

AS-Interface

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A00 General information about AS-Interface

AS-Interface (Actuator Sensor Interface) was originally a joint development by 11 manufacturers of binary actuators and sensors. Optimised for the lowest field level in the automation hierarchy, this bus system is an innovative network solution for decentralised automation technology.

AS-Interface complies with the following standards:

- EN 50 295
- IEC 62 026-2

AS-Interface was planned so that the connection technology is more straightforward than that used in conventional electrical installations. In addition, a greater degree of reliability was achieved for the transmission of signals when compared with traditional parallel wiring.

In comparison with parallel wiring, AS-Interface offers the following advantages:

- Speed
- Low-level concept
- Low costs
- Greater reliability
- Greater versatility
- Multi-vendor, openness, system neutrality as well as interoperability

A00.1 Data transmission

AS-Interface is the only fieldbus system that transmits data and energy via a conventional two-wire cable. This system modulates the information signal onto the supply voltage.

The data transmission rate is 167 Kbit/s including the pauses made by the master and slave. That corresponds to a net data transmission rate of 53.3 Kbit/s.

Address configuration for the fieldbus

Each slave has a unique address that can only be assigned once throughout the entire structure of the bus. This address is set either via the master or an addressing device. In the case of a new installation, each slave is connected and assigned an address individually. If a slave is exchanged during continuing operations, the master automatically assigns the new device the slave address of the device being replaced.

Each slave is clearly described by three pieces of information that are permanently stored in the device:

- Slave address
The slave address is unique within the network structure, and is assigned from the master.
- I/O configuration
Each slave has an input/output code that characterises the data bits as input data, output data or bi-directional data.
- ID code
Each slave has its own identification code that serves to differentiate between the slaves or types of slaves with the same I/O configuration.

The manufacturer defines and stores the I/O configuration and ID code of the slave on the integrated EEPROM. The combination of these two features clearly identifies standard sensors and actuators from different manufactures; thus securing the interchangeability of comparable slaves.

Communication

The slaves communicate with the master according to the polling procedure. The cycle time depends on the number of slaves connected:

Number of slaves	Bus cycle time (transmission of binary values)
6	1 ms
16	3 ms
31	5 ms
64	10 ms

The cycle time increases when transmitting analogue values.

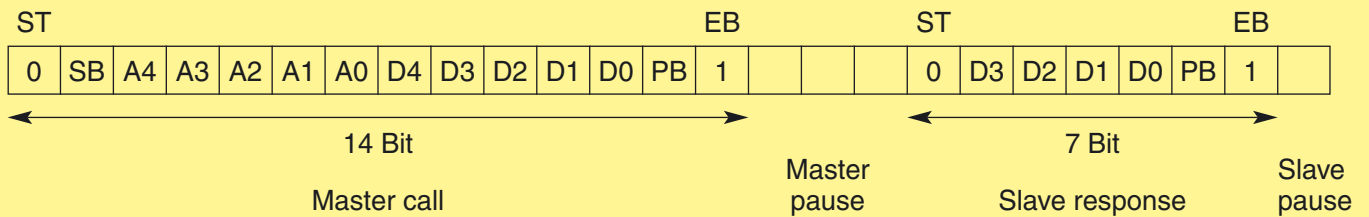
Data telegrams

An AS-Interface telegram is made up of the following elements:

- A master call
- A master pause (3 to 10 bit)
- A slave message (7 bit) and
- A slave pause (1 bit)

The start and stop bits are responsible for synchronisation.

The following figure depicts the structure of an AS-Interface telegram:



- ST = Start bit
- SB = Control bit
- A4 ... A0 = Address of the slaves
- D4 ... D0 = Data from the master to the slave and from the slave to the master
- PB = Parity bit
- EB = Stop bit

Slaves recognise the type of message by the input of certain bits.

Type of message	Meaning	Classification
Data	There are 4 bits (D0 to D3) reserved for data in the master call and the slave response respectively. The meaning of this data depends on the I/O configuration of the slave.	D4 = 0
Parameter	The functionality of the sensors is typically set by means of parameters.	D4 = 1
Addressing the slaves	During commissioning, the address call assigns a unique network address to the slave. In this case, the new slave address is contained in the data segment of the master call (D0 to D4).	SB = 0 and A0 to A4 = 0
Commands	Command calls query the configuration and the status of the slave. Commands include the following: <ul style="list-style-type: none"> • Reset • Delete address • Read I/O configuration • Read ID code • Read status • Read and delete status 	SB = 1

A00.2 Topology

The bus cable is routed and arranged to meet customer requirements. The position of the slaves alone determines the structure of the bus system. The following structures are available:

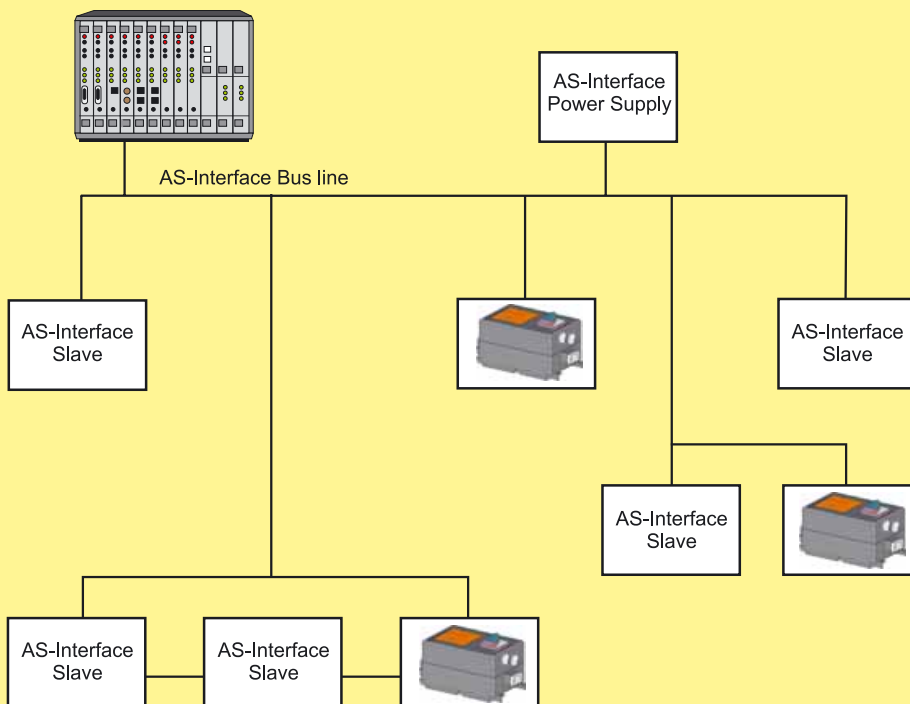
- Line
- Tree
- Star
- Ring

The bus stations can be connected and disconnected from the bus without stripping and without interrupting the communication on the bus.

