

har-link® Modular metric high speed connectors

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The **harlink®** connector system of HARTING complies with the requirements of IEC 61076-4-107 and is a compact and robust pcb-to-cable interface with excellent data transmission properties for high-speed networking and telecommunications.

All dimensions of the **harlink®** connector are in accordance with IEC 917 and IEEE P 1301 requirements, which allows for easy implementation into both metric and inch-based systems. In addition, **harlink®** supports hot plugging as required by modern bus systems such as CompactPCI, S-bus and VME.

harlink® allows data transmission up to 2 Gbit/s per pair and is therefore perfectly suited for modern transmission protocols such as Low Voltage Differential Signals (see Fig. 1). The design of the **harlink®** connector allows differential pairs to be placed horizontally (parallel to the pcb), thus reducing the skew at high frequencies and considering high signal integrity.

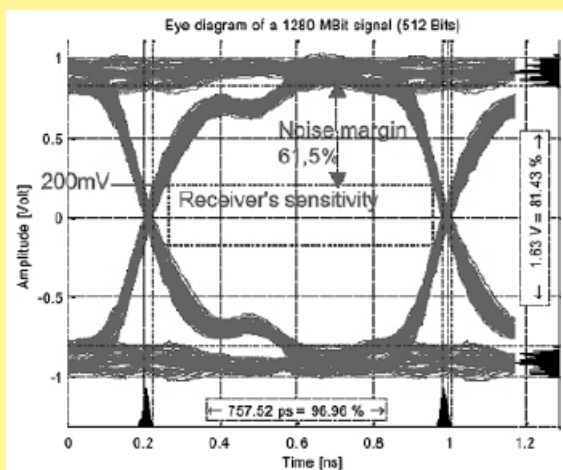


Fig. 1: Eye diagram of a 1280 MBit signal (512 Bits)

The metal shells of the **harlink®** connector are a guarantee for its superior performance in the EMI-polluted environment (see Fig. 2).



Fig. 2: 360° screened-can construction with locking levers

To reach a screening attenuation of more than 50 dB up to 1 GHz, HARTING offers brackets covering each connector in conjunction with a gasket, which is compressed between the bracket and the front panel (see Fig. 3).

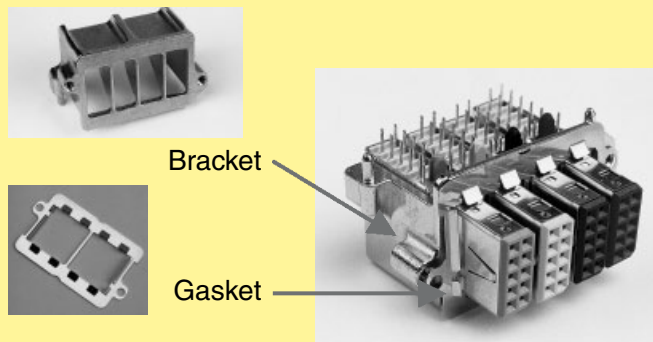


Fig. 3: 4 cavities bracket and gasket

Once plugged, the mated pair shows excellent mating safety. Due to the locking levers on both sides of the male connector, the connection withstands a pulling force of up to 80 N (see Fig. 2).

The high temperature resistant material of the **harlink®** female connector body supports the safe reflow soldering process. For easy identification of female modules, six different colours are available (see Fig. 4).

