



Pushing Performance



People | Power | Partnership

HARTING

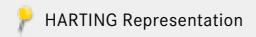
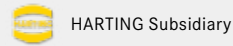
Han[®] F+B – A clean connection

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 5,000 staff.



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 technolo-

gy, 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.

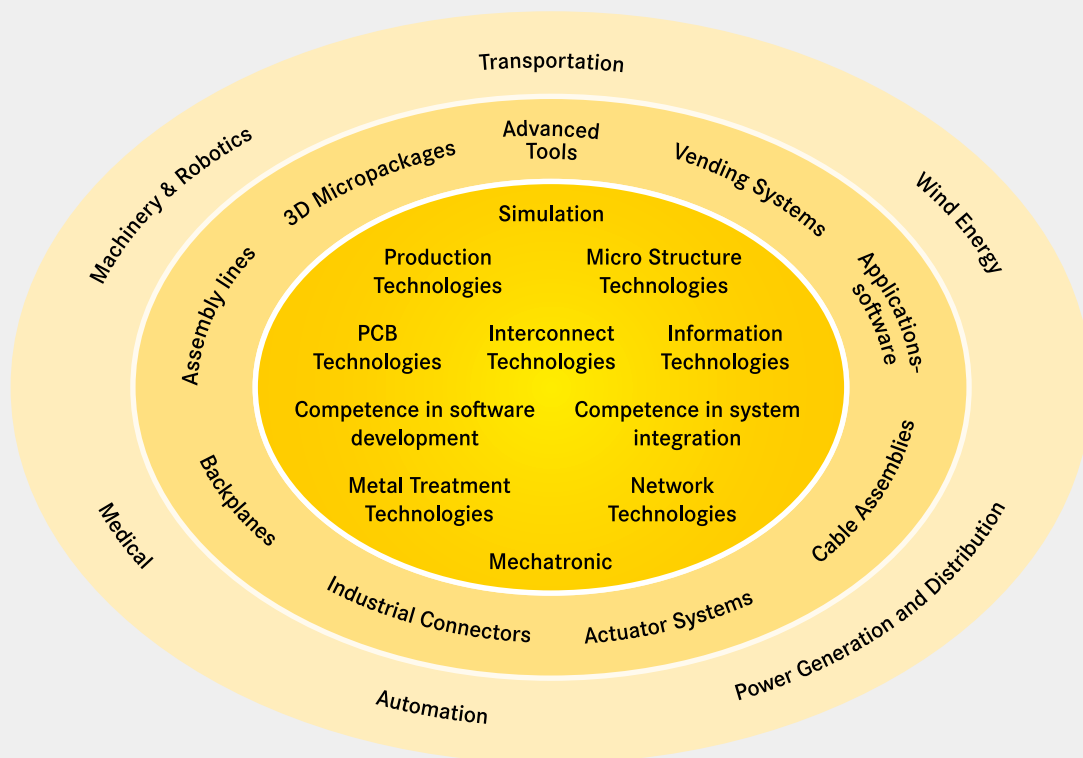
In order to ensure the future-proof design of RF and EMC-compatible interface solutions, the central **HARTING** laboratory (certified to EN 45001) employs simulation tools, as well as experimental, testing and diagnostics facilities all the way to scanning electron microscopes. In addition to product 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

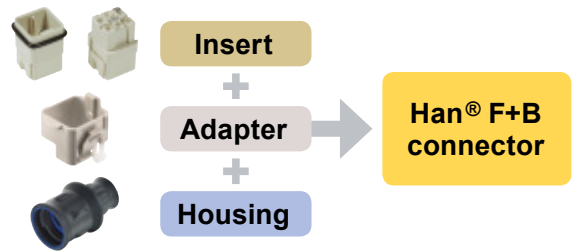
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Han
F+B

Han® F+B Connector System

- Reduces costs because connectors shorten assembly times
- Supports flexible configuration of machines as well as modularisation
- Reduces downtimes thanks to "Plug & Produce" principle



- Ecolab-certified
- Hood and housing materials comply with FDA 21
- Data, signal and power
- Easy-to-clean design, caps of hood and bulkhead mounted housing can be screwed together, e.g. for cleaning

- IP69 Highest protection class
- Resistant to cold and heat

Technical characteristics

Material hood	PP
Material seal	TPE
Material housing	PP
Material gasket	EPDM
Material o-ring	silicone
Material cable gland	PA / silicone
Limiting temperature	-40°C ... 125°C
Mating cycles	≥ 500
Mating cycles with adapter 09 15 503 9911	≥ 250
Degree of Protection acc. to DIN EN 60529 for coupled connector	IP67 / IP69
Specifications and approvals	
Materials according to FDA 21	P3-topax 19
Resistance, Ecolab-certified:	P3-topax 52
	P3-topax 56
	P3-topax 66
	P3-topax 99
	P3-topax 200