It is possible to add a branch at any point in the structure. The structure corresponds to parallel wiring.

Conventional sensors / actuators are connected via coupling modules. Intelligent modules possessing an integrated AS-Interface chip can be connected directly to the bus.

Programmable Logic Controller with AS-Interface interface (AS-Interface Master)



Single-lined structure of an AS-Interface system

Maximum system extension

62 slaves can be connected to each line. A maximum of 124 pieces of binary I/O information can be processed.

- Up to 124 binary elements in unidirectional bus operations
- Up to 248 binary elements in bi-directional bus operations

If further slaves are required, an additional line must be added; this then functions as an independent AS-Interface network.

Maximum length of the bus

The final length of an AS-Interface line must not exceed 100 meters.



The total length can be extended to 300 meters by using a maximum of 2 repeaters.

A00.3 Types of cables

As a rule, two types of cable are used:

- Geometrically coded, unshielded ribbon cable (2 x 1.5 mm²)
- Power cables, harmonised to DIN/VDE 0281 (up to maximum 2 x 2.5 mm²)

The flat-ribbon cable has become established as a quasi standard ahead of the conventional round cable.

AS-Interface slaves are connected by snapping the connectors onto the flat ribbon cable, without the need to strip the insulation from the core wires.

AS-Interface, the Actuator Sensor Interface, with its distinctive yellow cable, is an innovative networking solution for decentralised automation.

As an economical alternative to the wiring harness, AS-Interface has become widely accepted after being tested in numerous different products and applications in all sectors of industry. In the field of mechanical engineering, its use is growing all the time.

For the communication between sensors, actuators and control systems, field bus systems have met with

broad acceptance while we often find conventional concepts of parallel wiring in the area of drives or other loads.

What could be more logical than to apply the well established field bus concept of intelligent communication to the power supply section of a plant?

Each load is assigned a power branch which constantly communicates with the other users via a bus interface. Power is supplied to the various branches via an “energy bus”.



Within the *PowerSwitch* product group there are numerous variants of intelligent field equipment available.

They are suitable to control and supervise three-phase or AC drives via an AS-Interface. The monitoring of loads and the power branch can either be effected via the field bus or actually on the equipment using visual display elements.

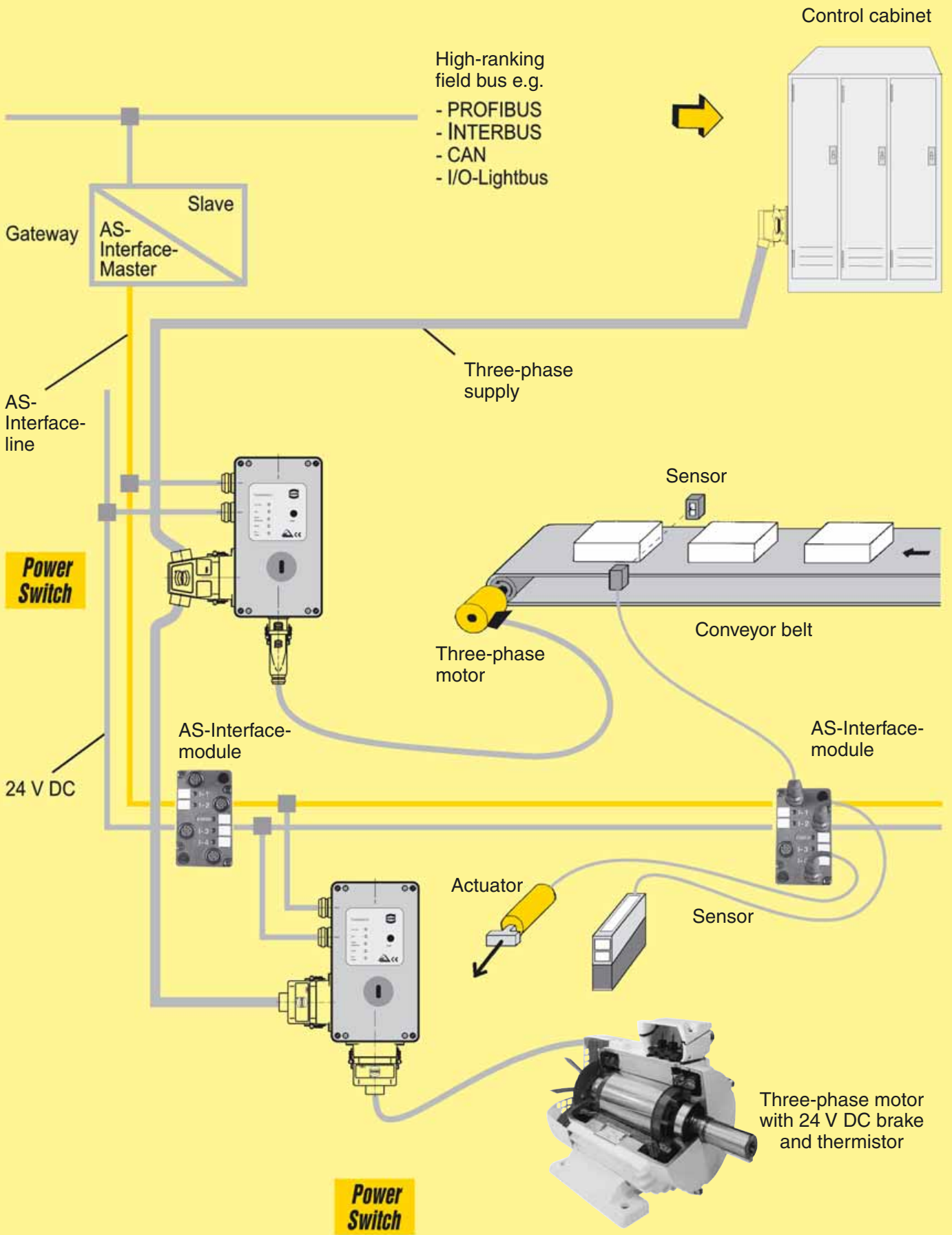
Very harsh local conditions often place high demands when it comes to reliably protecting the internal