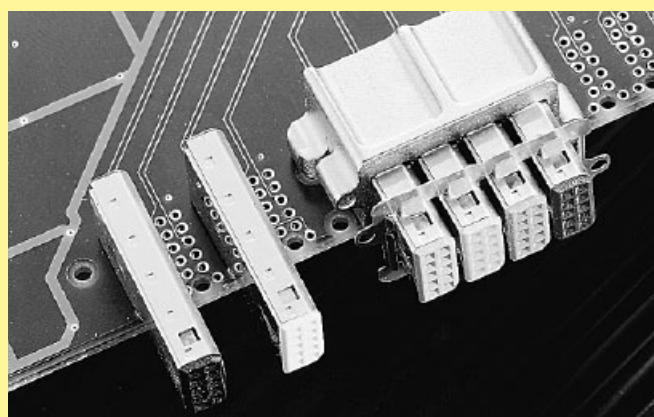
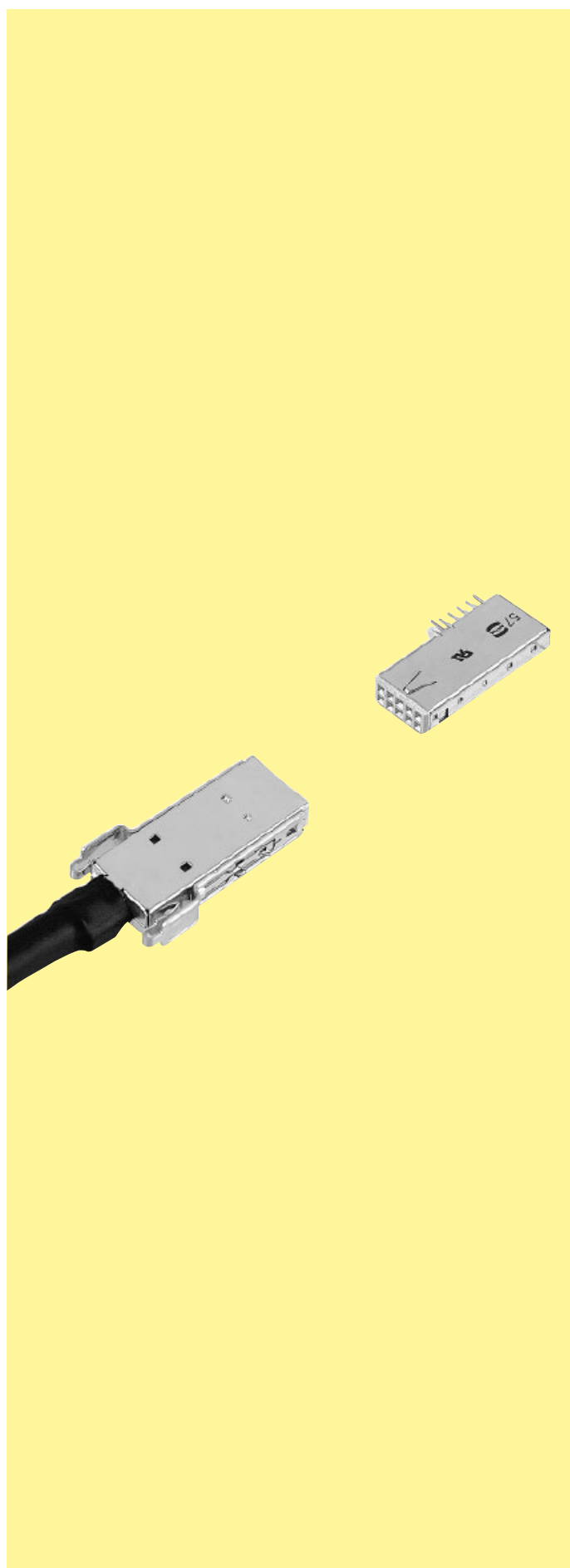
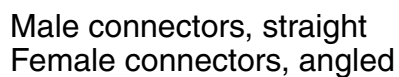


Fig. 4: Differently coloured female modules

In addition to single connectors, HARTING provides cable assemblies with unshielded twisted pairs or with shielded twisted pairs for high speed applications such as IEEE 1355. A crimping tool range for terminating the male **harlink®** connectors is available.

