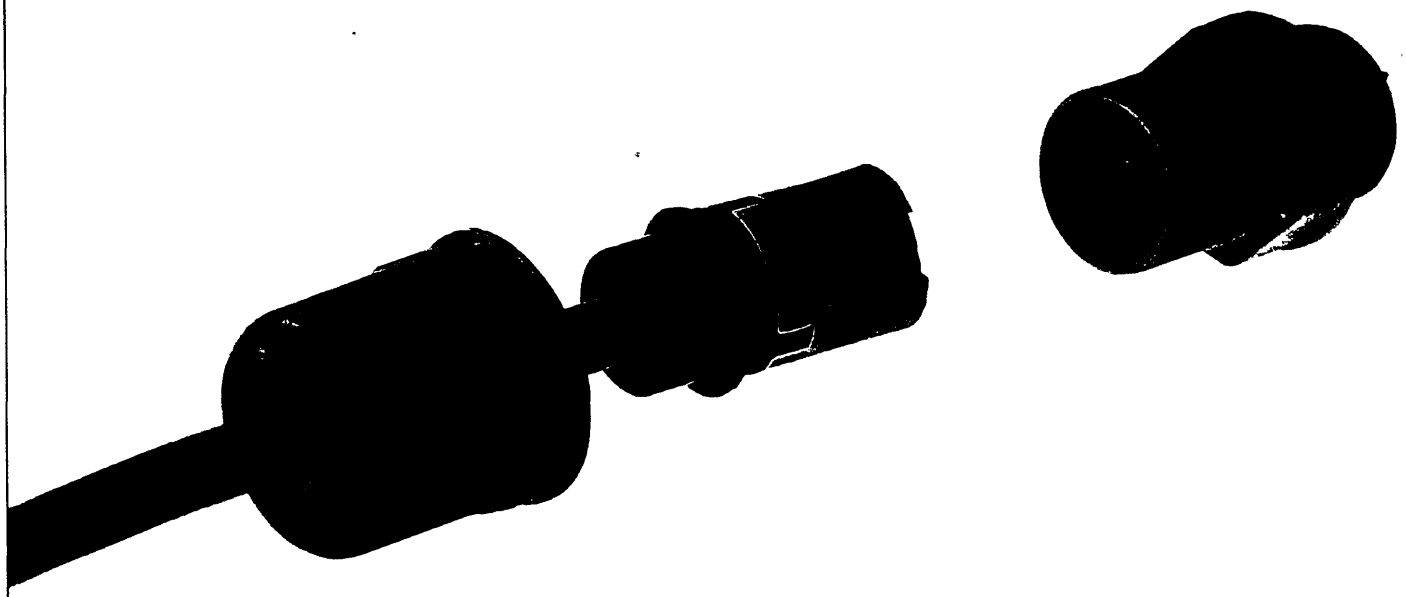
HARAX®

The universal
rapid termination system

HARTING®



HARAX® combines the advantages of connectors and screwed cable glands

Simpler and faster: the second generation ***HARAX***® simplifies the installation of sensors, actuators and other system components in automation engineering.

Not only is handling simpler, but also faster due to the reduction of individual parts.

The connection consists of a contact carrier with insulation displacement contacts and the coupling ring, seal insert and multifunctional splicing ring as add-on parts.

In a few seconds the connection is perfect:

- **remove cable sheath,**
- **attach *HARAX*®,**
- **tighten.**

Mechanical engineering makes use of preassembled components.

HARAX® now offers the user this opportunity as well. When mounting, both the seal insert and the cable course are fixed in a splicing ring, so they cannot be twisted, and are thus preassembled.

A collar prevents the wrench from slipping while tightening.

HARAX®-Panel feed throughs

Pg screwed glands are used today for connections to switchboxes, equipment and components which do not have to be separated and then reconnected to the plant. Here the line must be connected by qualified staff, which is time-assuming.

With *HARAX®* products, this equipment can now also be delivered to the end user ready-to-connect, since the complete internal wiring incl. testing has already been done at the equipment manufacturer's.