components of the equipment. Moreover the considerable time savings on assembly and maintenance work must not be cancelled out by inefficient termination techniques.

PowerSwitch meets these requirements with a robust housing in conjunction with connectors which have been designed throughout as mating connectors.

Proven components from the Han® connector range provide an IP 65 degree of protection.

Typical example



A number of functional advantages result from the integration of *PowerSwitch*:

- decrease of the required space in control cabinets
- reduction of wiring time
- simplified planning, installation, service and systems maintenance
- system modularity simplifies plant expansion or conversion
- local or remote condition monitoring via the AS-Interface

PowerSwitch for AS-Interface

AS-Interface supervision

PowerSwitch (AS-Interface) is able to detect a breakdown in AS-Interface data transmission. If this occurs there is a shut-down in motor-power and an optional motor brake is immediately released.

Error analysis and reset of error message

Occuring errors get registered and analyzed by integrated electronics. The error message may be reset either by an associated switch on the control panel of the module or remotely via the system controller.

Diagnostics

LEDs provide operational status at both the system controller and the *PowerSwitch* module.

Motor protection

The use of a motor protection switch can prevent overload or shorting damage. In *PowerSwitch* modules with remote reset overload protection is obtained by motor protection relays. Protection against shorting has to be provided externally.

Thermal supervision

Additional thermistors or bi-metal switches ("Klixon") can be connected to the *PowerSwitch* (AS-Interface) modules to allow thermal supervision of the motor coils.

Motor brake

PowerSwitch (AS-Interface) facilitates the connection of drives equipped with an integrated brake (24 V DC / 400 V AC).

Sensor/actuator operation

In some applications additional sensors or actuators can be directly attached to *PowerSwitch* (AS-Interface) modules.

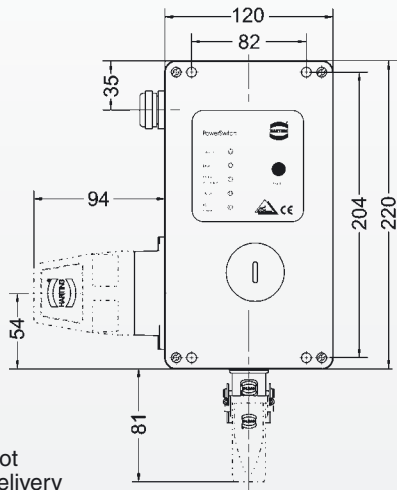
• Degree of protection	IP 65
• Power supply	400 V AC (other types on request)
• Maximum motor power	4 kW (other types on request)
• Motor brake Voltage Switching current	24 V DC / 400 V AC 2 A
• Signalling AS-Interface Power LED green Motor LED yellow Motor protection LED red Error LED red 24 V DC LED green	AS-Interface power is on Motor in operation Motor protection switch has been triggered General error External power supply (24 V DC) is on
• AS-Interface certification	yes

AS-Interface

	PS ... type A
• Temperature range Storage Operating	-20 ... +70 °C 0 ... +45 °C
• Switching device	Contacteur

PowerSwitch (AS-Interface) functions

Functions	PS ... type A (F)
Rotation direction (left/right) selectable via AS-Interface	yes
24 V DC motor brake control via AS-Interface	no
Current supervision motor protection switch (motor protection relay)	yes
Thermal motor protection (thermistor) applicable	no
Thermal motor protection (bi-metal switch "Klixon") applicable	no
Status feedback via AS-Interface • motor in operation • error • reset of the error message • external power supply (24 V DC) is on	yes yes yes yes
Status information at the device	yes



Mating cable connectors not included in delivery



Identification

PS I type A



The *PowerSwitch* PS I type A is suitable for connection, control and supervision of one single drive by an AS-Interface system.

To minimize the wiring time it is possible to provide the complete 24 V DC power supply directly from the AS-Interface line. So an external power supply for the PS I type A is not required.

AS-Interface

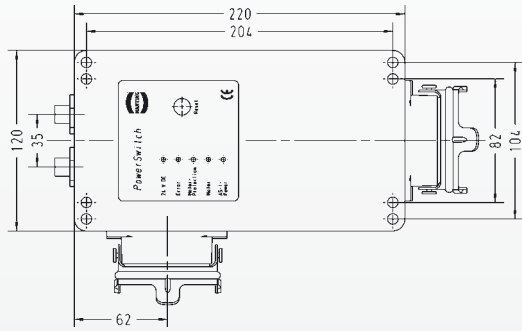
Functions	Type A (refer to page A20.04 "functions")
Housing	Die-cast aluminium housing (220 x 120 x 91) mm, RAL 7037
AS-Interface termination	Termination options available
24 V DC power supply	Directly from the AS-Interface line or external power supply Termination options available
Three-phase-supply	The suggested termination for wires with diameters up to 2.5 mm ² is the Han® 6 E-connector. It also allows the connection of T-junction power distributors (for applications refer to page A20.07).
Motor cable	Set "M1" (refer to page A20.07)

Three-phase termination	Motor termination	Rotation-direction	24 V DC power supply	AS-Interface termination	Part No.
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Modules with 24 V DC power supply from the AS-Interface line

Three-phase termination	Motor termination	Rotation-direction	24 V DC power supply	AS-Interface termination	Part No.
Han® 6 E	Han® Q 5/0	right	AS-Interface line	M12 circular	21 10 012 171 x
		right/left	AS-Interface line	M12 circular	21 10 012 172 x

x	1	2	3	4	5	6	7
Rated current protection switch	0.25 - 0.40 A	0.40 - 0.63 A	0.63 - 1.00 A	1.00 - 1.60 A	1.60 - 2.50 A	2.50 - 4.00 A	4.00 - 6.30 A



Mating cable connectors not included in delivery

Identification

PS I type A F



PowerSwitch modules PS I type A F use motor protection relays instead of protection switches. This makes the device ready for a remote reset function (in case of a released motor protection) via AS-Interface. Protection against shorting has to be provided externally.

