

**HARTING** Han<sup>®</sup> 1A Versatile compact connector series

# 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.

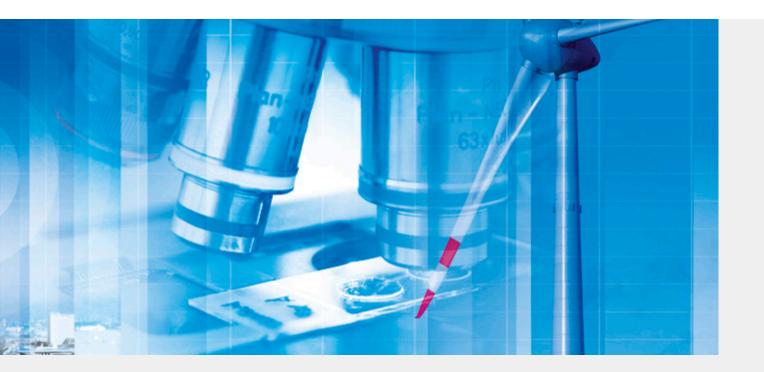
Salient examples of these sources of innovative knowledge include microstructure technologies, 3D design and connection technologies.

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.

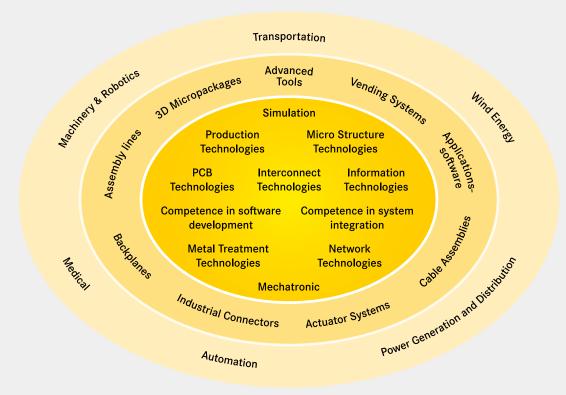
In order to ensure the future-proof design of RF and EMC-compatible interface solutions, the central HARTING laboratory (certified to EN 45001) employs simulation tools, as well as experimental, testing and diagnostics facilities all the way to scanning electron microscopes. In addition to product and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



# HARTING eCatalogue





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# Han® 1A



Han

1A

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# Han® 1A - Versatile compact connector series

Han 1A

# Markets and applications

#### • Transportation

- Can be used in: door systems and ramps, illumination, headlights, speakers, indicating lights, warning lights, screens, door opener, push buttons, buzzers, windscreen wiper systems,...

#### · Wind energy

- Can be used in: tower lightning, emergency stops, sensors, indicating sounds, ventilators,...

#### · Energy storage systems

 Can be used in: battery storage sytems, solar inverters, power plant control sytems and cabinets, power generator sets, sensors,...

#### Machinery & Robotics

 Can be used in: subunits of injection moulding machines like heater, fan, control terminals, industrial lightning, small drives, vibratory conveyors, connections inside cabinets,...

# Features and benefits

#### Versatile concept

 Build your own connectivity solution by using the modularity advantage of the Han® 1A with inserts covering data, signal and power transmission. Together with all accessory parts the Han® 1A is a very flexible system usable for a broad range of applications.

#### Time saving

 Due to the easy mate and click design of all single components the assembly of the connector is done within seconds - and there are no tools needed.

#### · Space saving

 The Han<sup>®</sup> 1A components are designed to fulfil the trend of miniaturisation - while beeing still a robust Han<sup>®</sup> connector also for harsh environments.

#### · IP protected where needed

 - By usage of hood and housing elements or single wire seals IP65 protection degree can be realized in easy manner.

# Flexible connector system The right connectivity solution for eyery application! Mounting frame Single locking lever Cable adapter Bulkhead mounted housing (straight/angled) Inserts Data / Signal / Power Crimp and screw termination

Number of contacts

4

4 A 1.5 kV 3 + shielding Cat. 5

# Technical characteristics

Number of contacts

further contacts + shielding
Rated current 4 A
Rated impulse voltage 1.5 kV
Pollution degree 3

Rated voltage 48 V AC, 60 V DC

Transmission characteristics Cat. 5, Class D up to 100 MHz

Data rate 10 Mbit/s, 100 Mbit/s

Insulation resistance  $>10^8 Ω$ Limiting temperature -30 ... +90 °CMating cycles ≥100Degree of protection acc. to IEC IP20

60529

Material (insert) Polyamide (PA)
Colour (insert) RAL 9005 (jet black)

Material (seal) NBR Colour (seal) Black Material flammability class acc. V-0

to UL 94

RoHS compliant with exemption

# Specifications and approvals

EN 45545-2 R22: HL1, HL2, HL3 EN 45545-2 R23: HL1, HL2, HL3 EN 45545-2 R24: HL1, HL2, HL3 IEC 61373 Category 1 Class B

EN 60664-1 IEC 61984 DNV GL

UL 1977 ECBT2.E235076

CSA-C22.2 No. 182.3 ECBT8.E235076

Please contact your local HARTING subsidiary for further information.