Number of contacts	10
Approvals	IEC 61 076-4-107 UL recognized: E102079
Contact pitch Connector pitch	2 mm 6 mm
Working current	1.5 A at 70 °C
Test voltage $U_{r.m.s.}$	750 V
Contact resistance Insulation resistance	$\leq 30 \text{ m}\Omega$ $\geq 10^{10} \Omega$
Temperature range during reflow soldering	-55 °C ... + 125 °C female: max. + 260 °C for 60 s
Mating cycles	250, performance level 2
Terminations	Insulation displacement (male), AWG 28/7 - 30/7, AWG 30 solid Solder pins for $\varnothing 0.6 \text{ mm}$ min. (female)
Insertion force Withdrawal force	10 N max. / module 2 N min. / module (without locking levers)
Latching system	Locking levers
Materials Mouldings	Male connector: Polyester, UL 94-V0 Female connector: High temperature plastic material, UL 94-V0
Contacts Shells	Copper alloy Male connector: Stainless steel Female connector: Maillechort
Contact surface Contact zone	Selectively gold-plated

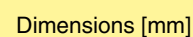


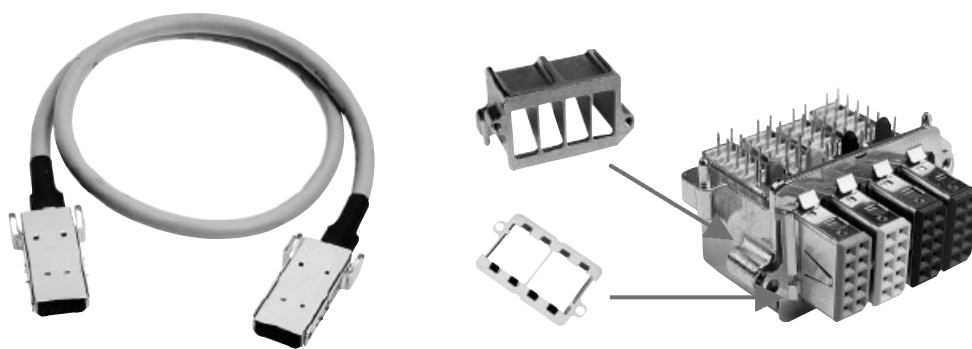


Male connector
(delivered in piece parts)



Female connector



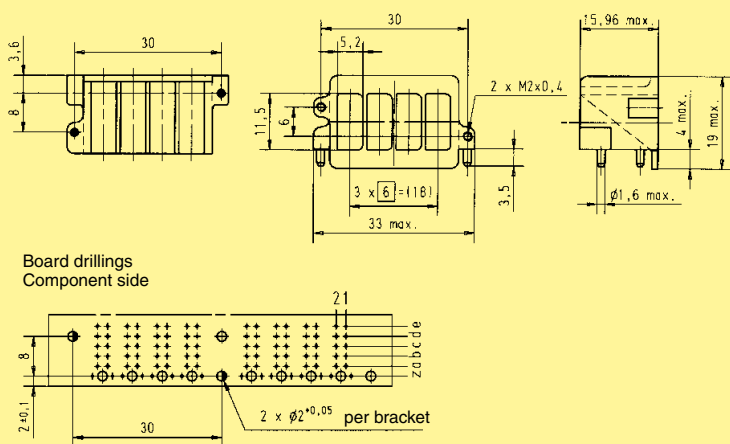


Accessories and cable assemblies

Identification	Part No.	Drawing	Dimensions [mm]
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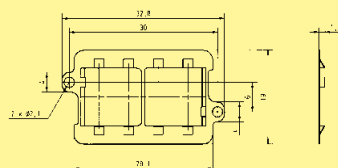
Bracket
with four cavities

27 71 040 0001



Gasket
with four cavities

27 71 040 0002



High end cable assembly har-link® 10 pole
Cable: 5 twisted pairs,
AWG 28, shielded, PVC
Wiring: 1:1