There are *PowerSwitch* devices available for reversing drives or pole-switchable motors.

PowerSwitch Type A F provides a solid adaptor for rapid and convenient DIN-rail mounting (horizontal mounting position).

Functions	Type A F (refer to page A20.04 "functions")
Housing	Die-cast aluminium housing (220 x 120 x 91) mm, RAL 7037
AS-Interface termination	Termination options available
24 V DC power supply	External power supply has to be used with these modules Termination options available
Three-phase-supply	The suggested termination for wires up to 2.5 mm ² is the Han® 6 E-connector. They also allow the connection of T-junction power distributors (for applications refer to page A20.07).

Three-phase termination	Motor termination	Rotation-direction	24 V DC power supply	AS-Interface termination	Part No.
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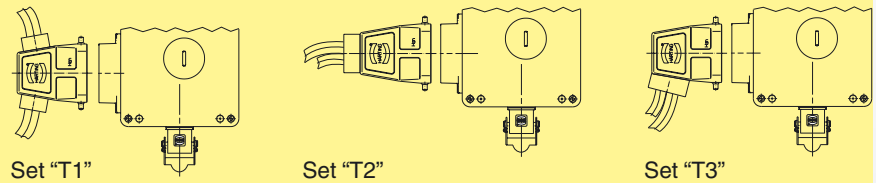
Modules for reversing drives

Han® 6 E	Han® 6 E	right/left	M12 circular	M12 circular	21 10 212 532 x
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x	1	2	3	4	5	6	7
Rated current protection relay	0.25 - 0.40 A	0.40 - 0.63 A	0.63 - 1.00 A	1.00 - 1.60 A	1.60 - 2.50 A	2.50 - 4.00 A	4.00 - 6.30 A

T-junction power distributors for wire diameters up to 2.5 mm²

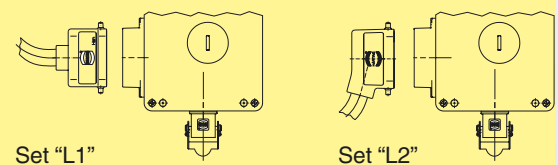
These T-junction power distributors allow internal through connection of the three phase power from the "power-bus". They maintain a permanent power supply even if a *PowerSwitch* module needs to be replaced.



Termination	Application	Description	Part No.
Set "T1"	Three phase power supply	Han® 6 B hood "high version", side entry (2 x Pg 21) Han® ESS contact insert female with cage clamp without cable locking	21 00 010 0001
Set "T2"	Three phase power supply	Han® 6 B hood "high version", top entry (1 x Pg 29) Han® ESS contact insert female with cage clamp Pg 29 cable locking and sealing system for two cables (2 x 11 mm)	21 00 010 0002
Set "T3"	Three phase power supply	Similar to Set "T2" except for side entry (1 x Pg 29)	21 00 010 0003

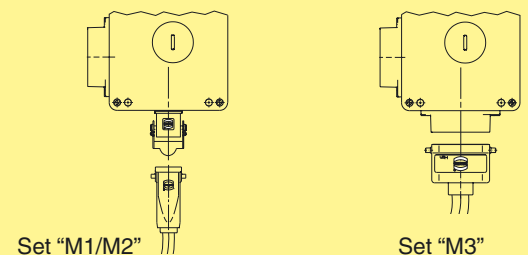
Three phase power terminations for wire diameters up to 2.5 mm²

These terminations are suitable to connect single *PowerSwitch* units or to terminate the power bus.



Termination	Application	Description	Part No.
Set "L1"	Three phase power supply	Han® 6 B hood "low version", top entry (1 x Pg 13.5) Han® ES contact insert female with cage clamp without cable locking	21 00 010 0004
Set "L2"	Three phase power supply	Similar to Set "L1" except for side entry (1 x Pg 13.5)	21 00 010 0005

Single ended cable assemblies for motor connection



Termination	Application	Description	Part No.
Set "M1"	Motor cable	Han® 3 A hood with top entry (Pg 11) Han® Q 5/0 contact insert male crimp Pg 11 cable locking and sealing system for cable diameters (5-8 mm) 3 m flexible PVC cable (4 x 1.5 mm ²)	21 00 020 0013
Set "M2"	Motor cable (motors with thermistor or brake)	Similar to Set "M1" except for cable (6 x 1.5 mm ²)	21 00 020 0023
Set "M3"	Motor cable (Motors with 24 V DC brake and thermistor)	Han® 6 B hood with top entry (Pg 13.5) Han® 10 EE contact insert male crimp Pg 13.5 cable locking and sealing system for cable diameters (7-10.5 mm) 3 m flexible PVC cable (8 x 1.5 mm ²)	21 00 020 0033

T-junction power distributors for wire diameter up to 2.5 mm²

Termination Set "T1" for Three phase power supply

Termination	Identification	Part No. set	Part No. components
Set "T1"		21 00 010 0001	
	Han® 6 B hood "high version", side entry (2 x Pg 21)		09 30 006 0545
	Han® ESS contacts insert female with cage clamp		09 33 006 2772

