



HARTING ix Industrial® type A



General information

Design	Cable to Board connector for Ethernet communication
Product standard	IEC 61076-3-124 (Type A)
No. of contacts	10 (2x4 for Ethernet + 2x grounding pin)
Transmission rate	10 / 100 Mbit/s and 1 / 2,5 / 5 / 10 Gbit/s
Transmission performance	Category 6 _A / Class E _A up to 500 MHz acc. to ISO/IEC 11801, EN 50173-1
Shielding	Fully shielded, 360° shielding contact
Degree of protection	IP20
Mating cycles	Min. 5.000
UL/CSA	UL 1977 ECBT2.E102079/ CSA-C22.2 No. 182.3 ECBT8. E102079
RoHS-compliant	Yes
Lead free	Yes

Cable specification

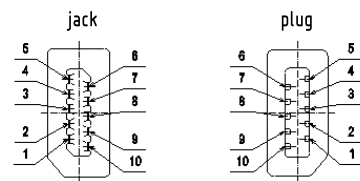
Cable diameter	5,5 to 7,2 mm		
P/N	09451812560	09451812561	09451812562
Connection type	solder	IDC	IDC
Conductor cross section	AWG 28 - 22	AWG 28/7 - 26/7	AWG 24/7
Conductor diameter	max. 1,55 mm	0,95 - 1,05 mm	1,1 - 1,25 mm

Electrical specification

Rated current	1,5A - (all pins) values at 40°C
	3A - 4 pins of contacts no. 1, 2, 6 and 7
Rated voltage	50 V AC / 60 V DC
Contact resistance (100 mA max. (DC or 1000 Hz))	Contact: 30 mΩ max. Shield: 100 mΩ max.
Insulation resistance	500 MΩ min. (500 V DC)
Voltage proof	500 V DC (for 1 min. current leakage max. 2 mA)
Mechanical operation with electrical load (IEC 60512 - test 9c)	Unmating under electrical load with: 1,2 A / 50 V 50 cycles for each polarity
PoE	PoE IEEE 802.3af PoE+ IEEE 802.3at 4PPoE IEEE 802.3bt

Pin and pair grouping assignment

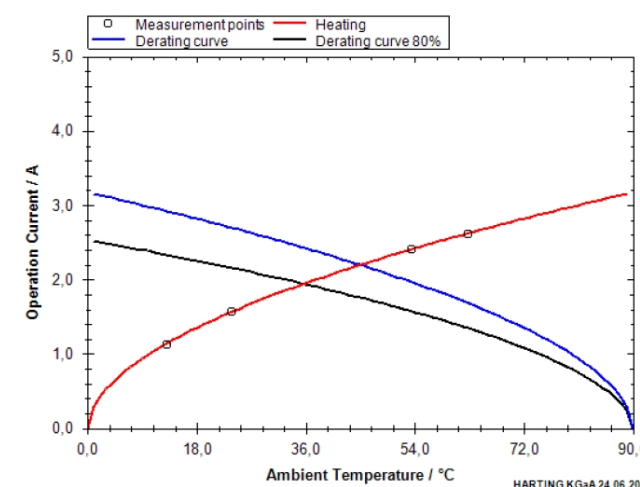
pin assignment front view of connector Type A



Pin No. ix	10BASE-T 100BASE-TX	1/10GBASE-T	EIA/TIA 568A	EIA/TIA 568B	Industrial (PROFINET)
1	TX+	BI_DA+	white/green	white/orange	yellow
2	TX-	BI_DA-	green	orange	orange
3	N.C.	GND	-	-	-
4	N.C.	BI_DC+	blue	blue	-
5	N.C.	BI_DC-	white/blue	white/blue	-
6	RX+	BI_DB+	white/orange	white/green	white
7	RX-	BI_DB-	orange	green	blue
8	N.C.	GND	-	-	-
9	N.C.	BI_DD+	white/brown	white/brown	-
10	N.C.	BI_DD-	brown	brown	-

Derating diagram acc. to IEC512 (Current carrying capacity)

Current-carrying capacity 1,5A @ 40°C



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, non 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.