# **Details**

A Han® 1A configuration that only consists of inserts (with or without strain relief, 09 10 000 5300) is an unenclosed connector according to IEC 61984. In this case protection against electric shock must be provided by the installation methods of the user.

Contact inserts must not be coupled or decoupled under electrical load.

Contact inserts must not be powered-up in the un-mated condition.

Identification	Conductor cross-section (mm²)	Part n Male	umber Female	Drawing (dimensions in mm)
Han® 1A, Crimp termination, With cable tie, Snap-in latches, IP20	0.13 0.82	09 10 004 3001	09 10 004 3101	45,6 20,2 18,7 41,9 41,9
Please order crimp contacts separately. Order separately the hoods/ housings for an IP65 performance. Contact insert not compatible with 09 10 000 0800 (bulkhead mounted housing, angled)				F 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3



Conductor Part number Drawing (dimensions in mm) cross-section Identification Male Female (mm<sup>2</sup>) Han® 1A, 09 10 004 3006 09 10 004 3106 0.13 ... 0.82 Crimp termination, With cable tie, Single locking lever, IP20 М Please order crimp contacts separately. Please order locking lever sep-Order separately the hoods/ housings for an IP65 perfor-mance.
Contact insert not compatible with 09 10 000 0800 (bulkhead mounted housing, angled)



# Technical characteristics

Technical characteristics

Contact resistance

≤10 mΩ

Material (contacts)

RoHS

Copper alloy

compliant with exemption

		RoHS	compliant with exemption
cro	onductor oss-section nm²) N	Part number Male Female	Drawing (dimensions in mm)
Standard, 0.3	.25 0.52 09 67	000 5576 000 8576 000 3576 09 67 000 3476 09 67 000 3476	Conductor cross-section         Ø 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         5



Number of contacts

8

Han 1A

0.5 A 48 V 0.8 kV 3 + shielding Cat. 6<sub>A</sub>

# **Technical characteristics**

Number of contacts 8

further contacts + shielding
Rated current 0.5 A
Rated voltage 48 V
Rated impulse voltage 0.8 kV
Pollution degree 3

Transmission characteristics Cat. 6<sub>A</sub>, Class E<sub>A</sub> 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

Insulation resistance  $>10^8 \Omega$ Limiting temperature  $-30 \dots +90 \,^{\circ}$ C Mating cycles ≥100Degree of protection acc. to IEC IP20

60529

Material (insert) Polyamide (PA)
Colour (insert) RAL 9005 (jet black)

Material (seal) NBR
Colour (seal) Black
Material flammability class acc. V-0

to UL 94

RoHS compliant with exemption

# Specifications and approvals

EN 45545-2 R22: HL1, HL2, HL3 EN 45545-2 R23: HL1, HL2, HL3 EN 45545-2 R24: HL1, HL2, HL3 IEC 61373 Category 1 Class B

EN 60664-1 IEC 61984 DNV GL

UL 1977 ECBT2.E235076

CSA-C22.2 No. 182.3 ECBT8.E235076

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Contact inserts must not be coupled or decoupled under electrical load.

Contact inserts must not be powered-up in the un-mated condition.

Identification	Conductor cross-section (mm²)	Part n Male	umber Female	Drawing (dimensions in mm)
Han® 1A, Crimp termination, With cable tie, Snap-in latches, IP20	0.08 0.25	09 10 008 3001	09 10 008 3101	M (45,6)
Please order crimp contacts				F 🔀
separately. Order separately the hoods/ housings for an IP65 perfor- mance. Contact insert not compatible with 09 10 000 0800 (bulkhead mounted housing, angled)				
1				



Identification	Conductor cross-section (mm²)	Part n Male	umber Female	Drawing (dimensions in mm)
Han® 1A, Crimp termination, With cable tie, Single locking lever, IP20  Please order crimp contacts separately. Please order locking lever separately. Order separately the hoods/ housings for an IP65 performance. Contact insert not compatible with 09 10 000 0800 (bulkhead mounted housing, angled)	0.08 0.25	09 10 008 3006	09 10 008 3106	M 16,3 39,2 17,1 17,1 17,1 17,1 17,1 17,1 17,1 17



8

# Technical characteristics Technical characteristics RoHS compliant with exemption Material (contacts) Copper alloy Conductor Part number cross-section (mm²) Drawing (dimensions in mm) Identification Male Female 21 01 100 9014 21 01 100 9023 21 01 100 9019 21 01 100 9021 0.08 ... 0.22 0.13 ... 0.25 har-speed, Crimp contact, Contact surface: Au over Ni, Mating side Han

Number of contacts

6.5 A 50 V 0.8 kV 3

# Technical characteristics

Number of contacts Rated current 6.5 A Rated voltage 50 V Rated impulse voltage 0.8 kV Pollution degree