Termination Set "T2" for Three phase power supply

Termination	Identification	Part No. set	Part No. components
Set "T2"		21 00 010 0002	
	Han® 6 B hood "high version", top entry (1 x Pg 29)		09 30 006 0443
	Han® ESS contact insert female with cage clamp		09 33 006 2772
	Pg 29 cable locking and sealing system, metal, for two cables (2 x 11 mm)*		

* only available with the respective termination set

Termination Set "T3" for Three phase power supply

Termination	Identification	Part No. set	Part No. components
Set "T3"		21 00 010 0003	
	Han® 6 B hood "high version", side entry (1 x Pg 29)		09 30 006 0543
	Han® ESS contact insert female with cage clamp		09 33 006 2772
	Pg 29 cable locking and sealing system, metal, for two cables (2 x 11 mm)*		

* only available with the respective termination set

Three phase power terminations for wire diameter up to 2.5 mm²

Termination Set "L1" for Three phase power supply

Termination	Identification	Part No. set	Part No. components
Set "L1"		21 00 010 0004	
	Han® 6 B hood "low version", top entry (1 x Pg 13.5)		09 30 006 1440
	Han® ES contact insert female with cage clamp		09 33 006 2716

Termination Set "L2" for Three phase power supply

Termination	Identification	Part No. set	Part No. components
Set "L2"		21 00 010 0005	
	Han® 6 B hood "low version", side entry (1 x Pg 13.5)		09 30 006 1540
	Han® ES contact insert female with cage clamp		09 33 006 2716

Single ended cable assemblies for Motor connection

Termination Set "M1" for Motor cable

Termination	Identification	Part No. set	Part No. components
Set "M1"		21 00 020 0013	
	Han® 3 A hood with top entry (Pg 11)		09 20 003 1440
	Han® Q 5/0 contact insert male crimp		09 12 005 3001
	Crimp contacts for Han® Q 5/0 contact insert male		09 33 000 6104
	Pg 11 cable locking and sealing system, metal, for cable diameters 5 to 8 mm		09 00 000 5081
	3 m flexible PVC cable (4 x 1.5 mm ²)*		

* only available with the respective termination set

Termination Set "M2" for Motor cable (motors with thermistor or brake)

Termination	Identification	Part No. set	Part No. components
Set "M2"		21 00 020 0023	
	Han® 3 A hood with top entry (Pg 11)		09 20 003 1440
	Han® Q 5/0 contact insert male crimp		09 12 005 3001
	Crimp contacts for Han® Q 5/0 contact insert male		09 33 000 6104
	Pg 11 cable locking and sealing system, metal, for cable diameters 5 to 8 mm		09 00 000 5081
	3 m flexible PVC cable (6 x 1.5 mm ²)*		


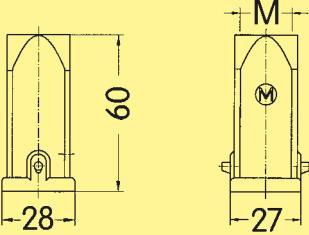
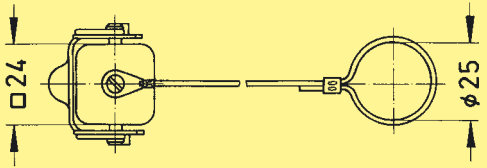
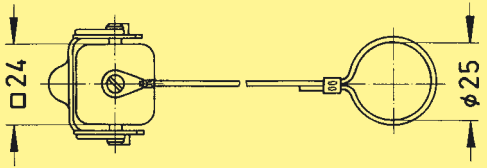
* only available with the respective termination set

Termination Set "M3" for Motor cable (motors with 24 V DC brake and thermistor)

Termination	Identification	Part No. set	Part No. components
Set "M3"		21 00 020 0033	
	Han® 6 B hood "low version", top entry (1 x Pg 13.5)		09 30 006 1440
	Han® 10 EE contact insert male crimp		09 32 010 3001
	Crimp contacts for Han® 10 EE contact insert male		09 33 000 6104
	Pg 13.5 cable locking and sealing system, metal, for cable diameters 7 to 10,5 mm*		
	3 m flexible PVC cable (8 x 1.5 mm ²)*		


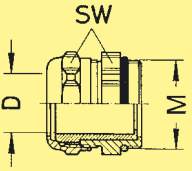
* only available with the respective termination set

Metal

Identification	Part No.	M	Drawing	Dimensions in mm
Hood top entry 	19 20 003 1440	20		
Protection cover for hoods 	09 20 003 5421			

AS-Interface

Cable entry protection for metric cable entries

Identification	Part No.	Drawing	Dimensions in mm												
Cable entry protection for metric cable entries(IP 68) Metal 	19 00 000 5080 19 00 000 5082 19 00 000 5084	<table border="1"> <thead> <tr> <th>Thread M</th> <th>Cable diameter D</th> <th>SW</th> </tr> </thead> <tbody> <tr> <td>M 20</td> <td>5 - 9 mm</td> <td>22</td> </tr> <tr> <td>M 20</td> <td>6 - 12 mm</td> <td>22</td> </tr> <tr> <td>M 20</td> <td>10 - 14 mm</td> <td>24</td> </tr> </tbody> </table>	Thread M	Cable diameter D	SW	M 20	5 - 9 mm	22	M 20	6 - 12 mm	22	M 20	10 - 14 mm	24	
Thread M	Cable diameter D	SW													
M 20	5 - 9 mm	22													
M 20	6 - 12 mm	22													
M 20	10 - 14 mm	24													

A
70
03

Stock items in bold type

Specifications

DIN VDE 0627
DIN VDE 0110
DIN EN 61 984

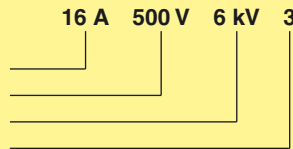
Approvals



Inserts

Number of contacts 10, 18, 32, 46, 64 (2 x 32),
92 (2 x 46) + PE

Electrical data
acc. to DIN EN 61 984



Rated current
Rated voltage
Rated impulse voltage
Pollution degree

- Pollution degree 2 also 16 A 830 V 8 kV 2

Rated voltage
acc. to UL/CSA 600 V

Insulation resistance $\geq 10^{10} \Omega$
Material Polycarbonate
Temperature range - 40 °C ... +125 °C
Flammability acc. to UL 94 V 0
Mechanical working life
- Mating cycles ≥ 500

