4.3 / 19 mm 16 mm² / 5.5 / 19 mm 25 mm² / 7 / 19 mm 35 mm² / 8.2 / 16 mm for stranded wire according to IEC 60 228 Class 5
TC 100, Axial screw contact, Contact surface: Silver plated 	10 ... 25 16 ... 35	09 11 000 6112 09 11 000 6113	 Stripping length 13 mm Tightening torque mm² / 10 / 16 / 25 / 35 Nm / 6 / 6 / 7 / 8

Number of contacts

1

Features

- PE module to connect large cable diameters within the Han-Modular® hinged frames
- Electrically conductive connection of the PE contact to the hinged frames and the hoods and housings acc. to EN 61984
- Pre-leading and robust 100 A PE contact
- Suitable for the connection of standard power cables even with large cross-sections (no special cables with reduced PE necessary)
- Crimp- and axial module are compatible modules

Technical characteristics

Number of contacts	1
Contact resistance	≤0.3 mΩ
Limiting temperature	-40 ... +125 °C
Mating cycles	≥500
Material (insert)	Zinc die-cast, nickel-plated
Material (contacts)	Copper alloy
RoHS	compliant with exemption

Specifications and approvals

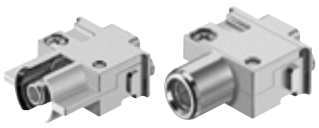
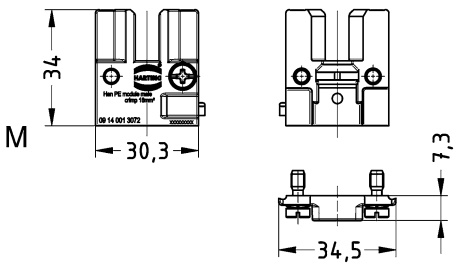
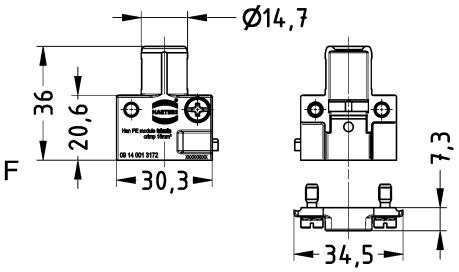
IEC 61984
UL 1977 ECBT2.E235076
CSA-C22.2 No. 182.3 ECBT8.E235076

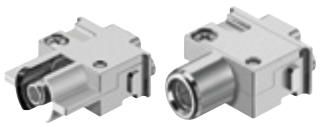
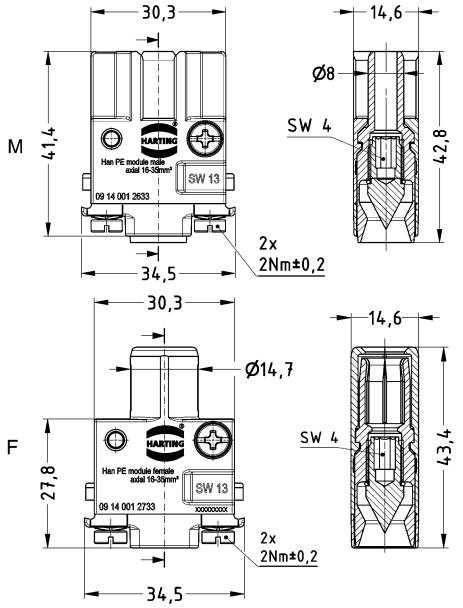
Details

Short-time withstand current: 1920 A for 1 second (acc. to IEC 60947-7-2)

Remarks on the axial screw technique

The wire gauges mentioned in the catalogue refer to geometric wire gauges of cables.

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Han-Modular®, Han® PE module, Crimp termination, Pack contents: 2 PE module halves, 1 contact pressure plate, 1 crimp contact Contact surface: Silver plated 	16 25	09 14 001 3072 09 14 001 3073	09 14 001 3172 09 14 001 3173	M  F 

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Han-Modular®, Han® PE module, Axial screw termination, Pack contents: PE module with pre-assembled axial screw contact Contact surface: Silver plated 	10 ... 25	09 14 001 2632	09 14 001 2732	 Stripping length 13 mm

Technical characteristics

Input voltage	24 V DC ±10 %
Current consumption	100 mA
Limiting temperature	-20 ... +55 °C
Relative humidity	5 ... 95 %
Material (insert)	Polycarbonate (PC)
Colour (insert)	RAL 7032 (pebble grey)
Material flammability class acc. to UL 94	V-0

Specifications and approvals

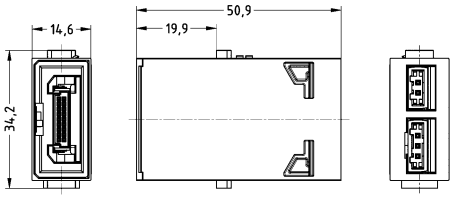
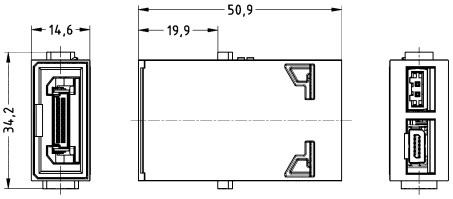
EN 61000-6-2
EN 61000-6-4
EN 61010-1
EN 61010-2-030
EN 61326-1

CE

Details

Must be sourced with PELV or SELV acc. EN 50178.

Voltage source must be galvanically isolated from power mains.

Identification	Part number Male	Drawing (dimensions in mm)
Han-Modular®, HEM module, Modbus RTU Communication interface for the use in combination with 09 80 504 1200 	09 80 316 0100	 Interface : *har*-flexicon®, 2-pin RS 485 Modbus RTU/slave: *har*-flexicon®, 3-pin
Han-Modular®, HEM module, Modbus TCP Communication interface for the use in combination with 09 80 504 1200 	09 80 416 0100	 Interface : *har*-flexicon®, 2-pin Modbus TCP specification V1.1b: ix Industrial® Type A

Number of contacts

6+ 

35 A 400/690 V 6 kV 3
35 A 500 V 6 kV 3

Features

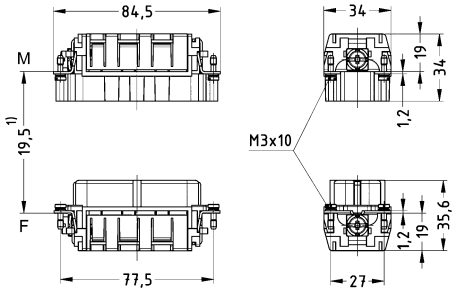
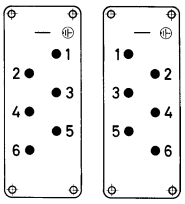
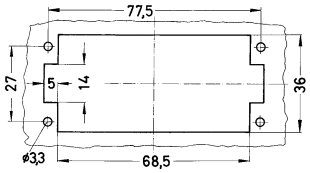
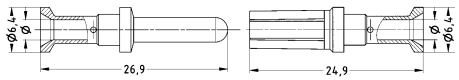
- Suitable for power supply applications
- Crimp termination

Technical characteristics

Number of contacts	6
Rated current	35 A
Rated voltage conductor-earth	400 V
Rated voltage conductor-conductor	690 V
Rated impulse voltage	6 kV
Pollution degree	3
Rated voltage acc. to UL	600 V
Rated voltage acc. to CSA	600 V
Insulation resistance	$>10^{10}$ Ω
Contact resistance	≤1 mΩ
Limiting temperature	-40 ... +125 °C
Mating cycles	≥500
Material (insert)	Polycarbonate (PC)
Colour (insert)	RAL 7032 (pebble grey)
Material (contacts)	Copper alloy
Material flammability class acc. to UL 94	V-0

Specifications and approvals

EN 60664-1
IEC 61984

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Han® HsB, Crimp termination  Please order crimp contacts separately.	1.5 ... 10	09 31 006 3001	09 31 006 3101	 1) distance for contact max. 21 mm  M F Contact arrangement (view from termination side)  Panel cut out for use without Hoods/Housings
Han® HsB, Crimp contact, Contact surface: Silver plated 	1.5 2.5 4 6 10	09 31 000 6104 09 31 000 6105 09 31 000 6101 09 31 000 6102 09 31 000 6103	09 31 000 6204 09 31 000 6205 09 31 000 6201 09 31 000 6202 09 31 000 6203	 Wire gauge / ø / Stripping length 1.5 mm² AWG 16 / 1.78 mm / 9.5 mm 2.5 mm² AWG 14 / 2.28 mm / 9.5 mm 4 mm² AWG 12 / 2.88 mm / 9.5 mm 6 mm² AWG 10 / 3.53 mm / 9.5 mm 10 mm² AWG 8 / 4.33 mm / 9.5 mm

Features

- Application with socket and data connector (RJ45, USB)
- Compact design for easy installation in single or double frame
- Suitable for data module in HIFF-size
- Screening shield to optimise EMC protection

Technical characteristics

Mounting depth	30 mm
Supply voltage	250 V AC
Nominal frequency	50 Hz, 60 Hz
Nominal current	13 A, 10 A
Material (hood/housing)	Thermoplastic
RoHS	compliant

Specifications and approvals

CE

Identification	Conductor cross-section (mm²)	Part number	
Han-Port®, Socket, 2 cut-outs for HIFF data module, Finger safe, Screw termination, Great Britain (BS), 30 mm / 250 V AC / 60 Hz, 50 Hz / 13 A	4	39 50 001 0452	
Han-Port®, Socket, 2 cut-outs for HIFF data module, Spring clamp termination, Switzerland, 30 mm / 250 V AC / 50 Hz / 10 A	1.5	39 50 001 0454	

Han® F+B

Connector for food+beverage industry
Screw locking

Features

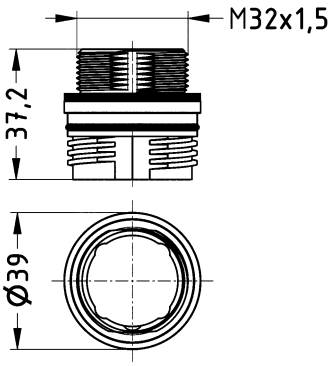
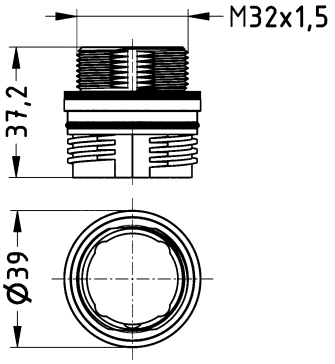
- “Easy-to-Clean” design
- Certified by Ecolab
- IP6K9K acc. to ISO 20653
- Inserts for Data / Signal / Power / Hybrid
- Han® 3 A inserts adaptable

Technical characteristics

Limiting temperature	-40 ... +125 °C
Mating cycles	≥500
Degree of protection acc. to IEC 60529	IP67, in locked position, IP6K9K acc. to ISO 20653
Material (hood/housing)	Polypropylen
Colour (hood/housing)	Black, Blue
Material (seal)	EPDM, Silicone
Colour (seal)	Blue

Specifications and approvals

Ecolab Topactive 200
Ecolab Topactive 500
Ecolab Topax 66
Ecolab Topactive OKTO
Ecolab Topax 990
FDA 21 CFR 177.1520
FDA 21 CFR 177.2600

Identification	Cable entry	Part number	Drawing (dimensions in mm)
Han® F+B, Screw mounted housing, Straight, Black 	1x M32	09 15 503 0102	
Han® F+B, Screw mounted housing, Straight, Blue 	1x M32	09 15 513 0102	

Number of contacts

32+

16 A 500 V 6 kV 3

Features

- Proven Han® E inserts in size L32 with wire protection

Technical characteristics

Number of contacts	32
Rated current	16 A
Rated voltage	500 V
Rated impulse voltage	6 kV
Pollution degree	3
Rated voltage acc. to UL	600 V
Rated voltage acc. to CSA	600 V
Insulation resistance	$>10^{10}$ Ω
Contact resistance	≤1 mΩ
Limiting temperature	-40 ... +125 °C
Mating cycles	≥500
Material (insert)	Polycarbonate (PC)
Colour (insert)	RAL 7032 (pebble grey)
Material (contacts)	Copper alloy
Material flammability class acc. to UL 94	V-0

Specifications and approvals

EN 60664-1
IEC 61984
UL 1977 ECBT2.E235076
DNV GL

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Han E®, Screw termination, With wire protection, Contact surface: Silver plated 	0.75 ... 2.5	09 33 032 2601	09 33 032 2701	

Standard hoods/housings for industrial connectors
Double locking lever

Features

- Reduces the number of connector interfaces required on the machine (with up to 8 Han Modular® inserts in one housing)
- Han-Easy Lock® bracket (cross) or metal bracket (longitudinal) available
- Cable entries can be designed variably (up to M50) using the hood configurator

Technical characteristics

Limiting temperature	-40 ... +125 °C
Degree of protection acc. to IEC 60529	IP65
Type rating acc. to UL 50 / UL 50E	4, 4X, 12
Material (hood/housing)	Aluminium die-cast
Surface (hood/housing)	Powder-coated
Colour (hood/housing)	RAL 7037 (dust grey)
Material (seal)	NBR
Material (locking)	Polycarbonate (PC), Stainless steel
Colour (locking)	RAL 7037 (dust grey)
Material flammability class acc. to UL 94 (locking levers)	V-0

Specifications and approvals

DNV GL

Identification	Cable entry	Part number	Drawing (dimensions in mm)
Han® B, Hood, Top entry	1x M40 1x M50	19 30 132 0428 19 30 132 0429	
Han® B, Hood, Side entry	1x M40	19 30 132 0528	
Han® B, Bulkhead mounted housing, Han-Easy Lock®		09 30 132 0301	
Han® B, Surface mounted housing, Side entry, Han-Easy Lock®	1x M40 2x M40	19 30 132 0271 19 30 132 0272	

Identification	Cable entry	Part number	Drawing (dimensions in mm)
Han® B, Cable to cable housing, Top entry, Han-Easy Lock® 	1x M40	19 30 132 0728	

Size L32

Standard hoods/housings for industrial connectors
Single locking lever

Technical characteristics

Limiting temperature	-40 ... +125 °C
Degree of protection acc. to IEC 60529	IP65
Type rating acc. to UL 50 / UL 50E	4, 4X, 12
Material (hood/housing)	Aluminium die-cast
Surface (hood/housing)	Powder-coated
Colour (hood/housing)	RAL 7037 (dust grey)

Technical characteristics

Material (seal)	NBR
Material (locking)	Steel, zinc plated

Specifications and approvals

DNV GL

Identification	Cable entry	Part number	Drawing (dimensions in mm)
Han® B, Hood, Top entry	1x M40 1x M50	19 30 132 0441 19 30 132 0449	
Han® B, Hood, Side entry	1x M40	19 30 132 0541	
Han® B, Bulkhead mounted housing, With thermo-plastic cover 		09 30 132 0304 ML	
Han® B, Bulkhead mounted housing		09 30 132 0307 ML	
Han® B, Surface mounted housing, Side entry	1x M40 2x M40	19 30 132 0275 ML 19 30 132 0276 ML	
Han® B, Surface mounted housing, With thermo-plastic cover, Side entry	1x M40 2x M40	19 30 132 2275 ML 19 30 132 2276 ML	
Han® B, Cable to cable housing, Top entry 	1x M40	19 30 132 0738 ML	

Features

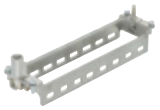
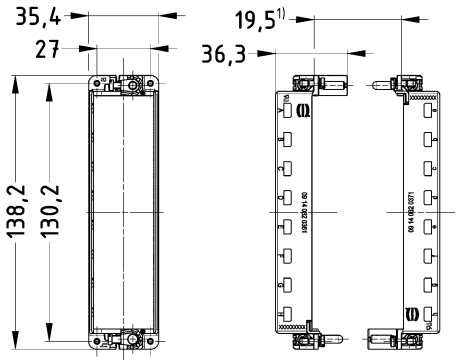
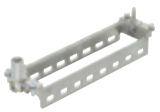
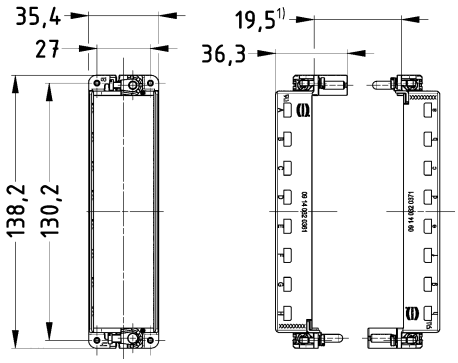
- Suitable for more than 100 different modules
- Quick and easy assembly supported by an audible “Click”
- Very robust mechanical characteristics
- Modules can be assembled/removed without tools
- Two leading PE contacts

Technical characteristics

Limiting temperature	-40 ... +125 °C
Mating cycles	≥500
Material (frames)	Zinc die-cast, Stainless steel

Specifications and approvals

EN 60664-1
IEC 61984
DNV GL

Identification	Part number	Drawing (dimensions in mm)
Han-Modular®, Hinged frame plus, for 8 modules, A … H 	09 14 032 0361	 1) distance for contact max. 20.5 mm
Han-Modular®, Hinged frame plus, for 8 modules, a … h 	09 14 032 0371	 1) distance for contact max. 20.5 mm

Han® EMC/B hoods/housings

Features

- Hoods/Housings for higher EMC requirements
- Continuous shield connection using conductive surface
- Metal hoods / housings with high shielding efficiency
- Field of application: for sensitive interconnections that have to be shielded against electrical, magnetic or electro-magnetic interferences
- Locking levers: Han-Easy Lock®

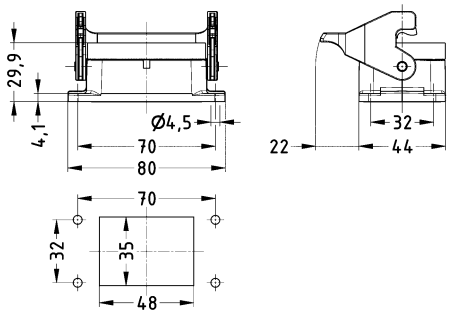
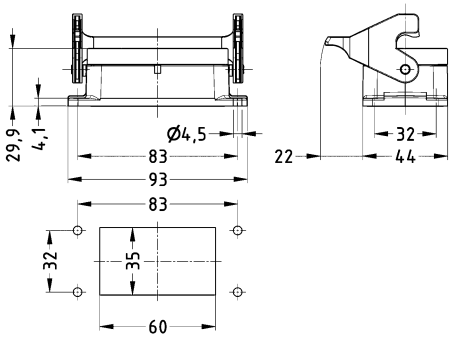
Technical characteristics

Limiting temperature	-40 ... +125 °C
Degree of protection acc. to IEC 60529	IP65
Type rating acc. to UL 50 / UL 50E	4, 12
Material (hood/housing)	Aluminium die-cast
Surface (hood/housing)	Uncoated
Colour (hood/housing)	Unpainted
Material (seal)	NBR
Material (locking)	Polycarbonate (PC), Stainless steel
Colour (locking)	RAL 7037 (dust grey)
Material flammability class acc. to UL 94 (locking levers)	V-0

Specifications and approvals

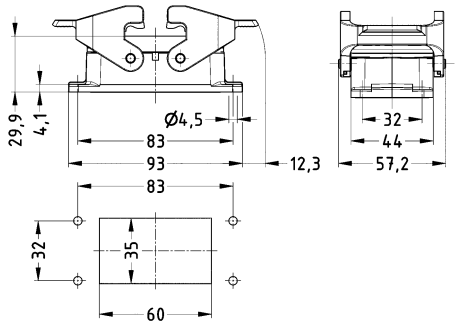
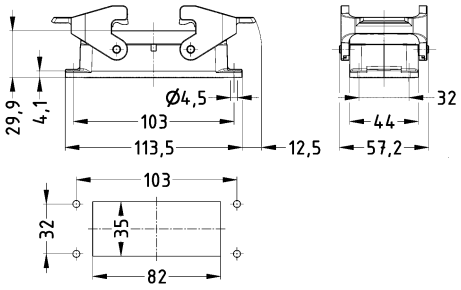
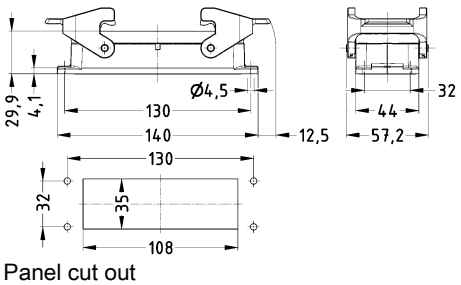
UL 1977 ECBT2.E235076
CSA-C22.2 No. 182.3 ECBT8.E235076
DNV GL

Hoods/Housings for higher EMC requirements
Single locking lever

Identification	Part number Low construc- tion	Drawing (dimensions in mm)
Han® EMC/B, Bulkhead mounted housing, Han-Easy Lock®, Size 6 B 	09 62 806 2301	 Panel cut out
Han® EMC/B, Bulkhead mounted housing, Han-Easy Lock®, Size 10 B 	09 62 810 2305	 Panel cut out

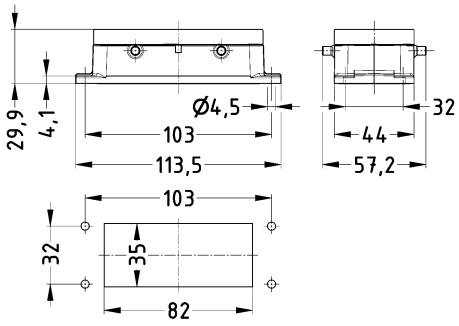
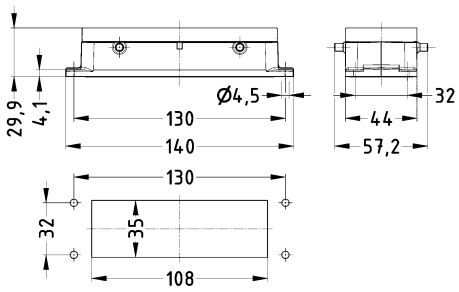
Han® EMC/B hoods/housings

Hoods/Housings for higher EMC requirements
Double locking lever

Identification	Part number Low construc- tion	Drawing (dimensions in mm)
Han® EMC/B, Bulkhead mounted housing, Han-Easy Lock®, Size 10 B 	09 62 810 2301	 Panel cut out
Han® EMC/B, Bulkhead mounted housing, Han-Easy Lock®, Size 16 B 	09 62 816 2301	 Panel cut out
Han® EMC/B, Bulkhead mounted housing, Han-Easy Lock®, Size 24 B 	09 62 824 2301	 Panel cut out

Han® EMC/B hoods/housings

Hoods/Housings for higher EMC requirements
Double locking lever (on the hood)

Identification	Part number Low construc- tion	Drawing (dimensions in mm)
Han® EMC/B, Bulkhead mounted housing, Size 16 B 	09 62 816 2303	 Panel cut out
Han® EMC/B, Bulkhead mounted housing, Size 24 B 	09 62 824 2306	 Panel cut out

Han® HPR rear mounting

Hoods/housings for harsh outdoor environments
Screw locking

Technical characteristics

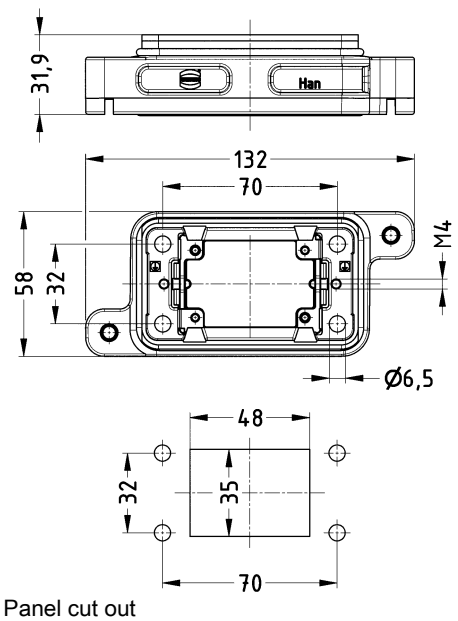
Limiting temperature	-40 ... +125 °C
Tightening torque (screw locking)	4 Nm
Degree of protection acc. to IEC 60529	IP65, IP68, IP69 / IPX9K acc. to ISO 20653
Type rating acc. to UL 50 / UL 50E	4, 4X, 12
Material (hood/housing)	Aluminium die-cast, Corrosion resistant
Surface (hood/housing)	Powder-coated

Technical characteristics

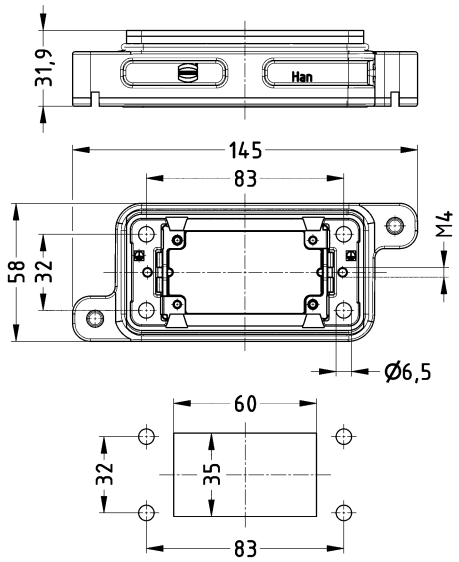
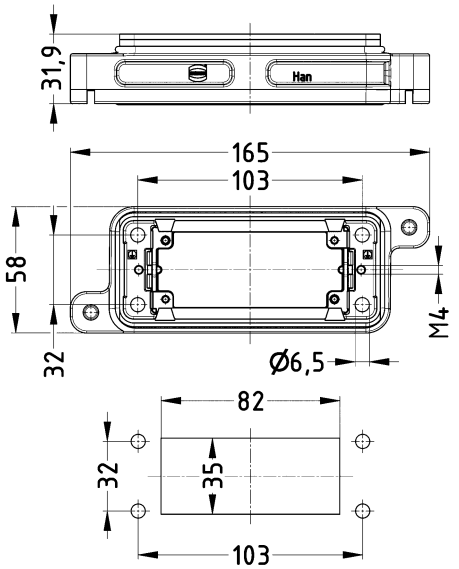
Colour (hood/housing)	RAL 9005 (jet black)
Material (seal)	NBR

