



PEOPLE. POWER. PARTNERSHIP.

HARTING

Ethernet portfolio guide

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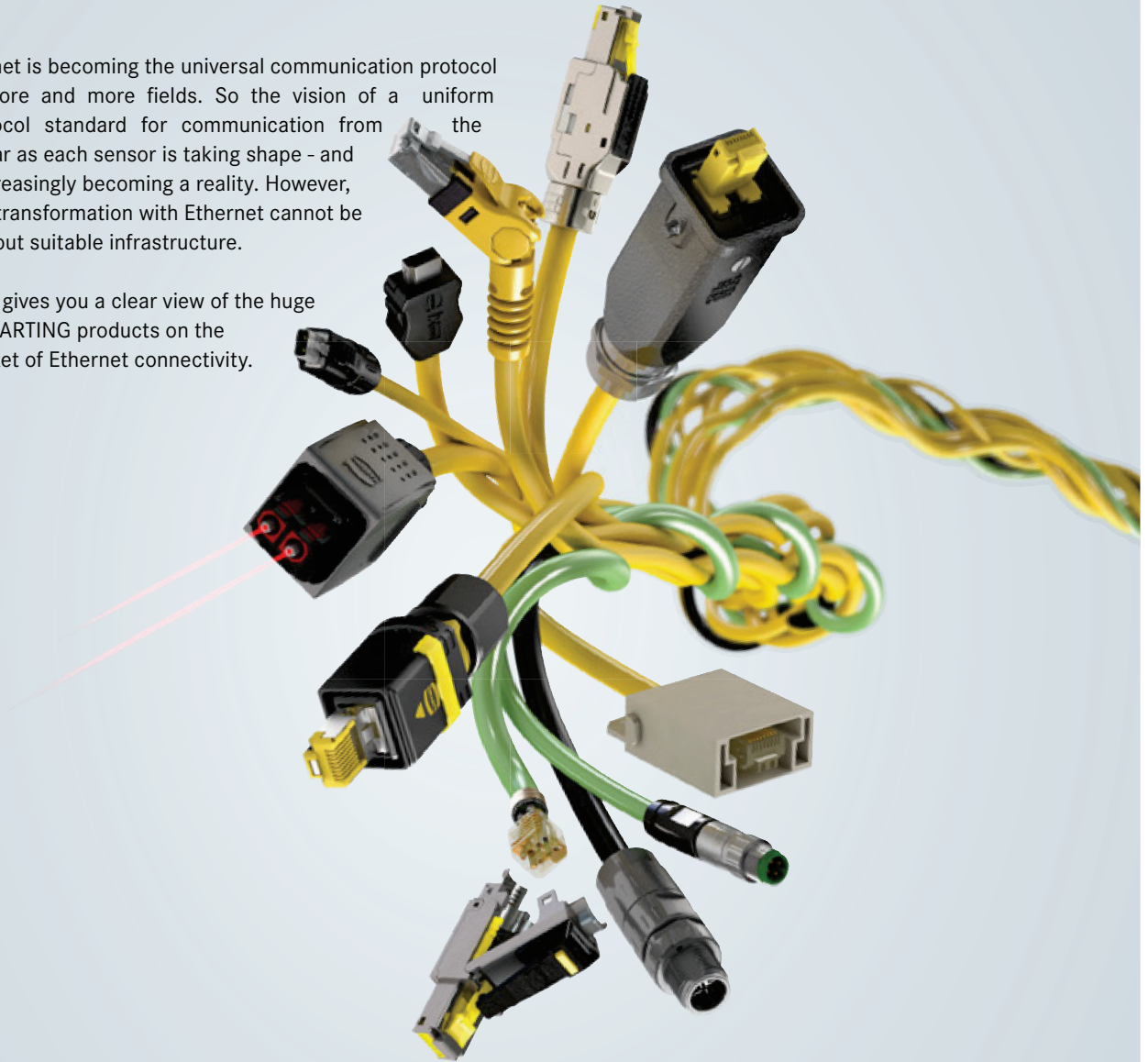
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Introduction

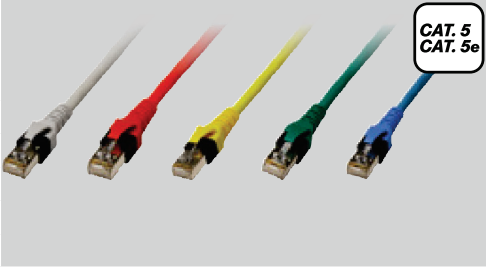

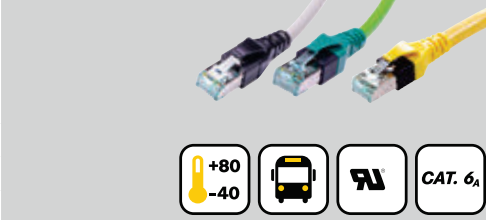
Ethernet is becoming the universal communication protocol in more and more fields. So the vision of a uniform protocol standard for communication from the cloud as far as each sensor is taking shape - and IIOT is increasingly becoming a reality. However, industrial transformation with Ethernet cannot be done without suitable infrastructure.

This guide gives you a clear view of the huge range of HARTING products on the large market of Ethernet connectivity.




**DIGITALISATION IN
INDUSTRIAL AUTOMATION
IS PROGRESSING WITH SPEED.**

DualBoot® RJ45 cables

 <p>CAT. 5 CAT. 5e</p>	DualBoot® RJ45 Ethernet cables	
	<ul style="list-style-type: none"> FRNC cable - S/FTP Halogen free, RoHS 	
	Grey	09 48 868 6569 xxx
	Red	09 48 868 6570 xxx
	Yellow	09 48 868 6571 xxx
 <p>CAT. 6A</p>	DualBoot® RJ45 Ethernet cable	
	<ul style="list-style-type: none"> FRNC cable - S/FTP Halogen free, RoHS 	
	White	09 48 878 7584 xxx
	Grey	09 48 878 7585 xxx
	Red	09 48 878 7586 xxx
	Yellow	09 48 878 7587 xxx
	Green	09 48 878 7588 xxx
 <p>+80 -40</p> <p>RoHS</p> <p>CAT. 6A</p>	DualBoot® RJ45 Ethernet cable	
	<ul style="list-style-type: none"> PUR cable - S/FTP Halogen free, RoHS UN/ECE R118 	
	Grey	09 48 474 7743 xxx
Green	09 48 474 7744 xxx	
Yellow	09 48 474 7756 xxx	

RJ Industrial® coupling box

 <p>PoE+</p> <p>IP65 IP67</p> <p>CAT. 6A</p>	RJ Industrial® RJ45 coupling box	
	<ul style="list-style-type: none"> Waterproof IP65/IP67 Polyamide (PA) Core shielded 360° 	
	09 45 805 1560	

DualBoot® RJ45 PushPull cables

	DualBoot® RJ45 PushPull Ethernet cable		<div style="border: 1px solid black; border-radius: 10px; padding: 2px; display: inline-block;"> CAT. 5 CAT. 5e </div>	
	<ul style="list-style-type: none"> ■ FRNC cable - S/FTP ■ Halogen free, RoHS 			
	Grey			09 48 898 9595 xxx
	Red			09 48 898 9596 xxx
	Yellow			09 48 898 9597 xxx
	Green			09 48 898 9594 xxx
<p style="text-align: center;">PushPull mechanism</p> <p>■ Pull: To loosen the connection, simply pull on the housing or bend protection.</p>	DualBoot® RJ45 PushPull Ethernet cable		<div style="border: 1px solid black; border-radius: 10px; padding: 2px; display: inline-block;"> CAT. 6_A </div>	
	<ul style="list-style-type: none"> ■ FRNC cable - S/FTP ■ Halogen free, RoHS 			
	White			09 48 888 8574 xxx
	Black			09 48 888 8575 xxx
	Grey			09 48 888 8576 xxx
	Red			09 48 888 8577 xxx
Yellow		09 48 888 8578 xxx		
Green		09 48 888 8579 xxx		
Blue		09 48 888 8580 xxx		
Orange		09 48 888 8592 xxx		

xxx = Length of cable

005 = 0.5 m	010 = 1.0 m	015 = 1.5 m	020 = 2.0 m	030 = 3.0 m	050 = 5.0 m	075 = 7.5 m	100 = 10 m	150 = 15 m	200 = 20 m
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Other lengths available on request (10cm)

DualBoot® RJ45 - Characteristics & advantages

The DualBoot® connector is overmoulded a durable material to make it strong and very rugged.