Contacts

Material copper alloy
Surface
- hard-silver plated 3 μm Ag
- hard-gold plated 2 μm Au over 3 μm Ni
Contact resistance $\leq 1 \text{ m}\Omega$
Crimp terminal
- mm^2 0.5 - 4.0
- AWG 20 - 12
- Stripping length 7.5 mm

Hoods/Housings

Material die cast aluminium
Surface powder-coated
RAL 7037
Locking element Han-Easy Lock®
Hoods/Housings seal NBR
Temperature range - 40 °C ... +125 °C
Degree of protection
acc. to DIN EN 60 529
for coupled connector IP 65

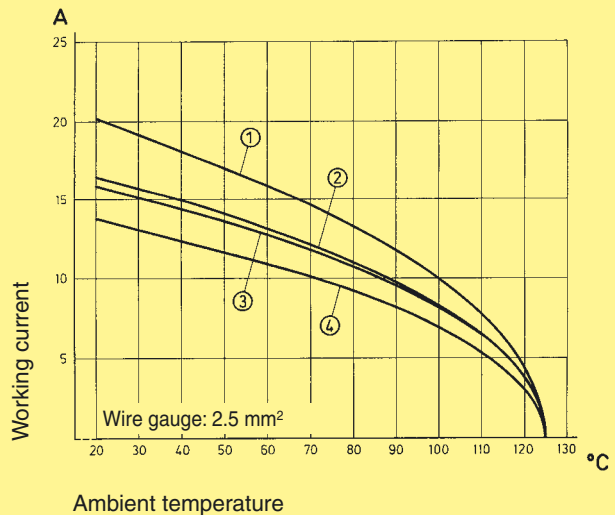
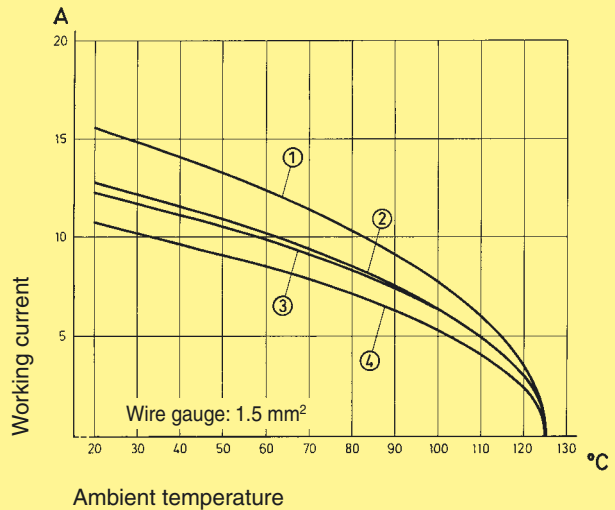
Accessories

Crimping tools
Cable clamps
Coding of Hoods/Housings
Label acc. to CSA-approval
Han-Snap®
Special insert fixing screws

Current carrying capacity

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

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



- ① Han® 10 EE
- ② Han® 18 EE
- ③ Han® 32 EE
- ④ Han® 46 EE

Specifications

DIN VDE 0627
DIN VDE 0110
DIN EN 61 984

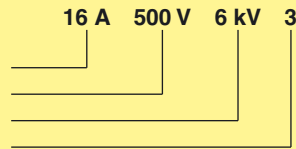
Approvals

UL, CE, SEV

Inserts

Number of contacts 6, 10, 16, 24, 32 (2 x 16), 48 (2 x 24) + PE

Electrical data acc. to DIN EN 61 984



Rated current
Rated voltage
Rated impulse voltage
Pollution degree

- Pollution degree 2 also 16 A 400/690 V 6 kV 2

Rated voltage acc. to UL/CSA 600 V

Insulation resistance $\geq 10^{10} \Omega$
Material Polycarbonate
Temperature range - 40 °C ... +125 °C
Flammability acc. to UL 94 V 0
Mechanical working life - Mating cycles ≥ 500

Contacts

Material copper alloy
Surface - hard-silver plated
Contact resistance $3 \mu\text{m Ag}$
 $\leq 3 \text{ m}\Omega$
Cage-clamp terminal
- mm² 0.14 - 2.5 mm²
- AWG 26 - 14
Stripping length 7 - 9 mm

Hoods/Housings

Material die cast aluminium
Surface powder-coated
RAL 7037
Locking element Han-Easy Lock®
Hoods/housings seal NBR
Temperature range - 40 °C ... +125 °C
Degree of protection acc. to DIN EN 60 529 for coupled connector IP 65

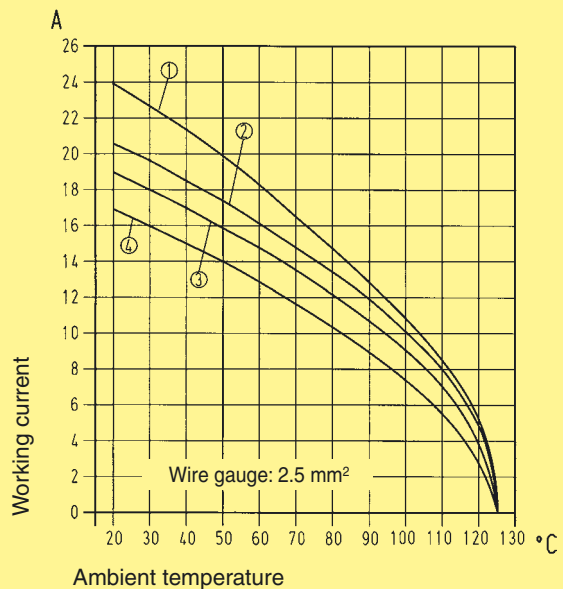
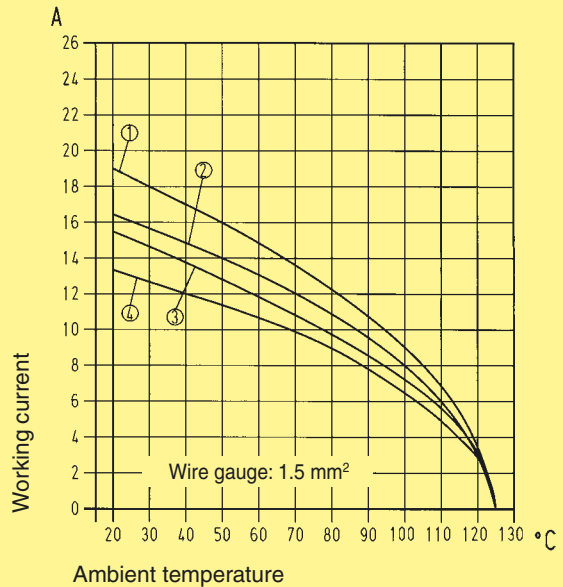
Accessories