Specifications and approvals

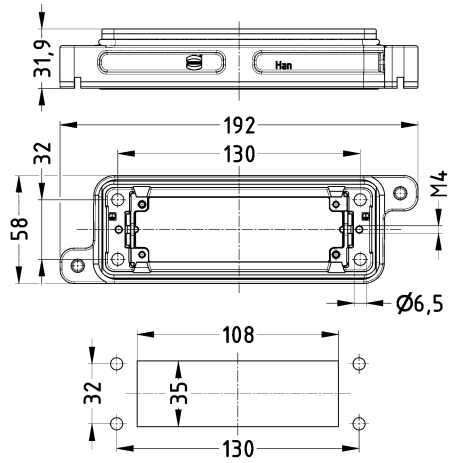
UL 1977 ECBT2.E235076
CSA-C22.2 No. 182.3 ECBT8.E235076
DNV GL

Identification	Part number	Drawing (dimensions in mm)
Han® HPR, Bulkhead mounted housing, Rear mounting, Size 6 B, Pack contents: Mounting frame is included within the delivery 	09 40 006 0391	 Panel cut out

Han® HPR rear mounting

Identification	Part number	Drawing (dimensions in mm)
Han® HPR, Bulkhead mounted housing, Rear mounting, Size 10 B, Pack contents: Mounting frame is included within the delivery 	09 40 010 0391	 Panel cut out
Han® HPR, Bulkhead mounted housing, Rear mounting, Size 16 B, Pack contents: Mounting frame is included within the delivery 	09 40 016 0391	 Panel cut out

Han® HPR rear mounting

Identification	Part number	Drawing (dimensions in mm)
Han® HPR, Bulkhead mounted housing, Rear mounting, Size 24 B, Pack contents: Mounting frame is included within the delivery 	09 40 024 0391	 Panel cut out

Hoods/housings for harsh outdoor environments
Screw locking

Features

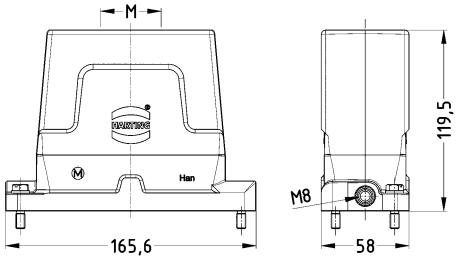
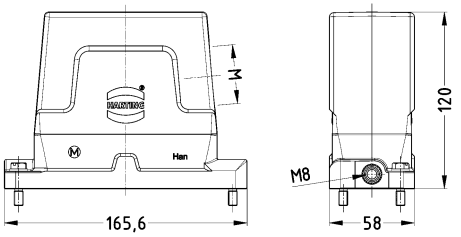
- Option of connecting a cable for a functional earth externally
- Large space for cables
- Excellent EMC characteristics

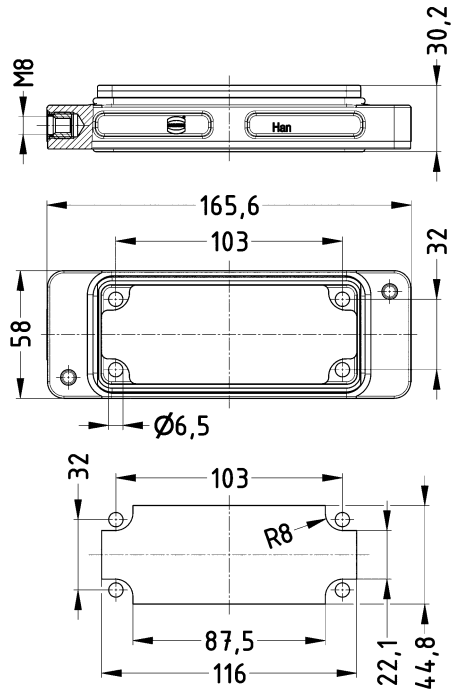
Technical characteristics

Limiting temperature	-40 ... +125 °C
Tightening torque (screw locking)	4 Nm
Degree of protection acc. to IEC 60529	IP66, IP68, IP69 / IPX9K acc. to ISO 20653
Type rating acc. to UL 50 / UL 50E	4, 4X, 12
Material (hood/housing)	Aluminium die-cast, Corrosion resistant
Surface (hood/housing)	Powder-coated
Colour (hood/housing)	RAL 9005 (jet black)
Material (seal)	NBR
Material (locking)	Stainless steel

Specifications and approvals

UL 1977 ECBT2.E235076
CSA-C22.2 No. 182.3 ECBT8.E235076
DNV GL

Identification	Cable entry	Part number	Drawing (dimensions in mm)
Han® HPR, Hood, Enlarged, with functional earth, Top entry 	1x M32 1x M40	19 40 016 0442 19 40 016 0443	
Han® HPR, Hood, Enlarged, with functional earth, Side entry 	1x M32 1x M40	19 40 016 0552 19 40 016 0553	

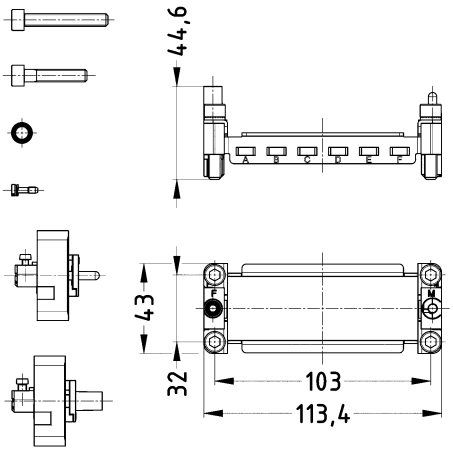
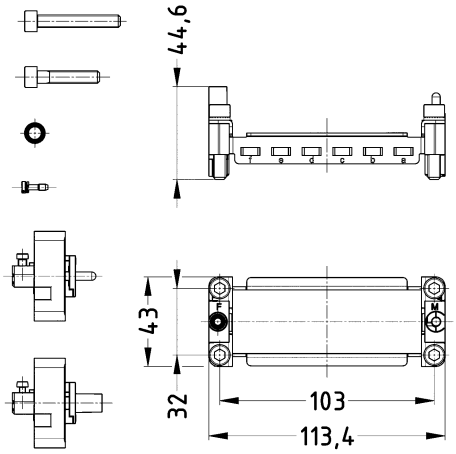
Identification	Cable entry	Part number	Drawing (dimensions in mm)
Han® HPR, Bulkhead mounted housing, Enlarged, with functional earth 		09 40 016 0371	 Panel cut out

Features

- Hinged frames with additional PE connection for 6 Han-Modular® single modules
- Two leading PE contacts
- Compatible to the hinged frame Han® HPR EasyCon

Technical characteristics

Limiting temperature	-40 ... +125 °C
Mating cycles	≥500
Material (accessories)	Zinc die-cast, Stainless steel

Identification	Conductor cross-section (mm²)	Part number	Drawing (dimensions in mm)
Han® HPR enlarged, Frame, for up to 6 single modules, A ... F, Pack contents: 1x male PE adapter, 1x female PE adapter, 2x M3 screw, 4x washer SK S6, 4x cheese-head screw M6 x 30, 4x cheese-head screw M6 x 40 	4 ... 10 PE terminal power side, 1 ... 2.5 PE terminal signal side	09 11 016 9933	
Han® HPR enlarged, Frame, for up to 6 single modules, a ... f, Pack contents: 1x male PE adapter, 1x female PE adapter, 2x M3 screw, 4x washer SK S6, 4x cheese-head screw M6 x 30, 4x cheese-head screw M6 x 40 	4 ... 10 PE terminal power side, 1 ... 2.5 PE terminal signal side	09 11 016 9934	

Hoods/housings for harsh outdoor environments
Screw locking

Features

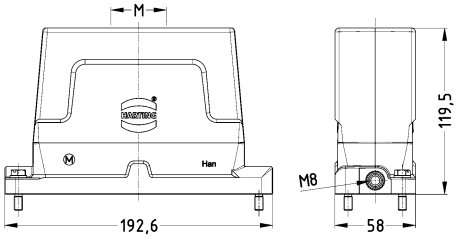
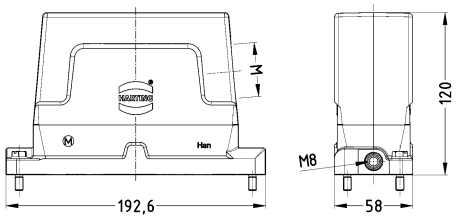
- Option of connecting a cable for a functional earth externally
- Large space for cables
- Excellent EMC characteristics

Technical characteristics

Limiting temperature	-40 ... +125 °C
Tightening torque (screw locking)	4 Nm
Degree of protection acc. to IEC 60529	IP66, IP68, IP69 / IPX9K acc. to ISO 20653
Type rating acc. to UL 50 / UL 50E	4, 4X, 12
Material (hood/housing)	Aluminium die-cast, Corrosion resistant
Surface (hood/housing)	Powder-coated
Colour (hood/housing)	RAL 9005 (jet black)
Material (seal)	NBR
Material (locking)	Stainless steel

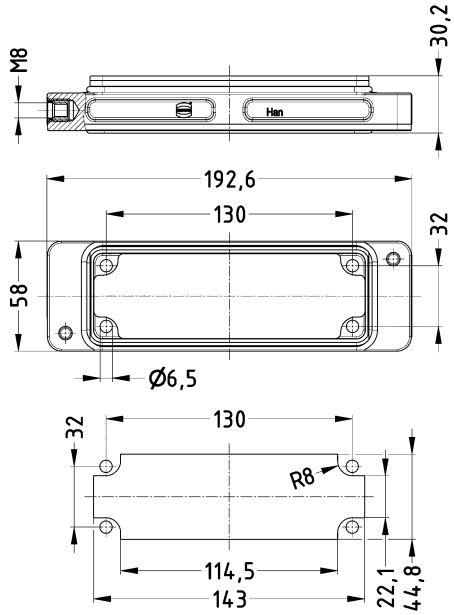
Specifications and approvals

UL 1977 ECBT2.E235076
CSA-C22.2 No. 182.3 ECBT8.E235076
DNV GL

Identification	Cable entry	Part number	Drawing (dimensions in mm)
Han® HPR, Hood, Enlarged, with functional earth, Top entry 	1x M32 1x M40	19 40 024 0442 19 40 024 0443	
Han® HPR, Hood, Enlarged, with functional earth, Side entry 	1x M32 1x M40	19 40 024 0552 19 40 024 0553	

Han® HPR enlarged

Size 24 B

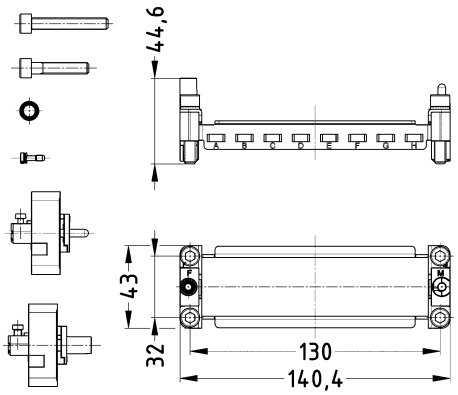
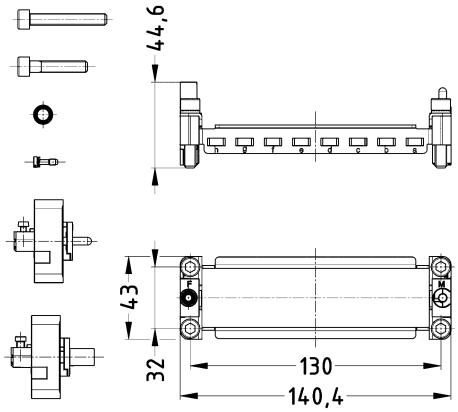
Identification	Cable entry	Part number	Drawing (dimensions in mm)
Han® HPR, Bulkhead mounted housing, Enlarged, with functional earth 		09 40 024 0371	 Panel cut out

Features

- Hinged frames with additional PE connection for 8 Han-Modular® single modules
- Two leading PE contacts
- Compatible to the hinged frame Han® HPR EasyCon

Technical characteristics

Limiting temperature	-40 ... +125 °C
Mating cycles	≥500
Material (accessories)	Zinc die-cast, Stainless steel

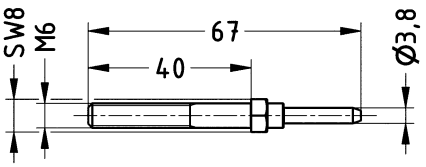
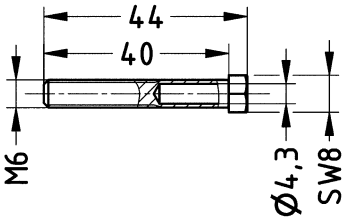
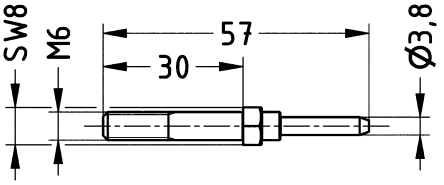
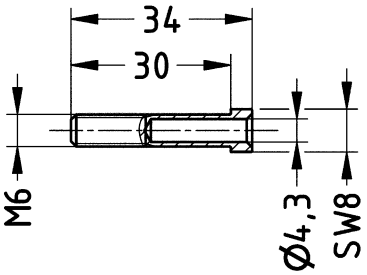
Identification	Conductor cross-section (mm²)	Part number	Drawing (dimensions in mm)
Han® HPR enlarged, Frame, for up to 8 single modules, A … H, Pack contents: 1x male PE adapter, 1x female PE adapter, 2x M3 screw, 4x washer SK S6, 4x cheese-head screw M6 x 30, 4x cheese-head screw M6 x 40	4 ... 10 PE terminal power side, 1 ... 2.5 PE terminal signal side	09 11 024 9933	
Han® HPR enlarged, Frame, for up to 8 single modules, a … h, Pack contents: 1x male PE adapter, 1x female PE adapter, 2x M3 screw, 4x washer SK S6, 4x cheese-head screw M6 x 30, 4x cheese-head screw M6 x 40	4 ... 10 PE terminal power side, 1 ... 2.5 PE terminal signal side	09 11 024 9934	

Features

- Guide pins and bushes for secure mating of hood and housing
- Can also be used for coding
- Are used in the hinged frame instead of M6 fixing screws

Technical characteristics

Material (accessories)	Stainless steel

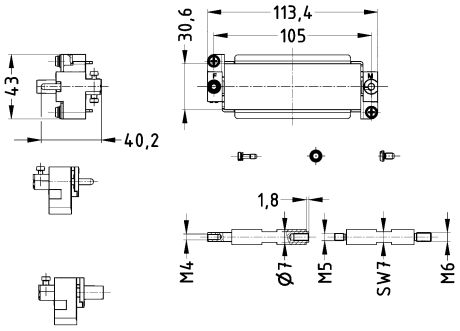
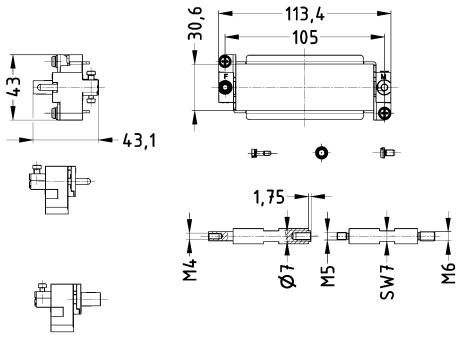
Identification	Part number Male	Part number Female	Drawing (dimensions in mm)
Han® HPR enlarged, Guide pin, for bulkhead mounted housings 	09 40 000 9811		
Han® HPR enlarged, Guide bush, for bulkhead mounted housings 		09 40 000 9812	
Han® HPR enlarged, Guide pin, for hoods 	09 40 000 9906		
Han® HPR enlarged, Guide bush, for hoods 		09 40 000 9907	

Features

- Hinged frames with additional PE connection for 6 Han-Modular® single modules
- Two leading PE contacts
- Compatible to the hinged frame Han® HPR enlarged

Technical characteristics

Limiting temperature	-40 ... +125 °C
Mating cycles	≥500
Material (accessories)	Zinc die-cast, Stainless steel

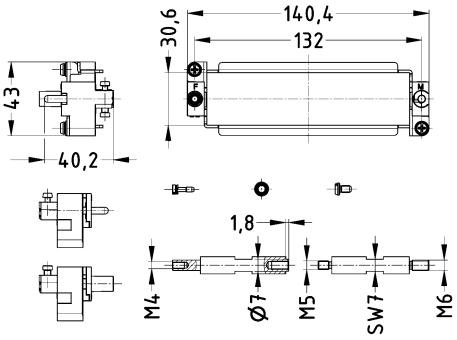
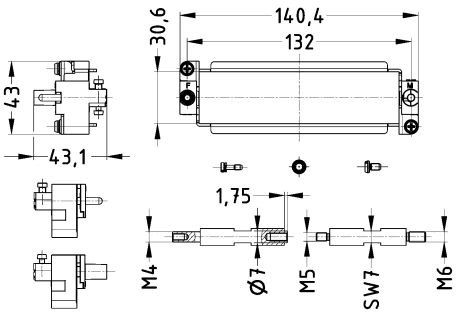
Identification	Conductor cross-section (mm²)	Part number	Drawing (dimensions in mm)
Han® HPR EasyCon, Frame, for up to 6 single modules, A ... F, Pack contents: 1x male PE adapter, 1x female PE adapter, 2x M4/M5 distance bolts (A/F 7), 2x M5/M6 distance bolts (A/F 7), 2x M3 screw, 2x M4 screw, 2x washer SK S4	4 ... 10 PE terminal power side, 1 ... 2.5 PE terminal signal side	09 40 016 9933	
Frame, for up to 6 single modules, a ... f, Pack contents: 1x male PE adapter, 1x female PE adapter, 2x M4/M5 distance bolts (A/F 7), 2x M5/M6 distance bolts (A/F 7), 2x M3 screw, 2x M4 screw, 2x washer SK S4	4 ... 10 PE terminal power side, 1 ... 2.5 PE terminal signal side	09 40 016 9934	

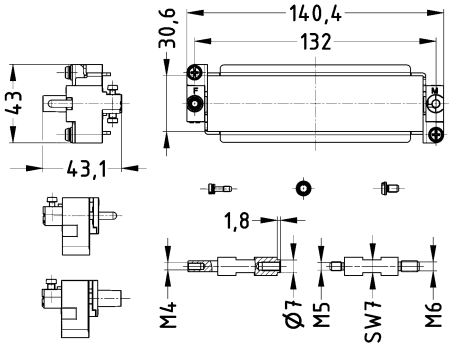
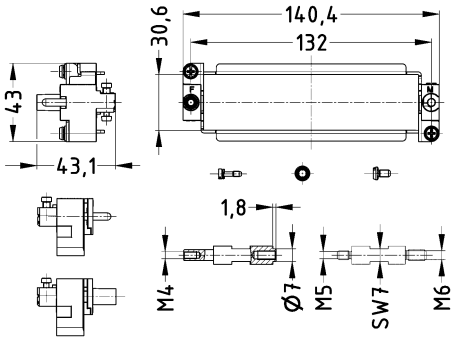
Features

- Hinged frames with additional PE connection for 8 Han-Modular® single modules
- Two leading PE contacts
- Compatible to the hinged frame Han® HPR enlarged

Technical characteristics

Limiting temperature	-40 ... +125 °C
Mating cycles	≥500
Material (accessories)	Zinc die-cast, Stainless steel

Identification	Conductor cross-section (mm²)	Part number	Drawing (dimensions in mm)
Han® HPR EasyCon, Frame, for up to 8 single modules, A … H, Pack contents: 1x male PE adapter, 1x female PE adapter, 2x M4/M5 distance bolts (A/F 7), 2x M5/M6 distance bolts (A/F 7), 2x M3 screw, 2x M4 screw, 2x washer SK S4	4 ... 10 PE terminal power side, 1 ... 2.5 PE terminal signal side	09 40 024 9933	
Han® HPR EasyCon, Frame, for up to 8 single modules, a … h, Pack contents: 1x male PE adapter, 1x female PE adapter, 2x M4/M5 distance bolts (A/F 7), 2x M5/M6 distance bolts (A/F 7), 2x M3 screw, 2x M4 screw, 2x washer SK S4	4 ... 10 PE terminal power side, 1 ... 2.5 PE terminal signal side	09 40 024 9934	

Identification	Conductor cross-section (mm²)	Part number	Drawing (dimensions in mm)
Han® HPR EasyCon, Frame, for up to 8 single modules, A … H, Low construction, Pack contents: 1x male PE adapter, 1x female PE adapter, 2x M4/M5 distance bolts (A/F 7), 2x M5/M6 distance bolts (A/F 7), 2x M3 screw, 2x M4 screw, 2x washer SK S4  ATTENTION! Only to be used with Han® 24 HPR EasyCon Short hoods and housings!	4 ... 10 PE terminal power side, 1 ... 2.5 PE terminal signal side	09 40 024 9935	
Han® HPR EasyCon, Frame, for up to 8 single modules, a … h, Low construction, Pack contents: 1x male PE adapter, 1x female PE adapter, 2x M4/M5 distance bolts (A/F 7), 2x M5/M6 distance bolts (A/F 7), 2x M3 screw, 2x M4 screw, 2x washer SK S4  ATTENTION! Only to be used with Han® 24 HPR EasyCon Short hoods and housings!	4 ... 10 PE terminal power side, 1 ... 2.5 PE terminal signal side	09 40 024 9936	

Ha-VIS eCon 2000 Advanced 5 ports

Switch

Features

- Unmanaged Plug & Play Gigabit Switch
- Robust and miniaturised Ethernet interface ix Industrial®
- Flat design for DIN rail or wall mounting
- Optimised for imaging processes and other data intensive applications
- Full Gigabit Ethernet Non Blocking switch architecture according to IEEE 802.3

Technical characteristics

Series	Ha-VIS eCon 2000
Element	Industrial Ethernet Switches
Specification	Unmanaged
Total number of ports	5
Operating temperature	-40 ... +70 °C
Storage temperature	-40 ... +85 °C
Degree of protection acc. to IEC 60529	IP30, when mated
Nominal voltage	24 V DC, 48 V DC
Power consumption	3.1 W @ 24 V DC, 3.4 W @ 48 V DC
10/100/1000 Mbit/s (ix Industrial®-Ports)	5 x
Transmission standard	10BASE-Te, 100BASE-TX EEE, 1000BASE-T EEE
Auto-negotiation	Yes
Auto-polarity	Yes
Auto-MDI(X)	Yes
Transmission physics	Twisted Pair, Cat. 5
Data rate	10 Mbit/s, 100 Mbit/s, 1000 Mbit/s
Transmission length	100 m
Material (hood/housing)	Aluminium (anodised)

Specifications and approvals

EN 61000-6-1 EMC Interference immunity
EN 61000-6-2 EMC Interference immunity
EN 55024 EMC Interference immunity
EN 61000-4-2 Electrostatic discharge (ESD)
EN 61000-4-3 Electromagnetic field
EN 61000-4-4 Rapid transients (burst)
EN 61000-4-6 conducted disturbances
EN 61000-6-4 emission standard
EN 55032 emission standard
FCC 47 FCR Part 15
IEC 60721-3-3 Mechanical stability (class 3M4)
IEC 60068-2-6 Vibration (sinusoidal)
IEC 60068-2-27 Shock
IEEE 802.3
IEC 61076-3-124 Type A
UL in preparation
DNV GL in preparation
E1 in preparation

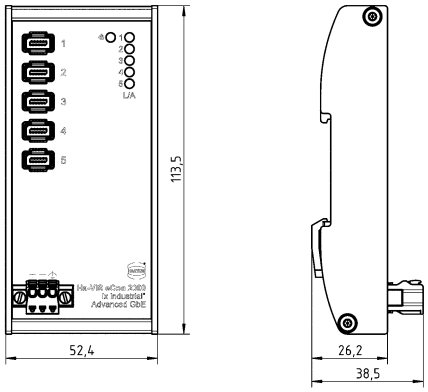
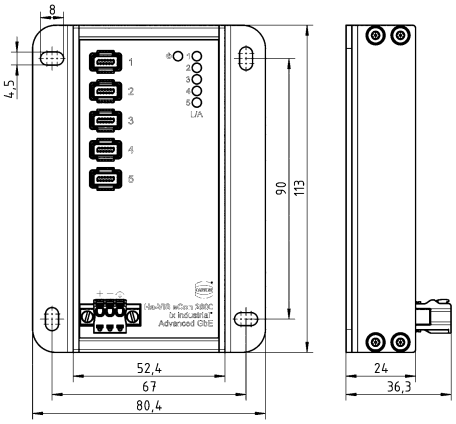
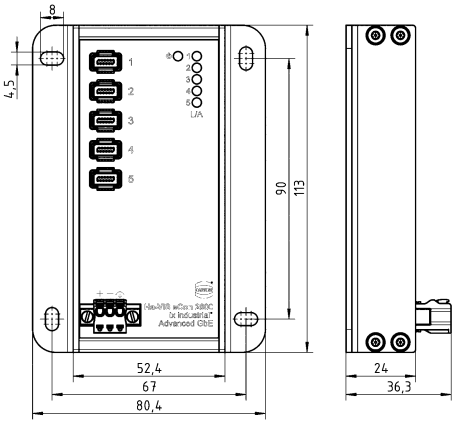
New

Ha-VIS eCon 2000 Advanced 5 ports

Total number of ports

5

Unmanaged Gigabit Switch

Identification	Part number	Drawing (dimensions in mm)
Ha-VIS eCon 2050GX-I-A, 35 mm DIN rail acc. to EN 60715, Pack contents: Pluggable and screwable Push-In contact for power supply, Assembly instructions 	24 14 405 0000	
Ha-VIS eCon 2050GX-I-AW, Flat wall mounting, Pack contents: Pluggable and screwable Push-In contact for power supply, Assembly instructions 	24 14 405 0001	
Ha-VIS eCon 2050GX-I-AWT, Flat wall mounting, Pack contents: Pluggable and screwable Push-In contact for power supply, Assembly instructions  with coated PCB	24 14 405 0002	

Ha-VIS eCon 2000 Advanced 8 ports

Features

- Unmanaged Plug & Play Gigabit Switch
- Robust and miniaturised Ethernet interface ix Industrial®
- Flat design for DIN rail or wall mounting
- Optimised for imaging processes and other data intensive applications
- Full Gigabit Ethernet Non Blocking switch architecture according to IEEE 802.3