- Connector shielded 360°
- Compact
- Excellent resistance to vibrations and shocks
- Cables tested 100%



VarioBoot® RJ45 cables



Connector 1	Connector 2			
VarioBoot® RJ45 UaD ¹	DualBoot® RJ45	Yellow		09 48 844 7745 xxx
VarioBoot® RJ45 UaD ¹	VarioBoot® RJ45 UaD ¹	Yellow		09 48 848 4745 xxx
VarioBoot® RJ45 UaD ¹	VarioBoot® RJ45 LaR ²	Yellow		09 48 848 5745 xxx
VarioBoot® RJ45 LaR ²	DualBoot® RJ45	Yellow		09 48 854 7745 xxx
VarioBoot® RJ45 LaR ²	VarioBoot® RJ45 LaR ²	Yellow		09 48 858 5745 xxx
VarioBoot® RJ45 LaR ²	RJ45 cores HIFF	Yellow		09 48 841 1745 xxx



Connector 1	Connector 2			
VarioBoot® RJ45 LaR ²	DualBoot® RJ45	Grey		09 48 858 7585 xxx
VarioBoot® RJ45 LaR ²	DualBoot® RJ45	Red		09 48 858 7586 xxx
VarioBoot® RJ45 LaR ²	DualBoot® RJ45	Yellow		09 48 858 7587 xxx
VarioBoot® RJ45 LaR ²	DualBoot® RJ45	Green		09 48 858 7588 xxx
VarioBoot® RJ45 LaR ²	DualBoot® RJ45	Blue		09 48 858 7589 xxx

Connector 1	Connector 2			
VarioBoot® RJ45 LaR ²	VarioBoot® RJ45 LaR ²	Grey		09 48 858 5585 xxx
VarioBoot® RJ45 LaR ²	VarioBoot® RJ45 LaR ²	Red		09 48 858 5586 xxx
VarioBoot® RJ45 LaR ²	VarioBoot® RJ45 LaR ²	Yellow		09 48 858 5587 xxx
VarioBoot® RJ45 LaR ²	VarioBoot® RJ45 LaR ²	Green		09 48 858 5588 xxx
VarioBoot® RJ45 LaR ²	VarioBoot® RJ45 LaR ²	Blue		09 48 858 5589 xxx

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Other lengths available on request (10cm)

1 = UaD: Up and Down

2 = LaR: Left and Right

RJ Industrial® RJ45 connectors

		<p>RJ Industrial® connector straight</p> <ul style="list-style-type: none"> ■ 4 IDC contacts without tools ■ Conductors AWG 27-22, solid/stranded 	<p>09 45 151 1120</p>
		<p>RJ Industrial® connector angled 45° (4 possible directions)</p> <ul style="list-style-type: none"> ■ 4 IDC contacts without tools ■ Conductors AWG 27-22, solid/stranded 	<p>09 45 151 1121</p>
		<p>RJ Industrial® connector EtherRail® straight</p> <ul style="list-style-type: none"> ■ 4 IDC contacts without tools ■ Conductors AWG 27-22, solid/stranded 	<p>09 45 151 1122</p>
		<p>RJ Industrial® connector straight</p> <ul style="list-style-type: none"> ■ 8 IDC contacts without tools ■ Conductors AWG 27-22, solid/stranded 	<p>09 45 151 1560</p>
		<p>RJ Industrial® connector angled 45° (4 possible directions)</p> <ul style="list-style-type: none"> ■ 8 IDC contacts without tools ■ Conductors AWG 27-22, solid/stranded 	<p>09 45 151 1561</p>
		<p>RJ Industrial® Multifeature</p> <ul style="list-style-type: none"> ■ 4 IDC contacts with integral blade without tools ■ Conductors AWG 26-22, solid/stranded 	<p>09 45 151 1140</p>
		<p>RJ Industrial® Multifeature angled 90° (4 possible directions)</p> <ul style="list-style-type: none"> ■ 4 IDC contacts with integral blade without tools ■ Conductors AWG 26-22, solid/stranded 	<p>09 45 151 1141</p>
		<p>RJ Industrial® Multifeature angled 35° (4 possible directions)</p> <ul style="list-style-type: none"> ■ 4 IDC contacts with integral blade without tools ■ Conductors AWG 26-22, solid/stranded 	<p>09 45 151 1142</p>
		<p>RJ Industrial® Multifeature</p> <ul style="list-style-type: none"> ■ 8 IDC contacts with integral blade without tools ■ Conductors AWG 26-22, solid/stranded 	<p>09 45 151 1570</p>
		<p>RJ Industrial® Multifeature angled 90° (4 possible directions)</p> <ul style="list-style-type: none"> ■ 8 IDC contacts with integral blade without tools ■ Conductors AWG 26-22, solid/stranded 	<p>09 45 151 1571</p>
		<p>RJ Industrial® Multifeature angled 35° (4 possible directions)</p> <ul style="list-style-type: none"> ■ 8 IDC contacts with integral blade without tools ■ Conductors AWG 26-22, solid/stranded 	<p>09 45 151 1572</p>

RJ Industrial® RJ45 cores

<p>CAT. 6A</p>	RJ Industrial® core ■ HIFF format ■ 8 IDC contacts without tools ■ Shielded	
	Conductors AWG 28-24, solid/stranded	09 45 545 1561
	Conductors AWG 24-22, solid/stranded	09 45 545 1562
<p>CAT. 6A</p>	RJ Industrial® core ■ Keystone format ■ 8 IDC contacts without tools ■ Shielded	
	Conductors AWG 28-24, solid/stranded	09 45 545 1563
	Conductors AWG 24-22, solid/stranded	09 45 545 1564

RJ Industrial® couplers

<p>CAT. 6A</p>	RJ Industrial® coupler RJ45 ■ HIFF format ■ Shielded	09 45 545 1560
<p>CAT. 6A</p>	RJ Industrial® coupler RJ45 ■ Keystone format ■ Shielded	09 45 545 1568
<p>CAT. 6A</p>	RJ Industrial® coupler IDC ■ 8 IDC contacts without tools ■ Conductors AWG 24-22, solid/stranded ■ Shielded	09 45 545 1569
<p>IP65 IP67</p>	RJ Industrial® waterproof box ■ Polyamide (PA) ■ Compatible with 09 45 545 1569	09 45 805 0000