Cable clamps
Coding of hoods/housings
Label acc. to CSA-approval
Han-Snap®
Special insert fixing screws

Current carrying capacity

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

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



- ① Han® 6 ES
- ② Han® 10 ES
- ③ Han® 16 ES
- ④ Han® 24 ES

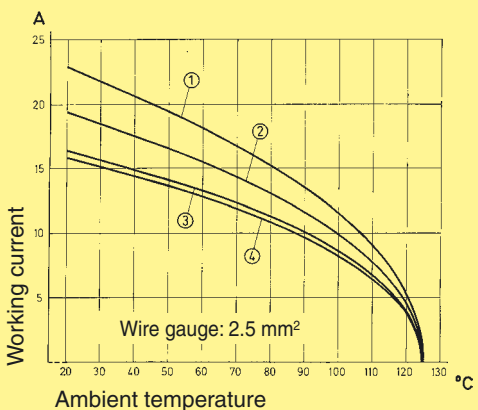
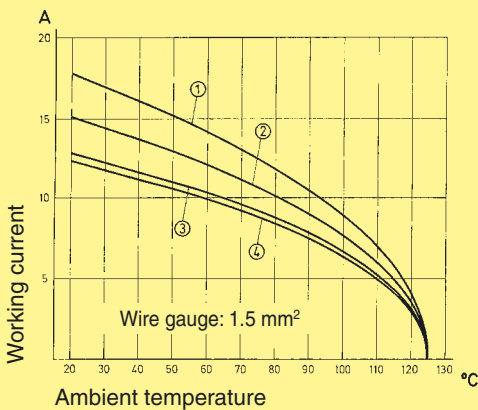
Features:

- 2 termination points per contact
- Termination: Cage-clamp
- Suitable for standard hoods/housings size B
- High construction hoods/housings are necessary
- No special tools necessary
- Bridges are made by using a simple screw driver
- Vibration resistant
- Ideal as motor connector as it offers the possibility to create star and delta bridges
- Testing is possible in the screwdriver aperture

Current carrying capacity

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

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



- ① Han[®] 6 ESS
- ② Han[®] 10 ESS
- ③ Han[®] 16 ESS
- ④ Han[®] 24 ESS

Specifications

DIN VDE 0627
DIN VDE 0110
DIN EN 61 984

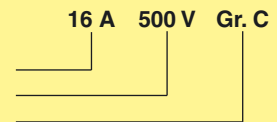
Approvals

SEV, us

Inserts

Number of contacts 6, 10, 16, 24, 32 (2 x 16),
48 (2 x 24) + PE

Electrical data
acc. to DIN VDE 0627



Rated current
Rated voltage
Insulation group

Rated voltage
acc. to UL/CSA 600 V

Test voltage U_{rms} 3 kV
Insulation resistance $\geq 10^{10} \Omega$
Material Polycarbonate
Temperature range - 40 °C ... +125 °C
Flammability acc. to UL 94 V 0
Mechanical working life
- Mating cycles ≥ 500

Contacts

Material copper alloy
Surface
- hard-silver plated 3 μ m Ag
Contact resistance $\leq 3 m\Omega$
Cage-clamp terminal
- mm² 0.14 - 2.5 mm²
- AWG 26 - 14
- Stripping length 9 - 11 mm

Hoods/Housings

Material die cast aluminium
Surface powder-coated
RAL 7037
Locking element Han-Easy Lock[®]
Hoods/Housings seal NBR
Temperature range - 40 °C ... +125 °C
Degree of protection acc. to DIN EN 60 529
for coupled connector IP 65

Accessories

Cable clamps
Coding of hoods/housings
Label acc. to CSA-approval
Han-Snap[®]
Special insert fixing screws

Number of contacts

6 +



Inserts

Identification

Series

Part No.