Technical characteristics

Series	Ha-VIS eCon 2000
Element	Industrial Ethernet Switches
Specification	Unmanaged
Total number of ports	8
Operating temperature	-40 ... +70 °C
Storage temperature	-40 ... +85 °C
Degree of protection acc. to IEC 60529	IP30, when mated
Nominal voltage	24 V DC, 48 V DC
Power consumption	4.6 W @ 24 V DC, 4.8 W @ 48 V DC
10/100/1000 Mbit/s (ix Industrial®-Ports)	8 x
Transmission standard	10BASE-Te, 100BASE-TX EEE, 1000BASE-T EEE
Auto-negotiation	Yes
Auto-polarity	Yes
Auto-MDI(X)	Yes
Transmission physics	Twisted Pair, Cat. 5
Data rate	10 Mbit/s, 100 Mbit/s, 1000 Mbit/s
Transmission length	100 m
Material (hood/housing)	Aluminium (anodised)

Specifications and approvals

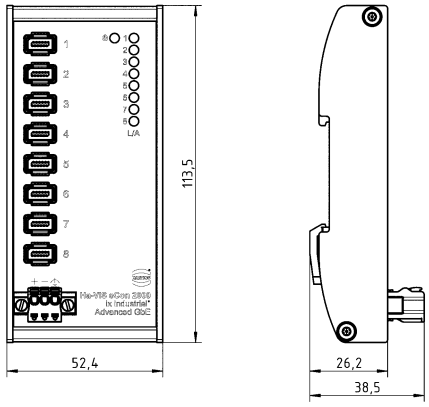
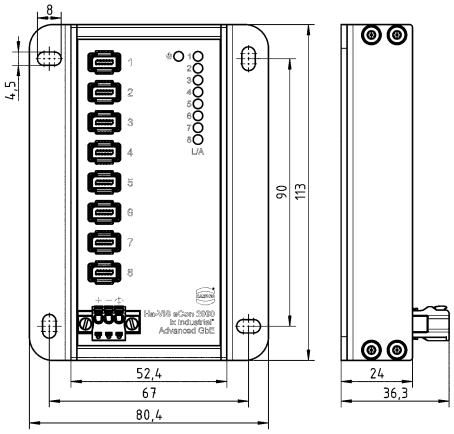
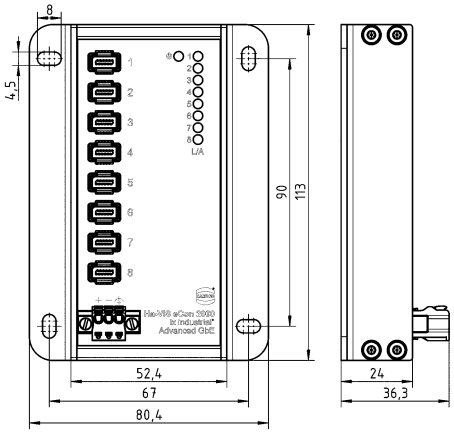
EN 61000-6-1 EMC Interference immunity
EN 61000-6-2 EMC Interference immunity
EN 55024 EMC Interference immunity
EN 61000-4-2 Electrostatic discharge (ESD)
EN 61000-4-3 Electromagnetic field
EN 61000-4-4 Rapid transients (burst)
EN 61000-4-6 conducted disturbances
EN 61000-6-4 emission standard
EN 55032 emission standard
FCC 47 FCR Part 15
IEC 60721-3-3 Mechanical stability (class 3M4)
IEC 60068-2-6 Vibration (sinusoidal)
IEC 60068-2-27 Shock
IEEE 802.3
IEC 61076-3-124 Type A
UL in preparation
DNV GL in preparation
E1 in preparation

Ha-VIS eCon 2000 Advanced 8 ports

Total number of ports

8

Unmanaged Gigabit Switch

Identification	Part number	Drawing (dimensions in mm)
Ha-VIS eCon 2080GX-I-A, 35 mm DIN rail acc. to EN 60715, Pack contents: Pluggable and screwable Push-In contact for power supply, Assembly instructions 	24 14 408 0000	
Ha-VIS eCon 2080GX-I-AW, Flat wall mounting, Pack contents: Pluggable and screwable Push-In contact for power supply, Assembly instructions 	24 14 408 0001	
Ha-VIS eCon 2080GX-I-AWT, Flat wall mounting, Pack contents: Pluggable and screwable Push-In contact for power supply, Assembly instructions  with coated PCB	24 14 408 0002	

Contents	Page
DIN 41612	**New 5.2**

PCB

Number of contacts

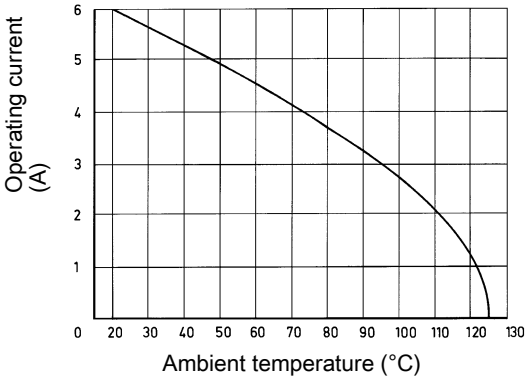
64

Female connector
Straight
Press-in termination

Technical characteristics

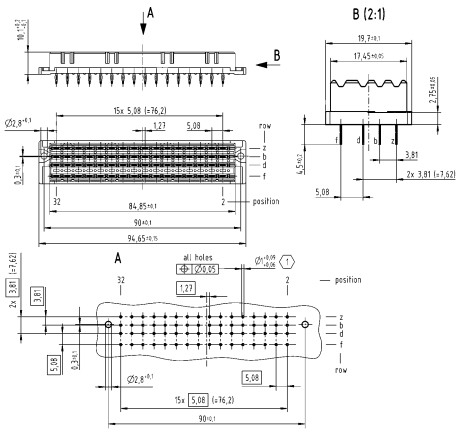
Contact rows	4
Contact spacing (termination side)	5.08 mm
Contact spacing (mating side)	5.08 mm
Clearance distance	≥1.6 mm
Creepage distance	≥3 mm
Rated current	6 A
Test voltage $U_{r.m.s.}$	1.55 kV (contact-contact), 2.5 kV (contact-ground)
Insulation resistance	$>10^{12}$ Ω
Limiting temperature	-40 ... +105 °C upper limiting temperature limited by the pcb
PCB thickness	≥1.6 mm
Railway classification	F4/I3, acc. to NFF 16-101/102
Material (insert)	Thermoplastic resin, glass-fibre filled
Isolation group	IIIa (175 ≤ CTI < 400)
Colour (insert)	Grey
Material (contacts)	Copper alloy
Surface (contacts)	Noble metal, Mating side, Nickel plated, Termination side
Material flammability class acc. to UL 94	V-0
RoHS	compliant

Derating



Specifications and approvals

IEC 60603-2

Identification	Termination length	Part number	Drawing (dimensions in mm)
DIN 41612, Type G, low profile, Female connector, Press-in termination, Straight, Performance level 1 	4.5 mm	09 06 264 2832	 PCB layout
DIN 41612, Type G, low profile, Female connector, Press-in termination, Straight, Performance level 2	4.5 mm	09 06 264 6832	

New
5
·
2

Number of contacts

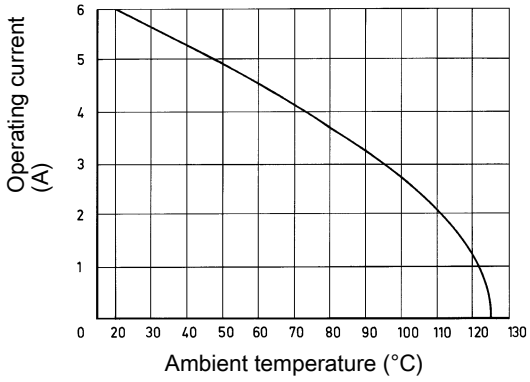
64

Female connector
Straight
Wave soldering termination

Technical characteristics

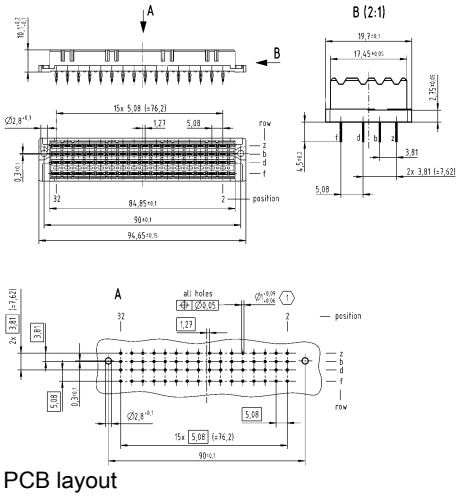
Contact rows	4
Contact spacing (termination side)	5.08 mm
Contact spacing (mating side)	5.08 mm
Clearance distance	≥1.6 mm
Creepage distance	≥3 mm
Rated current	6 A
Test voltage $U_{r.m.s.}$	1.55 kV (contact-contact), 2.5 kV (contact-ground)
Insulation resistance	$>10^{12}$ Ω
Limiting temperature	-55 ... +125 °C
Railway classification	F4/I3, acc. to NFF 16-101/102
Material (insert)	Thermoplastic resin, glass-fibre filled
Isolation group	IIIa (175 ≤ CTI < 400)
Colour (insert)	Grey
Material (contacts)	Copper alloy
Surface (contacts)	Noble metal, Mating side, Sn over Ni, Termination side
Material flammability class acc. to UL 94	V-0

Derating



Specifications and approvals

IEC 60603-2

Identification	Termination length	Part number	Drawing (dimensions in mm)
DIN 41612, Type G, low profile, Female connector, Wave soldering termination, Straight, Performance level 1 	3.7 mm 4.5 mm	09 06 264 2833 09 06 264 2834	 PCB layout
DIN 41612, Type G, low profile, Female connector, Wave soldering termination, Straight, Performance level 2	3.7 mm 4.5 mm	09 06 264 6833 09 06 264 6834	

Contents	Page

New products for Single Pair Ethernet (SPE)

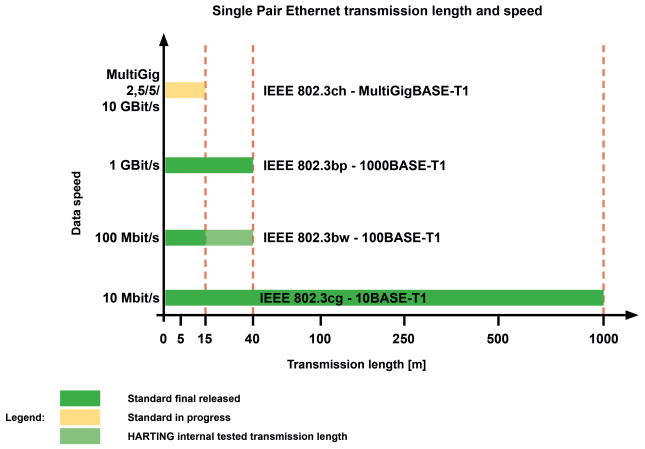
Single Pair Ethernet – the new transmission technology using only one wire pair

Introduction

The current IEEE standards

New TCP/IP-based transmission methods that use only one copper pair will replace old bus systems and analogue interfaces like the 20 mA current loop. They should also seamlessly connect sensor/actuator networks to Ethernet-based automation networks (such as PROFINET).

IEEE 802.3 is developing various transmission standards for this purpose. These include, firstly, the 100BASE-T1 in IEEE 802.3bw for 100 Mbit/s transmissions as well as the IEEE 802.3bp 1000BASE-T1 Gigabit version. It also defines a standard for remote power supply called Power over Data Line (PoDL) (IEEE 802.3bu). The combination of data and power using very small connectors and single pair cables enables miniaturisation, higher data rates and modularisation for simple as well as complex systems. IEEE is currently working on a further standard for even higher data rates up to 10 Gbit/s (IEEE 802.3ch), which are required for high-resolution sensors and video transmissions. A standard for only 10 Mbit/s (IEEE 802.3cg) is also released. This standard is highly relevant for many industries, since it enables transmission distances of up to 1,000 metres.



Overview of the relevant SPE/T1 standards for industry (status 3/2020)

Data transmission speed	Bandwidth	Protocol acc. to	Status	Cabling acc. to	Link length	Note
10 MBit/s	20 MHz	IEEE802.3cg	available	10BASE-T1	1000 m	shielded
100 MBit/s	200 MHz	IEEE802.3bw	available	100BASE-T1	40 m	shielded
1 GBit/s	600 MHz	IEEE802.3bp	available	1000BASE-T1	40 m	shielded
additional remote power supply		IEEE802.3bu	available			

Standards are essential – even for interfaces

The successful and large-scale implementation of SPE requires the consistent compatibility of devices, cables and connectors. Standardised and harmonised interfaces are the key for all manufacturers so that they can jointly develop an SPE product ecosystem consisting of sensors, actuators, controllers and connection technology. Users can then create suitable automation solutions with these components and be sure of their investment.

The mating face is described as a standard under IEC 63171-6. It is specially designed for use in environmental conditions up to $M_3I_3C_3E_3$.

The various transmission speeds (bit rates) and ranges for SPE and the requirements up to $M_3I_3C_3E_3$ result in an extensive product range for SPE connectors, which HARTING will cover as follows:

- IP20 products for use in protected zones, in control cabinets or within devices with:
  - PCB sockets – horizontal and vertical/straight and angled
  - Cable plugs – initially with crimp contacts, later also as IDC version
  - Preassembled cords, also available in over-moulded version
- IP65/67 products for use in industrial environments
  - Same/similar PCB sockets as IP20, but with M8 or M12 housing with threaded and PushPull locking added
  - Matching M8 or M12 cable sockets
  - Preassembled cords, also available in over-moulded version
- IP65/67 SnapIn variants
  - Sockets, plugs and cords with flexible plastic protective housings provide very compact space-saving solutions for devices and distributors

All HARTING T1 Industrial connectors are based on the same SPE data container, in the form of a contact carrier with shield plate. This delivers consistent stability and high performance, identical assembly sequences and plug-in compatibility between the different HARTING T1 Industrial IPxx variants. For example, the user can plug SPE IP20 cords onto T1 M8 or M12 sockets for measuring and testing purposes.

A complete SPE cable portfolio is being prepared so that complete cabling based on SPE and HARTING T1 Industrial can also be implemented. Corresponding standards are also being worked on for the cables which describe the basic structure and the assured performance:

Data transmission speed	Bandwidth	Cable standard	Laying procedure	Core structure	Typical cores	Note
1 GBit/s	600 MHz	IEC 61156-11	unmoved	solid wire	AWG23/1 and 22/1	shielded
1 GBit/s	600 MHz	IEC 61156-12	moved	stranded wire	AWG26/7	shielded
10 MBit/s	20 MHz	IEC 61156-13	unmoved	solid wire	AWG18…16	shielded
10 MBit/s	20 MHz	IEC 61156-14	moved	stranded wire	AWG22…26	shielded

Notice: According to IEC 61156-1x, the SPE cables are modified accordingly for use in different MICE environments and for special applications. Cables suitable for drag chains, torsion cables, outdoor cables and SPE cables can thus be used in railway applications.

The HARTING T1 Industrial cabling components shown here are the basis portfolio. They enable the SPE/T1 interfaces to be integrated onto devices and the power supply connection for these devices. HARTING's T1 Industrial portfolio will be successively expanded. Thanks to its forward-looking design, it can also be expanded for applications in the direction of 10 Gbit/s.

Number of contacts

2

+ shielding

Features

- Internationally standardised mating face acc. to IEC 63171-6
- For the construction of future-proof and standardised Single Pair Ethernet (SPE) communication networks with standar-dised cabling according to ISO / IEC 11801 and TIA 42
- Designed for industrial applications up to $M_3I_3C_3E_3$ environ-mental conditions
- Meets all IEEE 802.3 requirements for SPE
- Robust industrial design with 360° shielding, locking lever protection and high mating cycles
- Suitable for remote power supply for all Power over Data Line (PoDL) classes

Technical characteristics

Number of contacts	2
Additional contacts	+ shielding
Rated current	4 A
Rated voltage	60 V DC
Test voltage U_{DC}	1 kV (contact-contact), 2.25 kV (contact-ground)
Contact resistance	≤20 mΩ
Shielding resistance	≤100 mΩ
Limiting temperature	-40 ... +85 °C
Mating cycles	≥1000
Degree of protection acc. to IEC 60529	IP20
Transmission characteristics	600 MHz, Bandwidth
Data rate	10 Mbit/s, 100 Mbit/s, 1 Gbit/s
Moisture Sensitivity Level (MSL)	1, acc. to ECA/IPC/JEDEC J-STD-020D
Process Sensitivity Level (PSL)	R0, acc. to ECA/IPC/JEDEC J-STD-020D
RoHS	compliant

Specifications and approvals

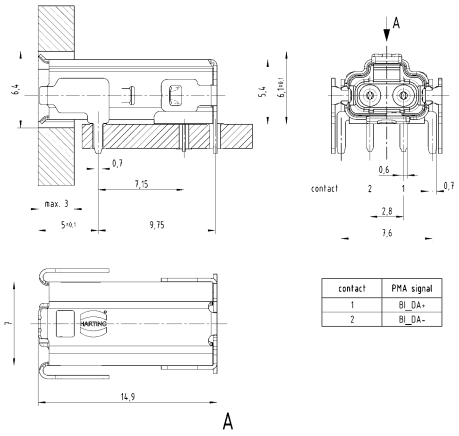
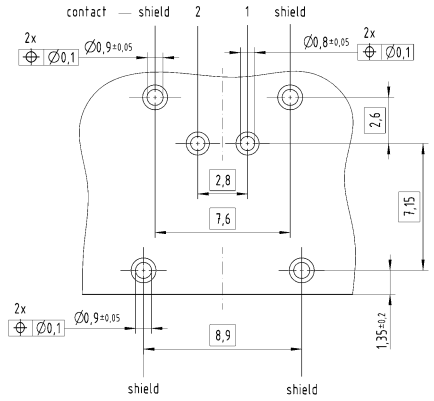
IEC 63171-6
IEEE 802.3bu (remote power supply over PoDL = Power over Data Line)
IEEE 802.3cg (10BASE-T1)
IEEE 802.3bw (100BASE-T1)
IEEE 802.3bp (1000BASE-T1)

Details

Unmating under electrical load with 1.5 A / 60 V. 50 cycles for each polarity.

UL approval in preparation

Cable assemblies see chapter 8

Identification	Part number	Drawing (dimensions in mm)
HARTING T1 Industrial, PCB connector, THR connection, Fully shielded, 360° shielding contact, Pack contents: Sample 	09 45 281 2800 333	  PCB layout
HARTING T1 Industrial, PCB connector, THR connection, Fully shielded, 360° shielding contact, Pack contents: 400 pieces on reel 	09 45 281 2800	

HARTING T1 Industrial

Number of contacts

2

+ shielding

Features

- Internationally standardised mating face acc. to IEC 63171-6
- For the construction of future-proof and standardised Single Pair Ethernet (SPE) communication networks with standar-dised cabling according to ISO / IEC 11801 and TIA 42
- Designed for industrial applications up to $M_3I_3C_3E_3$ environ-mental conditions
- Meets all IEEE 802.3 requirements for SPE
- Robust industrial design with 360° shielding, locking lever protection and high mating cycles
- Suitable for remote power supply for all Power over Data Line (PoDL) classes

Technical characteristics

Number of contacts	2
Additional contacts	+ shielding
Rated current	4 A
Rated voltage	60 V DC
Test voltage U_{DC}	1 kV (contact-contact), 2.25 kV (contact-ground)
Contact resistance	≤20 mΩ
Shielding resistance	≤100 mΩ
Limiting temperature	-40 ... +85 °C
Mating cycles	≥1000
Conductor cross-section	0.08 ... 0.32 mm² Stranded, 0.08 ... 0.12 mm², 0.22 ... 0.32 mm²
Conductor cross-section	AWG 28/7 ... AWG 22/7 Stranded, AWG 28 ... AWG 26, AWG 24 ... AWG 22
Wire outer diameter	≤1.55 mm
Degree of protection acc. to IEC 60529	IP20
Cable diameter	4.5 ... 6 mm
Transmission characteristics	600 MHz, Bandwidth
Data rate	10 Mbit/s, 100 Mbit/s, 1 Gbit/s
RoHS	compliant

Specifications and approvals

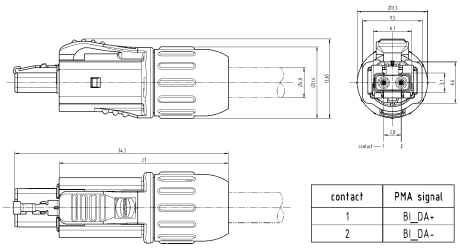
IEC 63171-6
IEEE 802.3bu (remote power supply over PoDL = Power over Data Line)
IEEE 802.3cg (10BASE-T1)
IEEE 802.3bw (100BASE-T1)
IEEE 802.3bp (1000BASE-T1)

Details

Unmating under electrical load with 1.5 A / 60 V. 50 cycles for each polarity.

UL approval in preparation

Cable assemblies see chapter 8

Identification	Part number	Drawing (dimensions in mm)
HARTING T1 Industrial, Cable connector, Crimp termination, Fully shielded, 360° shielding contact, AWG 28/7 ... AWG 22/7, Pack contents: Packaging with 100 pieces  Please order crimp contacts separately.	09 45 181 2800 XL	

Identification	Part number	Drawing (dimensions in mm)
Crimp contact, Turned contacts, AWG 28 ... AWG 26, Pack contents: 500 pieces on a reel	09 45 500 2800	
Crimp contact, Turned contacts, AWG 24 ... AWG 22, Pack contents: 500 pieces on a reel	09 45 500 2802	
Crimping tool, for HARTING T1 Industrial contacts (AWG 28 ... AWG 26)	09 45 800 2800	
Crimping tool, for HARTING T1 Industrial contacts (AWG 24 ... AWG 22)	09 45 800 2801	

Number of contacts

8

+ 2x GND

Features

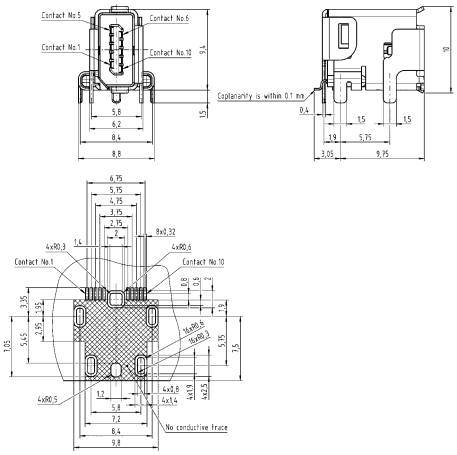
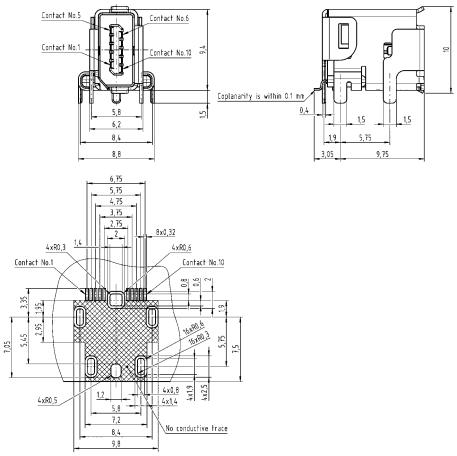
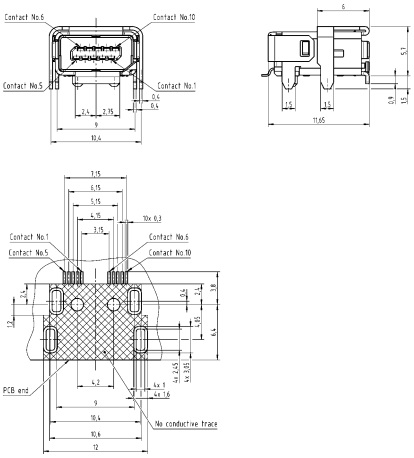
- Miniaturised Ethernet data interface suitable for industry in acc. to IEC 61076-3-124 type A
- Robust industrial design
- 360° shielding
- Category of transmission Cat. 6_A
- 5000 mating cycles
- 70 % reduced size compared to RJ45
- Suitable for all PoE versions

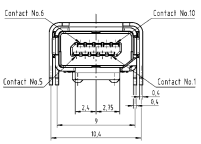
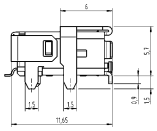
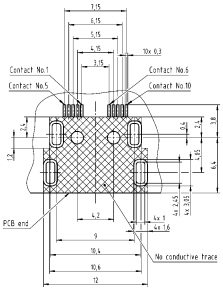
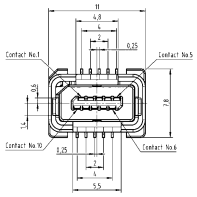
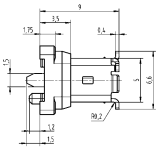
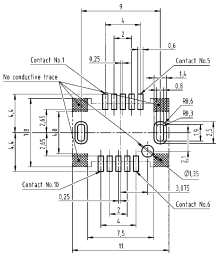
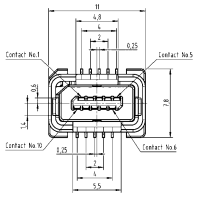
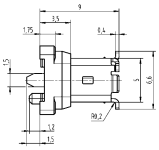
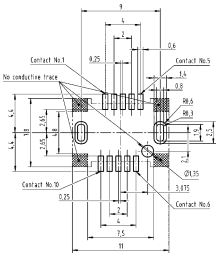
Technical characteristics

Number of contacts	8
Additional contacts	+ 2x GND
Rated current	1.5 A
Rated voltage	50 V AC, 60 V DC
Test voltage $U_{r.m.s.}$	0.5 kV
Contact resistance	≤30 mΩ
Shielding resistance	≤100 mΩ
Limiting temperature	-40 ... +85 °C
Storage temperature	-30 ... +60 °C
Mating cycles	≥5000
Degree of protection acc. to IEC 60529	IP20
Transmission characteristics	Cat. 6_A, Class E_A up to 500 MHz
Data rate	10 Mbit/s, 100 Mbit/s, 1 Gbit/s, 2.5 Gbit/s, 5 Gbit/s, 10 Gbit/s
Insertion force	≤25 N
Withdrawal force	≤25 N
Material (insert)	Liquid crystal polymer (LCP)
Colour (insert)	Black
Material (contacts)	Copper alloy
Surface (contacts)	Au over Ni
Material flammability class acc. to UL 94	V-0
RoHS	compliant