Benefits

- Helps reducing downtimes in food beverage industry
- Connectors are many times faster in plugging compared to hard wired solutions
- One type of hood or housing for all types of transmission in the industrial lifelines of data, signals and power
- Enables the modularisation of machines and plants as well as the introduction of future-proof concepts
- Reduces expenses on installation and maintenance of equipment as well as the resulting downtimes

Features

Easy-to-clean design based on standards ISO 14 159 und DIN EN 1672-2

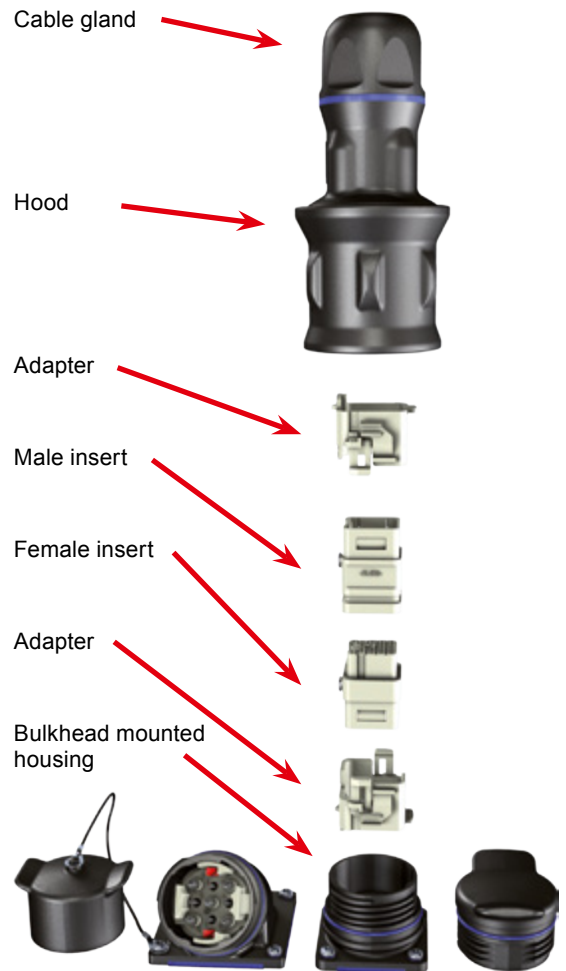
Applications:

- Machines for food industry
- Bottling plants
- Packaging machines

Suitable for food processing zones:

- Interfaces inside the splash zone
- Resistant to chemical cleaning agents even at high cleaning density

System description



Notice:
Adapter required for Han® 3 A insert

Device side	Setup of power and signal interface requires housings, adapter and insert						
		+		+		+	
Configuration example	Housing Han® F+B bulkhead mounted housing, straight 09 15 503 0301		Adapter required for Han® 3 A insert 09 15 503 9911		Insert Han® Q 12 09 12 012 3101		Contacts Han® D 09 15 000 6201

40 A	Han® Q 2/0		Han® Q 2/0	
Contacts	2 + PE		2 + PE	
Electrical data	40 A / 400 V		40 A / 400 V	
Termination	Axial screw		Crimp	
Cross section [mm² / AWG]	2.5 ... 6 mm² / AWG 14-10		1.5 ... 10 mm² / AWG 16-8	
Male	09 12 002 2653		09 12 002 3051	
Female	09 12 002 2753		09 12 002 3151	
Cross section [mm² / AWG]	4 ... 10 mm² / AWG 12-8			
Male	09 12 002 2651			
Female	09 12 002 2751			
Notice	Insert incl. contacts		Han® C contacts to be ordered separately	

16 A	Han® Q 5/0 Crimp		Han® Q 5/0 Quick Lock	
Contacts	5 + PE		5 + PE	
Electrical data	16 A / 230 / 400 V		16 A / 230 / 400 V	
Termination	Crimp		Quick Lock	
Cross section [mm² / AWG]	0.14/0.5 ... 2.5 mm² / AWG 26/20-14		0.14/0.5 ... 2.5 mm² / AWG 26/20-14	
Male	09 12 005 3004		09 12 005 2633	
Female	09 12 005 3104		09 12 005 2733	
Notice	Insert incl. contacts, crimp Han® E contacts to be ordered separately		Insert incl. contacts, crimp Han® E contacts to be ordered separately	

10 A	Han® 3 A		Han® 3 A Quick Lock		Han® 4 A		Han® 4 A Quick Lock	
Contacts	3 + PE		3 + PE		4 + PE		4 + PE	
Electrical data	10 A / 230 / 400 V		10 A / 230 / 400 V		10 A / 230 / 400 V		10 A / 230 / 400V	
Termination	Screw terminal		Quick Lock		Screw terminal		Quick Lock	
Cross section [mm² / AWG]	1.0 ... 2.5 mm² / AWG 18-14		0.5 ... 2.5 mm² / AWG 20-14		1.0 ... 2.5 mm² / AWG 18-14		0.5 ... 2.5 mm² / AWG 20-14	
Male	09 20 003 2611		09 20 003 2633		09 20 004 2611		09 20 004 2633	
Female	09 20 003 2711		09 20 003 2733		09 20 004 2711		09 20 004 2733	
Notice	Insert incl. contacts		Insert incl. contacts		Insert incl. contacts		Insert incl. contacts	