5 A @ AWG 20 Rated current acc. to UL

Rated voltage acc. to UL 30 V >10<sup>8</sup> Ω Insulation resistance -30 ... +90 °C Limiting temperature Mating cycles ≥100

Degree of protection acc. to IEC IP20

60529

Material (insert) Polyamide (PA) RAL 9005 (jet black) Colour (insert)

Material (seal) **NBR** Colour (seal) Black Material flammability class acc. V-0

to UL 94

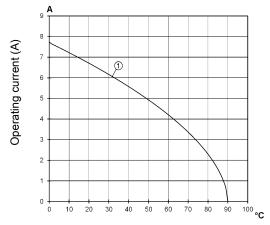
RoHS compliant

# **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



Ambient temperature (°C)

① Conductor cross-section 0.52 mm²

# Specifications and approvals

EN 45545-2 R22: HL1, HL2, HL3 EN 45545-2 R23: HL1, HL2, HL3 EN 45545-2 R24: HL1, HL2, HL3 IEC 61373 Category 1 Class B

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

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Contact inserts must not be coupled or decoupled under electri-

Contact inserts must not be powered-up in the un-mated condi-



	Identification	Conductor cross-section (mm²)	Part n Male	umber Female	Drawing (dimensions in mm)
Han 1A	Han® 1A, Crimp termination, Snap-in latches, IP20  Please order crimp contacts separately. Order separately the single wire seal or the hoods/housings for an IP65 performance.	0.09 0.52	09 10 012 3001	09 10 012 3101	M 38,6 20,2 18,7 18,7 37 18,7 19,7 19,7 19,7 19,7 19,7 19,7 19,7 19
	Han® 1A, Crimp termination, Single locking lever, IP20  Please order crimp contacts separately. Please order locking lever separately. Order separately the single wire seal or the hoods/housings for an IP65 performance.	0.09 0.52	09 10 012 3006	09 10 012 3106	M 38,6 17,1 4 5 5 5 16,3 17,1 4 5 5 5 7 16,3 17,1 17,1 17,1 17,1 17,1 17,1 17,1 17
	Single wire seal, Silicone, for 12 contacts		09 10 012 9900	09 10 012 9900	12 10 10 10 10 10 10 10 10 10 10 10 10 10
Han 22 10					



# Technical characteristics

Technical characteristics

Contact resistance

≤10 mΩ

Material (contacts) Copper alloy
RoHS compliant with exemption

				·	
Identification	Conductor cross-section (mm²)	Part n Male	umber Female	Drawing (dimensions in mm)	
D-Sub, Standard, Crimp contact, Contact surface: Noble metal over Ni	0.09 0.25 0.13 0.33 0.25 0.52 0.33 0.82	09 67 000 7576 09 67 000 5576 09 67 000 8576	09 67 000 7476 09 67 000 5476 09 67 000 8476 09 67 000 3476	Conductor 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 for stranded wire according IEC 60228 Class 5	Han 22 11
					11



Number of contacts

2+ 😩

10 A 230/400 V 4 kV 3

# Technical characteristics

Number of contacts 2
Rated current 10 A
Rated voltage conductor-earth 230 V
Rated voltage conductor-con-400 V

ductor

Rated impulse voltage 4 kV Pollution degree 3

Rated current acc. to UL 10 A @ AWG 16

Rated voltage acc. to UL 250 V Insulation resistance  $>10^8 \Omega$  Limiting temperature  $-30 \dots +90 \,^{\circ}\text{C}$  Mating cycles ≥100

Degree of protection acc. to IEC IP20 60529

Material (insert) Polyamide (PA)
Colour (insert) RAL 9005 (jet black)

Material (seal) NBR
Colour (seal) Black
Material (contacts) Copper alloy

Material flammability class acc.

to UL 94

RoHS compliant with exemption

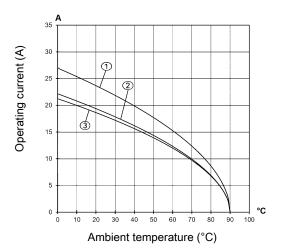
compliant

# **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 1.5 mm²
- 2 Conductor cross-section 1 mm<sup>2</sup>
- ③ Conductor cross-section 0.75 mm²

# Specifications and approvals

EN 45545-2 R22: HL1, HL2, HL3 EN 45545-2 R23: HL1, HL2, HL3 EN 45545-2 R24: HL1, HL2, HL3 IEC 61373 Category 1 Class B EN 60664-1 IEC 61984

DNV GL

UL 1977 ECBT2.E235076

CSA-C22.2 No. 182.3 ECBT8.E235076

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# **Details**

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Contact inserts must not be coupled or decoupled under electrical load.

# Details

Contact inserts must not be powered-up in the un-mated condition.

# Details

In accordance with the appropriate regulations a wire-end sleeve has to be used at clamps without wire protection (see "screw terminal", chapter Han 00).