For solving a wide variety of problems, the following *HARAX®* products are available to the manufacturer:

- *HARAX®*-panel feed throughs with faston contacts
- *HARAX®*-panel feed throughs with solder lugs
- *HARAX®*-panel feed throughs with preassembled stranded wires

Mounting is performed from the outside: the contact carrier is screwed into a thread or inserted through a housing bore and fastened internally with a nut.

HARAX®-Sensor-/actuator-boxes

Nowadays sensors are either connected by means of preassembled cable using M12 connectors or directly connected in terminal boxes individually.

Preassembled cables are only suitable where application presents no problems and a remaining cable loop does not get in the way.

In areas in which preassembled cable cannot be used such as application in pipes or cable dusts, lines must be connected "on site".

HARAX®-sensor-/actuator-boxes are now revolutionising the connection of sensors and actuators.

The complex assembly of M12 connectors is no longer necessary.

Mounting times are reduced to a minimum.

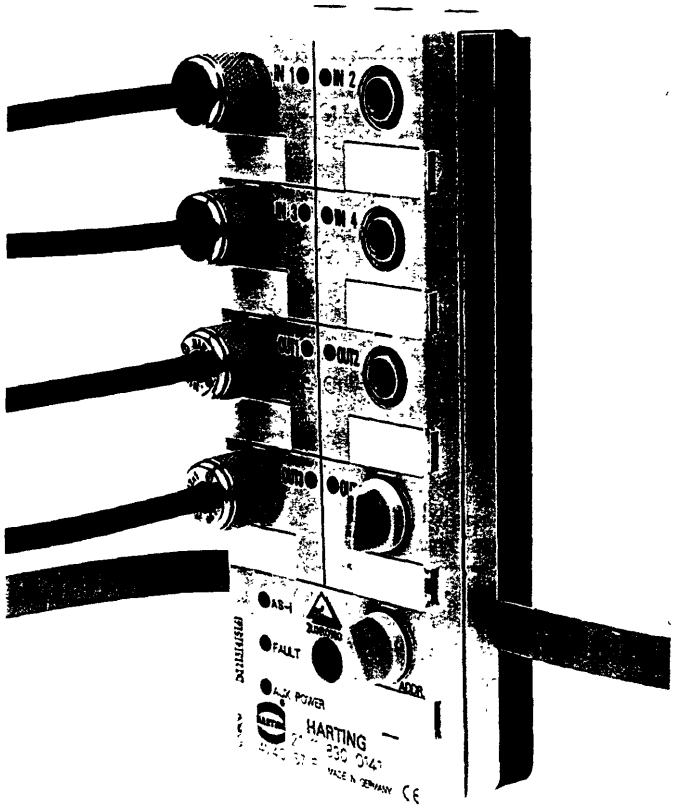
Designed for round cable, 3 cable cores with a 0.25 mm² to 0.5 mm² cross section can be connected without special tools.

Due to its compact design the *HARAX®* connection is no larger than an M12 connector.

The new passive modules are available with external distribution terminals for open assembly or with permanently connected cable providing four, six and eight *HARAX®*-M12 connection points.

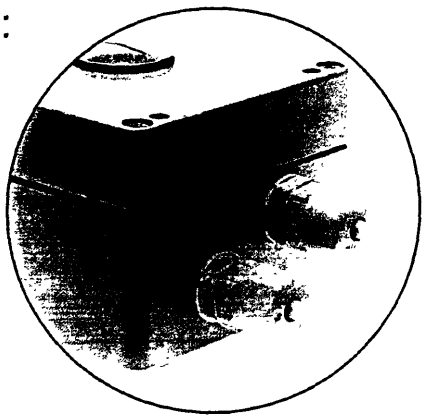
In addition to the passive modules, HARTING now offers communicating products with AS-Interface.

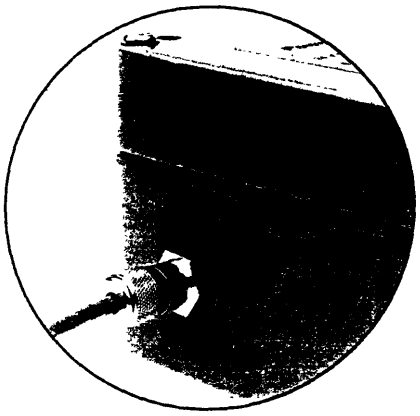
On the compact module with *HARAX®*-M12 connection points the system characteristics of the AS-Interface, such as simple wiring, continue through to the sensor/actuator.