10 A	Han® 7 D		Han® 7 D Quick Lock		Han® Q 7/0	
Contacts	7 + PE		7 + PE		7 + PE	
Electrical data	10 A / 250 V		10 A / 250 V		10 A / 400 V	
Termination	Crimp		Quick Lock		Crimp	
Cross section [mm² / AWG]	0.14 ... 2.5 mm² / AWG 26-14		0.14 ... 2.5 mm² / AWG 26-14		0.14 ... 2.5 mm² / AWG 26-14	
Male	09 21 007 3031		09 21 007 2632		09 12 007 3001	
Female	09 21 007 3131		09 21 007 2732		09 12 007 3101	
Notice	Han® D contacts to be ordered separately		Han® D contacts to be ordered separately		Han® D contacts to be ordered separately	

Inserts for adapter



Han
F+B

Cable side

Configuration example



Hood and cable gland
19 15 503 1403



Adapter
09 15 503 9911



Insert
09 12 012 3001



Contacts
09 15 000 6101

20 A

Han® F+B 4 / 4



Han® F+B 4 / 4 / 4



Hybrid system cable

Cable side



Device side



Contacts
Electrical data

4 / 4 + PE
20 A + PE / 10 A

4 / 4 + PE + Ethernet
20 A + PE / 10 A

20 A + PE
10 A / Cat. 5e

20 A + PE
10 A / Cat. 5e

Termination

Crimp

Crimp

Cross section [mm² / AWG]

0.14 ... 2.5 mm² / AWG 26-14

0.16 ... 1.5 mm² / AWG 26-16

Male

09 15 508 3001

09 15 512 3002

33 50 300 0140 050

33 50 319 9141 003

Female

09 15 508 3101

09 15 512 3102

Notice

No adapter necessary,
Han® D and E contacts to
be ordered separately

No adapter necessary,
Han® D, E and Ethernet
contacts to be ordered
separately

Cable length 5 m

Wire length 30 cm

up to 10 A

Han® Q 12/0



Han® High Density



Han® 8 D



Han® 8 D Quick Lock



Contacts
Electrical data

12 + PE
10 A / 230 / 400V

21
6.5 A / 50 - 120 V

8
10 A / 50 V - 120 V

8
10 A / 50 V - 120 V

Termination

Crimp

Crimp

Crimp

Han-Quick Lock®

Cross section [mm² / AWG]

0.14 ... 2.5 mm² / AWG 26-14

0.09 ... 0.56 mm² / AWG 26-20

0.14 ... 2.5 mm² / AWG 26-14

0.25 ... 1.5 mm² / AWG 24-16

Male

09 12 012 3001

09 12 021 3001

09 36 008 3001

09 36 008 2632

Female

09 12 012 3101

09 12 021 3101

09 36 008 3101

09 36 008 2732

Notice

Han® D contacts
to be ordered separately

D-Sub contacts
to be ordered separately

Han® D contacts to be
ordered separately

Insert incl. contacts

Termination technique

Screw terminal

HARTING screw
terminals are designed
according
to DIN EN 60999

Han-Quick Lock® termination

Push the stranded wire
into the Han-Quick Lock®
contact chamber and
push the actuator in until
it comes to a stop!

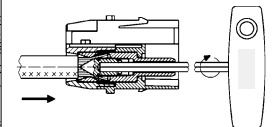
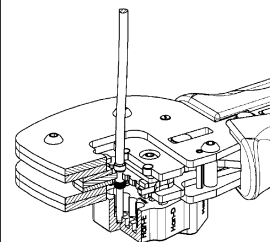
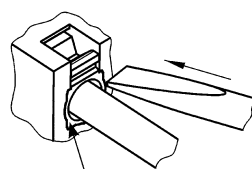
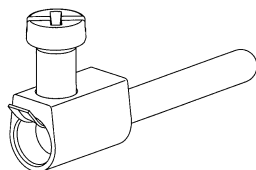
Crimp termination

Crimp connections are
solder-free and tension-
resistant, to be processed
with crimping tool