Specifications and approvals

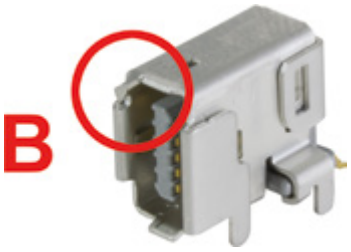
IEC 61076-3-124
UL 1977 ECBT2.E102079
CSA-C22.2 No. 182.3 ECBT8.E102079

Identification	Part number	Drawing (dimensions in mm)
HARTING ix Industrial®, Data, PCB connector, Angled, Solder termination, Fully shielded, 360° shielding contact, Pack contents: Sample 	09 45 281 2560 333	
HARTING ix Industrial®, Data, PCB connector, Angled, Solder termination, Fully shielded, 360° shielding contact, Pack contents: 400 pieces on reel 	09 45 281 2560	
HARTING ix Industrial®, Data, PCB connector, Horizontal, Solder termination, Fully shielded, 360° shielding contact, Pack contents: Sample 	09 45 281 2561 333	

Identification	Part number	Drawing (dimensions in mm)
HARTING ix Industrial®, Data, PCB connector, Horizontal, Solder termination, Fully shielded, 360° shielding contact, Pack contents: 550 pieces on reel A 	09 45 281 2561	  
HARTING ix Industrial®, Data, PCB connector, Vertical, Solder termination, Fully shielded, 360° shielding contact, Pack contents: Sample A 	09 45 281 2562 333	  
HARTING ix Industrial®, Data, PCB connector, Vertical, Solder termination, Fully shielded, 360° shielding contact, Pack contents: 450 pieces on reel A 	09 45 281 2562	  

Number of contacts

10



Features

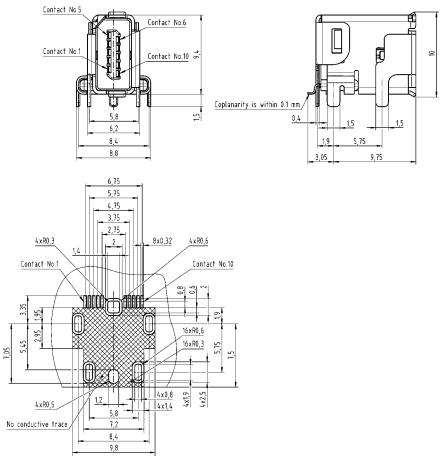
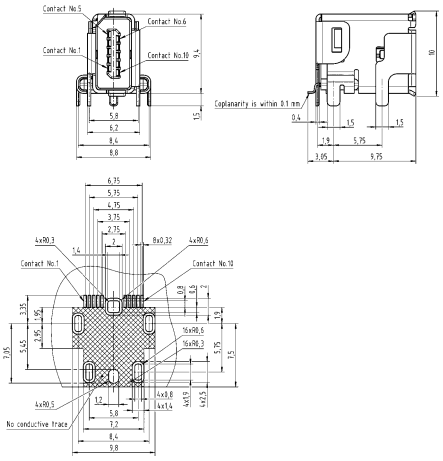
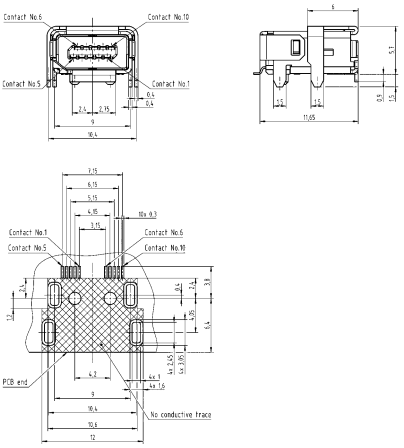
- Miniaturised interface for signals and bus systems in acc. to IEC 61076-3-124 type B, suitable for industrial use
- Robust industrial design
- 360° shielding
- 5000 mating cycles
- Very small and space saving interface

Technical characteristics

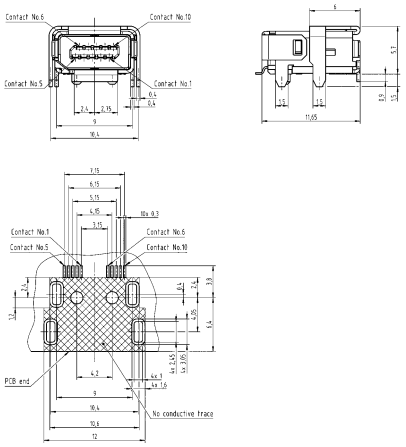
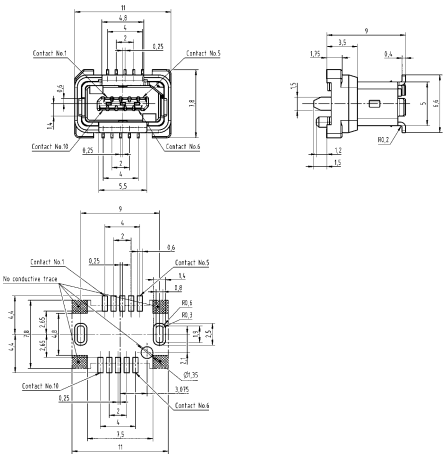
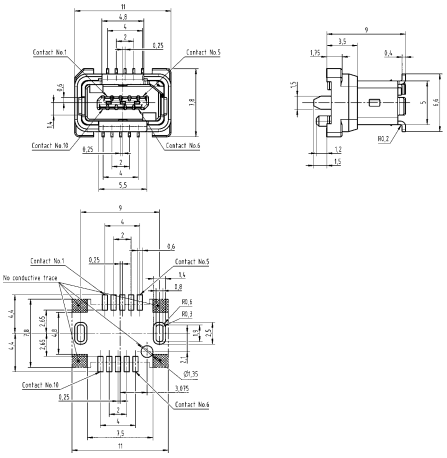
Number of contacts	10
Rated current	1.5 A
Rated voltage	50 V AC, 60 V DC
Test voltage $U_{r.m.s.}$	0.5 kV
Contact resistance	≤30 mΩ
Shielding resistance	≤100 mΩ
Limiting temperature	-40 ... +85 °C
Storage temperature	-30 ... +60 °C
Mating cycles	≥5000
Degree of protection acc. to IEC 60529	IP20
Transmission characteristics	Cat. 6_A, Class E_A up to 500 MHz
Insertion force	≤25 N
Withdrawal force	≤25 N
Material (insert)	Liquid crystal polymer (LCP)
Colour (insert)	Black
Material (contacts)	Copper alloy
Surface (contacts)	Au over Ni
Material flammability class acc. to UL 94	V-0
RoHS	compliant

Specifications and approvals

IEC 61076-3-124
UL 1977 ECBT2.E102079
CSA-C22.2 No. 182.3 ECBT8.E102079

Identification	Part number	Drawing (dimensions in mm)
HARTING ix Industrial®, Signal, PCB connector, Angled, Solder termination, Fully shielded, 360° shielding contact, Pack contents: Sample 	09 45 281 9000 333	
HARTING ix Industrial®, Signal, PCB connector, Angled, Solder termination, Fully shielded, 360° shielding contact, Pack contents: 400 pieces on reel 	09 45 281 9000	
HARTING ix Industrial®, Signal, PCB connector, Horizontal, Solder termination, Fully shielded, 360° shielding contact, Pack contents: Sample 	09 45 281 9001 333	

Inter-face

Identification	Part number	Drawing (dimensions in mm)
HARTING ix Industrial®, Signal, PCB connector, Horizontal, Solder termination, Fully shielded, 360° shielding contact, Pack contents: 550 pieces on reel 	09 45 281 9001	
HARTING ix Industrial®, Signal, PCB connector, Vertical, Solder termination, Fully shielded, 360° shielding contact, Pack contents: Sample 	09 45 281 9002 333	
HARTING ix Industrial®, Signal, PCB connector, Vertical, Solder termination, Fully shielded, 360° shielding contact, Pack contents: 450 pieces on reel 	09 45 281 9002	

Number of contacts

8

+ 2x GND

Features

- Miniaturised Ethernet data interface suitable for industry in acc. to IEC 61076-3-124 type A
- Robust industrial design
- 360° shielding
- Category of transmission Cat. 6_A
- 5000 mating cycles
- Suitable for all PoE versions

Technical characteristics

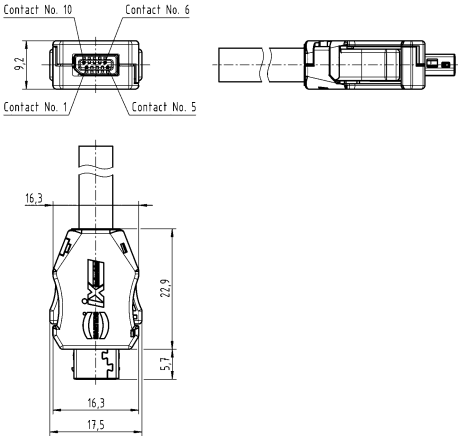
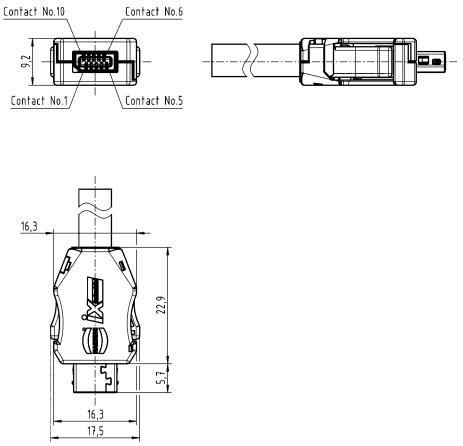
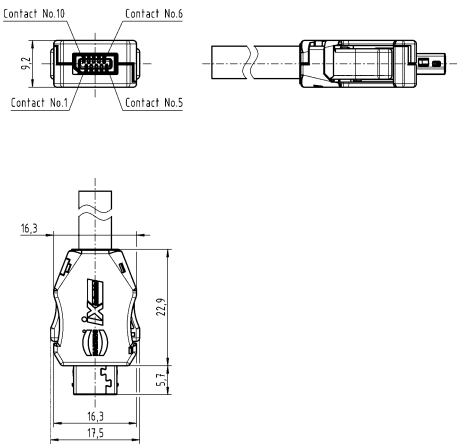
Number of contacts	8
Additional contacts	+ 2x GND
Rated current	1.5 A
Rated voltage	50 V AC, 60 V DC
Test voltage $U_{r.m.s.}$	0.5 kV
Contact resistance	≤30 mΩ
Shielding resistance	≤100 mΩ
Limiting temperature	-40 ... +85 °C
Storage temperature	-30 ... +60 °C
Mating cycles	≥5000
Conductor cross-section	AWG 28/7 ... AWG 22/7, AWG 28/7 ... AWG 26/7, AWG 24/7
Wire outer diameter	≤1.55 mm, 0.95 ... 1.05 mm, 1.1 ... 1.25 mm
Degree of protection acc. to IEC 60529	IP20
Retention force	≥80 N locking
Cable diameter	5.5 ... 7.2 mm
Transmission characteristics	Cat. 6_A, Class E_A up to 500 MHz
Data rate	10 Mbit/s, 100 Mbit/s, 1 Gbit/s, 2.5 Gbit/s, 5 Gbit/s, 10 Gbit/s
Insertion force	≤25 N
Withdrawal force	≤25 N
Material (insert)	Polyamide (PA)
Colour (insert)	Black
Material (contacts)	Copper alloy
Surface (contacts)	Au over Ni
Material flammability class acc. to UL 94	V-0
RoHS	compliant

Specifications and approvals

IEC 61076-3-124
UL 1977 ECBT2.E102079
CSA-C22.2 No. 182.3 ECBT8.E102079

Details

Cable assemblies see chapter 8

Identification	Part number	Drawing (dimensions in mm)
HARTING ix Industrial®, Data, Cable connector, Solder termination, Fully shielded, 360° shielding contact, for AWG 28/7 - 22/7 and conductor diameters up to 1.55 mm, Pack contents: Packaging with 100 pieces 	09 45 181 2560 XL	
HARTING ix Industrial®, Data, Cable connector, IDC termination, Fully shielded, 360° shielding contact, for AWG 28/7 - 26/7 and conductor diameters from 0.95 - 1.05 mm, Pack contents: Packaging with 100 pieces 	09 45 181 2561 XL	
HARTING ix Industrial®, Data, Cable connector, IDC termination, Fully shielded, 360° shielding contact, for AWG 24 and conductor diameters from 1.1 - 1.25 mm, Pack contents: Packaging with 100 pieces 	09 45 181 2562 XL	

Number of contacts

10

Features

- Miniaturised interface for signals and bus systems in acc. to IEC 61076-3-124 type B, suitable for industrial use
- Robust industrial design
- 360° shielding
- 5000 mating cycles
- Very small and space saving interface

Technical characteristics

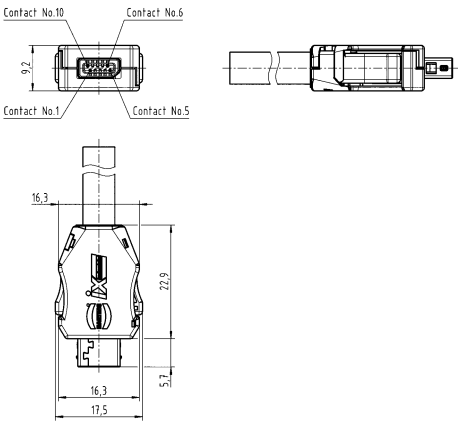
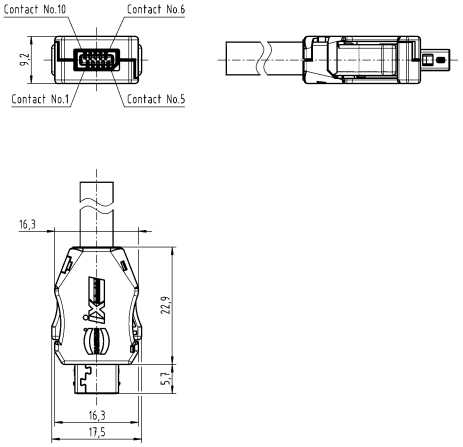
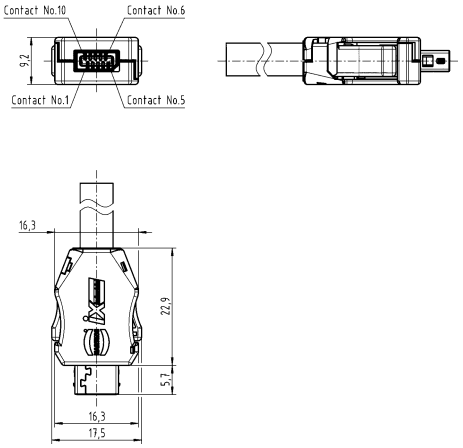
Number of contacts	10
Rated current	1.5 A
Rated voltage	50 V AC, 60 V DC
Test voltage $U_{r.m.s.}$	0.5 kV
Contact resistance	≤30 mΩ
Shielding resistance	≤100 mΩ
Limiting temperature	-40 ... +85 °C
Storage temperature	-30 ... +60 °C
Mating cycles	≥5000
Conductor cross-section	AWG 28/7 ... AWG 22/7, AWG 28/7 ... AWG 26/7, AWG 24/7
Wire outer diameter	≤1.55 mm, 0.95 ... 1.05 mm, 1.1 ... 1.25 mm
Degree of protection acc. to IEC 60529	IP20
Retention force	≥80 N locking
Cable diameter	5.5 ... 7.2 mm
Insertion force	≤25 N
Withdrawal force	≤25 N
Material (insert)	Polyamide (PA)
Colour (insert)	Black
Material (contacts)	Copper alloy
Surface (contacts)	Au over Ni
Material flammability class acc. to UL 94	V-0
RoHS	compliant

Specifications and approvals

IEC 61076-3-124
UL 1977 ECBT2.E102079
CSA-C22.2 No. 182.3 ECBT8.E102079

Details

Cable assemblies see chapter 8

Identification	Part number	Drawing (dimensions in mm)
HARTING ix Industrial®, Signal, Cable connector, Solder termination, Fully shielded, 360° shielding contact, for AWG 28/7 - 22/7 and conductor diameters up to 1.55 mm, Pack contents: Packaging with 100 pieces 	09 45 181 9000 XL	
HARTING ix Industrial®, Signal, Cable connector, IDC termination, Fully shielded, 360° shielding contact, for AWG 28/7 - 26/7 and conductor diameters from 0.95 - 1.05 mm, Pack contents: Packaging with 100 pieces 	09 45 181 9001 XL	
HARTING ix Industrial®, Signal, Cable connector, IDC termination, Fully shielded, 360° shielding contact, for AWG 24 and conductor diameters from 1.1 - 1.25 mm, Pack contents: Packaging with 100 pieces 	09 45 181 9002 XL	

Identification	Part number	
Assembly tool, for HARTING ix Industrial® to assemble the single wire to the IDC and the cable strain relief crimping	09 45 800 0181	
Removal tool, for HARTING ix Industrial® as pull-out aid for close-fitting ix Industrial® connectors	09 45 800 0182	

HARTING Mini PushPull ix Industrial®

Features

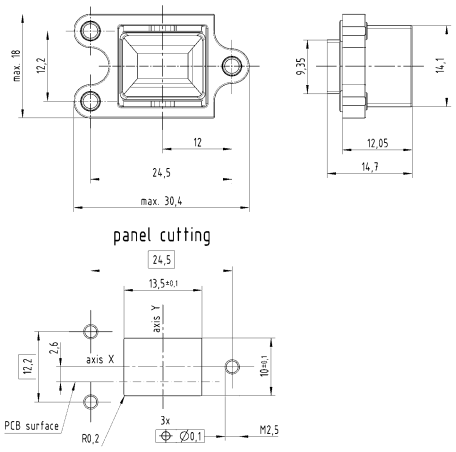
- PushPull housing (bulkhead mounting) with HARTING PushPull technology
- Small, space-saving PushPull interfaces in IP65 / IP67
- High packing density (spacing 25 x 18 mm)

Technical characteristics

Limiting temperature	-40 ... +70 °C
Mating cycles	≥750
Locking type	PushPull
Degree of protection acc. to IEC 60529	IP65 / IP67
Material (hood/housing)	Polybutylene terephthalate (PBT)
Colour (hood/housing)	Black
Material (seal)	PTS
Colour (seal)	Yellow
Material flammability class acc. to UL 94	V-0

Details

Can be combined with HARTING ix Industrial® jacks, angled, horizontal, vertical, types A and B

Identification	Part number	Drawing (dimensions in mm)
HARTING Mini PushPull, Bulkhead mounted housing, Without board locks, **Available as from Q3/2020** 	09 51 521 0001	

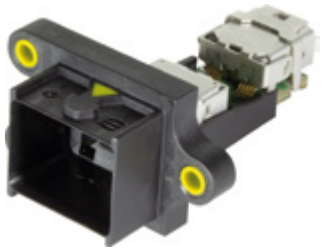
HARTING Mini PushPull ix Industrial®

Type A

Number of contacts

8

+ 2x GND



Features

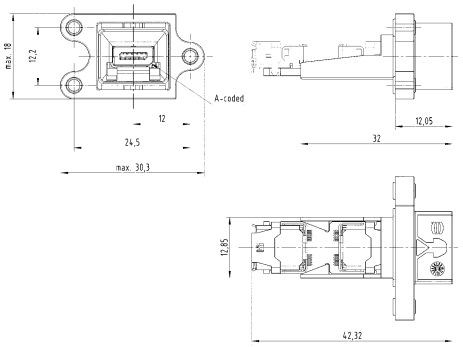
- Small, space-saving PushPull interfaces in IP65 / IP67
- Easy handling of ix Industrial patch cords in switch cabinets or sets
- Miniaturised Ethernet data interface for industry in acc. to IEC 61076-3-124, type A

Technical characteristics

Number of contacts	8
Additional contacts	+ 2x GND
Rated current	1.5 A
Rated voltage	50 V AC, 60 V DC
Test voltage $U_{r.m.s.}$	0.5 kV
Contact resistance	≤30 mΩ
Shielding resistance	≤100 mΩ
Limiting temperature	-40 ... +70 °C
Storage temperature	-30 ... +60 °C
Mating cycles	≥750
Locking type	PushPull
Degree of protection acc. to IEC 60529	IP65 / IP67
Transmission characteristics	Cat. 6_A, Class E_A up to 500 MHz
Data rate	10 Mbit/s, 100 Mbit/s, 1 Gbit/s, 2.5 Gbit/s, 5 Gbit/s, 10 Gbit/s
Insertion force	≤25 N
Withdrawal force	≤25 N
Material (insert)	Liquid crystal polymer (LCP)
Colour (insert)	Black
Material (hood/housing)	Polybutylene terephthalate (PBT)
Colour (hood/housing)	Black
Material (seal)	PTS
Colour (seal)	Yellow
Material (contacts)	Copper alloy
Material flammability class acc. to UL 94	V-0

Specifications and approvals

IEC 61076-3-124 Type A
EN 50173-1

Identification	Part number	Drawing (dimensions in mm)
HARTING Mini PushPull, ix Industrial®, Bulkhead mounted housing, Panel feed trough set, Fully shielded, 360° shielding contact, **Available as from Q3/2020**, Pack contents: incl. seal, 2x HARTING ix Industrial®-jack type A (Ethernet) and board drillings for M2.5 	09 51 221 0001	

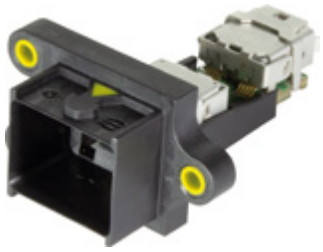
HARTING Mini PushPull ix Industrial®

Type B

Number of contacts

8

+ 2x GND



Features

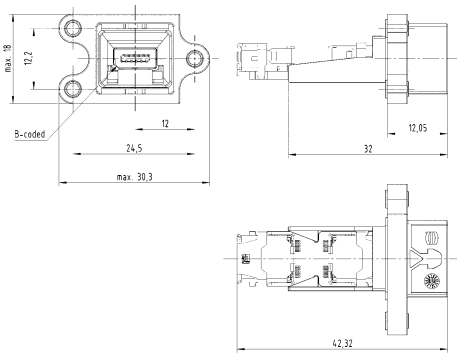
- Small, space-saving PushPull interfaces in IP65 / IP67
- Easy handling of ix Industrial patch cords in switch cabinets or sets
- Miniaturised interface for signals and bus systems, suitable for industrial use in acc. to IEC 61076-3-124, type B

Technical characteristics

Number of contacts	8
Additional contacts	+ 2x GND
Rated current	1.5 A
Rated voltage	50 V AC, 60 V DC
Test voltage $U_{r.m.s.}$	0.5 kV
Contact resistance	≤30 mΩ
Shielding resistance	≤100 mΩ
Limiting temperature	-40 ... +70 °C
Storage temperature	-30 ... +60 °C
Mating cycles	≥750
Locking type	PushPull
Degree of protection acc. to IEC 60529	IP65 / IP67
Insertion force	≤25 N
Withdrawal force	≤25 N
Material (insert)	Liquid crystal polymer (LCP)
Colour (insert)	Black
Material (hood/housing)	Polybutylene terephthalate (PBT)
Colour (hood/housing)	Black
Material (seal)	PTS
Colour (seal)	Yellow
Material (contacts)	Copper alloy
Material flammability class acc. to UL 94	V-0

Specifications and approvals

IEC 61076-3-124 Type B

Identification	Part number	Drawing (dimensions in mm)
HARTING Mini PushPull, ix Industrial®, Bulkhead mounted housing, Panel feed trough set, Fully shielded, 360° shielding contact, **Available as from Q3/2020**, Pack contents: incl. seal, 2x HARTING ix Industrial®-jack type B (Signal) and board drillings for M2.5	09 51 221 0002	

New 6 . 21

HARTING Mini PushPull ix Industrial®

Type A

Number of contacts

8

+ 2x GND

Inter-face

Features

- Ethernet connector based on HARTING ix Industrial®
- 360° shielding
- Field-assembly connector with IDC contacts
- Category of transmission: Cat. 6_A / class E_A for 1 / 10 Gbit Ethernet
- Miniaturised Ethernet data interface for industry in acc. to IEC 61076-3-124, type A

Technical characteristics

Number of contacts	8
Additional contacts	+ 2x GND
Rated current	1.5 A
Rated voltage	50 V AC, 60 V DC
Test voltage $U_{r.m.s.}$	0.5 kV
Contact resistance	≤30 mΩ
Shielding resistance	≤100 mΩ
Limiting temperature	-40 ... +70 °C
Storage temperature	-30 ... +60 °C
Mating cycles	≥750
Conductor cross-section	0.09 ... 0.14 mm², 0.23 ... 0.36 mm²
Conductor cross-section	AWG 28 ... AWG 26, AWG 24 ... AWG 22
Wire outer diameter	≤1.15 mm, ≤1.59 mm
Locking type	PushPull
Degree of protection acc. to IEC 60529	IP65 / IP67
Cable diameter	4.5 ... 7.5 mm
Transmission characteristics	Cat. 6_A, Class E_A up to 500 MHz
Data rate	10 Mbit/s, 100 Mbit/s, 1 Gbit/s, 2.5 Gbit/s, 5 Gbit/s, 10 Gbit/s
Insertion force	≤25 N
Withdrawal force	≤25 N
Material (insert)	Polyamide (PA)
Colour (insert)	Black
Material (hood/housing)	Polybutylene terephthalate (PBT) / PA66
Colour (hood/housing)	Black
Material (seal)	HNBR / NBR
Colour (seal)	Black
Material (locking)	Polybutylene terephthalate (PBT)
Colour (locking)	Yellow
Material (contacts)	Copper alloy
Material flammability class acc. to UL 94	V-0