HARAX® – Functionality and mounting

Application examples:



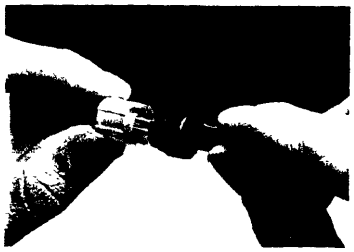


HARAX®-Function principle

- The contact of the cable cores is made automatically by screwing the coupling ring onto the contact carrier. At the same time the wires are guided through channels in the splicing ring and exactly positioned.
- Newly developed insulation displacement contacts, guided through contact channels, consequently permit reliable contact of the individual cable cores.
- Once the coupling ring is tightened, the cable is automatically strain-relieved by means of the seal element, clamped and protected against dust and splashwater (IP 67).

HARAX®-Mounting

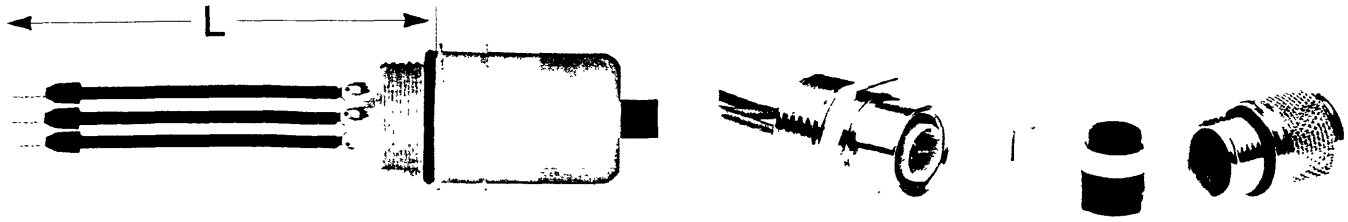
- Cut the cable to length and remove the line sheath
- Slide the coupling ring and seal insert onto the cable end
- Insert the core ends into the corresponding bushings of the splicing ring
- Join the seal insert and splicing ring and cut off projecting core ends flush with the splicing ring
- Insert the premounted splicing-seal element into the contact carrier
- Screw the screw cap to the contact carrier



HARAX®-Removal

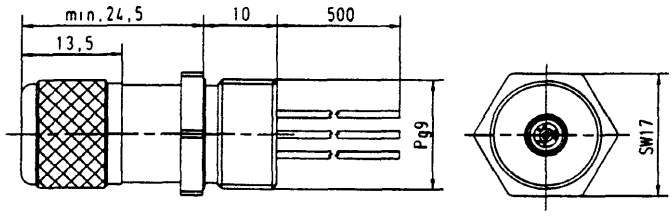
- Loosen the screwed cable gland and remove the cable cores by pulling out of the contacts.
- Renewed connection after cutting off the contacted core ends is possible up to 10 times (assuming the same core diameters are used).