Axial screw termination

For flexible conductors
with large cross sections,
special tools required

Drawing



Tools

Screwdriver

Screwdriver

Crimping tool

Torque wrench

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Inserts for adapter



Han
F+B





5 A – D-Sub	Cross section		Male contacts for Ethernet elements	Female contacts for Ethernet elements	Male (gold plated)	Female (gold plated)
	(mm ²)	(AWG)				
	0.09-0.25	28-24				
	0.12-0.33	26-22	21 01 100 9020	21 01 100 9025	09 67 000 7576	09 67 000 7476
	0.13-0.33	26-22			09 67 000 5576	09 67 000 5476
0.25-0.52	24-20			09 67 000 8576	09 67 000 8476	
10 A – Han® D	Cross section		Male (silver plated)	Female (silver plated)	Male (gold plated)	Female (gold plated)
	(mm ²)	(AWG)				
	0.14-0.37	26-22				
	0.5	20	09 15 000 6104	09 15 000 6204	09 15 000 6124	09 15 000 6224
	0.75	18	09 15 000 6103	09 15 000 6203	09 15 000 6123	09 15 000 6223
	1	18	09 15 000 6105	09 15 000 6205	09 15 000 6125	09 15 000 6225
	1.5	16	09 15 000 6102	09 15 000 6202	09 15 000 6122	09 15 000 6222
2.5	14	09 15 000 6101	09 15 000 6201	09 15 000 6121	09 15 000 6221	
2.5	14	09 15 000 6106	09 15 000 6206	09 15 000 6126	09 15 000 6226	
16 / 20 A – Han® E	Cross section		Male (silver plated)	Female (silver plated)	Male (gold plated)	Female (gold plated)
	(mm ²)	(AWG)				
	0.14-0.37	26-22				
	0.5	20	09 33 000 6127	09 33 000 6227	09 33 000 6117	09 33 000 6217
	0.75	18	09 33 000 6121	09 33 000 6220	09 33 000 6122	09 33 000 6222
	1	18	09 33 000 6114	09 33 000 6214	09 33 000 6115	09 33 000 6215
	1.5	16	09 33 000 6105	09 33 000 6205	09 33 000 6118	09 33 000 6218
	2.5	14	09 33 000 6104	09 33 000 6204	09 33 000 6116	09 33 000 6216
	3	12	09 33 000 6102	09 33 000 6202	09 33 000 6123	09 33 000 6223
4	12	09 33 000 6106	09 33 000 6206			
4	12	09 33 000 6107	09 33 000 6207	09 33 000 6119	09 33 000 6221	
40 A – Han® C	Cross section		Male (silver plated)	Female (silver plated)		
	(mm ²)	(AWG)				
	1.5	16				
	2.5	14	09 32 000 6104	09 32 000 6204		
	4	12	09 32 000 6105	09 32 000 6205		
	6	10	09 32 000 6107	09 32 000 6207		
10	8	09 32 000 6108	09 32 000 6208			
10	8	09 32 000 6109	09 32 000 6209			
Crimping tools	Part numbers		09 99 000 0501	09 99 000 0377	09 99 000 0888	09 99 000 0898
	Contacts	D-Sub 0.09-0.52	Han® C 6.0-10.0	Han® D 0.14-2.5	for shielding ferrules	
	Cross section [mm ²]		Han® C 4.0-40.0	Han® E 0.14-4.0		
	Locator for Ethernet	61 03 600 0023		Han® C 1.5-4.0	09 99 000 0637	
Locator for D-Sub	09 99 000 0531			09 99 000 0637		
Axial screw termination tools	Hex key	T-handle hex key	Bit 1/4"	Hex key torque set	Others	Han® F+B removal tool
	2 mm (40 A)	09 99 000 0313	09 99 000 0369	09 99 000 0834		for circular inserts
2.5 mm (70 A)		09 99 000 0375	09 99 000 0834		09 99 000 0878	




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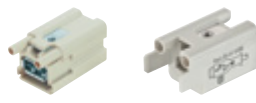

Inserts for adapter



Han
F+B

Configuration example	Plug		Socket	
	 Hood and adapter Han® F+B and RJ45 adapter 19 15 503 1403 09 15 503 9911	 Plug Cat. 6, IDC 09 45 100 1560	 Socket Cat. 6, IDC 09 45 545 1561 09 45 515 0024	 Bulkhead mounted housing, straight 09 15 503 0301 09 15 503 9911

	Cat. 5	Cat. 6A	Cat. 6A
			
Poles Data transmission	4 poles 10/100 Mbit	8 poles 1/10 Gbit	8 poles 1/10 Gbit
Termination	HARAX® IDC	IDC	preLink®
Plug	09 45 100 1100	09 45 100 1560	20 82 002 0001
AWG	24/22	27-22	
preLink yellow Termination Block			20 82 000 0001
AWG			23/22
preLink white Termination Block			20 82 001 0002
AWG			27/26
Socket (HIFF)	09 45 545 1120	09 45 545 1561	20 82 001 0001
AWG	24/22	28-24	23/22
Socket (HIFF)		09 45 545 1562	20 82 001 0002
AWG		24-22	27/26
Coupler (HIFF)	09 45 545 1560	09 45 545 1560	09 45 545 1560
Notice	Use Han® HIFF adapter for socket and coupler 09 45 515 0024		
Adapter for plug and socket/coupler	09 15 503 9911		

USB / Fire Wire	Han-Brid® USB	Han-Brid® FireWire	Others	Tool
	Contacts Electrical data Termination	 1 1 A / 50 V Patch cable		 1 1A / 50 V Patch cable
Male	09 12 001 3091	09 12 001 3071		20 82 000 9901
Female	09 12 001 2794	09 12 001 2774		
Notice	Use adapter for male and female 09 15 503 9911			