Specifications and approvals

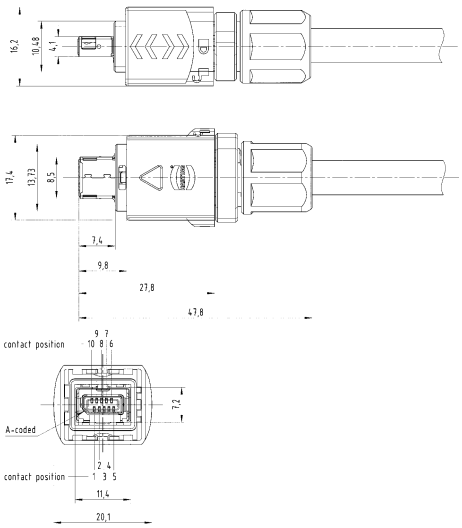
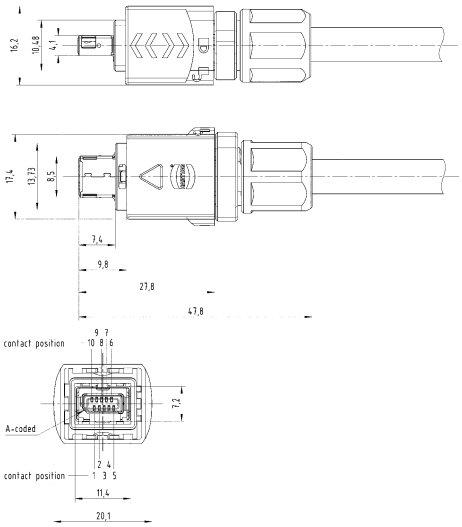
IEC 61076-3-124 Type A
EN 50173-1

Details

Cable assemblies see chapter 8

Can be combined with HARTING ix Industrial® jacks

New
6
.
22

Identification	Part number	Drawing (dimensions in mm)
HARTING Mini PushPull, ix Industrial®, Connector sets, IDC termination, Fully shielded, 360° shielding contact, 8 contacts + 2 GND, AWG 28 ... AWG 26, Conductor cross-section 0.09 ... 0.14 mm², Wire outer diameter ≤ 1.15 mm, **Available as from Q3/2020**, Pack contents: incl. housing, HARTING ix Industrial®-connector type A, shielding and cable gland 	09 51 121 0001	
HARTING Mini PushPull, ix Industrial®, Connector sets, IDC termination, Fully shielded, 360° shielding contact, 8 contacts, AWG 24 ... AWG 22, Conductor cross-section 0.23 ... 0.36 mm², Wire outer diameter ≤ 1.59 mm, **Available as from Q3/2020**, Pack contents: incl. housing, HARTING ix Industrial®-connector type A, shielding and cable gland 	09 51 121 0003	

HARTING Mini PushPull ix Industrial®

Type B

Number of contacts

8

+ 2x GND

Inter-face

Features

- 360° shielding
- Field-assembly connector with IDC contacts
- Miniaturised interface for signals and bus systems, suitable for industrial use in acc. to IEC 61076-3-124, type B

Technical characteristics

Number of contacts	8
Additional contacts	+ 2x GND
Rated current	1.5 A
Rated voltage	50 V AC, 60 V DC
Test voltage $U_{r.m.s.}$	0.5 kV
Contact resistance	≤30 mΩ
Shielding resistance	≤100 mΩ
Limiting temperature	-40 ... +70 °C
Storage temperature	-30 ... +60 °C
Mating cycles	≥750
Conductor cross-section	0.09 ... 0.14 mm², 0.23 ... 0.36 mm²
Conductor cross-section	AWG 28 ... AWG 26, AWG 24 ... AWG 22
Wire outer diameter	≤1.15 mm, ≤1.59 mm
Locking type	PushPull
Degree of protection acc. to IEC 60529	IP65 / IP67
Cable diameter	4.5 ... 7.5 mm
Insertion force	≤25 N
Withdrawal force	≤25 N
Material (insert)	Polyamide (PA)
Colour (insert)	Black
Material (hood/housing)	Polybutylene terephthalate (PBT) / PA66
Colour (hood/housing)	Black
Material (seal)	HNBR / NBR
Colour (seal)	Black
Material (locking)	Polybutylene terephthalate (PBT)
Colour (locking)	Yellow
Material (contacts)	Copper alloy
Material flammability class acc. to UL 94	V-0

Specifications and approvals

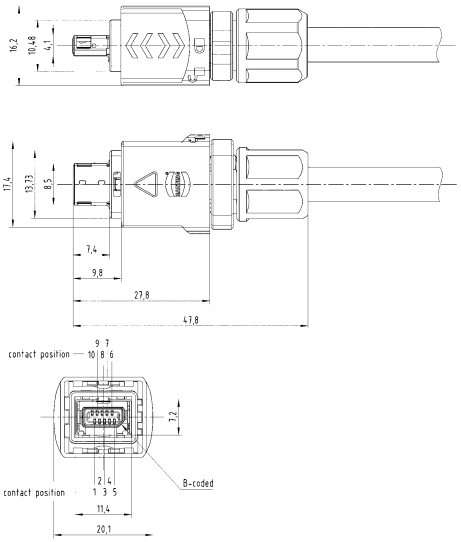
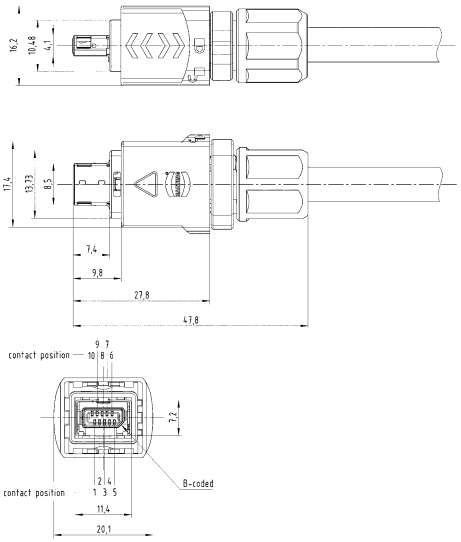
IEC 61076-3-124 Type B

Details

Cable assemblies see chapter 8

Can be combined with HARTING ix Industrial® jacks

New
6
.
24

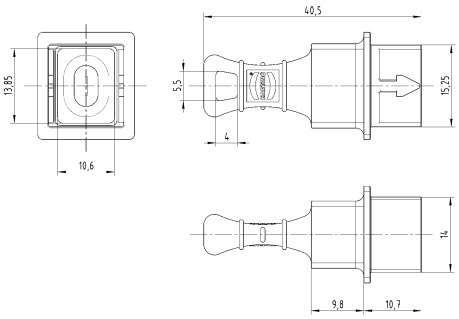
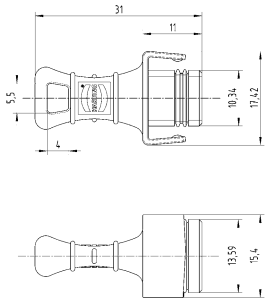
Identification	Part number	Drawing (dimensions in mm)
HARTING Mini PushPull, ix Industrial®, Connector sets, IDC termination, Fully shielded, 360° shielding contact, 8 contacts + 2 GND, AWG 28 ... AWG 26, Conductor cross-section 0.09 ... 0.14 mm², Wire outer diameter ≤ 1.15 mm, **Available as from Q3/2020**, Pack contents: incl. housing, HARTING ix Industrial®-connector type B, shielding and cable gland 	09 51 121 0002	
HARTING Mini PushPull, ix Industrial®, Connector sets, IDC termination, Fully shielded, 360° shielding contact, 8 contacts, AWG 24 ... AWG 22, Conductor cross-section 0.23 ... 0.36 mm², Wire outer diameter ≤ 1.59 mm, **Available as from Q3/2020**, Pack contents: incl. housing, HARTING ix Industrial®-connector type B, shielding and cable gland 	09 51 121 0004	

Technical characteristics

Limiting temperature	-40 ... +70 °C
Mating cycles	≥100
Locking type	PushPull
Degree of protection acc. to IEC 60529	IP65 / IP67
Material (seal)	NBR

Technical characteristics

Colour (seal)	Black
Material (accessories)	Polybutylene terephthalate (PBT)
Colour (accessories)	Black
Material flammability class acc. to UL 94	V-0

Identification	Part number	Drawing (dimensions in mm)
HARTING Mini PushPull, Protection cover, for cable side, **Available as from Q3/2020** 	09 51 800 0002	
HARTING Mini PushPull, Protection cover, for device side, **Available as from Q3/2020** 	09 51 800 0003	

Han® PushPull RJ45 metal

Number of contacts

4

Features

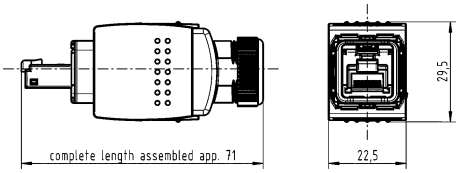
- HARTING PushPull (V14) technology
- 360° shielding
- Field assembly
- No side cutter needed anymore – integrated cutting blades behind the IDC contacts cut the wires to the correct length
- Wide range IDC for solid and stranded wires from AWG 26 to AWG 22
- Suitable for all PoE versions

Technical characteristics

Number of contacts	4
Limiting temperature	-40 ... +85 °C
Mating cycles	≥750
Conductor cross-section	0.14 ... 0.34 mm² Stranded, 0.22 ... 0.32 mm² Solid
Conductor cross-section	AWG 26/7 ... AWG 22/7 Stranded, AWG 24/1 ... AWG 22/1 Solid
Wire outer diameter	0.8 ... 1.6 mm
Degree of protection acc. to IEC 60529	IP65, IP67
Cable diameter	6.5 ... 9.5 mm
Transmission characteristics	Cat. 5, Class D up to 100 MHz
Data rate	10 Mbit/s, 100 Mbit/s
Material (hood/housing)	Zinc die-cast
Surface (hood/housing)	Nickel plated

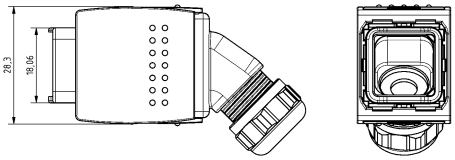
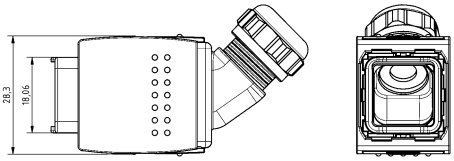
Specifications and approvals

IEC 60603-7 Mating face
IEC 11801
EN 50173-1
IEC 61076-3-117 Variant 14
DNV GL

Identification	Part number	Drawing (dimensions in mm)
Han® PushPull (V14), Connector, AIDA compliant, PROFINET, Straight, IDC termination, Fully shielded, 360° shielding contact	09 35 229 0401	

When installing a PROFINET system, observe the PROFINET installation guideline.

Han® PushPull RJ45 metal

Identification	Part number	Drawing (dimensions in mm)
Han® PushPull (V14), Connector, AIDA compliant, PROFINET, Angled bottom, IDC termination, Fully shielded, 360° shielding contact  When installing a PROFINET system, observe the PROFINET installation guideline.	09 35 229 0402	
Han® PushPull (V14), Connector, AIDA compliant, PROFINET, Angled top, IDC termination, Fully shielded, 360° shielding contact When installing a PROFINET system, observe the PROFINET installation guideline.	09 35 229 0403	

Han® PushPull RJ45 metal

Number of contacts

8

Features

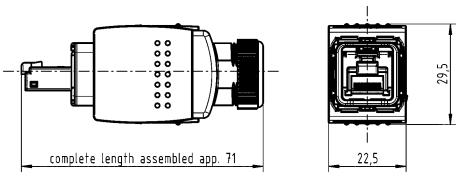
- HARTING PushPull (V14) technology
- 360° shielding
- Category of transmission Cat. 6_A
- Field assembly
- No side cutter needed anymore – integrated cutting blades behind the IDC contacts cut the wires to the correct length
- Wide range IDC for solid and stranded wires from AWG 26 to AWG 22
- Suitable for all PoE versions

Technical characteristics

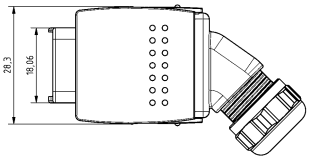
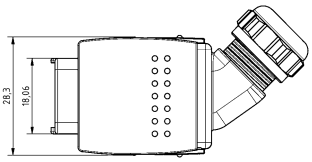
Number of contacts	8
Limiting temperature	-40 ... +85 °C
Mating cycles	≥750
Conductor cross-section	0.14 ... 0.34 mm² Stranded, 0.22 ... 0.32 mm² Solid
Conductor cross-section	AWG 26/7 ... AWG 22/7 Stranded, AWG 24/1 ... AWG 22/1 Solid
Wire outer diameter	0.8 ... 1.6 mm
Degree of protection acc. to IEC 60529	IP65, IP67
Cable diameter	6.5 ... 9.5 mm
Transmission characteristics	Cat. 6_A, Class E_A up to 500 MHz
Data rate	10 Mbit/s, 100 Mbit/s, 1 Gbit/s, 2.5 Gbit/s, 5 Gbit/s, 10 Gbit/s
Material (hood/housing)	Zinc die-cast
Surface (hood/housing)	Nickel plated

Specifications and approvals

IEC 60603-7 Mating face
IEC 11801
EN 50173-1
IEC 61076-3-117 Variant 14
DNV GL

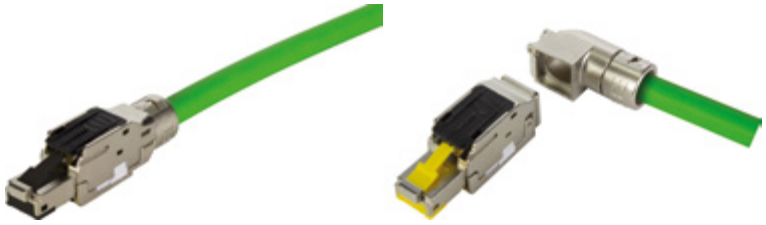
Identification	Part number	Drawing (dimensions in mm)
Han® PushPull (V14), Connector, AIDA compliant, PROFINET, Straight, IDC termination, Fully shielded, 360° shielding contact	09 35 220 0401	

Han® PushPull RJ45 metal

Identification	Part number	Drawing (dimensions in mm)
Han® PushPull (V14), Connector, AIDA compliant, PROFINET, Angled bottom, IDC termination, Fully shielded, 360° shielding contact 	09 35 220 0402	
Han® PushPull (V14), Connector, AIDA compliant, Angled top, IDC termination, Fully shielded, 360° shielding contact 	09 35 220 0403	

Number of contacts

4



Features

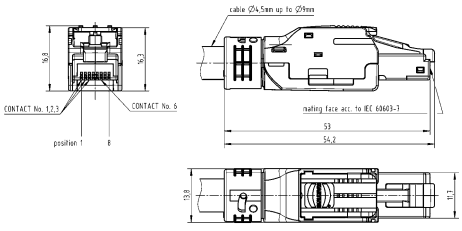
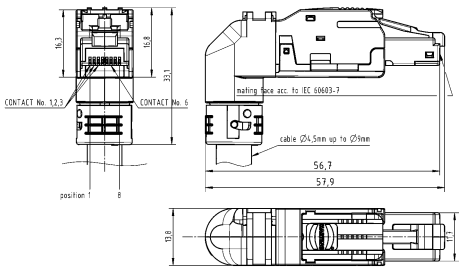
- Very robust full metal housing
- Wide range IDC for solid and stranded wires from AWG 26 to AWG 22
- No side cutter needed anymore – integrated cutting blades behind the IDC contacts cut the wires to the correct length
- Very robust and patent pending cable fixing
- 35° + 90° angled version with variable cable outlet in 4 different cable outlet directions
- Simple mounting
- Suitable for all PoE versions

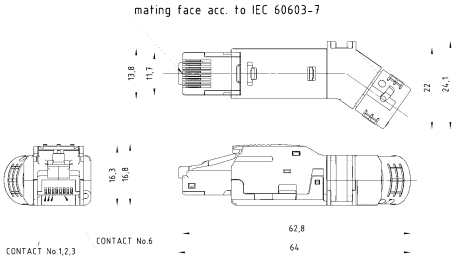
Technical characteristics

Number of contacts	4
Limiting temperature	-40 ... +85 °C
Mating cycles	≥750
Conductor cross-section	0.14 ... 0.34 mm² Stranded, 0.22 ... 0.32 mm² Solid
Conductor cross-section	AWG 26/7 ... AWG 22/7 Stranded, AWG 24/1 ... AWG 22/1 Solid
Wire outer diameter	0.8 ... 1.6 mm
Degree of protection acc. to IEC 60529	IP20
Cable diameter	4.5 ... 9 mm
Transmission characteristics	Cat. 5, Class D up to 100 MHz
Data rate	10 Mbit/s, 100 Mbit/s
Material (hood/housing)	Zinc die-cast
RoHS	compliant with exemption

Specifications and approvals

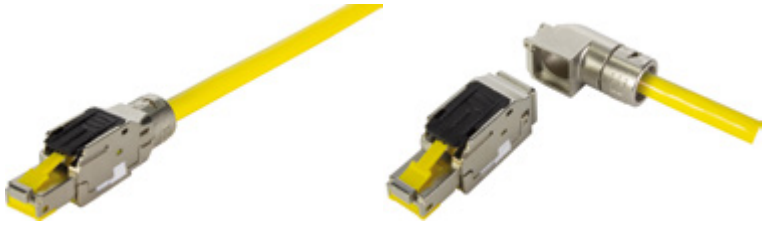
IEC 60603-7 Mating face
IEC 11801
EN 50173-1
DNV GL

Identification	Part number	Drawing (dimensions in mm)
HARTING RJ Industrial®, Connector, Multi Feature RJ45, Straight, IDC termination, Fully shielded, 360° shielding contact, **Available as from Q2/2020**	09 45 151 1140	
HARTING RJ Industrial®, Connector, Multi Feature RJ45, 90° angled, IDC termination, Fully shielded, 360° shielding contact, **Available as from Q2/2020**	09 45 151 1141	

Identification	Part number	Drawing (dimensions in mm)
HARTING RJ Industrial®, Connector, Multi Feature RJ45, 35° angled, IDC termination, Fully shielded, 360° shielding contact, **Available as from Q2/2020**	09 45 151 1142	

Number of contacts

8



Features

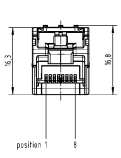
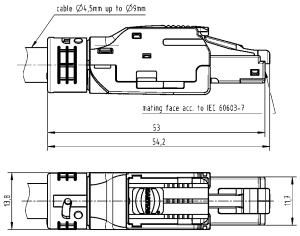
- Very robust full metal housing
- Wide range IDC for solid and stranded wires from AWG 26 to AWG 22
- No side cutter needed anymore – integrated cutting blades behind the IDC contacts cut the wires to the correct length
- Very robust and patent pending cable fixing
- 35° + 90° angled version with variable cable outlet in 4 different cable outlet directions
- Simple mounting
- Suitable for all PoE versions

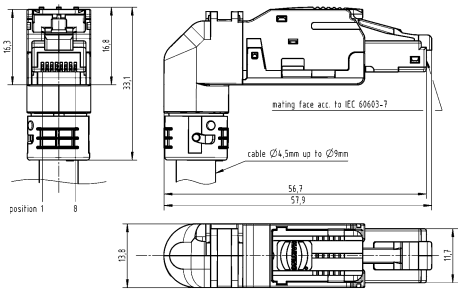
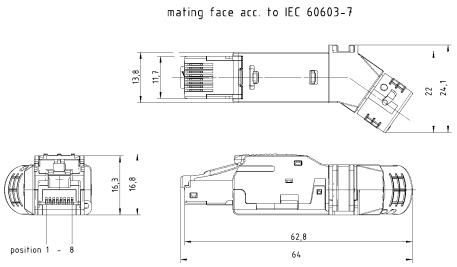
Technical characteristics

Number of contacts	8
Limiting temperature	-40 ... +85 °C
Mating cycles	≥750
Conductor cross-section	0.14 ... 0.34 mm² Stranded, 0.22 ... 0.32 mm² Solid
Conductor cross-section	AWG 26/7 ... AWG 22/7 Stranded, AWG 24/1 ... AWG 22/1 Solid
Wire outer diameter	0.8 ... 1.6 mm
Degree of protection acc. to IEC 60529	IP20
Cable diameter	4.5 ... 9 mm
Transmission characteristics	Cat. 6_A, Class E_A up to 500 MHz
Data rate	10 Mbit/s, 100 Mbit/s, 1 Gbit/s, 2.5 Gbit/s, 5 Gbit/s, 10 Gbit/s
Material (hood/housing)	Zinc die-cast
RoHS	compliant with exemption

Specifications and approvals

IEC 60603-7 Mating face
IEC 11801
EN 50173-1
DNV GL

Identification	Part number	Drawing (dimensions in mm)
HARTING RJ Industrial®, Connector, Multi Feature RJ45, Straight, IDC termination, Fully shielded, 360° shielding contact, **Available as from Q2/2020**	09 45 151 1570	 

Identification	Part number	Drawing (dimensions in mm)
HARTING RJ Industrial®, Connector, Multi Feature RJ45, 90° angled, IDC termination, Fully shielded, 360° shielding contact, **Available as from Q2/2020** 	09 45 151 1571	
HARTING RJ Industrial®, Connector, Multi Feature RJ45, 35° angled, IDC termination, Fully shielded, 360° shielding contact, **Available as from Q2/2020**	09 45 151 1572	

Contents	Page

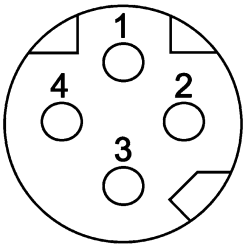
Device side M8

D-coding

Number of contacts

4

Reflow soldering termination (THR)
Shielded



Circu-
lar

Technical characteristics

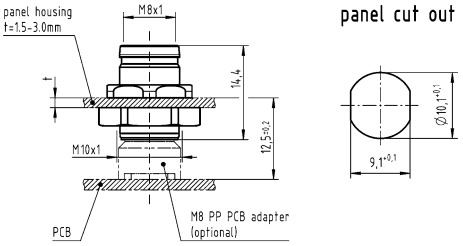
Number of contacts	4
Rated current	4 A
Rated voltage	60 V
Rated impulse voltage	1.5 kV
Pollution degree	3
Insulation resistance	>10^8 Ω
Contact resistance	≤10 mΩ
Mating cycles	≥100
Degree of protection acc. to IEC 60529	IP65 / IP67, when mated

Technical characteristics

Transmission characteristics	Cat. 5, Class D up to 100 MHz
Tightening torque	1 Nm Lock nut
Material (contacts)	Copper alloy
Surface (contacts)	Gold plated
RoHS	compliant with exemption

Specifications and approvals

IEC 61076-2-114

Identification	Part number Female	Drawing (dimensions in mm)
Circular connectors M8, PCB connector, Straight, Reflow soldering termination (THR), Shielded, Pack contents: 50 pieces in a tray  Order housings separately	21 02 381 2418	
Circular connectors M8, PCB connector, Straight, Reflow soldering termination (THR), Shielded, Pack contents: 25 pieces in a carton box  Order housings separately	21 02 381 2419	

New
7
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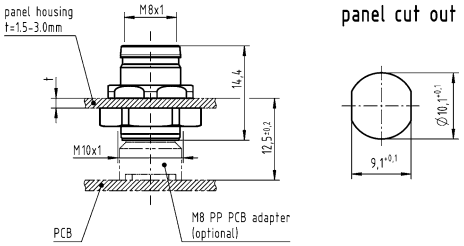
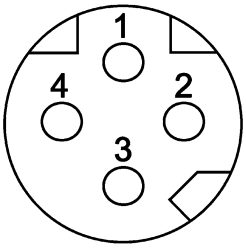
2

Identification	Part number Female	Drawing (dimensions in mm)
Circular connectors M8, Housing, for front mounting, Pack contents: incl. lock nut 	21 02 301 2001	
Circular connectors M8, Housing, for front mounting, Pack contents: without lock nut	21 02 301 2002	
Lock nut, M10 x 1	21 01 000 0051	

Number of contacts

4

Reflow soldering termination (THR)
Shielded



Technical characteristics

Number of contacts	4
Rated current	4 A
Rated voltage	60 V
Rated impulse voltage	1.5 kV
Pollution degree	3
Insulation resistance	>10^8 Ω
Contact resistance	≤10 mΩ
Degree of protection acc. to IEC 60529	IP65 / IP67, when mated
Transmission characteristics	Cat. 5, Class D up to 100 MHz

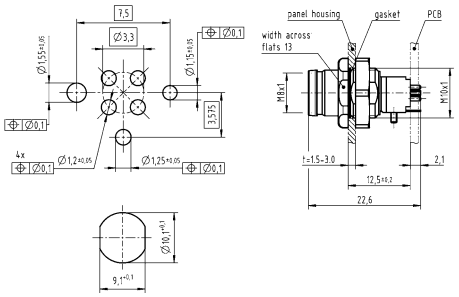
Technical characteristics

Tightening torque	1 Nm Lock nut
Material (contacts)	Copper alloy
Surface (contacts)	Gold plated
RoHS	compliant with exemption

Specifications and approvals

IEC 61076-2-114

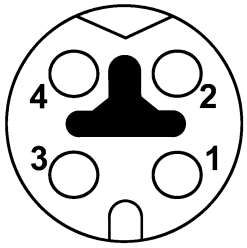
Identification	Part number Female	Drawing (dimensions in mm)
Circular connectors M8, PCB connector, Straight, for front mounting, Reflow soldering termination (THR), Shielded, Pack contents: incl. housing	21 02 381 2431	Panel cut out



Number of contacts

4

Reflow soldering termination (THR)
Shielded



Technical characteristics

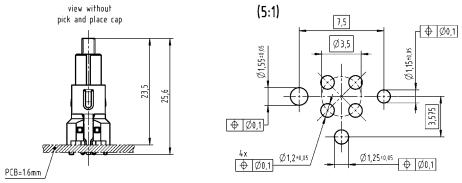
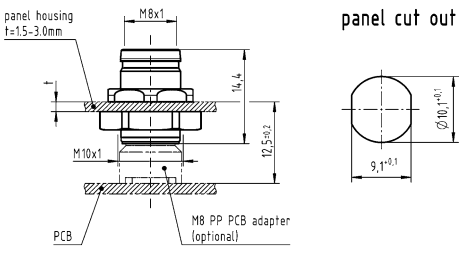
Number of contacts	4
Rated current	4 A
Rated voltage	60 V
Rated impulse voltage	1.5 kV
Pollution degree	3
Insulation resistance	>10^8 Ω
Contact resistance	≤10 mΩ
Mating cycles	≥100
Degree of protection acc. to IEC 60529	IP65 / IP67, when mated