Accessories - Mounting of RJ45 Keystone cores and couplers

		<p>Bracket for mounting on DIN rail</p> <ul style="list-style-type: none"> ■ For RJ45 core in Keystone format ■ Not compatible with RJ45 couplers ■ With ground connection 	<p>09 45 851 0000</p>
		<p>Kit of 2 protection guards</p>	<p>09 45 851 0001</p>
		<p>Bracket for mounting on DIN rail</p> <ul style="list-style-type: none"> ■ For RJ45 core in Keystone format ■ Not compatible with RJ45 couplers ■ With ground connection 	<p>09 45 851 0002</p>
		<p>Protection cover</p>	<p>09 45 851 0003</p>
		<p>19" panel, 24 RJ45 ports</p> <ul style="list-style-type: none"> ■ Compatible with RJ45 cores and couplers in Keystone format 	<p>20 82 400 0002</p>
		<p>Distribution box IP44</p> <ul style="list-style-type: none"> ■ For 2 RJ45 cores in Keystone format 	<p>09 45 851 0015</p>
		<p>Earthing cable</p> <ul style="list-style-type: none"> ■ Ensures ground connection of RJ45 core 	<p>09 45 500 0002</p>

ix Industrial® connectors

	<p>ix Industrial® connector Type A</p> <ul style="list-style-type: none"> ■ 8 conductors + 2 GND ■ 70% more compact than RJ45 ■ Stronger with its metal locking lugs ■ ≥ 5000 mating cycles ■ Shielded 360° 	
Soldered contact pins AWG 28-22		09 45 181 2560 XL
IDC contacts AWG 28-26		09 45 181 2561 XL
IDC contacts AWG 24		09 45 181 2562 XL
	<p>ix Industrial® connector Type A angled 90°</p> <ul style="list-style-type: none"> ■ 8 conductors + 2 GND ■ ≥ 5000 mating cycles ■ Shielded 360° <p>Angled down version:</p>	
Soldered contact pins AWG 28-22		09 45 181 2580 XL
IDC contacts AWG 28-26		09 45 181 2581 XL
IDC contacts AWG 24		09 45 181 2582 XL
Angled up version:		
Soldered contact pins AWG 28-22		09 45 181 2585 XL
IDC contacts AWG 28-26		09 45 181 2586 XL
IDC contacts AWG 24		09 45 181 2587 XL
	<p>ix Industrial® plug Type A</p> <ul style="list-style-type: none"> ■ Angled 90°, soldered contact pin on PCB 	09 45 281 2560
	<p>ix Industrial® plug Type A</p> <ul style="list-style-type: none"> ■ Flat mounting, soldered contact pins on PCB 	09 45 281 2561
	<p>ix Industrial® straight plug, Type A</p> <ul style="list-style-type: none"> ■ Straight, soldered contact pins on PCB 	09 45 281 2562
	<p>ix Industrial® tool</p> <ul style="list-style-type: none"> ■ Needed to assemble the cable connector ■ With ratchet mechanism 	09 45 800 0181

ix Industrial® Ethernet cables

	ix Industrial® Ethernet cable ■ PVC cable - S/FTP yellow ■ Use with Ethernet switch eCon 2000 Advanced ix Industrial®				
	Connector 1	Connector 2			
	ix Industrial®	ix Industrial®	Yellow	33 48 060 6830 xxx	
	ix Industrial®	RJ45	Yellow	33 48 065 3830 xxx	
	ix Industrial® Ethernet cable ■ FRNC cable - S/FTP ■ Halogen free, RoHS				
	Connector 1	Connector 2			
	ix Industrial®	ix Industrial®	Blue	33 48 010 1822 xxx	
	ix Industrial®	ix Industrial®	White	33 48 010 1823 xxx	
	ix Industrial®	ix Industrial®	Grey	33 48 010 1824 xxx	
	ix Industrial®	ix Industrial®	Red	33 48 010 1825 xxx	
	ix Industrial®	ix Industrial®	Yellow	33 48 010 1826 xxx	
	ix Industrial®	ix Industrial®	Green	33 48 010 1827 xxx	
	ix Industrial®	ix Industrial®	Black	33 48 010 1828 xxx	
	ix Industrial®	ix Industrial®	Orange	33 48 010 1829 xxx	
	Connector 1	Connector 2			
	ix Industrial®	DualBoot® RJ45	Blue	33 48 014 7822 xxx	
	ix Industrial®	DualBoot® RJ45	White	33 48 014 7823 xxx	
	ix Industrial®	DualBoot® RJ45	Grey	33 48 014 7824 xxx	
	ix Industrial®	DualBoot® RJ45	Red	33 48 014 7825 xxx	
	ix Industrial®	DualBoot® RJ45	Yellow	33 48 014 7826 xxx	
	ix Industrial®	DualBoot® RJ45	Green	33 48 014 7827 xxx	
	ix Industrial®	DualBoot® RJ45	Black	33 48 014 7828 xxx	
	ix Industrial®	DualBoot® RJ45	Orange	33 48 014 7829 xxx	

xxx = Length of cable

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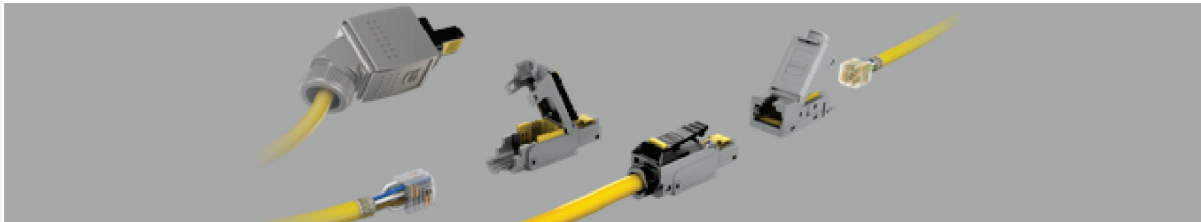
Other lengths available on request (10cm)

preLink®

	Termination of preLink® cable				
	Cable 4 or 8 wires AWG 22-24	Yellow			20 82 000 0001
	Cable 4 or 8 wires AWG 26-27	White		20 82 000 0003	
	RJ45 preLink® connector				
		Straight			20 82 101 0020
		Angled 90° (with 4 directions)			20 82 101 0021
	Angled 35° (with 4 directions)		20 82 101 0022		
	RJ45 preLink® core in Keystone format				
		Straight version			20 82 500 0001
	Angled 90° version		20 82 500 0002		
	RJ45 preLink® core in HIFF format			20 82 000 0002	
	preLink® extender			20 82 101 0001	
	RJ Industrial® waterproof box			09 45 805 0000	
	<ul style="list-style-type: none"> Polyamide (PA) IP65/IP67 				
	preLink® tool			20 82 000 9901	
	<ul style="list-style-type: none"> Simultaneously cuts and connects all IDC contacts Ratchet mechanism 				
	preLink® cables				
	PUR cable - S/FTP				
	Connector 1	Connector 2			
preLink®	preLink®	Yellow		20 82 600 2xxx	
DualBoot®	preLink®	Yellow		20 82 601 1xxx	

preLink® - Characteristics & advantages

preLink® is a cabling concept providing flexibility and ease of use for Ethernet networks. It creates the detachable connection between cable and connector.



har-port panel feed-throughs

			har-port RJ45 coupler ■ Shielded 360°	CAT. 6_A
			Silver	09 45 452 1560
			Black	09 45 452 1561
			White	09 45 452 1562
			har-port USB 2.0 A-A coupler	
			Silver	09 45 452 1901
			Black	09 45 452 1903
			White	09 45 452 1918
			har-port USB 3.0 A-A coupler	
			Silver	09 45 452 1902
			Black	09 45 452 1904
			White	09 45 452 1919
			har-port USB 3.0 A-A black	
			0.5 m	09 45 452 1970
			1.0 m	09 45 452 1971
			1.5 m	09 45 452 1972
			2.0 m	09 45 452 1973
			3.0 m	09 45 452 1974
			har-port USB 3.0 A-A silver	
			0.5 m	09 45 452 1930
			1.0 m	09 45 452 1931
			1.5 m	09 45 452 1932
			2.0 m	09 45 452 1933
			3.0 m	09 45 452 1934
			har-port HIFF ■ Compatible with inserts with HIFF format (RJ45 core, RJ45 coupler, USB coupler)	
			Silver	09 45 452 0000
			Black	09 45 452 0001
			White	09 45 452 0003
			Stainless steel	09 45 452 0002
			Protection cover IP65/IP67	
			Black rubber	09 45 502 0000
			transparent plastic	09 45 502 0005
			black plastic	09 45 502 0008
			Label holder	09 45 502 0002
			Label	09 45 502 0003
			Cover	09 45 502 0004
			Aluminum protection cover ■ IP65/IP67/IPx9k ■ Screw type	09 45 502 0006