Identification	Conductor cross-section (mm²)	Part n	umber Female	Drawing (dimensions in mm)
Han® 1A, Screw termination, Snap-in latches, IP20 Contact surface: Silver plated  Order separately the single wire seal or the hoods/housings for an IP65 performance.	0.75 1.5	09 10 002 2601	09 10 002 2701	39,1 20,2 20,2 F 52
Han® 1A, Screw termination, Single locking lever, IP20 Contact surface: Silver plated  Please order locking lever separately. Order separately the single wire seal or the hoods/housings for an IP65 performance.	0.75 1.5	09 10 002 2606	09 10 002 2706	39,1 17,1 16,3 16,3 15,2 16,3 16,3 17,1
Single wire seal, Silicone, for 4 contacts		09 10 004 9900	09 10 004 9900	15,6



Number of contacts

16 A 400 V 6 kV 3

# Technical characteristics

Number of contacts Rated current 16 A Rated voltage 400 V Rated impulse voltage 6 kV Pollution degree

Rated current acc. to UL 15 A @ AWG 12

Rated voltage acc. to UL 600 V >10<sup>8</sup> Ω Insulation resistance -30 ... +90 °C Limiting temperature Mating cycles ≥100

Degree of protection acc. to IEC IP20

60529

Material (insert) Polyamide (PA) RAL 9005 (jet black) Colour (insert)

Material (seal) Colour (seal) Black Material flammability class acc. V-0

to UL 94

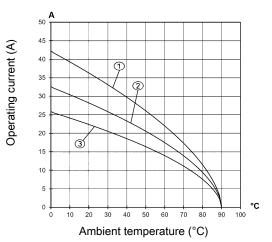
RoHS compliant

# **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



- Conductor cross-section 4 mm<sup>2</sup>
  - Conductor cross-section 2.5 mm<sup>2</sup>
- Conductor cross-section 1.5 mm<sup>2</sup>

# Specifications and approvals

EN 45545-2 R22: HL1, HL2, HL3 EN 45545-2 R23: HL1, HL2, HL3 EN 45545-2 R24: HL1, HL2, HL3 IEC 61373 Category 1 Class B

EN 60664-1 IEC 61984 DNV GL

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Contact inserts must not be coupled or decoupled under electri-

Contact inserts must not be powered-up in the un-mated condition.



	•			
Identification	Conductor cross-section (mm²)	Part no Male	umber Female	Drawing (dimensions in mm)
Han® 1A, Crimp termination, Snap-in latches, IP20  Please order crimp contacts separately. Order separately the single wire seal or the hoods/housings for an IP65 performance.	0.14 4	09 10 003 3201	09 10 003 3301	M 38,6 20,2 18,7 39,5 18,7 20,2 18,7
Han® 1A, Crimp termination, Single locking lever, IP20  Please order crimp contacts separately. Please order locking lever separately. Order separately the single wire seal or the hoods/housings for an IP65 performance.	0.14 4	09 10 003 3206	09 10 003 3306	38,6 17,1 1 17,1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Single wire seal, Silicone, for 4 contacts		09 10 004 9901	09 10 004 9901	15,4 — 4,71

# Technical characteristics

Contact resistance  $≤1 \text{ m}\Omega$ Mating cycles ≥500Material (contacts) Copper alloy

RoHS compliant with exemption

# Specifications and approvals

EN 60664-1 IEC 61984

# **Details**

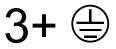
Crimping tools see chapter Han 90

# 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 n Male	umber Female	Drawing (dimensions in mm)
Han E <sup>®</sup> , Crimp contact, Contact surface: Silver plated	0.14 0.37 0.5 0.75 1 1.5 2.5 3	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 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  0.14-0.37 mm² AWG 26-22 no groove  0.5 mm² AWG 18 1 groove*  1.5 mm² AWG 18 2 groove  1.5 mm² AWG 16 2 groove  2.5 mm² AWG 14 3 groove  3 mm² AWG 12 wide groove  4 mm² AWG 12 no groove  * on the back crimp collar  Stripping length 7.5 mm
Han E <sup>®</sup> , 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 6119		Conductor cross-section  0.14-0.37 mm² AWG 26-22 no groove  0.5 mm² AWG 18 1 groove*  1 mm² AWG 18 1 groove  1.5 mm² AWG 14 3 groove  2.5 mm² AWG 12 wide groove  4 mm² AWG 12 no groove  * on the back crimp collar  Stripping length 7.5 mm

Number of contacts



10 A 230/400 V 4 kV 3

# Technical characteristics

Number of contacts 3 10 A Rated current Rated voltage conductor-earth 230 V Rated voltage conductor-con-400 V

ductor

Rated impulse voltage 4 kV Pollution degree 3

Rated current acc. to UL 10 A @ AWG 16

Rated voltage acc. to UL 250 V >108 Ω Insulation resistance Limiting temperature -30 ... +90 °C Mating cycles ≥100

Degree of protection acc. to IEC IP20

60529

Material (insert) Polyamide (PA) Colour (insert) RAL 9005 (jet black)