Technical characteristics

Transmission characteristics	Cat. 5, Class D up to 100 MHz
Tightening torque	1 Nm Lock nut
Material (contacts)	Copper alloy
Surface (contacts)	Gold plated
RoHS	compliant with exemption

Specifications and approvals

IEC 61076-2-114

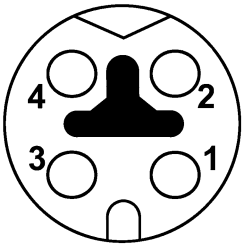
Identification	Part number Female	Drawing (dimensions in mm)
Circular connectors M8, PCB connector, Reflow soldering termination (THR), Shielded, Pack contents: 50 pieces in a tray  Order housings separately	21 02 341 2418	
Circular connectors M8, PCB connector, Straight, Reflow soldering termination (THR), Shielded, Pack contents: 25 pieces in a carton box  Order housings separately	21 02 341 2419	
Circular connectors M8, Housing, for front mounting, Pack contents: incl. lock nut 	21 02 301 2001	

Identification	Part number Female	Drawing (dimensions in mm)
Circular connectors M8, Housing, for front mounting, Pack contents: without lock nut	21 02 301 2002	
Lock nut, M10 x 1	21 01 000 0051	

Number of contacts

4

Reflow soldering termination (THR)
Shielded



Technical characteristics

Number of contacts	4
Rated current	4 A
Rated voltage	60 V
Rated impulse voltage	1.5 kV
Pollution degree	3
Insulation resistance	$>10^8$ Ω
Contact resistance	≤10 mΩ
Degree of protection acc. to IEC 60529	IP65 / IP67, when mated
Transmission characteristics	Cat. 5, Class D up to 100 MHz

Technical characteristics

Tightening torque	1 Nm Lock nut
Material (contacts)	Copper alloy
Surface (contacts)	Gold plated
RoHS	compliant with exemption

Specifications and approvals

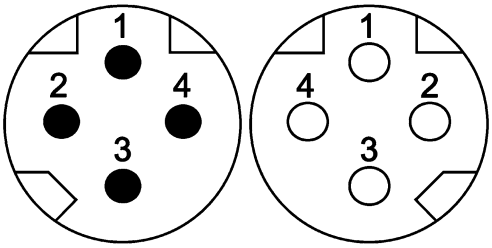
IEC 61076-2-114

Identification	Part number Female	Drawing (dimensions in mm)
Circular connectors M8, PCB connector, Straight, for front mounting, Reflow soldering termination (THR), Shielded, Pack contents: incl. housing	21 02 341 2431	

Number of contacts

4

HARAX® connection technology
Shielded



Technical characteristics

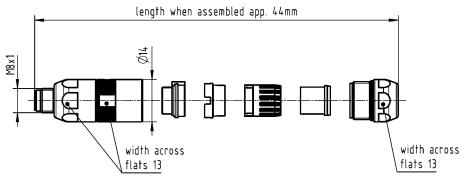
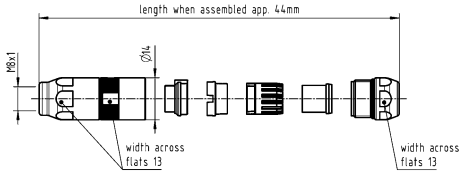
Number of contacts	4
Rated current	4 A
Rated voltage	60 V
Rated impulse voltage	1.5 kV
Pollution degree	3
Insulation resistance	>10^8 Ω
Contact resistance	≤10 mΩ
Mating cycles	≥100
Locking type	Screw locking, PushPull
Degree of protection acc. to IEC 60529	IP65 / IP67, in locked position
Cable diameter	6.2 ... 6.8 mm

Technical characteristics

Transmission characteristics	Cat. 5, Class D up to 100 MHz
Tightening torque	0.4 Nm
Material (insert)	Polyamide (PA)
Material (hood/housing)	Polyamide (PA), Zinc die-cast
Material (contacts)	Copper alloy
Surface (contacts)	Gold plated

Specifications and approvals

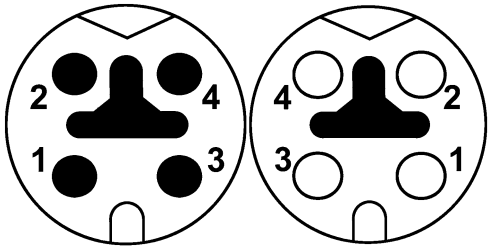
IEC 61076-2-114

Identification	Part number Male	Part number Female	Drawing (dimensions in mm)
Circular connectors M8, Cable connector, Straight, *HARAX*® connection technology, Shielded, Screw locking 	21 02 185 1405	21 02 185 2405	 
Circular connectors M8, Cable connector, Straight, *HARAX*® connection technology, Shielded, PushPull locking 	21 02 185 1430		

Number of contacts

4

HARAX® connection technology
Shielded



Technical characteristics

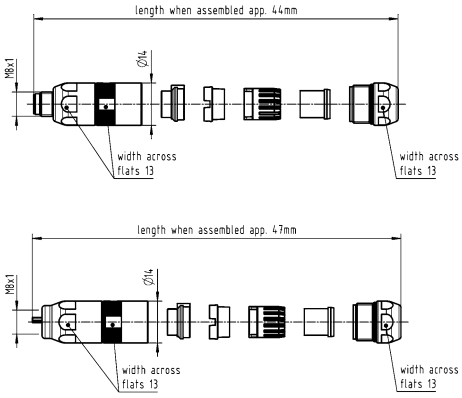
Number of contacts	4
Rated current	4 A
Rated voltage	60 V
Rated impulse voltage	1.5 kV
Pollution degree	3
Insulation resistance	>10^8 Ω
Contact resistance	≤10 mΩ
Mating cycles	≥100
Locking type	Screw locking, PushPull
Degree of protection acc. to IEC 60529	IP65 / IP67, in locked position
Cable diameter	6.2 ... 6.8 mm

Technical characteristics

Transmission characteristics	Cat. 5, Class D up to 100 MHz
Tightening torque	0.4 Nm
Material (insert)	Polyamide (PA)
Material (hood/housing)	Polyamide (PA), Zinc die-cast
Material (contacts)	Copper alloy
Surface (contacts)	Gold plated

Specifications and approvals

IEC 61076-2-114

Identification	Part number Male	Part number Female	Drawing (dimensions in mm)
Circular connectors M8, Cable connector, Straight, *HARAX*® connection technology, Shielded, Screw locking 	21 02 145 1405	21 02 145 2405	
Circular connectors M8, Cable connector, Straight, *HARAX*® connection technology, Shielded, PushPull locking 	21 02 145 1430		

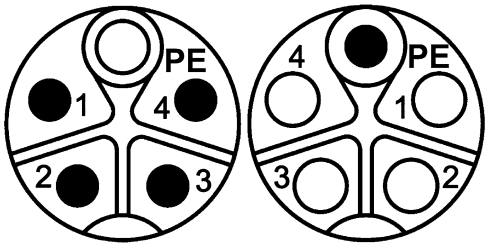
Device side M12 Power

K-coding

Number of contacts

4+

Reflow soldering termination (THR)
Shielded



Circu-
lar

Technical characteristics

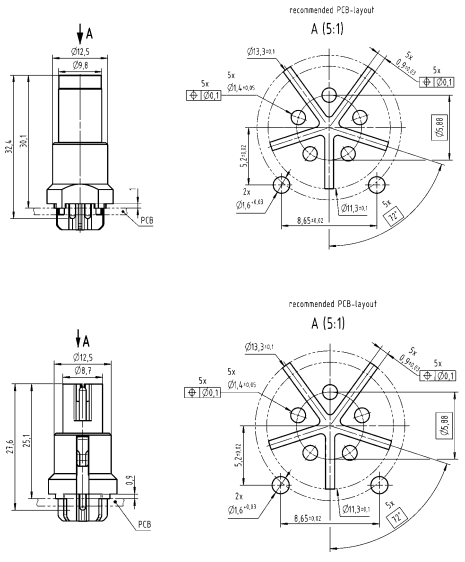
Number of contacts	4
Rated current	12 A
Rated voltage	630 V
Rated impulse voltage	6 kV
Pollution degree	3
Insulation resistance	>10^8 Ω
Contact resistance	≤10 mΩ
Mating cycles	≥100
Locking type	Screw locking, PushPull
Degree of protection acc. to IEC 60529	IP65 / IP67, when mated

Technical characteristics

Tightening torque	2 Nm Lock nut
Material (insert)	Liquid crystal polymer (LCP)
Material (contacts)	Copper alloy
Surface (contacts)	Gold plated

Specifications and approvals

IEC 61076-2-111

Identification	Part number Male	Part number Female	Drawing (dimensions in mm)
Circular connectors M12, M12 Power, PCB adapter, Straight, Reflow soldering termination (THR), Shielded, Pack contents: 30 pieces in a carton box  Order housings separately	21 03 309 1505 407	21 03 309 2505 407	
Circular connectors M12, M12 Power, PCB adapter, Straight, Reflow soldering termination (THR), Shielded, Pack contents: 60 pieces in a tray  Order housings separately	21 03 309 1505	21 03 309 2505	

New
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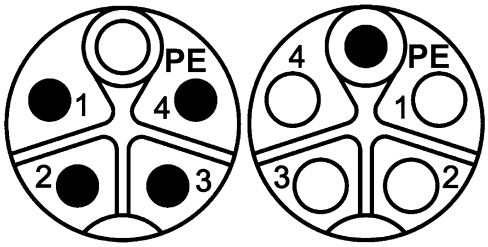
10

Identification	Part number Male	Part number Female	Drawing (dimensions in mm)
Circular connectors M12, Housing, for front mounting, Pack contents: 30 pieces 	21 03 302 1000 407	21 03 302 2001 407	
Circular connectors M12, Housing, for rear mounting, Pack contents: 30 pieces	21 03 302 1001 407	21 03 302 2000 407	

Number of contacts

4+ ⏚

Reflow soldering termination (THR)
Shielded



Circu-
lar

Technical characteristics

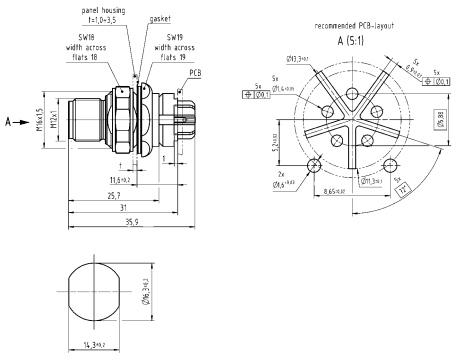
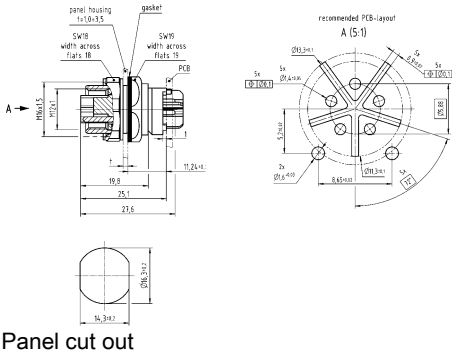
Number of contacts	4
Rated current	12 A
Rated voltage	630 V
Rated impulse voltage	6 kV
Pollution degree	3
Insulation resistance	>10^8 Ω
Contact resistance	≤10 mΩ
Mating cycles	≥100
Locking type	Screw locking, PushPull
Degree of protection acc. to IEC 60529	IP65 / IP67, when mated

Technical characteristics

Tightening torque	2 Nm Lock nut
Material (insert)	Liquid crystal polymer (LCP)
Material (contacts)	Copper alloy
Surface (contacts)	Gold plated

Specifications and approvals

IEC 61076-2-111

Identification	Part number Male	Part number Female	Drawing (dimensions in mm)
Circular connectors M12, M12 Power, PCB adapter, Straight, incl. housing, for rear mounting, Reflow soldering termination (THR), Shielded	21 03 309 1530	21 03 309 2530	 Panel cut out  Panel cut out

New
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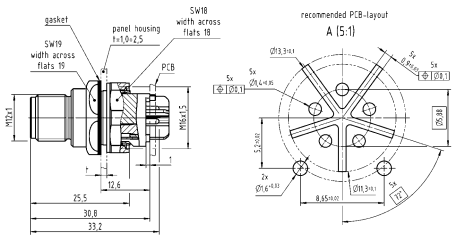
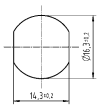
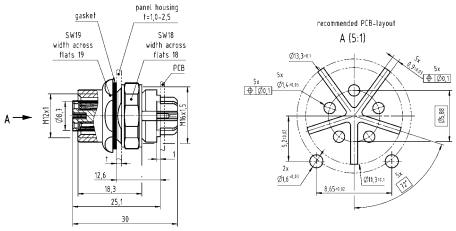
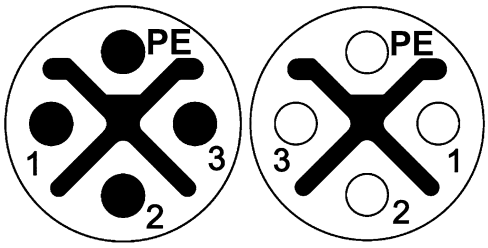
12

Identification	Part number Male	Part number Female	Drawing (dimensions in mm)
Circular connectors M12, M12 Power, PCB adapter, Straight, incl. housing, for front mounting, Reflow soldering termination (THR), Shielded 	21 03 309 1531	21 03 309 2531	  Panel cut out   Panel cut out

Number of contacts

3+ ⏚

Reflow soldering termination (THR)
Shielded



Circu-
lar

Technical characteristics

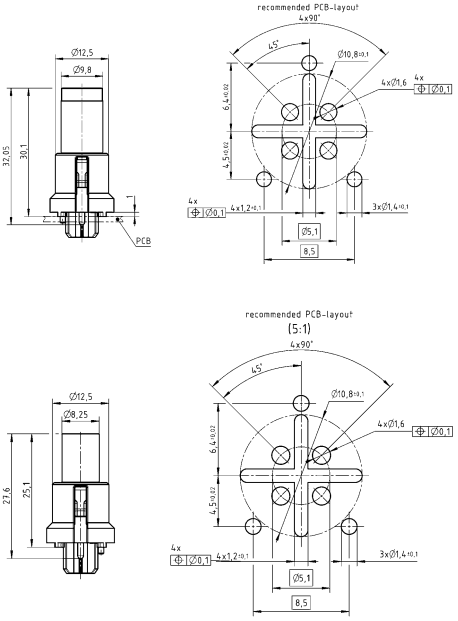
Number of contacts	3
Rated current	12 A
Rated voltage	630 V
Rated impulse voltage	6 kV
Pollution degree	3
Insulation resistance	>10^8 Ω
Contact resistance	≤10 mΩ
Mating cycles	≥100
Locking type	Screw locking, PushPull
Degree of protection acc. to IEC 60529	IP65 / IP67, when mated

Technical characteristics

Tightening torque	2 Nm Lock nut
Material (insert)	Liquid crystal polymer (LCP)
Material (contacts)	Copper alloy
Surface (contacts)	Gold plated

Specifications and approvals

IEC 61076-2-111

Identification	Part number Male	Part number Female	Drawing (dimensions in mm)
Circular connectors M12, M12 Power, PCB adapter, Straight, Reflow soldering termination (THR), Shielded, Pack contents: 30 pieces in a carton box  Order housings separately	21 03 399 1430	21 03 399 2430	
Circular connectors M12, M12 Power, PCB adapter, Straight, Reflow soldering termination (THR), Shielded, Pack contents: 60 pieces in a tray Order housings separately	21 03 399 1460	21 03 399 2460	

New
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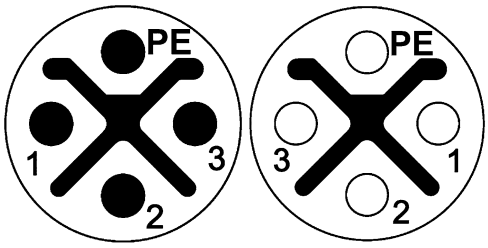
14

Identification	Part number Male	Part number Female	Drawing (dimensions in mm)
Circular connectors M12, Housing, for front mounting, Pack contents: 30 pieces 	21 03 302 1000 407	21 03 302 2001 407	
Circular connectors M12, Housing, for rear mounting, Pack contents: 30 pieces	21 03 302 1001 407	21 03 302 2000 407	

Number of contacts

3+ ⏚

Reflow soldering termination (THR)
Shielded



Technical characteristics

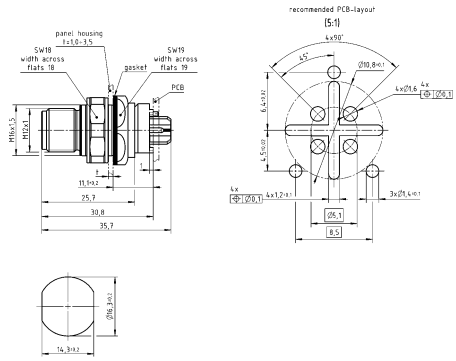
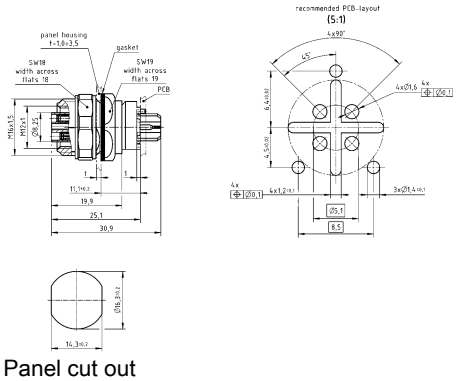
Number of contacts	3
Rated current	12 A
Rated voltage	630 V
Rated impulse voltage	6 kV
Pollution degree	3
Insulation resistance	>10^8 Ω
Contact resistance	≤10 mΩ
Mating cycles	≥100
Locking type	Screw locking
Degree of protection acc. to IEC 60529	IP65 / IP67, when mated

Technical characteristics

Tightening torque	2 Nm Lock nut
Material (insert)	Liquid crystal polymer (LCP)
Material (contacts)	Copper alloy
Surface (contacts)	Gold plated

Specifications and approvals

IEC 61076-2-111

Identification	Part number Male	Part number Female	Drawing (dimensions in mm)
Circular connectors M12, M12 Power, PCB adapter, Straight, Reflow soldering termination (THR), Shielded, Pack contents: incl. housing 	21 03 399 1403	21 03 399 2403	 Panel cut out  Panel cut out

New
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16

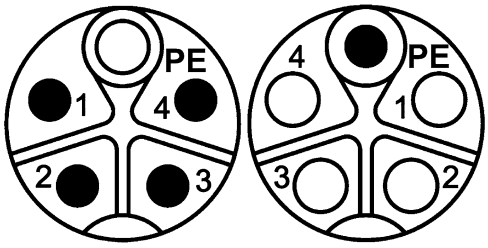
Device side M12 Power

K-coding

Number of contacts

4+ ⏚

Shielded



Technical characteristics

Number of contacts	4
Rated current	12 A
Rated voltage	630 V
Rated impulse voltage	6 kV
Pollution degree	3
Insulation resistance	>10^8 Ω
Contact resistance	≤10 mΩ
Mating cycles	≥100
Locking type	Screw locking, PushPull
Conductor length	30 cm
Degree of protection acc. to IEC 60529	IP65 / IP67, when mated

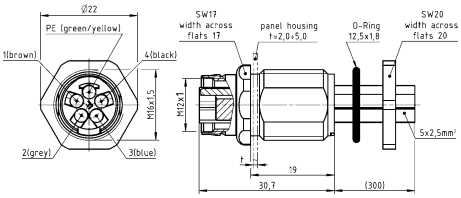
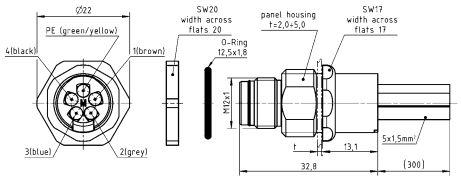
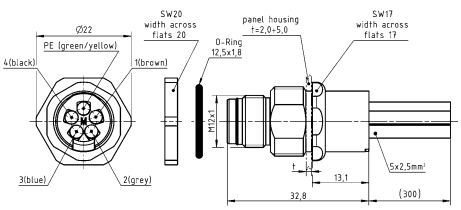
Technical characteristics

Conductor cross-section	2.5 mm², 1.5 mm²
Tightening torque	0.6 Nm, 2 Nm Lock nut
Material (insert)	Polyamide (PA)
Material (contacts)	Brass
Surface (contacts)	Gold plated

Specifications and approvals

IEC 61076-2-111

Circu-
lar

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Circular connectors M12, M12 Power, Panel feed through, With conductors, for front mounting, Shielded 	1.5 2.5	21 03 309 5503 21 03 309 5501	21 03 309 6503 21 03 309 6501	 Panel cut out
Circular connectors M12, M12 Power, Panel feed through, With conductors, for rear mounting, Shielded 	1.5 2.5	21 03 309 5504 21 03 309 5502	21 03 309 6504 21 03 309 6502	 Panel cut out  Panel cut out

New
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17

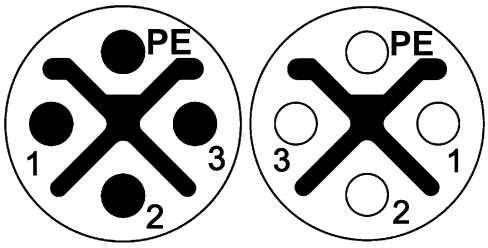
Device side M12 Power

S-coding

Number of contacts

3+ ⏚

Unshielded



Circu-
lar

Technical characteristics

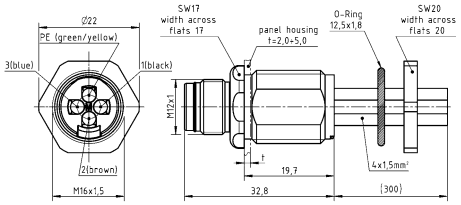
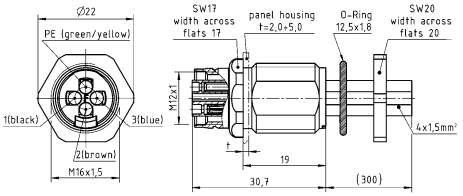
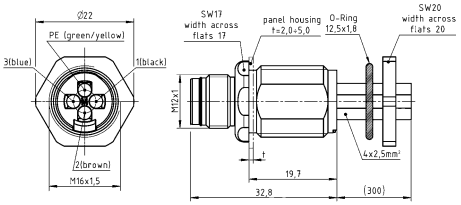
Number of contacts	3
Rated current	12 A
Rated voltage	630 V
Rated impulse voltage	6 kV
Pollution degree	3
Insulation resistance	>10^8 Ω
Contact resistance	≤10 mΩ
Mating cycles	≥100
Locking type	Screw locking, PushPull
Degree of protection acc. to IEC 60529	IP65 / IP67, when mated

Technical characteristics

Conductor cross-section	1.5 mm², 2.5 mm²
Conductor cross-section	AWG 16, AWG 14
Tightening torque	0.6 Nm, 2 Nm Lock nut
Material (insert)	Polyamide (PA)
Material (contacts)	Brass
Surface (contacts)	Gold plated

Specifications and approvals

IEC 61076-2-111

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Circular connectors M12, M12 Power, Panel feed through, With conductors, for front mounting, Unshielded 	1.5 2.5	21 03 396 1401 21 03 399 1401	21 03 396 2401 21 03 399 2401	  Panel cut out   Panel cut out   Panel cut out

New
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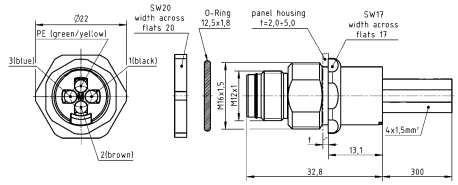
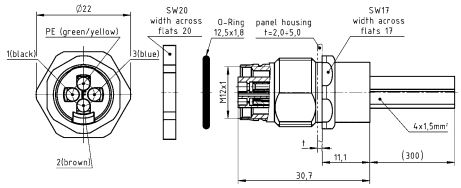
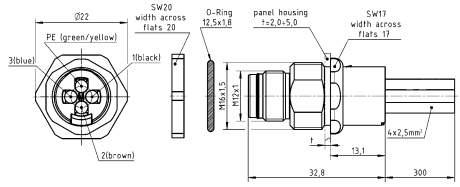
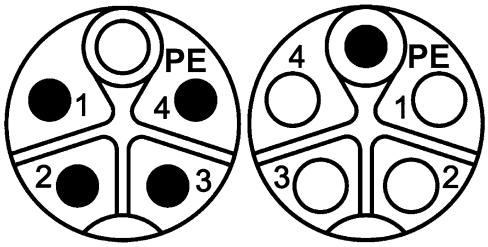
18

Identification	Conductor cross-section (mm^2)	Part number Male	Part number Female	Drawing (dimensions in mm)
Circular connectors M12, M12 Power, Panel feed through, With conductors, for rear mounting, Unshielded	1.5 2.5	21 03 396 1402 21 03 399 1402	21 03 396 2402 21 03 399 2402	  Panel cut out   Panel cut out   Panel cut out

Number of contacts

4+ ⏚

Crimp termination
Shielded



Technical characteristics

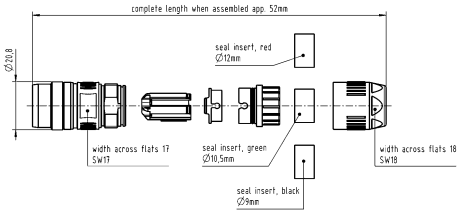
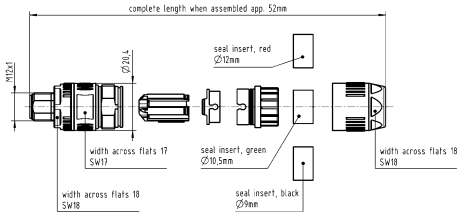
Number of contacts	4
Rated current	12 A
Rated voltage	630 V
Rated impulse voltage	6 kV
Pollution degree	3
Insulation resistance	>10^8 Ω
Contact resistance	≤10 mΩ
Mating cycles	≥500
Locking type	PushPull, Screw locking
Degree of protection acc. to IEC 60529	IP65 / IP67, when mated
Conductor cross-section	0.5 ... 2.5 mm², 2.5 mm², 1.5 mm², 0.75 mm², 0.5 mm²