Drawing

Dimensions in mm

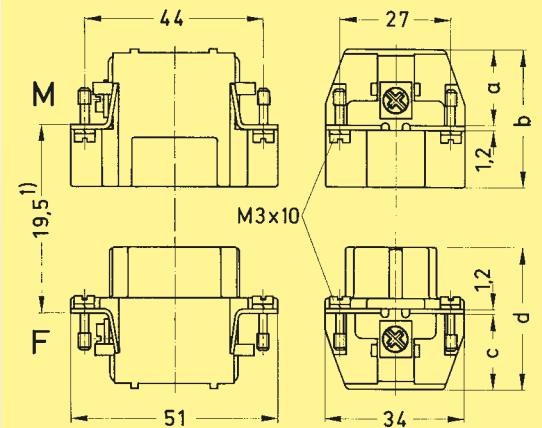
Cage-clamp terminal

two terminals
per contact



Han® ESS

09 33 006 2772



¹⁾ Distance for contact max. 21 mm

	a	b	c	d
Han® ES	19	34	19	36
Han ESS	34	49	32	49

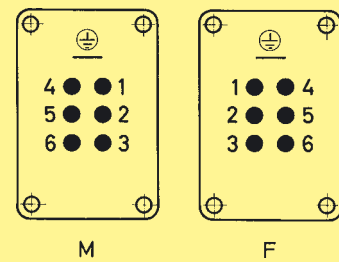
Cage-clamp terminal



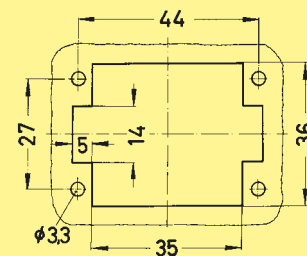
Han® ES

09 33 006 2716

Contact arrangement View from termination side



Panel cut out for inserts
for use without hoods/housings



AS-Interface

A
70
07

Stock items in bold type

Number of contacts

5 +



Inserts

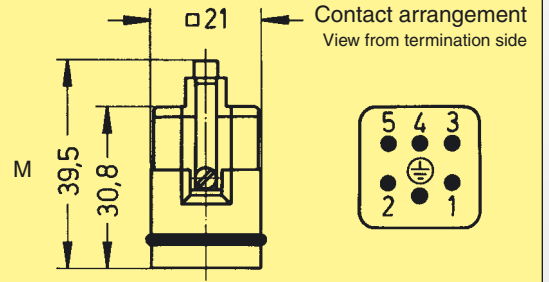
Identification Part No. Drawing Dimensions in mm

Crimp terminal

Order crimp contacts separately



09 12 005 3001



AS-Interface

Identification Wire gauge (mm²) Part No. Drawing Dimensions in mm

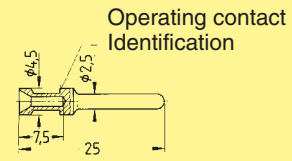
Crimp contacts

Power contacts

silver plated

1.5

09 33 000 6104



Crimp contact identification

Identification	Wire gauge		Stripping length
2 grooves	1.5 mm²	AWG 16	7.5 mm

Number of contacts

10 + 



Inserts

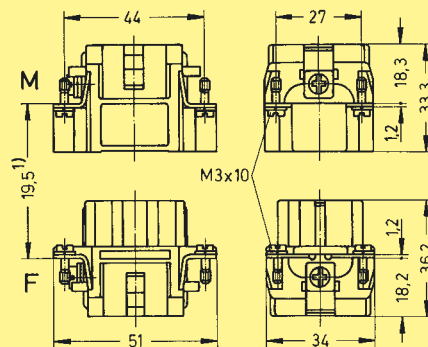
Identification Series Part No. Drawing Dimensions in mm

Crimp terminal
Order contacts separately



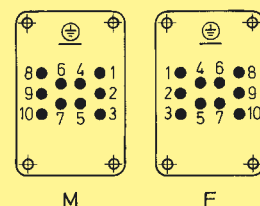
Han® EE

09 32 010 3001

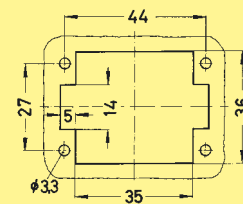


¹⁾ Distance for contact max. 21 mm

Contact arrangement View from termination side




Panel cut out for inserts for use without hoods/housings



Identification Wire gauge (mm²) Part No. Drawing Dimensions in mm

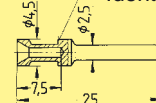
Crimp contacts
Power contacts

silver plated 

1.5

09 33 000 6104

Operating contact Identification



Crimp contact identification

Identification	Wire gauge	Stripping length
2 grooves	1.5 mm ² AWG 16	7.5 mm

Stock items in bold type

AS-Interface

A 70 09

Standard hoods with PG entries

Size 6 B



Metal, with 1 lever on the housing

AS-Interface

Identification	Part No.		Pg	Drawing	Dimensions in mm
	Low construction	High construction			
Hoods side entry		09 30 006 1540	13.5		
		09 30 006 0543	29		
Hoods top entry		09 30 006 1440	13.5		
		09 30 006 0443	29		

Standard hoods with PG entries

Size 3 A



Metal, with 1 lever on the housing

Identification	Part No.	Pg	Drawing	Dimensions in mm
Hood top entry		09 20 003 1440	11	

Cable glands for PG cable entries



A
70
10

Identification	Part No.	Pg	Drawing	Dimensions in mm													
Universal cable protection (IP 68) Metal		09 00 000 5081	11	<table border="1"> <thead> <tr> <th>Colour</th> <th>SW</th> <th colspan="2">Cable ϕ D</th> </tr> <tr> <th></th> <th></th> <th>min.</th> <th>max.</th> </tr> </thead> <tbody> <tr> <td>black</td> <td>20</td> <td>6.5</td> <td>9.5</td> </tr> </tbody> </table>	Colour	SW	Cable ϕ D				min.	max.	black	20	6.5	9.5	
				Colour	SW	Cable ϕ D											
		min.	max.														
black	20	6.5	9.5														

Stock items in bold type

Identification	Part No.	Drawing	Dimensions in mm
HARTING crimping tool	09 99 000 0110	Wire gauge 0.5 - 2.5 mm ²	
Locator	09 99 000 0112	 order separately	
HARTING Service crimping tool with locator	09 99 000 0021	Wire gauge 0.5 - 2.5 mm ²	
BUCHANAN crimping tool	09 99 000 0001	Wire gauge 0.5 - 4 mm ²	
Locator	09 99 000 0310	 order separately	
Crimping tool depth adjustment gauge	09 99 000 0203 09 99 000 0125 09 99 000 0007 09 99 000 0008 09 99 000 0006	Wire gauge 0.14 - 0.25 mm ² ø 1.00 0.37 mm ² ø 1.30 0.5 - 1 mm ² ø 1.55 1.5 - 2.5 mm ² ø 1.80 4 mm ² ø 2.00	
Crimp contact removal for Han® EE, Han® Q 5/0, Han® Q 8/0 Han E® and Han A®	09 99 000 0319	 A removal tool is necessary if contacts are to be replaced in the insert. The tool is inserted from the wiring side until a stop is noticeable. The wire with the crimp contact can be pulled out from the same side of the insert.	