Material (seal) **NBR** Colour (seal) Black Material (contacts) Copper alloy

Material flammability class acc.

to UL 94

RoHS compliant with exemption

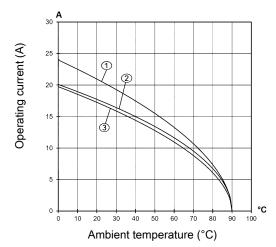
compliant

# **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



- Conductor cross-section 1.5 mm<sup>2</sup>
- Conductor cross-section 1 mm<sup>2</sup>
- Conductor cross-section 0.75 mm²

# Specifications and approvals

EN 45545-2 R22: HL1, HL2, HL3 EN 45545-2 R23: HL1, HL2, HL3 EN 45545-2 R24: HL1, HL2, HL3 IEC 61373 Category 1 Class B EN 60664-1

IEC 61984 **DNV GL** 

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Please contact your local HARTING subsidiary for further information.

# **Details**

A Han® 1A configuration that only consists of inserts (with or without strain relief, 09 10 000 5300) is an unenclosed connector according to IEC 61984. In this case protection against electric shock must be provided by the installation methods of the user.

Contact inserts must not be coupled or decoupled under electrical load.



# Details

Han

1A

Contact inserts must not be powered-up in the un-mated condition.

# Details

In accordance with the appropriate regulations a wire-end sleeve has to be used at clamps without wire protection (see "screw terminal", chapter Han 00).

	Conductor			
Identification	cross-section (mm²)	Part n Male	umber Female	Drawing (dimensions in mm)
Han® 1A, Screw termination, Snap-in latches, IP20 Contact surface: Silver plated  Order separately the single wire seal or the hoods/housings for an IP65 performance.	0.75 1.5	09 10 003 2601	09 10 003 2701	39,1 20,2 18,7 18,7 37 F SS
Han® 1A, Screw termination, Single locking lever, IP20 Contact surface: Silver plated  Please order locking lever separately. Order separately the single wire seal or the hoods/housings for an IP65 performance.  Single wire seal, Silicone, for 4 contacts	0.75 1.5	09 10 003 2606		M 2 39,1 17,1 17,1 1 17
for 4 contacts				16,9

Number of contacts

3+ (1) A 400 V 6 kV 3 + shielding

# Technical characteristics

Number of contacts

further contacts + shielding
Rated current 10 A
Rated voltage 400 V
Rated impulse voltage 6 kV
Pollution degree 3

Rated current acc. to UL 15 A @ AWG 14

Rated voltage acc. to UL 600 V Insulation resistance  $>10^8 \Omega$  Limiting temperature  $-30 \dots +90 \text{ °C}$  Mating cycles  $\geq 100$  Degree of protection acc. to IEC IP20

60529

Material (insert) Polyamide (PA)
Colour (insert) RAL 9005 (jet black)

Material (seal) NBR Colour (seal) Black Material flammability class acc. V-0

to UL 94

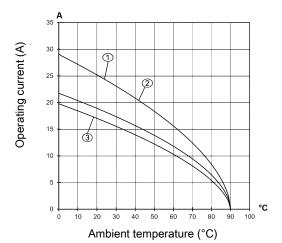
RoHS compliant

# **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
- ② Conductor cross-section 1.5 mm²
- 3 Conductor cross-section 1 mm²

# Specifications and approvals

EN 45545-2 R22: HL1, HL2, HL3 EN 45545-2 R23: HL1, HL2, HL3 EN 45545-2 R24: HL1, HL2, HL3 IEC 61373 Category 1 Class B

EN 60664-1 IEC 61984 DNV GL

UL 1977 ECBT2.E235076

CSA-C22.2 No. 182.3 ECBT8.E235076

Please contact your local HARTING subsidiary for further information.

# **Details**

A Han® 1A configuration that only consists of inserts (with or without strain relief, 09 10 000 5300) is an unenclosed connector according to IEC 61984. In this case protection against electric shock must be provided by the installation methods of the user.

The Han® 1A insert has no conductive connection between PE-contact and shielding element. Protection against electric shock must be provided by connecting the cable shielding to a protective earth (PE).

Contact inserts must not be coupled or decoupled under electrical load

Contact inserts must not be powered-up in the un-mated condition.