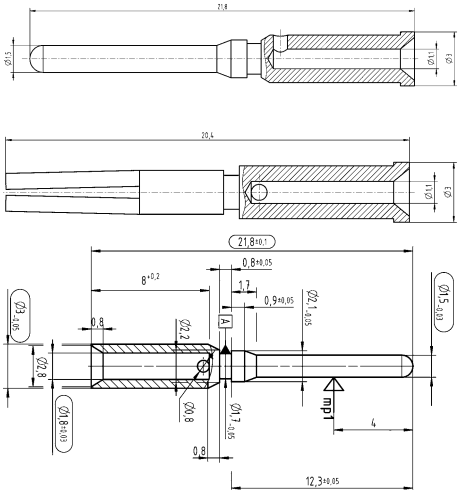
Technical characteristics

Conductor cross-section	AWG 20 ... AWG 14, AWG 14, AWG 16, AWG 19, AWG 21
Cable diameter	5.8 ... 13.5 mm
Tightening torque	0.6 Nm
Material (insert)	Polyamide (PA)
Material (hood/housing)	Zinc die-cast
Material (contacts)	Copper alloy
Surface (contacts)	Gold plated

Specifications and approvals

IEC 61076-2-111

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Circular connectors M12, M12 PushPull-Power, Cable connector, Straight, Crimp termination, Shielded, PushPull locking  Please order crimp contacts separately.	0.5 ... 2.5	21 03 896 1525	21 03 896 2525	
Circular connectors M12, M12 Power, Cable connector, Straight, Crimp termination, Shielded, Screw locking  Please order crimp contacts separately.	0.5 ... 2.5	21 03 896 1515	21 03 896 2515	

Identification	Conductor cross-section (mm^2)	Part number Male	Part number Female	Drawing (dimensions in mm)
Circular connectors M12, M12 Power, Crimp contact, Turned contacts, Pack contents: 50 pieces	0.5 0.75 1.5 2.5	21 01 100 9962 21 01 100 9963 21 01 100 9937 21 01 100 9938	21 01 100 9964 21 01 100 9965 21 01 100 9939 21 01 100 9940	

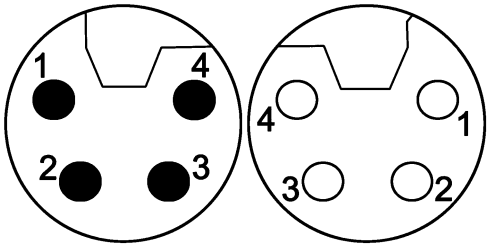
Cable side M12 Power

L-coding

Number of contacts

4

Crimp termination
Shielded



Circu-
lar

Technical characteristics

Number of contacts	4
Rated current	16 A
Rated voltage	63 V
Rated impulse voltage	1.5 kV
Pollution degree	3
Insulation resistance	>10^8 Ω
Contact resistance	≤10 mΩ
Mating cycles	≥500
Locking type	PushPull, Screw locking
Degree of protection acc. to IEC 60529	IP65 / IP67, when mated
Conductor cross-section	2.5 mm², 1.5 mm², 0.75 mm², 0.5 mm²
Conductor cross-section	AWG 14, AWG 16, AWG 19, AWG 21

Technical characteristics

Cable diameter	5.8 ... 13.5 mm
Tightening torque	0.6 Nm
Material (insert)	Polyamide (PA)
Material (hood/housing)	Zinc die-cast
Material (contacts)	Copper alloy
Surface (contacts)	Gold plated

Specifications and approvals

IEC 61076-2-111

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Circular connectors M12, M12 PushPull-Power, Cable connector, Straight, Crimp termination, Shielded, PushPull locking Please order crimp contacts separately.		21 03 896 1420	21 03 896 2420	
Circular connectors M12, M12 Power, Cable connector, Straight, Crimp termination, Shielded, Screw locking Please order crimp contacts separately.		21 03 896 1410	21 03 896 2410	

New
7
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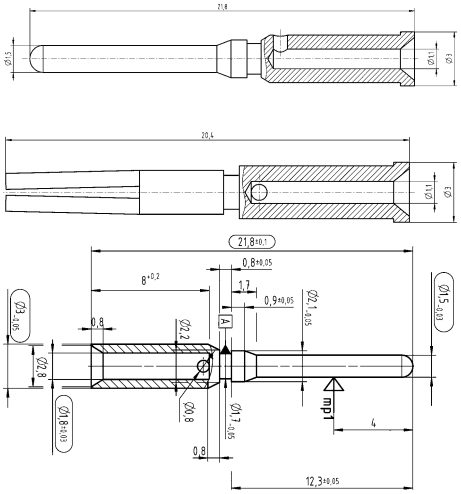
22

Identification	Conductor cross-section (mm^2)	Part number Male	Part number Female	Drawing (dimensions in mm)
Circular connectors M12, M12 Power, Crimp contact, Turned contacts, Pack contents: 50 pieces	0.5 0.75 1.5 2.5	21 01 100 9962 21 01 100 9963 21 01 100 9937 21 01 100 9938	21 01 100 9964 21 01 100 9965 21 01 100 9939 21 01 100 9940	

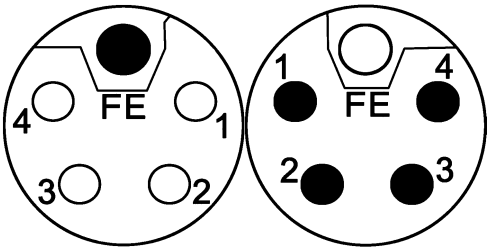
Cable side M12 Power

L-coding

Number of contacts

4+

Crimp termination
Shielded



Circu-
lar

Technical characteristics

Number of contacts	4
Rated current	16 A
Rated voltage	63 V
Rated impulse voltage	1.5 kV
Pollution degree	3
Insulation resistance	>10^8 Ω
Contact resistance	≤10 mΩ
Mating cycles	≥500
Locking type	PushPull, Screw locking
Degree of protection acc. to IEC 60529	IP65 / IP67, when mated
Conductor cross-section	2.5 mm², 1.5 mm², 0.75 mm², 0.5 mm²
Conductor cross-section	AWG 14, AWG 16, AWG 19, AWG 21

Technical characteristics

Cable diameter	5.8 ... 13.5 mm
Tightening torque	0.6 Nm
Material (insert)	Polyamide (PA)
Material (hood/housing)	Zinc die-cast
Material (contacts)	Copper alloy
Surface (contacts)	Gold plated

Specifications and approvals

IEC 61076-2-111

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Circular connectors M12, M12 PushPull-Power, Cable connector, Straight, Crimp termination, Shielded, PushPull locking Please order crimp contacts separately.		21 03 896 1520	21 03 896 2520	
Circular connectors M12, M12 Power, Cable connector, Straight, Crimp termination, Shielded, Screw locking Please order crimp contacts separately.		21 03 896 1510	21 03 896 2510	

New
7
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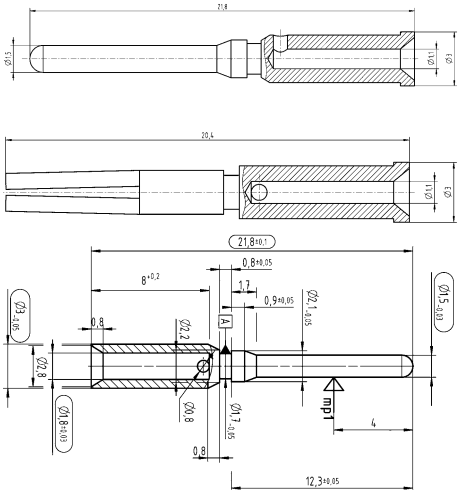
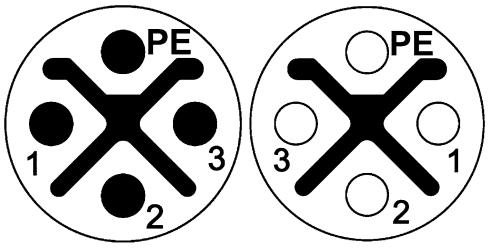
24

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Circular connectors M12, M12 Power, Crimp contact, Turned contacts, Pack contents: 50 pieces	0.5 0.75 1.5 2.5	21 01 100 9962 21 01 100 9963 21 01 100 9937 21 01 100 9938	21 01 100 9964 21 01 100 9965 21 01 100 9939 21 01 100 9940	

Number of contacts

3+ ⏚

Crimp termination
Shielded



Technical characteristics

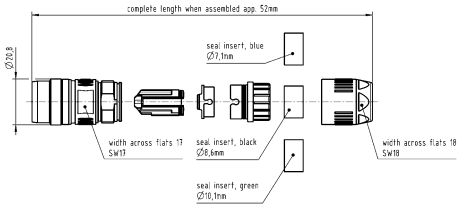
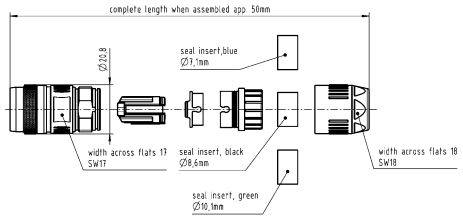
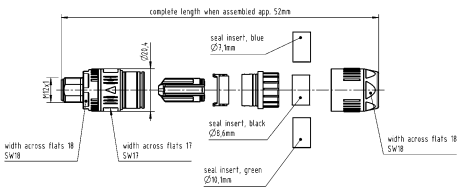
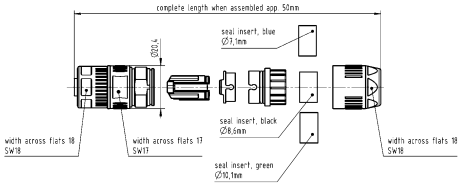
Number of contacts	3
Rated current	12 A
Rated voltage	630 V
Rated impulse voltage	6 kV
Pollution degree	3
Insulation resistance	>10^8 Ω
Contact resistance	≤10 mΩ
Mating cycles	≥500
Locking type	PushPull, Screw locking
Degree of protection acc. to IEC 60529	IP65 / IP67, when mated
Conductor cross-section	2.5 mm², 1.5 mm², 0.75 mm², 0.5 mm²

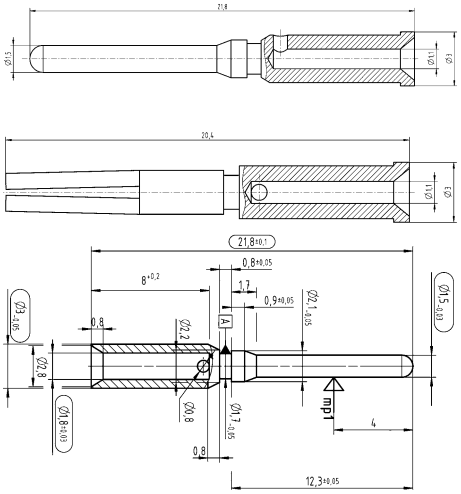
Technical characteristics

Conductor cross-section	AWG 14, AWG 16, AWG 19, AWG 21
Cable diameter	5.8 ... 13.5 mm
Tightening torque	0.6 Nm
Material (insert)	Polyamide (PA)
Material (hood/housing)	Zinc die-cast
Material (contacts)	Copper alloy
Surface (contacts)	Gold plated

Specifications and approvals

IEC 61076-2-111

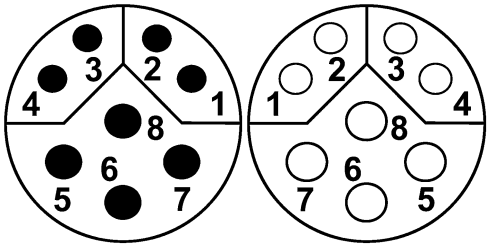
Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Circular connectors M12, M12 PushPull-Power, Cable connector, Straight, Crimp termination, Shielded, PushPull locking Please order crimp contacts separately.		21 03 896 1425	21 03 896 2425	 
Circular connectors M12, M12 Power, Cable connector, Straight, Crimp termination, Shielded, Screw locking  Please order crimp contacts separately.		21 03 896 1415	21 03 896 2415	 

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Circular connectors M12, M12 Power, Crimp contact, Turned contacts, Pack contents: 50 pieces	0.5 0.75 1.5 2.5	21 01 100 9962 21 01 100 9963 21 01 100 9937 21 01 100 9938	21 01 100 9964 21 01 100 9965 21 01 100 9939 21 01 100 9940	

Number of contacts

8

4 Power + 4 Data
Crimp termination
Shielded



Technical characteristics

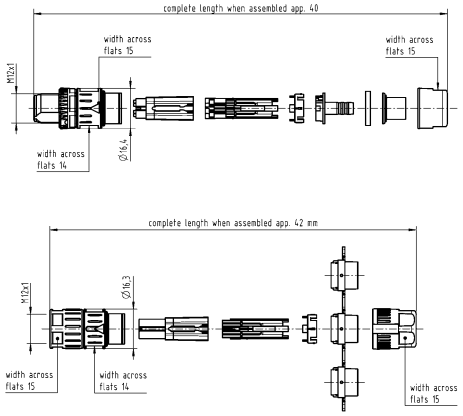
Number of contacts	8
Rated current	6 A
Rated voltage	50 V
Rated impulse voltage	1.5 kV
Pollution degree	3
Rated current (data)	0.5 A
Insulation resistance	>10^8 Ω
Contact resistance	≤10 mΩ
Mating cycles	≥100
Locking type	PushPull, Screw locking
Degree of protection acc. to IEC 60529	IP65 / IP67, when mated
Conductor cross-section	0.33 ... 0.82 mm², 0.13 ... 0.25 mm², 0.08 ... 0.22 mm²

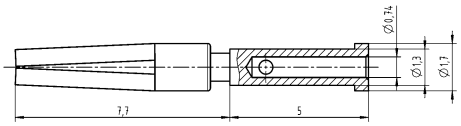
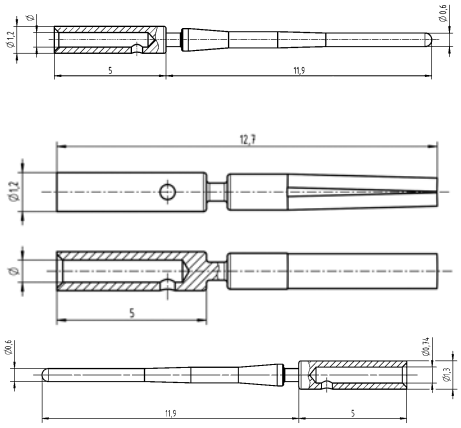
Technical characteristics

Conductor cross-section	AWG 22 ... AWG 18, AWG 26 ... AWG 23, AWG 28 ... AWG 24
Cable diameter	5.7 ... 8.8 mm
Tightening torque	0.6 Nm
Material (insert)	Polyamide (PA)
Material (hood/housing)	Zinc die-cast
Material (contacts)	Copper alloy
Surface (contacts)	Gold plated
RoHS	compliant with exemption

Specifications and approvals

IEC 61076-2-113

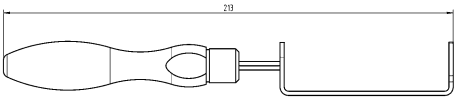
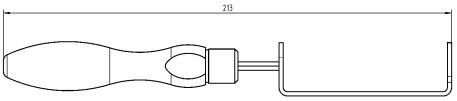
Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Circular connectors M12, M12 Slim Design, Cable connector, Straight, Crimp termination, Shielded, PushPull locking Please order crimp contacts separately.		21 03 861 1830		
Circular connectors M12, M12 Slim Design, Cable connector, Straight, Crimp termination, Shielded, Screw locking Please order crimp contacts separately.		21 03 861 1814	21 03 861 2805	
Circular connectors M12, M12 Slim Design, Cable connector, Panel feed through, for rear mounting, Crimp termination, Shielded Please order crimp contacts separately.		21 03 861 1825	21 03 861 2825	

Identification	Conductor cross-section (mm²)	Part number Male	Part number Female	Drawing (dimensions in mm)
Circular connectors M12, M12 Power, Crimp contact, Turned contacts, Pack contents: 50 pieces	0.13 ... 0.25 0.33 ... 0.82	21 01 100 9982 21 01 100 9981	21 01 100 9984 21 01 100 9983	
har-speed, Crimp contact, Turned contacts	0.08 ... 0.22 0.13 ... 0.25	21 01 100 9014 21 01 100 9019	21 01 100 9023 21 01 100 9021	

Circu-
lar

Technical characteristics

Conductor cross-section 0.09 ... 0.82 mm², 0.5 ... 2.5 mm²

Identification	Conductor cross-section (mm²)	Wrench size	Part number	Drawing (dimensions in mm)
Crimping tool, for turned male and female contact, 4 indent crimp in acc. to MIL 22 520/2-01	0.09 ... 0.82		09 99 000 0501	
Crimping tool, for power contacts	0.5 ... 2.5		09 99 000 0509	
Locator, for part number 09 99 000 0501 and Data- und Power contacts Y-coding			09 99 000 0618	
Locator, for part number 09 99 000 0509			09 99 000 0638	
Dynamometric screwdriver, for M12 Power		18	09 99 000 0659	
Dynamometric screwdriver, for M8		13	09 99 000 0660	

System cabling

Contents	Page

M12 system cables with PushPull and screw lock

A new portfolio of over-moulded M12 system cables

Our product line of over-moulded M12 system cables will be expanded. HARTING offers the best system cable for every application: in both straight and angled versions. In addition to the unshielded system cables with screw locking, the time-saving PushPull interlock is now also available for shielded assemblies with A-, D- and X-coding. Thus, customers benefit from the advantages of PushPull connectors for over-moulded cable assemblies.

The cabling solutions have been tested and certified for the entire industrial environment. The key factors are IP protection, plug-in safety, robustness, vibration resistance and EMC safety.

HARTING offers a comprehensive product range of pre-assembled, shielded M12 system cables. The A-coded connectors enable sensors and actuators to be connected quickly. But HARTING also offers pre-assembled, tested system cables for Ethernet communications. A suitable solution is already available using the D-coded connectors with their transmission rate of up to 100 Mbit/s. System cables with X-coded connectors can be used for even more data-hungry applications in automation environments. Transfer rates of up to 10 Gigabit can be achieved with this cabling solution.

In addition to the standardised lengths and solutions, customised variants can also be implemented.

HARTING M12 A-, D- und X-coded cable assemblies

M12 system cables,
shieleded, A-coding,
3, 4, 5 and 8 poles

Part number definition

2	1	4	0	X	X	X	X	X	X	X	X	X	X	X

Connector 1
10 Male straight screw
11 Female straight screw
12 Male angled screw
13 Female angled screw
20 Male straight PushPull
22 Male angled PushPull

Connector 2
00 No connector
10 Male straight screw
11 Female straight screw
12 Male angled screw
13 Female angled screw
20 Male straight PushPull
22 Male angled PushPull

Number of contacts
3 3 poles
4 4 poles
5 5 poles
8 8 poles

Cable material
33 PVC (3 poles)
32 PUR (3 poles)
43 PVC (4 poles)
42 PUR (4 poles)
53 PVC (5 poles)
52 PUR (5 poles)
83 PVC (8 poles)
82 PUR (8 poles)

Preferred length*
005 0.5 m
010 1.0 m
015 1.5 m
020 2.0 m
050 5.0 m
075 7.5 m
100 10.0 m

* Other cable lengths on request!

M12 system cables,
D-coding,
4 poles

Part number definition

2	1	4	0	X	X	X	X	X	X	X	X	X	X	X

Connector 1
30 Male straight screw
31 Female straight screw
32 Male angled screw
33 Female angled screw
40 Male straight PushPull
42 Male angled PushPull

Connector 2
00 No connector
30 Male straight screw
31 Female straight screw
32 Male angled screw
33 Female angled screw
40 Male straight PushPull
42 Male angled PushPull

Number of contacts
4 4 poles

Cable material
46 PVC
45 PUR
47 EtherRail

Preferred length*
005 0.5 m
010 1.0 m
015 1.5 m
020 2.0 m
050 5.0 m
075 7.5 m
100 10.0 m

* Other cable lengths on request!

HARTING M12 X-coded system cables

M12 system cables,
X-coding,
8 poles

Part number definition

2	1	4	0	X	X	X	X	X	X	X	X	X	X	X

Connector 1
50 Male straight screw
51 Female straight screw
52 Male angled screw
53 Female angled screw
60 Male straight PushPull
62 Male angled PushPull

Connector 2
00 No connector
50 Male straight screw
51 Female straight screw
52 Male angled screw
53 Female angled screw
60 Male straight PushPull
62 Male angled PushPull

Number of contacts
8 8 poles

Cable material
85 PVC
86 PUR
88 EtherRail

Preferred length*
005 0.5 m
010 1.0 m
015 1.5 m
020 2.0 m
050 5.0 m
075 7.5 m
100 10.0 m

* Other cable lengths on request!

HARTING T1 Industrial system cables

1x 2x AWG 26/7
HARTING T1 Industrial Overmoulded
HARTING T1 Industrial Overmoulded

Cable

Features

- Internationally standardised mating face acc. to IEC 63171-6
- For the construction of future-proof and standardised Single Pair Ethernet (SPE) communication networks with standardised cabling according to ISO / IEC 11801 and TIA 42
- Designed for industrial applications up to $M_3I_3C_3E_3$ environmental conditions
- Meets all IEEE 802.3 requirements for SPE
- Robust industrial design with 360° shielding, locking lever protection and high mating cycles
- Suitable for remote power supply for all Power over Data Line (PoDL) classes
- Very flexible, overmoulded cable with a small footprint

Technical characteristics

Number of cores	2
Core structure	1x 2x AWG 26/7
Connector 1	HARTING T1 Industrial, Overmoulded
Connector 2	HARTING T1 Industrial, Overmoulded
Rated current	4 A
Rated voltage	60 V DC
Test voltage U_{DC}	1 kV (contact-contact), 2.25 kV (contact-ground)
Contact resistance	≤20 mΩ
Shielding resistance	≤100 mΩ
Limiting temperature	-40 ... +80 °C unmoved, -25 ... +80 °C moved
Mating cycles	≥1000
Degree of protection acc. to IEC 60529	IP20
Transmission characteristics	600 MHz, Bandwidth
Data rate	10 Mbit/s, 100 Mbit/s, 1 Gbit/s
Material (cable)	PUR (polyurethane)
Colour (cable)	Yellow

Specifications and approvals

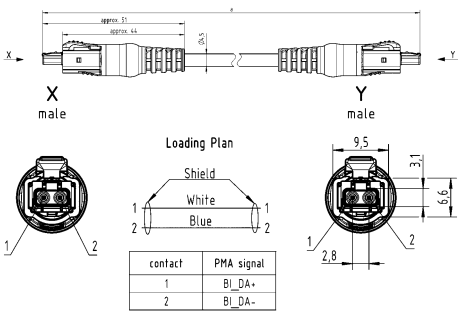
IEC 63171-6
IEEE 802.3bu (remote power supply over PoDL = Power over Data Line)
IEEE 802.3cg (10BASE-T1)
IEEE 802.3bw (100BASE-T1)
IEEE 802.3bp (1000BASE-T1)
IEC 60332-1-2 Flame retardancy
EN 60811-404 Oil resistancy

Details

Unmating under electrical load with 1.5 A / 60 V. 50 cycles for each polarity.

Other cable lengths on request!

UL approval in preparation

Identification	Cable length	Part number	Drawing (dimensions in mm)
HARTING T1 Industrial, Copper cable (round), Halogen-free, Oil resistant, Flame retardant, Pre-assembled on both sides	0.5 m 1 m 2 m 3 m 5 m 7.5 m 10 m 15 m 20 m	33 28 010 1001 005 33 28 010 1001 010 33 28 010 1001 020 33 28 010 1001 030 33 28 010 1001 050 33 28 010 1001 075 33 28 010 1001 100 33 28 010 1001 150 33 28 010 1001 200	

New
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HARTING Mini PushPull ix Industrial® system cables

4x 2x AWG 26/7
HARTING Mini PushPull ix Industrial® Type A Overmoulded
HARTING Mini PushPull ix Industrial® Type A Overmoulded
Cable material: PVC

Features

- Miniaturised Ethernet data interface suitable for industry in acc. to IEC 61076-3-124 type A
- Robust industrial design
- 360° shielding
- Category of transmission Cat. 6_A
- 5000 mating cycles
- Flexible, space saving
- Suitable for all PoE versions

Technical characteristics

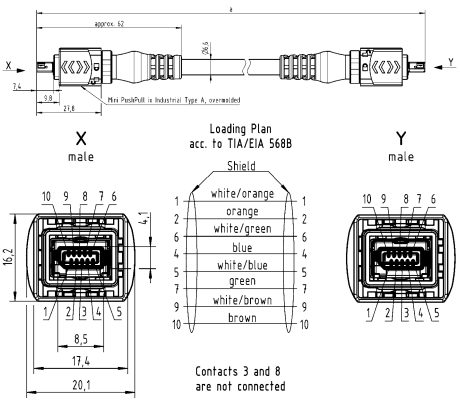
Number of cores	8
Core structure	4x 2x AWG 26/7
Connector 1	HARTING Mini PushPull, ix Industrial®, Type A, Overmoulded
Connector 2	HARTING Mini PushPull, ix Industrial®, Type A, Overmoulded
Limiting temperature	-20 ... +80 °C unmoved, -20 ... +80 °C moved
Transmission characteristics	Cat. 6_A, Class E_A up to 500 MHz
Data rate	10 Mbit/s, 100 Mbit/s, 1 Gbit/s, 2.5 Gbit/s, 5 Gbit/s, 10 Gbit/s
Material (cable)	PVC
Colour (cable)	Yellow

Specifications and approvals

IEC 61076-3-124

Details

Other cable lengths on request!