Mechanical specification

Insertion force	Max. 25 N
Withdrawal force	Max. 25 N
Mechanical Operation	5.000 times insertions and extractions Mating speed: 10 mm/s max. Rest: 5s, min. (unmated)
Lock Strength	Min. 80 N (for the mating axis direction in state in fitted with applicable connector)
Wrenching Strength	Applying 25times of 30 N 1 s for 2 axis direction on tip of plug case in state in fitted with applicable connector

Environment specification

Storage temperature range	-30°C to +60°C (95% RH max.)
Operating temperature range	-40°C to +85°C (95% RH max.)
Rapid change of temperature (IEC 60512-11d)	10 cycles between -55°C and 85°C with 30 minutes dwell at temp. extremes and 1 minute transition between temperatures
Dry heat (IEC 60512-11i)	Temperature 85°C, duration 500 h
Damp heat cyclic (IEC 60068-2-38)	25°C to 65°C; cold sub-cycle - 10°C; humidity 93 % RH 25 cycles, 1 cycle/24 h
Cold (IEC 60512-11j)	-55°C duration 240 h
Flow mixed gas test (IEC 60068-2-60)	Duration 4 d, Method 4 (mated and unmated)
Corrosion salt mist	Exposed at 5 % salt water, 35 ± 2°C, duration 48 h
Vibration Sinusoidal (IEC 60512-test 6d)	10 - 500 Hz; 0,35 mm; 4,9 m/s ² 2 h / 3 axis; No contact disturbances ≥ 1 μs
Mechanical shock (IEC 60512-test 6c)	Half sine shock 500 m/s ² , duration 11 ms 3 shocks / both directions / 3 axis - totally 18 shocks; No contact disturbances ≥ 1 μs
Mechanical shock (DIN EN 61373 Class 1 cat b) Additional test to fulfill DIN EN 50155 for railway equipment	Half sine shock 5 g, duration 30 ms 5 shocks / both directions / 3 axis - totally 30 shocks; No contact disturbances ≥ 1 μs
Random vibration (DIN EN 61373 Class 1 cat b) Additional test to fulfill DIN EN 50155 for railway equipment	Class 1 cat b 5,72 m/s ² ; No contact disturbances ≥ 1 μs
Fretting Corrosion	4,90 m/s ² , 30 times/min at 1.000 times; No contact disturbances ≥ 1 μs

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HARTING Electronics GmbH D-32339 Espelkamp		Type DS	Number 09450000003		Rev. F	Page 1/2



HARTING ix Industrial® type A



Packaging specification

Material PE + PS

Material specification

Isolator material plug

Material	Isolation body PA Plug hood PC
Color	Black
UL classification	UL94 V-0

Isolator material jack

Material	LCP
Color	Black
UL classification	UL94 V-0

Contact

Contact material	Copper alloy
Plating contact zone	Au (min. 0,2 µm) over Ni (min. 1,27 µm)
Plating solder area	Au (min. 0,05 µm) over Ni (min. 1,27 µm)

Shielding shells

Material	Stainless steel
Plating	Sn (min. 1 µm) over Ni (min. 2 µm) solder area and mating zone Ni (min. 2 µm) for all other areas

Soldering specification

Solderability	Soldering point immersed in solder bath of +235°C ± 5°C, 5 sec. (using type r flux). Solder cover minimum of 95 % of the surface being immersed.
Resistance to soldering heat	
Soldering points of plug	+250°C ± 10°C, 5 sec. at soldering parts
Soldering contacts of jack	Profile is shown in Fig-1, under 2 cycles
MSL level acc. to ECA/IPC/JEDEC J-STD-020D	MSL1

Recommended soldering profile for plug

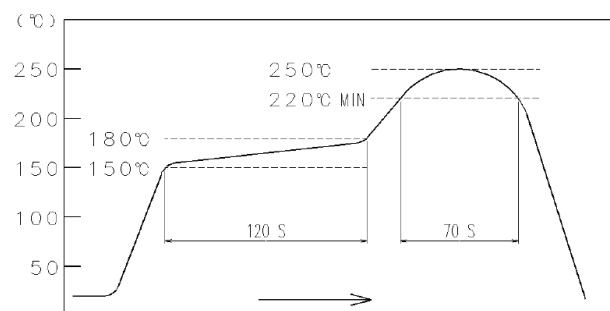


Fig - 1 Resistance to soldering heat (temperature at top surface of connector)

Recommended soldering profile for THR jack

Recommended profile refers to Fig - 2. (temperature at smt leads)

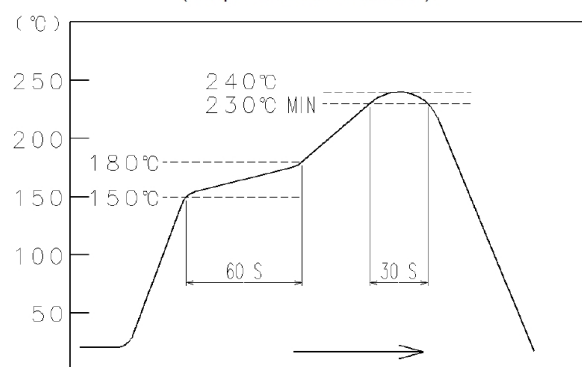


Fig - 2 Recommended reflow profile temperature

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HARTING Electronics GmbH D-32339 Espelkamp		Type DS	Number 09450000003			

	All Dimensions in mm Original Size DIN A3	Scale 1:1	Free size tol.	Ref.
				Sub.