	Identification	Conductor cross-section (mm²)	Part n	umber Female	Drawing (dimensions in mm)
Han 1A	Han® 1A, Crimp termination, With cable tie, Snap-in latches, IP20 Pack contents: Shielding element is included within the delivery  Please order crimp contacts separately. Order separately the hoods/ housings for an IP65 performance.	0.14 2.5	09 10 003 3001	09 10 003 3101	M 39,6 20,2 18,7 39,1 19,7 19,7 19,7 19,7 19,7 19,7 19,7 1
Han 22 20	Han® 1A, Crimp termination, With cable tie, Single locking lever, IP20 Pack contents: Shielding element is included within the delivery  Please order crimp contacts separately. Please order locking lever separately. Order separately the hoods/ housings for an IP65 performance.	0.14 2.5	09 10 003 3006	09 10 003 3106	M

# Technical characteristics

 $\begin{array}{ll} \mbox{Contact resistance} & \leq 3 \ \mbox{m} \Omega \\ \mbox{Mating cycles} & \geq 500 \\ \mbox{Material (contacts)} & \mbox{Copper alloy} \\ \end{array}$ 

RoHS compliant with exemption

# Specifications and approvals

EN 60664-1 IEC 61984

# Details

Crimping tools see chapter Han 90

# Remarks on the crimp technique

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

			ı	
Identification	Conductor cross-section (mm²)	Part n Male	umber Female	Drawing (dimensions in mm)
Han D <sup>®</sup> , Crimp contact, Contact surface: Silver plated	0.14 0.37 0.5 0.75 1 1.5 2.5	09 15 000 6102 09 15 000 6101	09 15 000 6205 09 15 000 6202	25 21.5
				Conductor cross-section         Ø 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	25 21.5
				Conductor cross-section         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



Number of contacts

10 A 400 V 6 kV 3

# Technical characteristics

Number of contacts Rated current 10 A 400 V Rated voltage Rated impulse voltage 6 kV Pollution degree

Rated current acc. to UL 15 A @ AWG 14

Rated voltage acc. to UL 600 V >10<sup>8</sup> Ω Insulation resistance -30 ... +90 °C Limiting temperature Mating cycles ≥100

Degree of protection acc. to IEC IP20 60529

Material (insert) Polyamide (PA) RAL 9005 (jet black) Colour (insert)

Material (seal) Colour (seal) Black Material flammability class acc. V-0

to UL 94

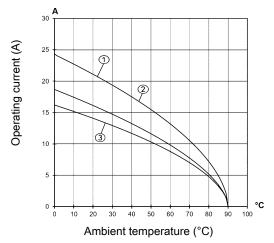
RoHS compliant

# **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



- Conductor cross-section 2.5 mm<sup>2</sup>
- Conductor cross-section 1.5 mm<sup>2</sup>
- 3 Conductor cross-section 1 mm²

# Specifications and approvals

EN 45545-2 R22: HL1, HL2, HL3 EN 45545-2 R23: HL1, HL2, HL3 EN 45545-2 R24: HL1, HL2, HL3 IEC 61373 Category 1 Class B

EN 60664-1 IEC 61984 DNV GL

UL 1977 ECBT2.E235076

CSA-C22.2 No. 182.3 ECBT8.E235076

Please contact your local HARTING subsidiary for further information.

# **Details**

A Han® 1A configuration that only consists of inserts (with or without strain relief, 09 10 000 5300) is an unenclosed connector according to IEC 61984. In this case protection against electric shock must be provided by the installation methods of the user.

Contact inserts must not be coupled or decoupled under electri-

Contact inserts must not be powered-up in the un-mated condition.



Identification	Conductor cross-section (mm²)	Part n Male	umber Female	Drawing (dimensions in mm)
Han® 1A, Crimp termination, Snap-in latches, IP20  Please order crimp contacts separately. Order separately the single wire seal or the hoods/housings for an IP65 performance.	0.14 2.5	09 10 005 3001	09 10 005 3101	39,6 20,2 18,7 38,8 F \$\frac{1}{5}\frac{1}{5
Han® 1A, Crimp termination, Single locking lever, IP20  Please order crimp contacts separately. Please order locking lever separately. Order separately the single wire seal or the hoods/housings for an IP65 performance.	0.14 2.5	09 10 005 3006	09 10 005 3106	M 200 17,1 1 16,3 18,8 18 19 19 19 19 19 19 19 19 19 19 19 19 19
Single wire seal, Silicone, for 6 contacts		09 10 006 9900	09 10 006 9900	15,4

# Technical characteristics

Contact resistance  $≤3 \text{ m}\Omega$ Mating cycles ≥500Material (contacts) Copper alloy

RoHS compliant with exemption

# Specifications and approvals

EN 60664-1 IEC 61984

# **Details**

Crimping tools see chapter Han 90

# 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 n Male	umber 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 6101	09 15 000 6203 09 15 000 6205 09 15 000 6202	25 21.5
				Conductor cross-section         Ø 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 6223 09 15 000 6225 09 15 000 6222 09 15 000 6221	25 21.5
				Conductor cross-section         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