HIFF inserts (HARTING Industrial Form Factor)

	USB 2.0 type A coupler in HIFF format	09 45 545 1901
	USB 3.0 type A coupler in HIFF format	09 45 545 1902
	USB 2.0 type A insert in HIFF format pre-assembled	
	0.15 m 	09 45 545 1927
	0.4 m 	09 45 545 1928
	0.5 m 	09 45 545 1920
	1.0 m 	09 45 545 1921
	1.5 m 	09 45 545 1922
	2.0 m 	09 45 545 1923
	3.0 m 	09 45 545 1924
4.0 m 	09 45 545 1926	
5.0 m 	09 45 545 1925	
	USB 3.0 type A insert in HIFF format pre-assembled	
	0.25 m 	09 45 545 1936
	0.5 m 	09 45 545 1930
	1.0 m 	09 45 545 1931
	1.5 m 	09 45 545 1932
	2.0 m 	09 45 545 1933
	3.0 m 	09 45 545 1934
	5.0 m 	09 45 545 1935
 <div style="border: 1px solid black; border-radius: 50%; padding: 2px; display: inline-block; margin-top: 10px;"> CAT. 6_A </div>	RJ45 HIFF core pre-assembled with DualBoot® RJ45 cable	
	0.15 m 	09 45 545 1500
	0.2 m 	09 45 545 1501
	0.3 m 	09 45 545 1502
	0.4 m 	09 45 545 1503
	0.5 m 	09 45 545 1504
	1.0 m 	09 45 545 1509
	RJ45 HIFF core pre-assembled with VarioBoot® RJ45 cable	09 48 841 1745 xxx

xxx = Length of cable

005 = 0.5 m | 010 = 1.0 m | 015 = 1.5 m | 020 = 2.0 m | 030 = 3.0 m | 050 = 5.0 m | 075 = 7.5 m | 100 = 10 m | 150 = 15 m | 200 = 20 m

Other lengths available on request (10cm)

T1 Industrial - SPE connector (Single Pair Ethernet)

	T1 Industrial connector <ul style="list-style-type: none"> ■ Single Pair Ethernet ■ 2 crimp contacts ■ Shielded 360° 	09 45 181 2810 XL
	Crimp contacts AWG 28-26	09 45 181 2810 XL
	Crimp contacts AWG 24-22	09 45 800 2812
	T1 Industrial plug Flat mounting, soldered contact pins on PCB	09 45 281 2810
	Crimping tool	
	T1 Industrial contacts AWG 28-26	09 45 800 2810
	T1 Industrial contacts AWG 24-22	09 45 800 2811
	SPE cables <ul style="list-style-type: none"> ■ SPE cable, PUR ■ Pre-assembled with overmoulded T1 connectors on two sides ■ 10/100 Mbit/s - 10 Gbit/s 	
	2 x AWG 26/7	33 28 020 2001 xxx
	2 x AWG 22/7	33 28 020 2002 xxx

T1 M12/T1 Industrial connector - Characteristics & advantages

Single Pair Ethernet (SPE) is a new TCP/IP transmission standard for one twisted pair. Transmission standards prepared by IEEE 802.3 have already been published.

IEEE 802.3bw	100BASE-T1: 100 Mbit/s - 166 MHz	15.0 m non-shielded / 40.0 m shielded
IEEE 802.3bp	1000BASE-T1: 1 Gbit/s - 600 MHz	15.0 m non-shielded / 40.0 m shielded
IEEE 802.3bu	Power over Data Line (PoDL)	12 V / 24 V / 48 V / 5.0 ... 50.0 W
IEEE 802.3cg	10BASE-T1 - 10 Mbit/s - 20 MHz	25.0 m non-shielded / 1000 m shielded
IEEE 802.3ch	2.5 GBASE-T1 - 5 GBASE-T1 - 10 GBit/s - 4GHz	15.0 m shielded

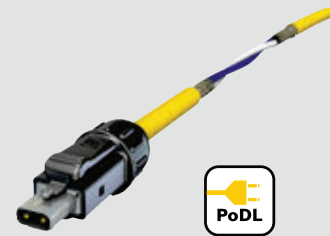
Capable of being used over distances up to 1 km, SPE has all the features to replace old field buses or analog networks as current loops 4...20 mA. It is also a good support for connecting actuators and sensors with Ethernet-based automation networks.

An SPE cable has many advantages:

- Thinner lighter cable
- Better performance to industrial requirements, especially in cyclic translation on a drag chain or in torsion (robotic).
- Lower cost cable (less than copper)
- Simpler cabling

As an IEC 63171-6 certified connector, the T1 Industrial is suitable for use in harsh industrial environments.

- Data rate: 10/100 Mbit/s, 10 Gbit/s
- Bandwidth: 4 GHz
- ≥ 1000 mating cycles
- Designed for industrial environments M313C3E3



M12 Circular connectors

		T1 Industrial coding (2 wires)		
Cable side		IP65 IP67 M12 connector male slim code-T1 Industrial ■ 2 crimp contacts ■ Conductors AWG 28-22	21 03 339 1205	
		Crimp contacts AWG 28-26	09 45 500 2810	
		Crimp contacts AWG 24-22	09 45 500 2812	
Plugs		IP65 IP67 T1 Industrial M12 plug straight 12.5 mm ■ THR soldering ■ Shielded ■ Straight, soldered contact pins on PCB	21 03 339 2202	
			IP65 IP67 T1 Industrial M12 plug straight 8 mm ■ THR soldering ■ Shielded ■ Straight, soldered contact pins on PCB	21 03 339 2201
				IP65 IP67 T1 Industrial M12 plug angled ■ THR soldering ■ Shielded ■ Flat mounting, soldered contact pins on PCB
Housings		IP65 IP67 T1 Industrial M12 receptacle for rear mounting ■ Screw locking	21 03 339 2001	
			IP65 IP67 T1 Industrial M12 receptacle for front mounting ■ Screw locking & PushPull	21 03 339 2000
Tools		Crimping tool (AWG 28-26)	09 45 800 2810	
		Crimp contacts AWG 28-26	09 45 500 2810	
		Crimping tool (AWG 24-22)	09 45 800 2811	
		Crimp contacts AWG 24-22	09 45 500 2812	









M12 Circular connectors

D-coded - Cat. 5 (4 wires)	Cable side	 	M12 connector male slim D-coded ■ 4 HARAX® contacts (IDC) ■ Shielded	Conductors AWG 26 21 03 382 1410 Conductors AWG 22 21 03 382 1400
		 	M12 connector male D-coded ■ 4 HARAX® contacts (IDC) ■ Shielded ■ Conductors AWG 26-22	21 03 281 1405
		 	M12 PushPull connector male D-coded ■ 4 HARAX® contacts (IDC) ■ Shielded	Conductors AWG 26 21 03 382 1411 Conductors AWG 22 21 03 382 1401
		 	M12 connector male D-coded ■ preLink® (AWG 27-22) ■ Shielded	20 82 005 0001
		 	M12 connector female slim D-coded ■ 4 HARAX® contacts (IDC) ■ Shielded	Conductors AWG 26 21 03 382 2410 Conductors AWG 22 21 03 382 2400
		 	M12 connector female D-coded ■ 4 HARAX® contacts (IDC) ■ Shielded ■ Conductors AWG 26-22	21 03 281 2405
	Device side	 	M12 connector female D-coded ■ PFT (panel feed-through) ■ 4 HARAX® contacts (IDC) ■ Shielded ■ Conductors AWG 26-22	21 03 381 2425
		 	M12 PushPull connector female D-coded ■ PFT (panel feed-through) ■ preLink® (AWG 27-22) ■ Shielded	20 82 005 2001

xxx = Length of cable

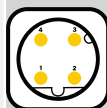
003 = 0.3 m	005 = 0.5 m	010 = 1.0 m	015 = 1.5 m
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Other lengths available on request (10cm)