HARAX® – Panel feed throughs with preassembled stranded wires



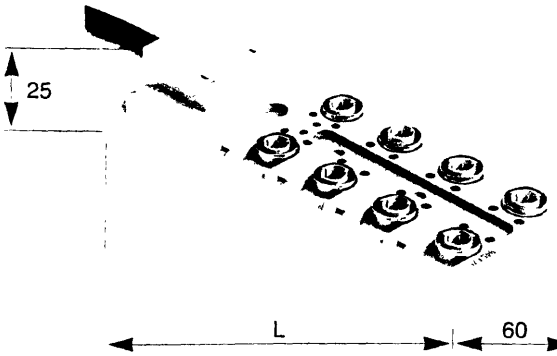
Description		Pg 13.5 panel feed through with preassembled stranded wires (installation from outside) Part number	Pg 9 panel feed through with preassembled stranded wires (installation from outside) Part number
Panel feed through, straight termination	type orange	21 01 130 0223	
Panel feed through, straight termination	type black	21 01 130 1223	
Panel feed through, straight termination	type metal		21 01 130 4241
Pack quantity	(pieces)	1	1
Number of poles		3	3
General characteristics			
Conductor cross section	(mm^2)	1.5	0.5
Wire length "L"	(mm)	500*	500*
Colour coding	1	brown	brown
	2	black	black
	3	blue	blue
Mounting hole-Ø	(mm)	20.8 – 0.3	15.5 – 0.2
Thread		Pg 13.5	Pg 9
Width across flats	(mm)	24	17
Cable characteristics			
Conductor cross section	(mm^2)	0.75 – 1.5	0.25 – 0.5
Type of strands / minimum diameter of individual strands	(mm)	VDE 0295, class 2 – 5 / 0.2	VDE 0295, class 2 – 6 / 0.1
Conductor insulation material		PVC / PE / PUR	PVC / PE / PUR
Wire diameter	(mm)	≤ 2.8	1.2 – 1.6
Cable outside diameter	(mm)	5.6 – 8.5	4 – 5.1
Environmental characteristics			
Protection rating acc. to IEC 529 / EN 60 529 / DIN VDE 0470-1		IP 67	IP 67
Flammability rating acc. to UL 94		V 0	V 0
Electrical characteristics			
Current rating	(A)	17.5	3
Working voltage	(V AC)	250	32
Overvoltage category		3	3
Degree of pollution		3	2
Mechanical characteristics			
Maximum number of connections with the same wire gauge to one contact		10	10
Materials			
Contact material		Copper alloy	Copper alloy
Contact plating		Tin over nickel	Tin over nickel
Insulating material type		Polyamide (plastic type)	Brass (metal type)

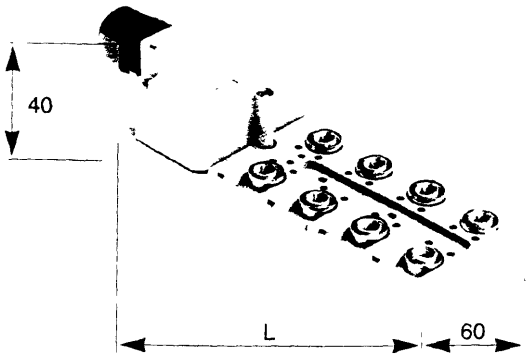
Drawing
Dimensions in mm



* Other wire lengths on request

HARAX® – Passive sensor-/actuator-boxes





Description	Sensor-/actuator-box with *HARAX* and preassembled cable		Sensor-/actuator-box with *HARAX* and terminal block
Sensor-/actuator-box, complete	Part number	Part number	Part number
4 terminals	21 01 430 0121	21 01 430 0131	21 01 430 0111
6 terminals	21 01 630 0121	21 01 630 0131	21 01 630 0111
8 terminals	21 01 830 0121	21 01 830 0131	21 01 830 0111
Cable length	5 m	10 m	without cable
Pack quantity (pieces)	1	1	1
Technical data			
Working voltage (V DC)	10 ... 30		10 ... 30
Maximum current per terminal / in total (A)	2 / 10		2 / 10
Working current of display elements (mA)	≤ 5		≤ 5
Poles per terminal	3		3
Protection rating acc. to IEC 529 / EN 60 529 / DIN VDE 0470-1	IP 67		IP 67
Temperature range	- 40 ... + 75 °C		- 40 ... + 75 °C
***HARAX*-Termination**			
Conductor cross section (mm²)	0.25 – 0.5		0.25 – 0.5
Type of strands / minimum diameter of individual strands (mm)	VDE 0295, class 2 – 6 / 0.1		VDE 0295, class 2 – 6 / 0.1
Conductor insulating materials	PVC / PE / PUR		PVC / PE / PUR
Wire diameter (mm)	1.2 – 1.6		1.2 – 1.6
Cable outside diameter (mm)	4 – 5.1		4 – 5.1
Local diagnostics			
Power supply per module (Us)	LED green		LED green
Status I/O	LED yellow		LED yellow
Preassembled cable/ terminal block			
Data cable flexible / AWG (mm²)	0.34 / 22		0.14 – 1.0 / 26 – 18
Power supply flexible/ AWG (mm²)	3 x 1.0 / 17		3 x 0.2 – 1.5 / 24 – 16
Materials			
Housing insulation material	PBT		PBT