# **Features**

- · IP65 in locked condition
- · Suitable for snap-in latch and lever

# Technical characteristics

-30 ... +90 °C Limiting temperature

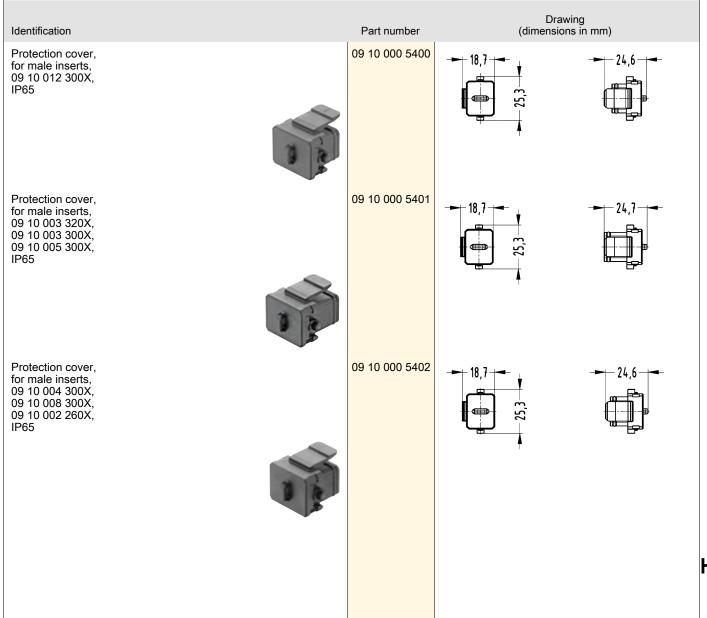
Degree of protection acc. to IEC IP65 60529

Material (cover) Polyamide (PA) Colour (accessories) RAL 9005 (jet black)

Material flammability class acc. V-0

to UL 94

RoHS compliant





	Identification	Part number	Drav (dimension	ving ns in mm)
Han 1A	Protection cover, for female inserts, 09 10 012 310X, IP65	09 10 000 5500	20,1	22,4
	Protection cover, for female inserts, 09 10 003 330X, 09 10 003 310X, 09 10 005 310X, IP65	09 10 000 5501	20,1	22,4
	Protection cover, for female inserts, 09 10 004 310X, 09 10 008 310X, 09 10 008 270X, 09 10 003 270X, 09 10 003 270X, IP65	09 10 000 5502	20,1	22,4
	Nylon cord, With cable eye and crimp sleeve, for Han® 1A Protection covers	09 10 000 9959		
Han 22 26				





# **Features**

- · Toolless assembly of Han® contact inserts
- · Practical and easy handling
- · Compact design saves space
- · Optional with and without strain relief
- · Suitable for standard rail TS 35

# Technical characteristics

-30 ... +90 °C Limiting temperature

Number of relockings <10 Degree of protection acc. to IEC IP65

Material (hood/housing) Polyamide (PA) Colour (hood/housing) RAL 9005 (jet black)

Material (seal) Colour (seal) Yellow

Polyamide (PA) Material (accessories)

Colour (accessories) Black Material flammability class acc. V-0

to UL 94

RoHS compliant

# Specifications and approvals

EN 45545-2 R22: HL1, HL2, HL3 EN 45545-2 R23: HL1, HL2, HL3 EN 45545-2 R24: HL1, HL2, HL3 IEC 61373 Category 1 Class B DNV GL UL 1977 ECBT2.E235076

CSA-C22.2 No. 182.3 ECBT8.E235076 Please contact your local HARTING subsidiary for further information.

 $\epsilon$ 

# **Details**

A Han® 1A configuration that only consists of inserts (with or without adapter 09 10 000 9911 / 09 10 000 9912) is an unenclosed connector according to IEC 61984. In this case protection against electric shock must be provided by the installation methods of the user.

Identification	Cable entry	Cable diameter (mm)	Part number	Dr <i>a</i> (dimensio	wing ons in mm)
Han® 1A, Cable adapter, Top entry, IP65	1x Integrated	5.7 10, 6.3 10 According to CSA-ap- proval	09 10 000 0400	20,3 Ø20 SW18	16,3

Han

1A



Cable diameter (mm) Drawing (dimensions in mm) Identification Cable entry Part number Han® 1A, Bulkhead mounted housing, 09 10 000 0300 25,8 Straight, IP65 Ø3,2±0,1-21,4±0,2-Panel cut out Han® 1A, Bulkhead mounted housing, Angled, IP65 09 10 000 0800 25,8 23,3 38,3-21,4±0,2-Panel cut out Han® 1A, Adapter, for mounting on top hat rails, 09 10 000 9911 With strain relief 92,3 56,3 Han 28



Identification	Cable entry	Cable diameter (mm)	Part number	Drawing (dimensions in mm)
Han® 1A, Adapter, for mounting on top hat rails			09 10 000 9912	E 95
Han® 1A, Mounting frames, for wall mounting			09 10 000 9908	-26,65 -26,5 -26,5 -26,5 -31 -30,4 -30,4
Han® 1A, Strain relief, IP20 Pack contents: Cable tie is included within the delivery			09 10 000 5300	20,3
A Han® 1A configuration that only consists of inserts (with or without strain relief, 09 10 000 5300) is an unenclosed connector. In this case protection against electric shock must be provided by the installation methods of the user. Only for use with single wires according to CSA approval.				