X-coded - Cat. 6A (8 wires)	Cable side		M12 connector male slim X-coded ■ 8 crimp contacts ■ Shielded	21 03 881 1805
			har-speed crimp contacts AWG 28-24	21 01 100 9014
			har-speed crimp contacts AWG 26-23	21 01 100 9019
			M12 PushPull connector male X-coded ■ 8 crimp contacts ■ Shielded	21 03 881 1830
			har-speed crimp contacts AWG 28-24	21 01 100 9014
			har-speed crimp contacts AWG 26-23	21 01 100 9019
	Device side		M12 connector male D-coded ■ preLink® (AWG 27-22) ■ Shielded	20 82 005 0002
			M12 connector female slim X-coded ■ 8 crimp contacts ■ Shielded	21 03 881 2805
			har-speed crimp contacts AWG 28-24	21 01 100 9023
			har-speed crimp contacts AWG 26-23	21 01 100 9021
			M12 PushPull connector female X-coded ■ PFT (panel feed-through) ■ 8 crimp contacts ■ Shielded	21 03 881 2825
			har-speed crimp contacts AWG 28-24	21 01 100 9023
	har-speed crimp contacts AWG 26-23	21 01 100 9021		
	M12 PushPull connector female X-coded ■ PFT (panel feed-through) ■ preLink® (AWG 27-22) ■ Shielded	20 82 006 2001		
	M12 PushPull connector female X-coded pre-assembled ■ PFT (panel feed-through) ■ 8 crimp contacts on cable S/FTP PUR black ■ Shielded			
	Black cable 	21 33 080 0850 xxx		

M12 connector - Characteristics & advantages

With the M12 PushPull, screwing the connectors together is not necessary, this saves time in mating and un-mating and no torque wrench is needed.



D-coded
Cat. 5 (10/100 Mbit/s - 100 MHz)



X-coded
Cat. 6_A (1/10 Gbit/s - 500 MHz)

M12 cables D-coded - Definition of references

2 1	3 4	X X X	X X X X	x x x	
9 2					M12 connector male straight
9 3					M12 connector female straight
9 4					M12 connector male angled
9 5					M12 connector female angled
	0	0			No connector
	9	2			M12 connector male straight
	9	3			M12 connector female straight
	9	4			M12 connector male angled
	9	5			M12 connector female angled
		4			4 poles
	0 5				PVC
	7 7				PUR
	0 0 5				0.5 m
	0 1 0				1.0 m
	0 1 5				1.5 m
	0 2 0				2.0 m
	0 5 0				5.0 m
	0 7 5				7.5 m
	1 0 0				10.0 m

CAT. 6_s

M12 Ethernet cable X-coded

- Cable S/FTP yellow
- Connector male Slim Press & Go


Jacket	Connector 1	Connector 2		
PVC	M12 X-coded	No		21 33 050 0855 xxx
PUR	M12 X-coded	No		21 33 050 0850 xxx
PVC	M12 X-coded	M12 X-coded		21 33 050 5855 xxx
PUR	M12 X-coded	M12 X-coded		21 33 050 5850 xxx

xxx = Length of cable

005 = 0.5 m	010 = 1.0 m	020 = 2.0 m	030 = 3.0 m	050 = 5.0 m	100 = 10 m
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Other lengths available on request (10cm)

M8 cables D-coded - Definition of references



CAT. 5

2 1	3 4	X X X	X X X X	x x x	
C 7					M8 connector male straight
D 7					M8 connector female straight
		0 0			No connector
		C 7			M8 connector male straight
		D 7			M8 connector female straight
			4		4 poles
		0 5			PVC
		7 7			PUR
		0 0 5			0.5 m
		0 1 0			1.0 m
		0 1 5			1.5 m
		0 2 0			2.0 m
		0 5 0			5.0 m
		0 7 5			7.5 m
		1 0 0			10.0 m

	RJ45/ M12 Ethernet cables D-coded			
	<ul style="list-style-type: none"> Cable 2 x 2 x AWG22 green Overmoulded connectors 			
	Jacket	Connector 1	Connector 2	
PUR	DualBoot® RJ45	M12 male straight	09 48 689 6018 xxx	
PUR	DualBoot® RJ45	M12 male angled	09 48 688 3018 xxx	

xxx = Length of cable

005 = 0.5 m	010 = 1.0 m	020 = 2.0 m	030 = 3.0 m	050 = 5.0 m	100 = 10 m
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Other lengths available on request (10cm)

M8 Circular connectors

D-coded - Cat. 5 (4 wires)		M8 connector D-coded <ul style="list-style-type: none"> 4 HARAX® contacts (IDC) Shielded Conductors AWG 22 	IP65 IP67	Male	21 02 185 1405
				Female	21 02 185 2405
		M8 PushPull connector male D-coded <ul style="list-style-type: none"> 4 HARAX® contacts (IDC) Shielded Conductors AWG 22 	IP65 IP67		21 02 185 1430
P-coded - Cat. 5 (4 wires)		M8 connector P-coded <ul style="list-style-type: none"> 4 HARAX® contacts (IDC) Shielded Conductors AWG 22 	IP65 IP67	Male	21 02 145 1405
				Female	21 02 145 2405
		M8 PushPull connector male P-coded <ul style="list-style-type: none"> 4 HARAX® contacts (IDC) Shielded Conductors AWG 22 	IP65 IP67		21 02 145 1430

M8 connector - Characteristics & advantages

The M8 connector is 30% more compact than the M12, which is significant for small sensors or actuators. Like the M12, the M8 PushPull version does not need to be connected using the screw thread saving time.



D-coded
Cat. 5 (10/100 Mbit/s - 100 MHz)









P-coded
Cat. 5 (10/100 Mbit/s - 100 MHz)

PushPull (V4) RJ45 Ethernet cables

	Overmoulded cables			
	<ul style="list-style-type: none"> Cable S/FTP 			
	Jacket	Connector 1	Connector 2	
	PUR	PushPull RJ45	PushPull RJ45	09 48 282 8756 xxx
	PVC	PushPull RJ45	PushPull RJ45	09 48 282 8757 xxx
	PUR	PushPull RJ45	DualBoot® RJ45	09 48 284 7744 xxx
	PUR	PushPull RJ45	DualBoot® RJ45	09 48 284 7756 xxx
	PVC	PushPull RJ45	DualBoot® RJ45	09 48 284 7757 xxx
	PVC Outdoor	PushPull RJ45	PushPull RJ45	09 48 282 2758 xxx
PVC Outdoor	PushPull RJ45	DualBoot® RJ45	09 48 284 7758 xxx	

PushPull (V4) connectors

Cable side		PushPull (V4) RJ45 connector ■ 4 IDC contacts ■ Shielded ■ Conductors AWG 24-22	CAT. 5 IP65 IP67	09 45 145 1106
		PushPull (V4) RJ45 connector ■ 8 IDC contacts ■ Shielded ■ Conductors AWG 27-22	CAT. 6_A IP65 IP67	09 45 145 1561
		PushPull RJ45 coupler ■ Shielded	CAT. 6_A IP65 IP67	09 45 345 1560
Device side		PushPull RJ45 housing ■ BULKHEAD mounting ■ Shielded	CAT. 6_A IP65 IP67	09 45 245 1561
		PushPull HIFF housing ■ Compatible with inserts with HIFF format (RJ45 core, RJ45 coupler, USB coupler)	IP65 IP67	09 45 545 0041
Accessories		2-port outlet housing with protection caps ■ PushPull RJ45 two-port ■ IDC contacts ■ Conductors AWG 24-22	IP65 IP67	09 45 845 1562
		Empty 2-port outlet housing with protection caps ■ PushPull RJ45 two-way ■ Mounting of 2 RJ45 cores with HIFF format for cabling	IP65 IP67	09 45 845 1560

PushPull connector - Characteristics & advantages

The PushPull connector has all the advantages for intensive use:

- Speedy connection and disconnection
- Easy to use with audible click on connection
- Little force for insertion and removal

- Once connected, a locking ring can prevent accidental disconnections.