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Features

- Suitable for a lot of inserts size 3 A

Technical characteristics

Mating cycles	≥250
Material (accessories)	Polycarbonate (PC)
RoHS	compliant

Identification

Han® F+B,
Size 3 A,
Adapter

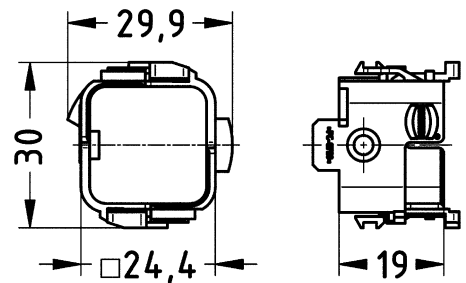
for male inserts
for female inserts



Part number

09 15 503 9911

Drawing (dimensions in mm)



Number of contacts

4+

20 A 400 V 6 kV 3
+ 4 additional signal contacts
10 A 250 V 4 kV 3

Han
F+B

Features

- Signal
- Power

Technical characteristics

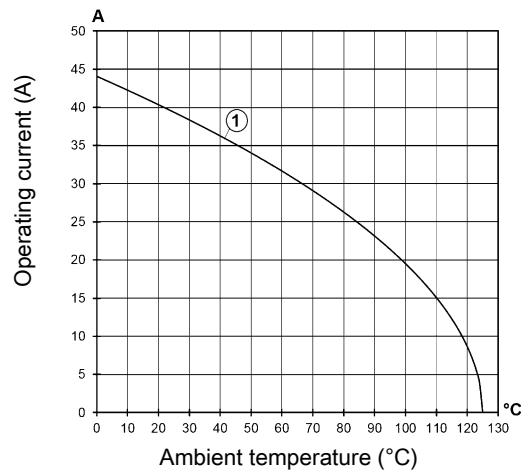
Number of contacts	4
Additional contacts	+ 4 additional signal contacts
Rated current	20 A
Rated voltage	400 V
Rated impulse voltage	6 kV
Pollution degree	3
Rated current (signal)	10 A
Rated voltage (signal)	250 V
Rated impulse voltage (signal)	4 kV
Pollution degree (signal)	3
Insulation resistance	>10 ¹⁰ Ω
Limiting temperature	-40 ... +125 °C
Mating cycles	≥500
Mating cycles with other HMC components	≥3000
Material (insert)	Polycarbonate (PC)
Colour (insert)	RAL 7032 (pebble grey)
Material flammability class acc. to UL 94	V-0
RoHS	compliant

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




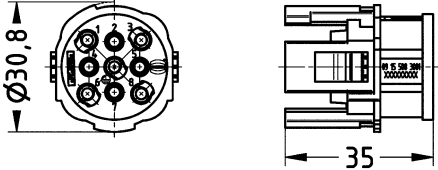
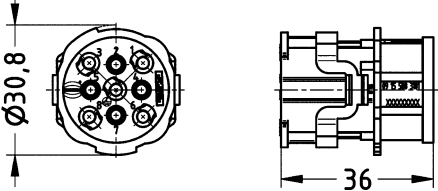
- ① Conductor cross-section 4 mm²
Current rating of the Han E[®] contacts

Specifications and approvals

UL 2237 PVVA2.E318390

Details

The connector series Han[®] F+B equipped with all contacts may be used for voltages up to 400 V, pollution degree 3. A modified contact loading arrangement only with 4 + PE Han E[®] power contacts permits use up to 500 V also in the same pollution degree.

Identification	Conductor cross-section (mm ²)	Part number		Drawing (dimensions in mm)	
		Male	Female		
<p>Han® F+B, Crimp termination</p>  <p>Please order crimp contacts separately. 4x Han E® 4x Han D®</p>	0.14 ... 4	09 15 508 3001	09 15 508 3101		

Han
F+B

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Number of contacts

4+

20 A 400 V 6 kV 3
 + 4 additional signal contacts + 1 Data
 10 A 250 V 4 kV 3
 Cat. 5

Han
F+B

Features

- Data
- Signal
- Power

Technical characteristics

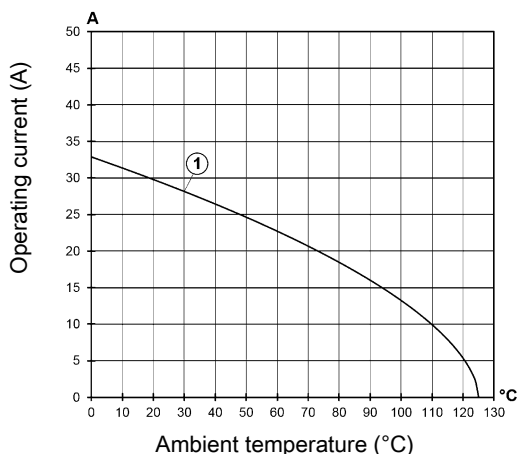
Number of contacts	4
Additional contacts	+ 4 additional signal contacts, + 1 Data
Rated current	20 A
Rated voltage	400 V
Rated impulse voltage	6 kV
Pollution degree	3
Rated current (signal)	10 A
Rated voltage (signal)	250 V
Rated impulse voltage (signal)	4 kV
Pollution degree (signal)	3
Insulation resistance	>10 ¹⁰ Ω
Limiting temperature	-40 ... +125 °C
Mating cycles	≥500
Mating cycles with other HMC components	≥3000
Transmission characteristics	Cat. 5, Class D up to 100 MHz
Material (insert)	Polycarbonate (PC)
Colour (insert)	RAL 7032 (pebble grey)
Material flammability class acc. to UL 94	V-0
RoHS	compliant