Terminal configuration
(boxes with preassembled cable)

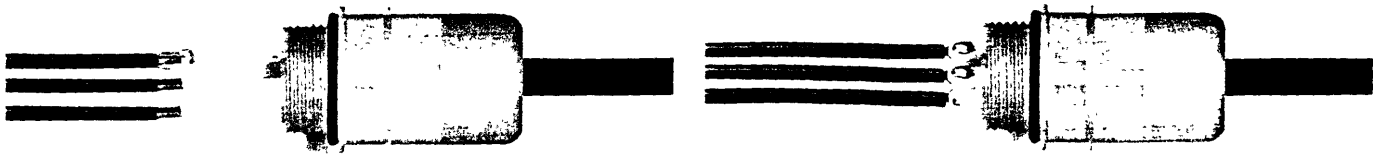
Conductor colour	Termination point/way	Potential
white	1 / 2	E / A
green	2 / 2	E / A
yellow	3 / 2	E / A
grey	4 / 2	E / A
pink	5 / 2	E / A
red	6 / 2	E / A
black	7 / 2	E / A
violet	8 / 2	E / A
brown	1–8 / 1	+ 24 V
blue	1–8 / 3	0 V
green / yellow	n. c.	PE

Dimensions
(boxes with preassembled cable / boxes with terminal block)

Number of terminals	Dimension L (mm)
4	102
6	127
8	152

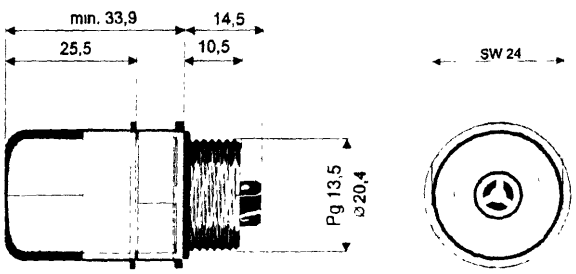
Dimensions in mm

HARAX® – Panel feed throughs



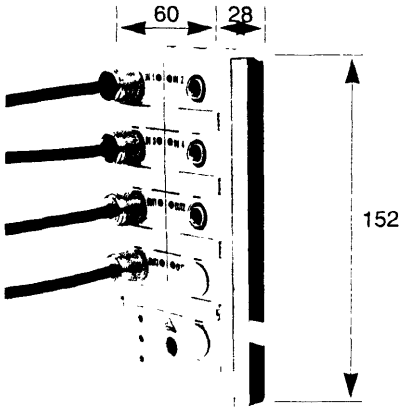
Description		Panel feed through with faston contacts (installation from outside) Part number	Panel feed through with solder lugs (installation from outside) Part number
Panel feed through, straight termination	type orange	21 01 130 0013	21 01 130 0023
Panel feed through, straight termination	type black	21 01 130 1013	21 01 130 1023
Pack quantity	(pieces)	25	25
Number of poles		3	3
General characteristics			
Termination on equipment side		Faston contact	Solder lug
	(mm)	4.8 x 0.8	
Mounting hole-Ø	(mm)	20.8 – 0.3	20.8 – 0.3
Thread		Pg 13.5	Pg 13.5
Width across flats	(mm)	24	24
Cable characteristics			
Conductor cross section	(mm^2)	0.75 – 1.5	
Type of strands / minimum diameter of individual strands	(mm)	VDE 0295, class 2 – 5 / 0.2	
Conductor insulating materials		PVC / PE / PUR	
Wire diameter	(mm)	≤ 2.8	
Cable outside diameter	(mm)	5.6 – 8.5	
Environmental characteristics			
Protection rating acc. to IEC 529 / EN 60 529 / DIN VDE 0470-1		IP 67	
Flammability rating acc. to UL 94		V 0	
Electrical characteristics			
Current rating	(A)	17.5	
Working voltage	(V AC)	250[1)]	
Overvoltage category		3	
Degree of pollution		3	
Mechanical characteristics			
Maximum number of connections with the same wire gauge to one contact		10	
Materials			
Contact material		Copper alloy	
Contact plating		Tin over nickel	
Insulating material type		Polyamide	