- Visual marking for easy connection



HARTING RJ Industrial® Han® 3A RJ45

Cable side				
Cable side		CAT. 5 Han® 3A RJ45 Male insert ■ 4 IDC contacts ■ Shielded	Conductors AWG 26	09 45 100 1110
			Conductors AWG 24-22	09 45 100 1100
				09 45 100 1560
		CAT. 6 Han® 3A RJ45 Male insert ■ 8 IDC contacts ■ Shielded ■ Conductors AWG 27-22		
			CAT. 6_A Han® 3A RJ45 preLink® Male insert ■ preLink® (AWG 27-22) ■ Shielded	
		IP65 IP67 Han® 3A Housing ■ With glued seal ■ M20 output		Metal, grey
			Metal, black	19 37 003 1443
			Plastic, grey	19 20 003 0423
			Plastic, black	19 20 003 0423
			EMC	19 62 003 1443
	Stainless steel		19 44 003 1443	
Device side		CAT. 6 Han® 3A RJ45 coupler ■ Shielded		09 45 200 1560
				09 45 515 0024
		IP65 IP67 Han® 3A bulkhead housing	Metal, grey	09 20 003 0301
			Metal, black	09 37 003 0301
			Plastic, grey	09 20 003 0320
			Plastic, black	09 20 003 0327
			EMC	09 62 003 0301
			Stainless steel	19 44 003 0301
	IP65 IP67 Han® 3A bulkhead housing ■ With self-closing cover	Metal, grey	09 20 003 0306	
		Metal, black	09 37 003 0306	
		EMC	09 62 003 0306	

Cable to cable junction		IP65 IP67	Han® 3A cable-to-cable housing	
			■ M20 output	
			Metal, grey	19 20 003 1750
			Metal, black	19 37 003 1750
			Plastic, grey	19 20 003 0720
			Plastic, black	19 20 003 0727
Cable to cable junction		CAT. 5 CAT. 5e IP65 IP67	Han® 3A RJ45 coupler	
			■ 8 poles	
			Metal, grey	09 45 215 1107
			Metal, black	09 45 215 1110
			Plastic, black	09 45 225 1107
			EMC	19 62 003 1750
USB	Cable side		Han-Brid® USB insert	
			■ Compatible with USB cables	09 12 001 3091
	Equipment		Han-Brid® USB insert	
			USB extender	
USB 3.0	09 12 001 2793			
USB 2.0	09 45 215 1110			
Han® 3A RJ45 kit	Cable side		Han® 3A RJ45 connector	
			■ 8 IDC contacts	CAT. 6
			■ AWG 27-22	
	Plastic version, black	09 45 125 1560		
	Equipment		Han® 3A RJ45 housing	
			■ RJ45 coupler	CAT. 6
Plastic version, black			09 45 225 1560	
Metal version, grey	09 45 215 1560			
Metal version, grey, with self-closing cover	09 45 215 1562			

Han® 3A Connector - Characteristics & advantages

For strength and versatility, the Han® industrial connector is used and recognized in the fields of machinery, robotics, transport and energy. You will find a version to suit whatever your needs for use in harsh industrial environments.

Han® 3A is a compact version available with several finishes:

- Standard (zinc with epoxy finish)
- Gray or black plastic (polycarbonate)
- Han® EMC for environments subject to electromagnetic disturbances
- Han-INOX® for increased resistance to saline environments
- Han® HPR for harsh external environments (IP69k)
- Han® Ex for zones exposed to explosion hazard

More than 100 inserts to Han® 3A size are available for connecting power, signals, data (copper, coaxial, optical fiber).



Han-Modular®

Han® RJ45			Han® RJ45 male module ■ Mounting of RJ45 male inserts	09 14 001 4623	
		CAT. 5	RJ45 insert - 4 IDC contacts		
			Conductors AWG 26	09 45 400 1109	
		CAT. 6_A	RJ45 insert - 8 IDC contacts		
			Conductors AWG 24-22	09 45 400 1100	
			RJ45 insert ■ Compatible with DualBoot® RJ45 cables	09 14 000 9966	
			Han® RJ45 female module ■ Compatible with RJ45 cores with HIFF format	09 14 001 4722	
			Han® RJ45 coupler module ■ Shielded	09 14 001 4721	
Han® Gigabit			CAT. 7	Han® Gigabit male module ■ Mounting of Han® Gigabit male insert	09 14 001 3011
				Han® Gigabit male insert ■ 8 crimp contacts ■ Shielded	09 14 008 3011
				Crimp contacts, male ■ AWG 26-22	09 93 000 5576
			CAT. 7	Han® Gigabit female module ■ Mounting of Han® Gigabit female insert	09 14 001 3111
				Han® Gigabit female insert ■ 8 crimp contacts ■ Shielded	09 14 008 3111
				Crimp contact, female ■ AWG 26-22	09 93 000 5476
				Cable clamp	
				Ø 5 - 7 mm	61 03 000 0141
				Ø 7 - 10 mm	61 03 000 0044
				Ø 9 - 12 mm	61 03 000 0143

Han® M12		Han® M12 male module ■ Mounting of 2 Han® M12 male inserts	09 14 002 3061
		Han® M12 D-coded male insert ■ 4 crimp contacts AWG 26-18	09 14 881 1405
		Crimp contacts, male M12 D-coded AWG 18-22	09 67 000 3576
		Crimp contacts, male M12 D-coded AWG 24-20	09 67 000 8576
		Crimp contacts, male M12 D-coded AWG 26-22	09 67 000 5576
	Han® M12 X-coded male insert ■ 8 crimp contacts AWG 28-23	09 14 881 1805	
	har-speed crimp contact AWG 28-24	21 01 100 9014	
	har-speed crimp contact AWG 26-23	21 01 100 9019	
		Han® M12 female module ■ Mounting of 2 Han® M12 female inserts	09 14 002 3161
		Han® M12 D-coded female insert ■ 4 crimp contacts AWG 26-18	09 14 881 2405
Crimp contacts, female M12 D-coded AWG 18-22		09 67 000 3476	
Crimp contacts, female M12 D-coded AWG 24-20		09 67 000 8476	
Crimp contacts, female M12 D-coded AWG 26-22		09 67 000 5476	
Han® M12 X-coded female insert ■ 8 crimp contacts AWG 28-23		09 14 881 2805	
har-speed crimp contact AWG 28-24		21 01 100 9023	
har-speed crimp contact AWG 26-23		21 01 100 9021	

Han-Modular® - Characteristics & advantages

Han-Modular® is the reference range for industrial modular connectors. More than 100 modules make up the range, which is the most versatile and complete on the market.