Han 22 29

# Accessories



Han 1A

# Technical characteristics

Number of relockings

≥100

Material (accessories) RoHS

Stainless steel compliant

# Specifications and approvals

UL 1977 ECBT2.E235076

CSA-C22.2 No. 182.3 ECBT8.E235076
Please contact your local HARTING subsidiary for further information.

#### Identification

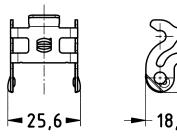
Han® 1A, Locking levers, for Han® 1A inserts with single locking lever



#### Part number

09 10 000 5200

# Drawing (dimensions in mm)



# Technical characteristics

Polycarbonate (PC) Polyamide (PA) Black Material (accessories)

Colour (accessories)

Red Blue Green Yellow Violet

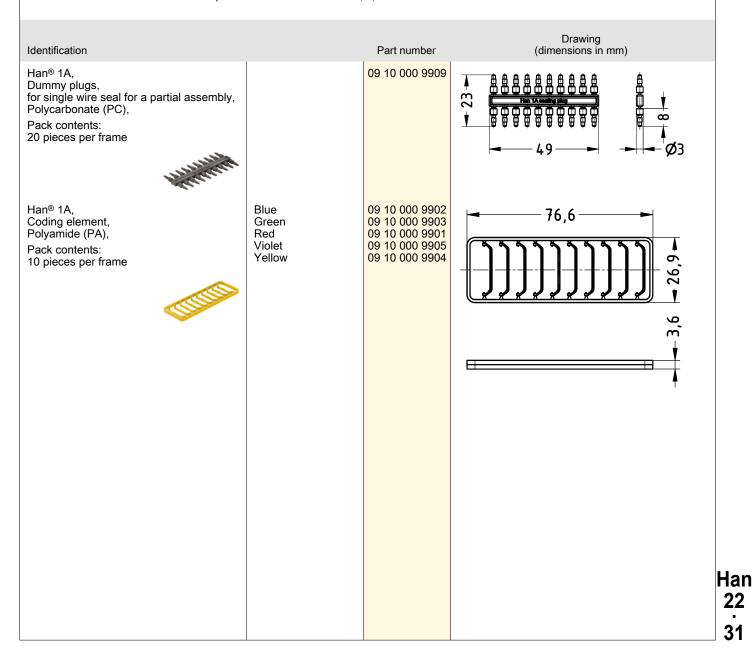
RoHS compliant

# Specifications and approvals

UL 1977 ECBT2.E235076

CSA-C22.2 No. 182.3 ECBT8.E235076

Please contact your local HARTING subsidiary for further information.



Identification	Conductor cross-section (mm²)	Part number	
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	
Locator, for single D-Sub standard contacts		09 99 000 0531	4311 1 4311 1
Locator, for <i>har</i> -speed M12 male contacts		09 99 000 0525	4111
Locator, for <i>har</i> -speed M12 female contacts		09 99 000 0635	
1			

# Details

The high end tool with best performance.

for wire gauges from 0.14 und 0.25  $\rm mm^2$  please use the contacts 09 15 000 6107, 6207, 6127 or 6227.

# Details

Robust allrounder with very good performance.

The service tool for on-site maintenance.

	ı	ı	
Identification	Conductor cross-section (mm²)	Part number	
Crimping tool, Han D®: 0.14 2.5 mm² (in the range from 0.14 0.37 mm² only suitable for contacts 09 15 000 6107/6207 and 09 15 000 6127/6227), Han E®: 0.14 4 mm², Han- Yellock®: 0.14 4 mm², Han® C: 1.5 4 mm², Pack contents: incl. locator, Handling instruction		09 99 000 0888	
Crimping tool, Han D®: 0.14 1.5 mm² (in the range from 0.14 0.37 mm² only suitable for contacts 09 15 000 6104/6204 and 09 15 000 6124/6224), Han E®: 0.5 4 mm², Han- Yellock®: 0.5 4 mm², Han® C: 1.5 4 mm², Pack contents: Locator Han® C, Locator Han E®, Locator Han D®, Please order Han- Yellock® separately.	0.14 4	09 99 000 0110	
Service crimping tool, Han D®: 0.14 1.5 mm² (in the range from 0.14 0.37 mm² only suitable for contacts 09 15 000 6104/6204 and 09 15 000 6124/6224), Han E®: 0.5 2.5 mm², Han- Yellock®: 0.5 2.5 mm², Pack contents: incl. locator, Please order Han- Yellock® separately.	0.14 2.5	09 99 000 0021	

# Tools



Han 1A

Identification	Part number	
Insertion tool for crimp contacts, Small cross-section, Variable length of blade, Han D <sup>®</sup> , Han E <sup>®</sup> , Han- <i>Yellock</i> <sup>®</sup>	09 99 000 0847	
Removal tool, Han D®	09 99 000 0012	
Insertion / removal tools, for D-Sub crimp contact, Han® 1A Suitable for a max. cable diameter of 1.6 mm	09 99 000 0809	

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