Derating


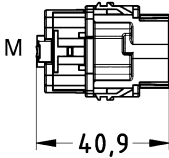
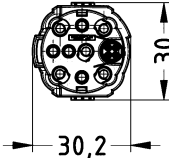
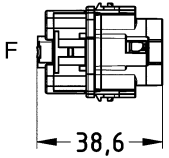
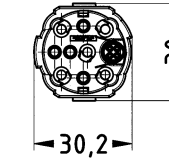
Current carrying capacity

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 2.5 mm²
 Current rating of the Han E[®] contacts

Identification	Conductor cross-section (mm ²)	Part number		Drawing (dimensions in mm)	
		Male	Female		
Han [®] F+B, Crimp termination  Please order crimp contacts separately. 4x Han E [®] 4x Han D [®] 4x M12 for data element incl. Ethernet element	0.14 ... 4	09 15 512 3002	09 15 512 3102	 M 40,9	 30,2 30
				 F 38,6	 30,2 30

Technical characteristics

Contact resistance	≤3 mΩ, ≤1 mΩ
Material (contacts)	Copper alloy
RoHS	compliant with exemption

Specifications and approvals


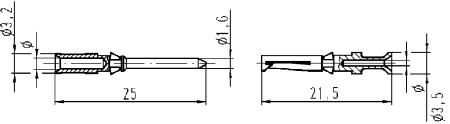

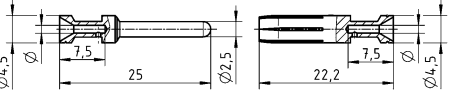
EN 60664-1
IEC 61984

Details


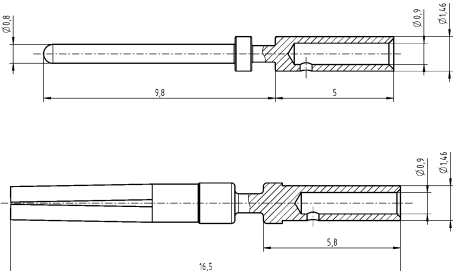
Crimping tools see chapter 90

Remarks on the crimp technique

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

Identification	Conductor cross-section (mm ²)	Part number		Drawing (dimensions in mm)																					
		Male	Female																						
Han D®, Crimp contact, Contact surface: Silver plated 	0.14 ... 0.37	09 15 000 6104	09 15 000 6204	 <table border="1"> <thead> <tr> <th>Wire gauge</th> <th>∅</th> <th>Stripping length</th> </tr> </thead> <tbody> <tr> <td>0.14-0.37 mm² AWG 26-22</td> <td>0.9 mm</td> <td>8 mm</td> </tr> <tr> <td>0.5 mm² AWG 20</td> <td>1.1 mm</td> <td>8 mm</td> </tr> <tr> <td>0.75 mm² AWG 18</td> <td>1.3 mm</td> <td>8 mm</td> </tr> <tr> <td>1 mm² AWG 18</td> <td>1.45 mm</td> <td>8 mm</td> </tr> <tr> <td>1.5 mm² AWG 16</td> <td>1.75 mm</td> <td>8 mm</td> </tr> <tr> <td>2.5 mm² AWG 14</td> <td>2.25 mm</td> <td>6 mm</td> </tr> </tbody> </table>	Wire gauge	∅	Stripping length	0.14-0.37 mm ² AWG 26-22	0.9 mm	8 mm	0.5 mm ² AWG 20	1.1 mm	8 mm	0.75 mm ² AWG 18	1.3 mm	8 mm	1 mm ² AWG 18	1.45 mm	8 mm	1.5 mm ² AWG 16	1.75 mm	8 mm	2.5 mm ² AWG 14	2.25 mm	6 mm
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2.5 mm ² AWG 14	2.25 mm	6 mm																							
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 E®, Crimp contact, Contact surface: Silver plated 	0.5	09 33 000 6121	09 33 000 6220	 <table border="1"> <thead> <tr> <th>Conductor cross-section</th> <th>Identification</th> </tr> </thead> <tbody> <tr> <td>0.14-0.37 mm²</td> <td>AWG 26-22 no groove</td> </tr> <tr> <td>0.5 mm²</td> <td>AWG 20 no groove</td> </tr> <tr> <td>0.75 mm²</td> <td>AWG 18 1 groove*</td> </tr> <tr> <td>1 mm²</td> <td>AWG 18 1 groove</td> </tr> <tr> <td>1.5 mm²</td> <td>AWG 16 2 grooves</td> </tr> <tr> <td>2.5 mm²</td> <td>AWG 14 3 grooves</td> </tr> <tr> <td>3 mm²</td> <td>AWG 12 wide groove</td> </tr> <tr> <td>4 mm²</td> <td>AWG 12 no groove</td> </tr> </tbody> </table> <p>* on the back crimp collar Stripping length 7.5 mm</p>	Conductor cross-section	Identification	0.14-0.37 mm ²	AWG 26-22 no groove	0.5 mm ²	AWG 20 no groove	0.75 mm ²	AWG 18 1 groove*	1 mm ²	AWG 18 1 groove	1.5 mm ²	AWG 16 2 grooves	2.5 mm ²	AWG 14 3 grooves	3 mm ²	AWG 12 wide groove	4 mm ²	AWG 12 no groove			
	Conductor cross-section	Identification																							
	0.14-0.37 mm ²	AWG 26-22 no groove																							
	0.5 mm ²	AWG 20 no groove																							
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	1 mm ²	AWG 18 1 groove																							
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2.5 mm ²	AWG 14 3 grooves																								
3 mm ²	AWG 12 wide groove																								
4 mm ²	AWG 12 no groove																								
0.75	09 33 000 6114	09 33 000 6214																							
1	09 33 000 6105	09 33 000 6205																							
1.5	09 33 000 6104	09 33 000 6204																							
2.5	09 33 000 6102	09 33 000 6202																							
3	09 33 000 6106	09 33 000 6206																							
4	09 33 000 6107	09 33 000 6207																							