- Many combinations of different connections in one connector
- Power, Signals, and Data in one connector
- By connector size, from 1 to 12 slots

With the different finishes available, Han-Modular® is suitable for all types of industrial environment.

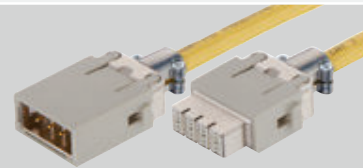
- Standard (moulded aluminum with epoxy treatment)
- Han-Eco® (fiberglass reinforced polyamide)
- Han® EMC for environments subject to electromagnetic disturbances
- Han-INOX® for increased resistance to saline environments
- Han® HPR for harsh external environments (IP69k)
- Han® Ex for zones exposed to explosion hazard














Han® Gigabit - Characteristics & advantages

Choose Han® Gigabit for high performance and robust Ethernet connections.

For high numbers of mating cycles, the Han® Gigabit HMC version (High Mating Cycle) is available ($\geq 10,000$ mating cycles). HMC contacts, with reinforced gold treatment, are also offered.



Han® 1A

		<p>Han® 1A, M12 D-coded inserts</p> <ul style="list-style-type: none"> ■ With locking catch ■ 4 crimp contacts AWG 26-18 ■ Shielded 	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; border-radius: 10px; padding: 2px 5px; font-weight: bold;">CAT. 5</div> <div style="border: 1px solid black; border-radius: 10px; padding: 2px 5px; font-weight: bold;">IP65</div> <div style="border: 1px solid black; border-radius: 10px; padding: 2px 5px; text-align: center;"> +90 -30 </div> </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Male insert</td> <td style="text-align: right;">09 10 004 3001</td> </tr> <tr> <td>Female insert</td> <td style="text-align: right;">09 10 004 3101</td> </tr> </table>	Male insert	09 10 004 3001	Female insert	09 10 004 3101				
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		<p>Han® 1A, M12 D-coded inserts</p> <ul style="list-style-type: none"> ■ With locking lever ■ 4 crimp contacts AWG 26-18 ■ Shielded 	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; border-radius: 10px; padding: 2px 5px; font-weight: bold;">CAT. 5</div> <div style="border: 1px solid black; border-radius: 10px; padding: 2px 5px; font-weight: bold;">IP65</div> <div style="border: 1px solid black; border-radius: 10px; padding: 2px 5px; text-align: center;"> +90 -30 </div> </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Male insert</td> <td style="text-align: right;">09 10 004 3006</td> </tr> <tr> <td>Female insert</td> <td style="text-align: right;">09 10 004 3106</td> </tr> </table>	Male insert	09 10 004 3006	Female insert	09 10 004 3106				
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Female insert	09 10 004 3106										
		<p>Crimp contacts, male M12 D-coded</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">AWG 18-22</td> <td style="text-align: right;">09 67 000 3576</td> </tr> <tr> <td>AWG 24-20</td> <td style="text-align: right;">09 67 000 8576</td> </tr> <tr> <td>AWG 26-22</td> <td style="text-align: right;">09 67 000 5576</td> </tr> <tr> <td>AWG 28-24</td> <td style="text-align: right;">09 67 000 7576</td> </tr> </table>		AWG 18-22	09 67 000 3576	AWG 24-20	09 67 000 8576	AWG 26-22	09 67 000 5576	AWG 28-24	09 67 000 7576
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<i>har-speed</i> female crimp contact AWG 26-23	21 01 100 9021										

		Bulkhead mounting ■ With seals Straight 09 10 000 0300 Angled 09 10 000 0800
		Cable junction With strain-relief clamp 09 10 000 5300 With Cable gland/Seals included 09 10 000 0400
		Han® 1A metal locking lever 09 10 000 5200
		Grip frame ■ Wall mounting 09 10 000 9908
		Grip frame ■ Mounting on DIN rail 09 10 000 9912










































Han® 1A - Characteristics & advantages

Han® 1A is the most compact of Han® industrial connectors.

- 30% smaller than Han® 3A.
- Its pluggable modular assembly saves mounting time
- Light, strong, waterproof
- Suited to use conditions in rough industrial environments
- Cable-to-cable or panel mounting
- Fast and easy to use for intensive use



Ethernet switches

	<p>eCon 2000 Ethernet switches</p> <ul style="list-style-type: none"> Flat Fast Ethernet MTBF $\geq 2,500,000$ h <table border="1"> <tbody> <tr> <td rowspan="2">  </td> <td>5 RJ45 ports</td> <td>24 02 005 0010</td> </tr> <tr> <td>8 RJ45 ports</td> <td>24 02 008 0010</td> </tr> <tr> <td rowspan="2">  </td> <td>5 RJ45 ports</td> <td>24 02 005 0000</td> </tr> <tr> <td>8 RJ45 ports</td> <td>24 02 008 0000</td> </tr> </tbody> </table>		5 RJ45 ports	24 02 005 0010	8 RJ45 ports	24 02 008 0010		5 RJ45 ports	24 02 005 0000	8 RJ45 ports	24 02 008 0000					
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eCon Ethernet switches - Characteristics & advantages

Plug & Play, HARTING Ethernet switches will facilitate the installation and extension of your Ethernet networks.

- Non-managed switches
- Compatible with IEEE 802.3 Ethernet architectures
- Wide power supply range: AC 24 V / DC 9 ... 60 V
- Strong and light with aluminum enclosure
- Minimal consumption
- Available in PoE / PoE+ version
- Available with Optical Fiber ports (SC Duplex connector)
- ECE-R10 (E1) approved for use in vehicles



Industry 4.0 and efficient connected devices mean increasingly high data flows. This is why Ethernet switches have to simultaneously transfer images and high data flows without altering network performance.

New generation HARTING Ethernet switches easily manage all Full Gigabit Ethernet ports, even when the devices are very data consuming cameras.