Drawing
Dimensions in mm



[1)] Faston termination with insulation cap

HARAX® – Compact modules for AS-Interface



Description Compact modules for AS-Interface with HARAX termination	Part number	Pack quantity (pieces)
Compact modules with 8 terminals (4 Input / 4 Output - PNP)	21 11 830 0141	1
Termination element HARAX M12 (screw cap, splice ring, sealing)	21 01 010 0001	1
Addressing cable	21 19 900 0001	1
Sealing for unused HARAX M12 terminals	21 19 900 0002	10

Technical data	
IO-Code / ID-Code	7 / 0
Internal current consumption	≤ 45 mA
Total current consumption	≤ 270 mA
Working voltage acc. to AS-Interface specification	26.5 ... 31.6 V DC
Polarisation	integrated
Inputs: Sensor supply via AS-Interface	
Voltage range	20 ... 30 V DC
Maximum current (all sensors in total)	200 mA (T_U ≤ 40 °C); 120 mA (T_U ≤ 85 °C)
Inputs with short circuit protection	yes
Switching level "High"-signal	≥ 10 V
Current consumption High Low	≥ 6 / ≤ 1.5 mA
Outputs:	
Maximum current per terminal	2.0 A
Maximum current of all terminals in total	≤ 3 A (T_U ≤ 40 °C); ≤ 2 A (T_U ≤ 85 °C)
External power supply	24 V DC via flat cable
Switching frequency resistive loads / inductive loads	200 Hz / 2 Hz
Short circuit protection	integrated
Inductive protection	integrated (diode)

HARAX-Termination	
Number of poles per terminal	3
Maximum number of connections with the same wire gauge to one contact	10
Conductor cross section	0.25 – 0.5 mm²
Type of strands / minimum diameter of individual strands	VDE 0295, class 2 – 6 / 0.1 mm
Conductor insulating materials	PVC / PE / PUR
Wire diameter	1.2 – 1.6 mm
Cable outside diameter	4 – 5.1 mm

Environmental characteristics	
Protection rating acc. to IEC 529 / EN 60 529 / DIN VDE 0470-1 (with mounting plate, and unused terminals covered with sealing)	IP 67

Temperature range	
Environment	– 25 °C ... + 85 °C
Stock	– 40 ° C ... + 85 °C

Local diagnostics

LED-colours
AS-Interface: green / red
AUX. Power: green
In-/Outputs: yellow

AS-Interface-status

green	red	status
on	off	ok
off	on	no data transmission
flashing	on	address zero
off	flashing	overload

Addressing

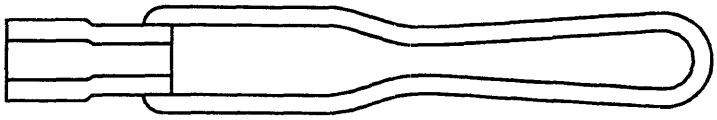
The mounted modules may be addressed remotely via a DC-power-connector (outer/inner diameter: 3.5 / 1.3 mm) using an addressing device (terminal "ADDR").
Note: Addresses may be assigned up to 15 times maximum.

Logical relation

IN 1: Databit d0	OUT 1: Databit d0
IN 2: Databit d1	OUT 2: Databit d1
IN 3: Databit d2	OUT 3: Databit d2
IN 4: Databit d3	OUT 4: Databit d3

Dimensions in mm

HARAX® – Accessories



Description	Part number	Pack quantity (pieces)
Socket wrench For easy mounting of Pg 13.5 panel feed throughs Width across flats 24 mm	21 01 000 0001	1
Nut (plastic) for mounting of contact carriers Pg 13.5 / width across flats 24 mm	21 01 000 0007	50
Termination element HARAX M12 (Screw cap, splice ring, sealing) suitable for: – Panel feed through Pg 9 – Sensor-/Aktuator-boxes (active / passive)	21 01 010 0001	1
Nut (metal) for mounting of contact carriers Pg 9 / width across flats 17 mm	21 01 000 0008	50
Addressing cable For manual addressing of compact modules for AS-Interface	21 19 900 0001	1
Sealing for unused HARAX M12 terminals suitable for: – Panel feed through Pg 9 – Sensor-/Aktuator-boxes (active / passive)	21 19 900 0002	10