Han
F+B

Identification	Conductor cross-section (mm ²)	Part number		Drawing (dimensions in mm)
		Male	Female	
Circular connectors M12, Crimp contact, Contact surface: Gold plated 	0.13 ... 0.33	21 01 100 9020	21 01 100 9025	

Han
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Connector for food+beverage industry
Screw locking

Han
F+B

Features

- "Easy-to-Clean" design
- Certified by Ecolab
- IP6K9K acc. to ISO 20653
- Inserts for Data / Signal / Power / Hybrid
- Han® 3 A inserts adaptable
- Protection Class II acc. to IEC 61140


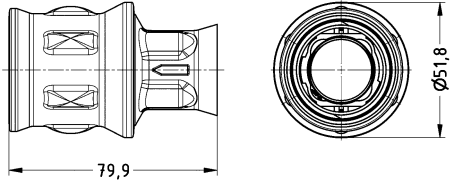

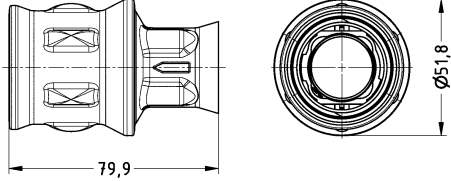
Technical characteristics

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/TPE, EPDM, Silicone
Colour (seal)	Blue
RoHS	compliant

Specifications and approvals


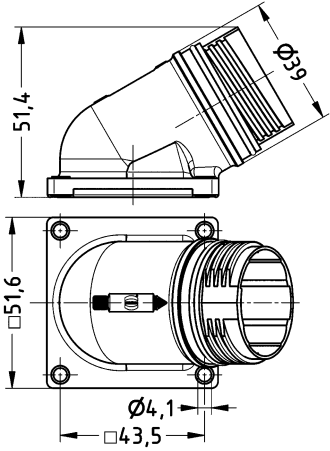

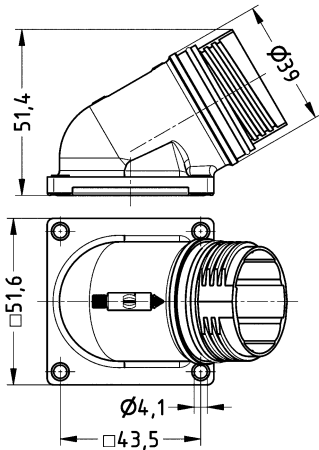

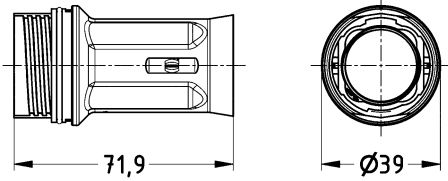

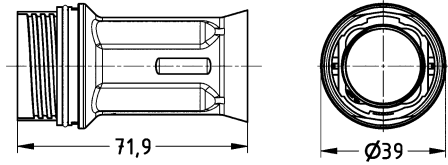
Ecolab Topactive 200
Ecolab Topactive 500
Ecolab Topax 66
Ecolab Topactive OKTO
Ecolab Topax 990
FDA 21 CFR 177.1520
FDA 21 CFR 177.2600