Length: L = 0.5 m
L = 1.0 m
L = 2.0 m

33 27 243 0500 001
33 27 243 1000 002
33 27 243 2000 003

Cable: 5 twisted pairs,
AWG 30, double
shielded, PVC
Wiring: 1:1

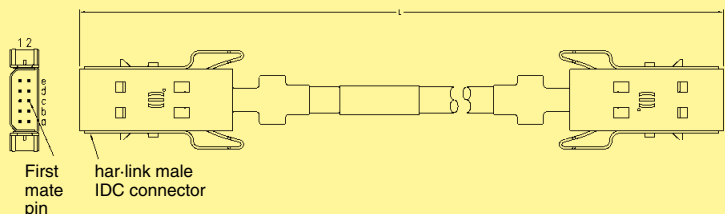
Length: L = 0.5 m
L = 1.0 m
L = 2.0 m

33 27 243 0500 006
33 27 243 1000 007
33 27 243 2000 008

Cable: 5 twisted pairs,
AWG 30, double shielded,
PVC
Wiring: acc. to IEEE 1355

Length: L = 0.5 m
L = 1.0 m
L = 2.0 m

33 27 243 0500 015
33 27 243 1000 016
33 27 243 2000 017

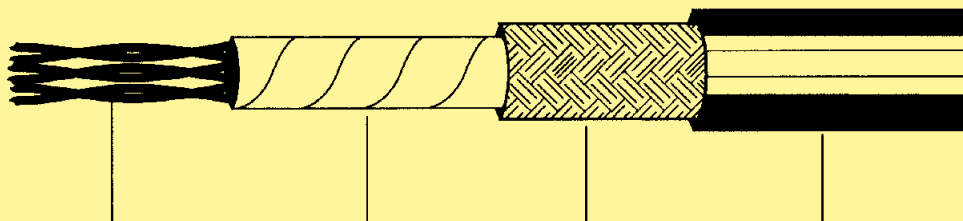


IEEE 1355
wiring

Connector 1	Connector 2
2-e	1-a
1-e	2-a
2-d	1-b
1-d	2-b
2-c	2-c

Connector 1	Connector 2
1-c	1-c
2-b	1-d
1-b	2-d
2-a	1-e
1-a	2-e

Cables for insulation displacement termination

Identification	No. of pairs	Standard version	Part No. <i>Halogen free version with screened pairs</i>												
Twisted pair cable with braid shield AWG 28 AWG 30 Length per reel: 100 m	5	60 90 005 6003	60 90 005 6009												
Drawing	<table><tr><th rowspan="2">No. of pairs</th><th colspan="2">Outside diameter</th></tr><tr><th>Nominal</th><th>Max</th></tr><tr><td>5</td><td>5.4</td><td>5.6</td></tr></table> <table><tr><th>No. of pairs</th><th>Outside diameter</th></tr><tr><td>5</td><td>5.5 ± 0.3</td></tr></table>  Twisted pair Screened twisted pairs Separator Shield Jacket PVC Jacket FRNC Dimensions in mm			No. of pairs	Outside diameter		Nominal	Max	5	5.4	5.6	No. of pairs	Outside diameter	5	5.5 ± 0.3
No. of pairs	Outside diameter														
	Nominal	Max													
5	5.4	5.6													
No. of pairs	Outside diameter														
5	5.5 ± 0.3														
Technical characteristics															
	Standard version	<i>Halogen free version with screened pairs</i>													
Number of pairs	5	5													
Voltage rating	30 V (style UL 2789)	100 V													
Maximum conductor resistance (20 °C)	233 Ω/km	350 Ω/km													
Minimum insulation resistance (20 °C)	1 MΩ/km	10 GΩ/km													
Nominal differential impedance (TDR)	85 Ω	95 Ω ± 5 Ω													
Nominal differential capacitance (1 kHz)	110 pF/m	45 pF/m													
Propagation velocity	60 %														
Temperature range	− 20 °C ... + 105 °C	− 25 °C ... + 80 °C													
Cable materials															
Conductor	7 x 0.13 mm stranded tinned copper	7 x 0.1 mm stranded tinned copper													
Insulation (except 50 pairs) (for 50 pairs)	PVC Ø 0.62 mm PVC Ø 0.65 – 0.80 mm	Polypropylene Ø 0.74 mm													
Shield	Tinned copper braid, covering ≥ 80 %	Tinned copper braid, covering ≥ 65 %													
Jacket	PVC	FRNC													
Flammability rating	IEC 332-1														
Sheath marking	 AWM 2789 60°C 30V VW1 36963	 AWM 21283 80°C 30V VW1													

Thin print: Standard version
Italic print: Halogen free version