Identification	Cable length	Part number	Drawing (dimensions in mm)
HARTING Mini PushPull, Copper cable (round), Pre-assembled on both sides	0.2 m 0.3 m 0.4 m 0.5 m 0.7 m 1 m 1.5 m 2 m 2.5 m 3 m 5 m 7.5 m 10 m	33 48 343 4805 002 33 48 343 4805 003 33 48 343 4805 004 33 48 343 4805 005 33 48 343 4805 007 33 48 343 4805 010 33 48 343 4805 015 33 48 343 4805 020 33 48 343 4805 025 33 48 343 4805 030 33 48 343 4805 050 33 48 343 4805 075 33 48 343 4805 100	

Cable

New

HARTING Mini PushPull ix Industrial® system cables

4x 2x AWG 26/7
HARTING Mini PushPull ix Industrial® Type A Overmoulded
HARTING Mini PushPull ix Industrial® Type A Overmoulded
Cable material: PUR

Features

- Miniaturised Ethernet data interface suitable for industry in acc. to IEC 61076-3-124 type A
- Robust industrial design
- 360° shielding
- Category of transmission Cat. 6_A
- 5000 mating cycles
- Flexible, space saving
- Suitable for all PoE versions

Technical characteristics

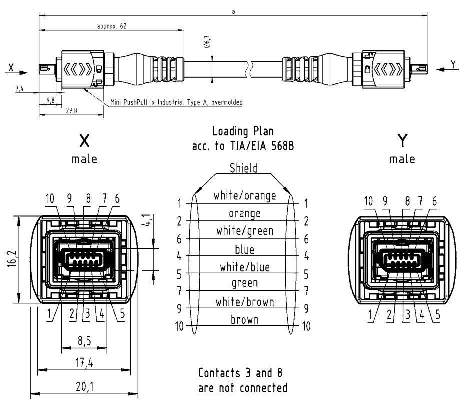
Number of cores	8
Core structure	4x 2x AWG 26/7
Connector 1	HARTING Mini PushPull, ix Industrial®, Type A, Overmoulded
Connector 2	HARTING Mini PushPull, ix Industrial®, Type A, Overmoulded
Limiting temperature	-40 ... +80 °C unmoved, -40 ... +80 °C moved
Transmission characteristics	Cat. 6_A, Class E_A up to 500 MHz
Data rate	10 Mbit/s, 100 Mbit/s, 1 Gbit/s, 2.5 Gbit/s, 5 Gbit/s, 10 Gbit/s
Material (cable)	PUR (polyurethane)
Colour (cable)	Yellow

Specifications and approvals

IEC 61076-3-124

Details

Other cable lengths on request!

Identification	Cable length	Part number	Drawing (dimensions in mm)
HARTING Mini PushPull, Copper cable (round), Pre-assembled on both sides 	0.2 m	33 48 343 4804 002	
	0.3 m	33 48 343 4804 003	
	0.4 m	33 48 343 4804 004	
	0.5 m	33 48 343 4804 005	
	0.7 m	33 48 343 4804 007	
	1 m	33 48 343 4804 010	
	1.5 m	33 48 343 4804 015	
	2 m	33 48 343 4804 020	
	2.5 m	33 48 343 4804 025	
	3 m	33 48 343 4804 030	
	5 m	33 48 343 4804 050	
	7.5 m	33 48 343 4804 075	
	10 m	33 48 343 4804 100	

HARTING Mini PushPull ix Industrial® system cables

10x AWG 26
HARTING Mini PushPull ix Industrial® Type B Overmoulded
HARTING Mini PushPull ix Industrial® Type B Overmoulded
Cable material: PVC

Features

- Miniaturised interface for signals and bus systems in acc. to IEC 61076-3-124 type B, suitable for industrial use
- Robust industrial design
- 360° shielding
- 5000 mating cycles
- Flexible, space saving

Technical characteristics

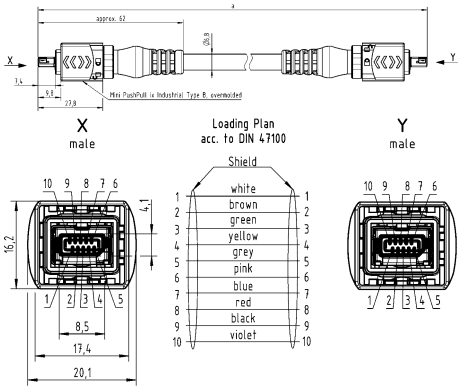
Number of cores	10
Core structure	10x AWG 26
Connector 1	HARTING Mini PushPull, ix Industrial®, Type B, Overmoulded
Connector 2	HARTING Mini PushPull, ix Industrial®, Type B, Overmoulded
Rated current	1.5 A
Rated voltage	50 V AC, 60 V DC
Limiting temperature	-5 ... +80 °C unmoved, -30 ... +80 °C moved
Material (cable)	PVC
Colour (cable)	Grey

Specifications and approvals

IEC 61076-3-124

Details

Other cable lengths on request!

Identification	Cable length	Part number	Drawing (dimensions in mm)
HARTING Mini PushPull, Copper cable (round), Pre-assembled on both sides 	0.2 m 0.3 m 0.4 m 0.5 m 0.7 m 1 m 1.5 m 2 m 2.5 m 3 m 5 m 7.5 m 10 m	33 48 353 5A20 002 33 48 353 5A20 003 33 48 353 5A20 004 33 48 353 5A20 005 33 48 353 5A20 007 33 48 353 5A20 010 33 48 353 5A20 015 33 48 353 5A20 020 33 48 353 5A20 025 33 48 353 5A20 030 33 48 353 5A20 050 33 48 353 5A20 075 33 48 353 5A20 100	

HARTING Mini PushPull ix Industrial® system cables

10x AWG 26
HARTING Mini PushPull ix Industrial® Type B Overmoulded
HARTING Mini PushPull ix Industrial® Type B Overmoulded
Cable material: PUR

Cable

Features

- Miniaturised interface for signals and bus systems in acc. to IEC 61076-3-124 type B, suitable for industrial use
- Robust industrial design
- 360° shielding
- 5000 mating cycles
- Flexible, space saving

Technical characteristics

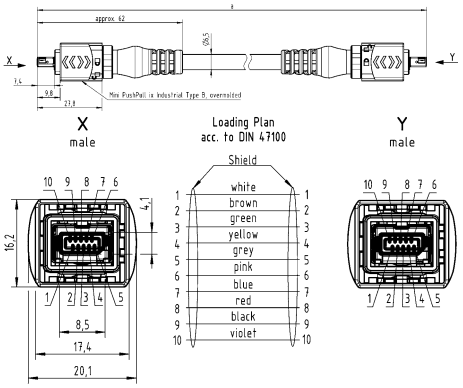
Number of cores	10
Core structure	10x AWG 26
Connector 1	HARTING Mini PushPull, ix Industrial®, Type B, Overmoulded
Connector 2	HARTING Mini PushPull, ix Industrial®, Type B, Overmoulded
Rated current	1.5 A
Rated voltage	50 V AC, 60 V DC
Limiting temperature	-5 ... +80 °C unmoved, -40 ... +80 °C moved
Material (cable)	PUR (polyurethane)
Colour (cable)	Grey

Specifications and approvals

IEC 61076-3-124

Details

Other cable lengths on request!

Identification	Cable length	Part number	Drawing (dimensions in mm)
HARTING Mini PushPull, Copper cable (round), Pre-assembled on both sides	0.2 m 0.3 m 0.4 m 0.5 m 0.7 m 1 m 1.5 m 2 m 2.5 m 3 m 5 m 7.5 m 10 m	33 48 353 5A21 002 33 48 353 5A21 003 33 48 353 5A21 004 33 48 353 5A21 005 33 48 353 5A21 007 33 48 353 5A21 010 33 48 353 5A21 015 33 48 353 5A21 020 33 48 353 5A21 025 33 48 353 5A21 030 33 48 353 5A21 050 33 48 353 5A21 075 33 48 353 5A21 100	

New
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HARTING VarioBoot RJ45 system cables

4x 2x AWG 26/7
HARTING VarioBoot RJ45 Preferred directions left/right
HARTING VarioBoot RJ45 Preferred directions left/right

Features

- Transmission of up to 10 Gbit/s
- Overmoulded
- Locking lever protection
- Adaptable and changeable cable outlet
- Flexible, space saving

Technical characteristics

Number of cores	8
Core structure	4x 2x AWG 26/7
Connector 1	HARTING VarioBoot RJ45, Preferred directions left/right
Connector 2	HARTING VarioBoot RJ45, Preferred directions left/right
Limiting temperature	-20 ... +60 °C unmoved, 0 ... +60 °C moved
Degree of protection acc. to IEC 60529	IP20
Transmission characteristics	Cat. 6_A, Class E_A up to 500 MHz
Data rate	10 Mbit/s, 100 Mbit/s, 1 Gbit/s, 2.5 Gbit/s, 5 Gbit/s, 10 Gbit/s
Material (cable)	FRNC (LSZH)
Colour (cable)	Grey, Red, Yellow, Green, Blue

Specifications and approvals

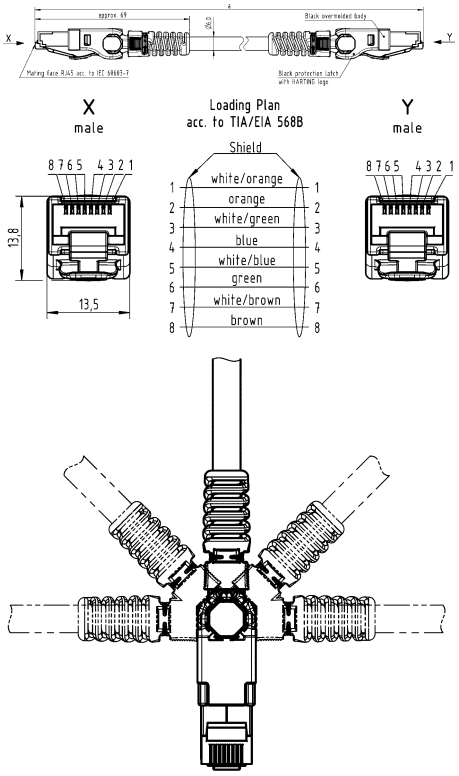
IEC 11801
IEC 61156-6
IEC 60332-1 Flame retardancy
IEC 60754-2 Halogen freeness
IEC 60754-2 Non corrosive
IEC 61034 Low smoke

Details

Other cable lengths on request!

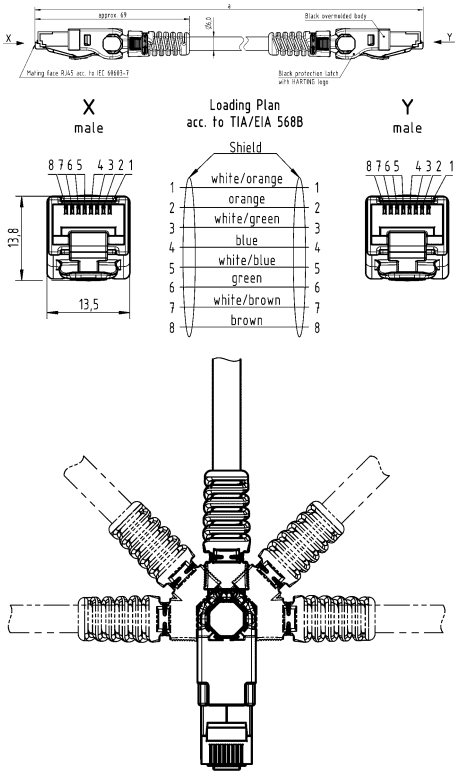
HARTING VarioBoot RJ45 system cables

Cable

Identification	Cable length	Part number	Drawing (dimensions in mm)
RJ45, Copper cable (round), Wiring 1:1, Flame retardant, Halogen-free, Pre-assembled on both sides, Preferred directions left/right, Grey	0.3 m 0.4 m 0.5 m 1 m 2 m 3 m 5 m 7.5 m 10 m 15 m 20 m	09 48 858 5585 003 09 48 858 5585 004 09 48 858 5585 005 09 48 858 5585 010 09 48 858 5585 020 09 48 858 5585 030 09 48 858 5585 050 09 48 858 5585 075 09 48 858 5585 100 09 48 858 5585 150 09 48 858 5585 200	
RJ45, Copper cable (round), Wiring 1:1, Flame retardant, Halogen-free, Pre-assembled on both sides, Preferred directions left/right, Red	0.3 m 0.4 m 0.5 m 1 m 2 m 3 m 5 m 7.5 m 10 m 15 m 20 m	09 48 858 5586 003 09 48 858 5586 004 09 48 858 5586 005 09 48 858 5586 010 09 48 858 5586 020 09 48 858 5586 030 09 48 858 5586 050 09 48 858 5586 075 09 48 858 5586 100 09 48 858 5586 150 09 48 858 5586 200	
RJ45, Copper cable (round), Wiring 1:1, Flame retardant, Halogen-free, Pre-assembled on both sides, Preferred directions left/right, Yellow	0.3 m 0.4 m 0.5 m 1 m 2 m 3 m 5 m 7.5 m 10 m 15 m 20 m	09 48 858 5587 003 09 48 858 5587 004 09 48 858 5587 005 09 48 858 5587 010 09 48 858 5587 020 09 48 858 5587 030 09 48 858 5587 050 09 48 858 5587 075 09 48 858 5587 100 09 48 858 5587 150 09 48 858 5587 200	
RJ45, Copper cable (round), Wiring 1:1, Flame retardant, Halogen-free, Pre-assembled on both sides, Preferred directions left/right, Green	0.3 m 0.4 m 0.5 m 1 m 2 m 3 m 5 m 7.5 m 10 m 15 m 20 m	09 48 858 5588 003 09 48 858 5588 004 09 48 858 5588 005 09 48 858 5588 010 09 48 858 5588 020 09 48 858 5588 030 09 48 858 5588 050 09 48 858 5588 075 09 48 858 5588 100 09 48 858 5588 150 09 48 858 5588 200	

New

HARTING VarioBoot RJ45 system cables

Identification	Cable length	Part number	Drawing (dimensions in mm)
RJ45, Copper cable (round), Wiring 1:1, Flame retardant, Halogen-free, Pre-assembled on both sides, Preferred directions left/right, Blue	0.3 m 0.4 m 0.5 m 1 m 2 m 3 m 5 m 7.5 m 10 m 15 m 20 m	09 48 858 5589 003 09 48 858 5589 004 09 48 858 5589 005 09 48 858 5589 010 09 48 858 5589 020 09 48 858 5589 030 09 48 858 5589 050 09 48 858 5589 075 09 48 858 5589 100 09 48 858 5589 150 09 48 858 5589 200	

HARTING VarioBoot RJ45 / DualBoot RJ45 system cables

4x 2x AWG 26/7
HARTING VarioBoot RJ45 Preferred directions left/right
HARTING DualBoot RJ45

Features

- Transmission of up to 10 Gbit/s
- Overmoulded
- Locking lever protection
- Adaptable and changeable cable outlet
- Flexible, space saving
- HARTING DualBoot RJ45 is compatible with Han-Modular®

Technical characteristics

Number of cores	8
Core structure	4x 2x AWG 26/7
Connector 1	HARTING VarioBoot RJ45, Preferred directions left/right
Connector 2	HARTING DualBoot RJ45
Limiting temperature	-20 ... +60 °C unmoved, 0 ... +60 °C moved
Degree of protection acc. to IEC 60529	IP20
Transmission characteristics	Cat. 6_A, Class E_A up to 500 MHz
Data rate	10 Mbit/s, 100 Mbit/s, 1 Gbit/s, 2.5 Gbit/s, 5 Gbit/s, 10 Gbit/s
Material (cable)	FRNC (LSZH)
Colour (cable)	Grey, Red, Yellow, Green, Blue

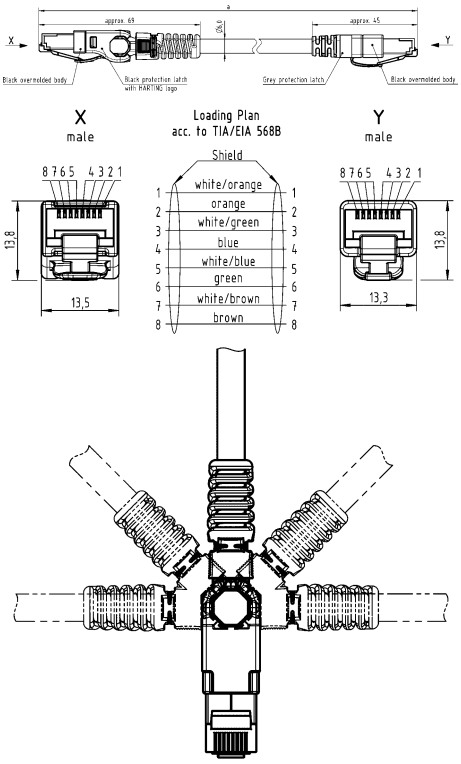
Specifications and approvals

IEC 11801
IEC 61156-6
IEC 60332-1 Flame retardancy
IEC 60754-2 Halogen freeness
IEC 60754-2 Non corrosive
IEC 61034 Low smoke

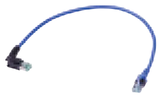
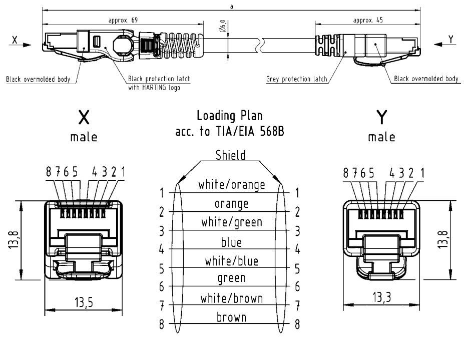
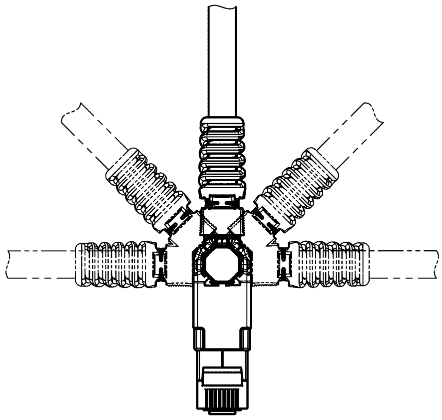
Details

Other cable lengths on request!

HARTING VarioBoot RJ45 / DualBoot RJ45 system cables

Identification	Cable length	Part number	Drawing (dimensions in mm)
RJ45, Copper cable (round), Wiring 1:1, Flame retardant, Halogen-free, Pre-assembled on both sides, Preferred directions left/right, Grey 	0.3 m 0.4 m 0.5 m 1 m 2 m 3 m 5 m 7.5 m 10 m 15 m 20 m	09 48 858 7585 003 09 48 858 7585 004 09 48 858 7585 005 09 48 858 7585 010 09 48 858 7585 020 09 48 858 7585 030 09 48 858 7585 050 09 48 858 7585 075 09 48 858 7585 100 09 48 858 7585 150 09 48 858 7585 200	
RJ45, Copper cable (round), Wiring 1:1, Flame retardant, Halogen-free, Pre-assembled on both sides, Preferred directions left/right, Red 	0.3 m 0.4 m 0.5 m 1 m 2 m 3 m 5 m 7.5 m 10 m 15 m 20 m	09 48 858 7586 003 09 48 858 7586 004 09 48 858 7586 005 09 48 858 7586 010 09 48 858 7586 020 09 48 858 7586 030 09 48 858 7586 050 09 48 858 7586 075 09 48 858 7586 100 09 48 858 7586 150 09 48 858 7586 200	
RJ45, Copper cable (round), Wiring 1:1, Flame retardant, Halogen-free, Pre-assembled on both sides, Preferred directions left/right, Yellow 	0.3 m 0.4 m 0.5 m 1 m 2 m 3 m 5 m 7.5 m 10 m 15 m 20 m	09 48 858 7587 003 09 48 858 7587 004 09 48 858 7587 005 09 48 858 7587 010 09 48 858 7587 020 09 48 858 7587 030 09 48 858 7587 050 09 48 858 7587 075 09 48 858 7587 100 09 48 858 7587 150 09 48 858 7587 200	
RJ45, Copper cable (round), Wiring 1:1, Flame retardant, Halogen-free, Pre-assembled on both sides, Preferred directions left/right, Green 	0.3 m 0.4 m 0.5 m 1 m 2 m 3 m 5 m 7.5 m 10 m 15 m 20 m	09 48 858 7588 003 09 48 858 7588 004 09 48 858 7588 005 09 48 858 7588 010 09 48 858 7588 020 09 48 858 7588 030 09 48 858 7588 050 09 48 858 7588 075 09 48 858 7588 100 09 48 858 7588 150 09 48 858 7588 200	

HARTING VarioBoot RJ45 / DualBoot RJ45 system cables

Identification	Cable length	Part number	Drawing (dimensions in mm)
RJ45, Copper cable (round), Wiring 1:1, Flame retardant, Halogen-free, Pre-assembled on both sides, Preferred directions left/right, Blue 	0.3 m 0.4 m 0.5 m 1 m 2 m 3 m 5 m 7.5 m 10 m 15 m 20 m	09 48 858 7589 003 09 48 858 7589 004 09 48 858 7589 005 09 48 858 7589 010 09 48 858 7589 020 09 48 858 7589 030 09 48 858 7589 050 09 48 858 7589 075 09 48 858 7589 100 09 48 858 7589 150 09 48 858 7589 200	 

Cable

HARTING DualBoot RJ45 Cat. 6_A PUR system cables

4x 2x AWG 26/7
HARTING DualBoot RJ45
HARTING DualBoot RJ45

Features

- Transmission of up to 10 Gbit/s
- Overmoulded
- Locking lever protection
- Flexible, space saving
- HARTING DualBoot RJ45 is compatible with Han-Modular®

Technical characteristics

Number of cores	8
Core structure	4x 2x AWG 26/7
Connector 1	HARTING DualBoot RJ45
Connector 2	HARTING DualBoot RJ45
Limiting temperature	-40 ... +80 °C unmoved, -40 ... +80 °C moved
Transmission characteristics	Cat. 6_A, Class E_A up to 500 MHz
Data rate	10 Mbit/s, 100 Mbit/s, 1 Gbit/s, 2.5 Gbit/s, 5 Gbit/s, 10 Gbit/s
Material (cable)	PUR (polyurethane)
Colour (cable)	Grey, Green
RoHS	compliant

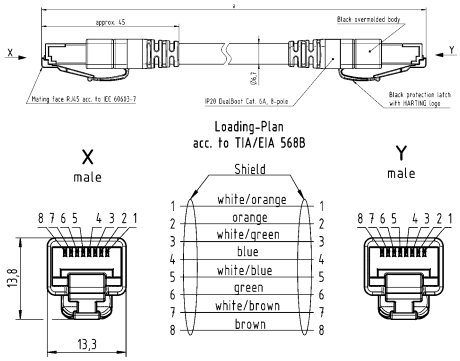
Specifications and approvals

UN/ECE-R 118
UL 1863 DUXR.E470046

Details

Other cable lengths on request!

Cable

Identification	Cable length	Part number	Drawing (dimensions in mm)
RJ45, Copper cable (round), Pre-assembled on both sides, Grey	0.3 m 0.5 m 1 m 2 m 3 m 5 m 6 m 7 m 10 m 12 m 15 m 20 m 25 m 30 m 35 m 40 m	09 48 474 7743 003 09 48 474 7743 005 09 48 474 7743 010 09 48 474 7743 020 09 48 474 7743 030 09 48 474 7743 050 09 48 474 7743 060 09 48 474 7743 070 09 48 474 7743 100 09 48 474 7743 120 09 48 474 7743 150 09 48 474 7743 200 09 48 474 7743 250 09 48 474 7743 300 09 48 474 7743 350 09 48 474 7743 400	

New
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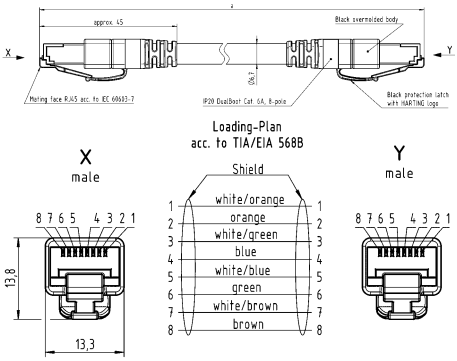
HARTING DualBoot RJ45 Cat. 6_A PUR system cables

Identification	Cable length	Part number	Drawing (dimensions in mm)
RJ45, Copper cable (round), Pre-assembled on both sides, Green 	0.3 m 0.5 m 1 m 2 m 3 m 5 m 7 m 10 m 14 m 15 m 20 m 25 m 30 m 35 m 40 m	09 48 474 7744 003 09 48 474 7744 005 09 48 474 7744 010 09 48 474 7744 020 09 48 474 7744 030 09 48 474 7744 050 09 48 474 7744 070 09 48 474 7744 100 09 48 474 7744 140 09 48 474 7744 150 09 48 474 7744 200 09 48 474 7744 250 09 48 474 7744 300 09 48 474 7744 350 09 48 474 7744 400	

Cable

New
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HARTING Industrial drag chain cable SF/UTP Cat. 6_A PUR

4x 2x AWG 26/7

Features

- Suitable for generic cabling
- For drag chain applications
- Highly EMC resistant
- Oil resistancy
- Flame retardant, halogen free and RoHS compliant

Technical characteristics

Number of cores	8
Core structure	4x 2x AWG 26/7
Rated voltage	100 V
Test voltage $U_{r.m.s.}$	2 kV Wire / wire / shielding
Limiting temperature	-40 ... +70 °C unmoved, -40 ... +70 °C moved
Conductor resistance @ 20 °C	≤140 Ω/km
Insulation resistance @ 20 °C	≥1000 MΩ x km
Signal run time @ 20 °C	≤5.13 ns/m
Impedance @ 100 MHz	100 Ω ±10 %
Cable diameter	6.5 ... 7.1 mm
Minimum bending radius	10x Cable diameter, (repeated bending), 5x Cable diameter, (singular bending)
Drag chain compatible	Yes
Bending cycles	≥ 5.000.000 @ 15x Cable diameter @ traversing distance ≤ 1 m @ speed ≤ 0.3 m/s @ acceleration ≤ 6 m/s²
Tensile strenght	≤15 N/mm²
Transmission characteristics	Cat. 6_A, Class E_A up to 500 MHz
Data rate	10 Mbit/s, 100 Mbit/s, 1 Gbit/s, 2.5 Gbit/s, 5 Gbit/s, 10 Gbit/s
Material (cable)	PUR (polyurethane)
Colour (cable)	Black
RoHS	compliant

Specifications and approvals

EN 50173-3 generic cabling
IEC 60332-1-2 Flame retardancy
IEC 60754-1

Identification	Cable length	Part number	Drawing (dimensions in mm)
Copper cable (round), Not assembled	20 m 50 m 100 m 500 m	09 45 600 0555 09 45 600 0556 09 45 600 0557 09 45 600 0558	

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