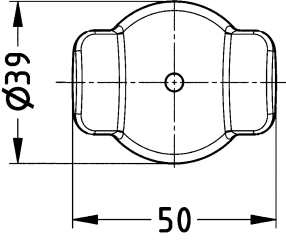

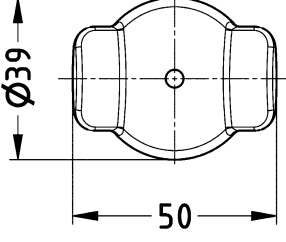

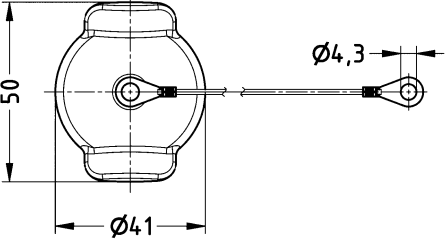

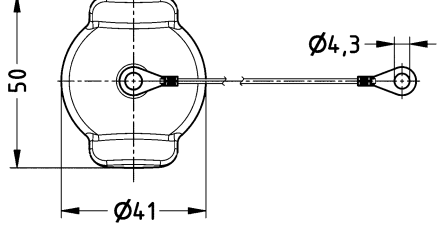
Identification	Cable entry	Part number	Drawing (dimensions in mm)	
Han® F+B, Hood, Top entry, Black 	1x M25	19 15 503 1403		
Han® F+B, Hood, Top entry, Blue 	1x M25	19 15 513 1403		

Han
F+B

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	
Han® F+B, Bulkhead mounted housing, Straight, With three through holes for fixing screws, Black		09 15 503 0301	
Han® F+B, Bulkhead mounted housing, Straight, With three through holes for fixing screws, Blue		09 15 513 0301	

Identification	Cable entry	Part number	Drawing (dimensions in mm)	
<p>Han® F+B, Bulkhead mounted housing, Angled, With three through holes for fixing screws, Black</p> 		09 15 503 0901		
<p>Han® F+B, Bulkhead mounted housing, Angled, With three through holes for fixing screws, Blue</p> 		09 15 513 0901		
<p>Han® F+B, Cable to cable housing, Top entry, Black</p> 	1x M25	19 15 503 1701		
<p>Han® F+B, Cable to cable housing, Top entry, Blue</p> 	1x M25	19 15 513 1701		

Han
F+B

Identification	Cable entry	Part number	Drawing (dimensions in mm)
<p>Han® F+B, Protection cover, for hoods, Black</p> 		09 15 503 5411	
<p>Han® F+B, Protection cover, for hoods, Blue</p> 		09 15 513 5411	
<p>Han® F+B, Protection cover, for bulkhead mounted housings, for cable to cable housing, With fixing cord</p> 		09 15 503 5401	
<p>Han® F+B, Protection cover, for bulkhead mounted housings, for cable to cable housing, With fixing cord, Blue</p> 		09 15 513 5401	


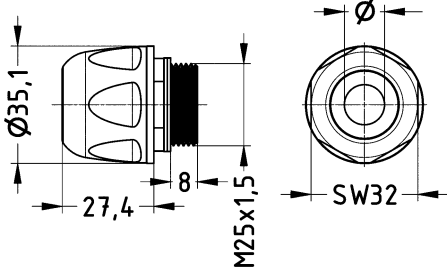

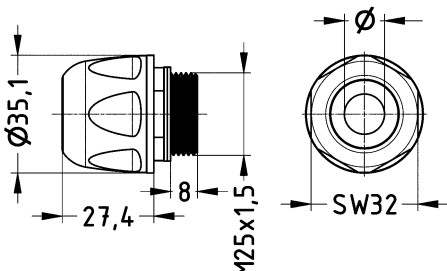

Han
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Technical characteristics

Limiting temperature	-40 ... +100 °C
Degree of protection acc. to IEC 60529	IP67 / IP69
Colour (seal)	Blue
Material (cable glands)	Polyamide (PA)
Material (accessories)	VA 1.4305
Colour (accessories)	Black, White
RoHS	compliant with exemption

Specifications and approvals

Ecolab Topactive 200
 Ecolab Topactive 500
 Ecolab Topax 66
 Ecolab Topactive OKTO
 Ecolab Topax 990
 FDA 21 CFR 177.1500
 FDA 21 CFR 176.170 (c)
 FDA 21 CFR 177.1390
 FDA 21 CFR 177.1395
 FDA 21 CFR 177.2600

Identification	Size	Clamping range (mm)	Part number	Drawing (dimensions in mm)
Han® F+B, Cable gland, Black, Pack contents: With spacing washer 	M25 M25 M25	11 ... 13 13 ... 16 16 ... 18	19 15 503 5196 19 15 503 5197 19 15 503 5199	
Han® F+B, Cable gland, White, Pack contents: With spacing washer 	M25 M25 M25	11 ... 13 13 ... 16 16 ... 18	19 15 523 5196 19 15 523 5197 19 15 523 5199	
Assembly tool, Han® F+B, Cable gland			09 99 000 0984	
Removal tool, Han® F+B, for circular inserts			09 99 000 0878	



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