24 13 416 0000

Industrial Ethernet cables

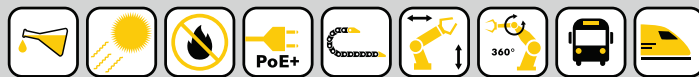
		Cable, Profinet type A - PVC - Star quad - 4 x AWG 22/1 UN/ECE-R118	<table border="1"> <tr><td>20 m</td><td>09 45 600 0130</td></tr> <tr><td>50 m</td><td>09 45 600 0140</td></tr> <tr><td>100 m</td><td>09 45 600 0100</td></tr> <tr><td>500 m</td><td>09 45 600 0110</td></tr> </table>	20 m	09 45 600 0130	50 m	09 45 600 0140	100 m	09 45 600 0100	500 m	09 45 600 0110
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		Cable, Profinet type B - PVC - Star quad - 4 x AWG 22/7 UN/ECE-R118	<table border="1"> <tr><td>20 m</td><td>09 45 600 0132</td></tr> <tr><td>50 m</td><td>09 45 600 0142</td></tr> <tr><td>100 m</td><td>09 45 600 0102</td></tr> <tr><td>500 m</td><td>09 45 600 0112</td></tr> </table>	20 m	09 45 600 0132	50 m	09 45 600 0142	100 m	09 45 600 0102	500 m	09 45 600 0112
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500 m	09 45 600 0112										
		Cable, Profinet type C - PUR - Star quad - 4 x AWG 22/7 ■ 3,000,000 cycles of bending in translation Ø of bending 200 mm speed 4 m/s - acceleration 4 m/s ² ■ 30,000 cycles of torsion to +/- 180° on 1.0 m UN/ECE-R118	<table border="1"> <tr><td>20 m</td><td>09 45 600 0131</td></tr> <tr><td>50 m</td><td>09 45 600 0141</td></tr> <tr><td>100 m</td><td>09 45 600 0101</td></tr> <tr><td>500 m</td><td>09 45 600 0111</td></tr> </table>	20 m	09 45 600 0131	50 m	09 45 600 0141	100 m	09 45 600 0101	500 m	09 45 600 0111
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		Cable, Profinet type R - PUR - Star quad - 4 x AWG 22/19 ■ 5,000,000 cycles of bending in translation Ø of bending 75 mm speed 5 m/s - acceleration 20 m/s ² ■ 5,000,000 cycles of torsion to +/- 180° on 1.0 m 	<table border="1"> <tr><td>20 m</td><td>09 45 600 1131</td></tr> <tr><td>50 m</td><td>09 45 600 1141</td></tr> <tr><td>100 m</td><td>09 45 600 1101</td></tr> <tr><td>50 mm</td><td>09 45 600 1111</td></tr> </table>	20 m	09 45 600 1131	50 m	09 45 600 1141	100 m	09 45 600 1101	50 mm	09 45 600 1111
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		Cable, Profinet type A - PVC - S/FTP - 4 x 2 x AWG 23/1 UN/ECE-R118	<table border="1"> <tr><td>20 m</td><td>09 45 600 1200</td></tr> <tr><td>50 m</td><td>09 45 600 1210</td></tr> <tr><td>100 m</td><td>09 45 600 1220</td></tr> <tr><td>500 m</td><td>09 45 600 1230</td></tr> </table>	20 m	09 45 600 1200	50 m	09 45 600 1210	100 m	09 45 600 1220	500 m	09 45 600 1230
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		Cable, Profinet type B - PVC - S/FTP - 4 x 2 x AWG 23/7 UN/ECE-R118	<table border="1"> <tr><td>20 m</td><td>09 45 600 1211</td></tr> <tr><td>50 m</td><td>09 45 600 1221</td></tr> <tr><td>100 m</td><td>09 45 600 1231</td></tr> <tr><td>500 m</td><td>09 45 600 1241</td></tr> </table>	20 m	09 45 600 1211	50 m	09 45 600 1221	100 m	09 45 600 1231	500 m	09 45 600 1241
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		Cable, PVC - S/FTP - 4 x 2 x AWG 26/7 UN/ECE-R118	<table border="1"> <tr><td>20 m</td><td>09 45 600 0532</td></tr> <tr><td>50 m</td><td>09 45 600 0542</td></tr> <tr><td>100 m</td><td>09 45 600 0502</td></tr> <tr><td>500 m</td><td>09 45 600 0522</td></tr> </table>	20 m	09 45 600 0532	50 m	09 45 600 0542	100 m	09 45 600 0502	500 m	09 45 600 0522
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		Cable, PVC Outdoor - S/FTP - 4 x 2 x AWG 26/7 UN/ECE-R118	<table border="1"> <tr><td>20 m</td><td>09 45 600 0531</td></tr> <tr><td>50 m</td><td>09 45 600 0541</td></tr> <tr><td>100 m</td><td>09 45 600 0501</td></tr> <tr><td>500 m</td><td>09 45 600 0521</td></tr> </table>	20 m	09 45 600 0531	50 m	09 45 600 0541	100 m	09 45 600 0501	500 m	09 45 600 0521
20 m	09 45 600 0531										
50 m	09 45 600 0541										
100 m	09 45 600 0501										
500 m	09 45 600 0521										

		Cable, PUR - S/FTP - 4 x 2 x AWG 26/7 CAT. 6A UN/ECE-R118	20 m 09 45 600 630 50 m 09 45 600 640 100 m 09 45 600 600 500 m 09 45 600 620
		 CAT. 7	100 m 09 45 600 711 500 m 09 45 600 721 1000 m 09 45 600 751
		Cable, EtherRail® - Star quad - 4 x AWG 22/7 CAT. 5 UN/ECE-R118 EN 45545-2 (HL 1-3)	10 m 09 45 600 0168 50 m 09 45 600 0178 100 m 09 45 600 0108 500 m 09 45 600 0118 1000 m 09 45 600 0128
		Cable, EtherRail® - Star quad - 4 x AWG 22/19 Ultra flexible CAT. 5 UN/ECE-R118 EN 45545-2 (HL 1-3)	10 m 09 45 600 0188 50 m 09 45 600 0189 100 m 09 45 600 0138 500 m 09 45 600 0148 1000 m 09 45 600 0158
		Cable, EtherRail® - S/FTP 4 x 2 x AWG 24/7 CAT. 7 UN/ECE-R118 EN 45545-2 (HL 1-3)	10 m 09 45 600 0694 50 m 09 45 600 0693 100 m 09 45 600 0692 500 m 09 45 600 0691 1000 m 09 45 600 0690
		4 x 2 x AWG 24/7 CAT. 7 UN/ECE-R118 EN 45545-2 (HL 1-3)	10 m 09 45 600 0704 50 m 09 45 600 0703 100 m 09 45 600 0702 500 m 09 45 600 0701 1000 m 09 45 600 0700
		Cable, SPE (Single Pair Ethernet) - PUR - SF/TP 1 x 2 x AWG 26/7 	10 m 09 45 600 2004 50 m 09 45 600 2003 100 m 09 45 600 2002 500 m 09 45 600 2001
		1 x 2 x AWG 22/7 	10 m 09 45 600 2014 50 m 09 45 600 2013 100 m 09 45 600 2012 500 m 09 45 600 2011

Ethernet cables - Characteristics & advantages

HARTING Ethernet cables are designed for use in industrial environments.

- High quality PVC, PUR or EtherRail® jackets
- Shielding braid covering at least 80% for excellent performance in environments exposed to electromagnetic pollution
- High mechanical resistance to bending or torsion according to cable
- UN/ECE-R 118 (Automobile Directive) certification according to cable
- EtherRail cables® approved to EN 45545-2, railway standard for fire safety



Contact allocation

	RJ45	M12 X-coded	Ethernet standard 8 wires	ETA / ITA T568A	EIA/TIA T568 B	IP Ethernet 2 pairs	Profinet	Ethernet standard 4 wires	M12/M8 D-coded	RJ45
1	1	1	BI_DA+	White/Green	White/Orange	White/Orange	Yellow	TX+	1	1
2	2	2	BI_DA-	Green	Orange	Orange	Orange	TX-	3	2
6	3	3	BI_DB+	White/Orange	White/Green	White/Green	White	RX+	2	3
4	4	4	BI_DC+	Blue	Blue					
5	5	5	BI_DC-	White/Blue	White/Blue					
7	6	6	BI_DB-	Orange	Green	Green	Blue	RX-	4	6
9	7	7	BI_DD+	White/Brown	White/Brown					
10	8	8	BI_DD-	Brown	Brown					
3.8 GND										

Performance categories according to connectors

Categories	Characteristics	Band-width	Ethernet	Transmission rate	No. of wires
Cat. 5 Class D	100 BASE-TX	100 MHz	Fast Ethernet	10/100 Mbits/s	4
Cat. 5e Class D	100 BASE-TX / 1000 BASE-T	100 MHz	Ethernet Gigabit	10/100/1000 Mbits/s	8
Cat. 6 Class E	1G BASE-T, 2.5 / 5G BASE-T	250 MHz	Ethernet Gigabit	10/100 Mbits/s - 1/10 Gbits/s	8
Cat. 6 _A Class E _A	10G BASE-T	500 MHz	Ethernet 10 GB	10/100 Mbits/s	8
Cat. 7 Class F	10G BASE-T	600 MHz	Ethernet 10 GB	10/100 Mbits/s	8
Cat. 7 _A Class F _A	10G BASE-T	1000 MHz	Ethernet 10 GB	10/100 Mbits/s	8

HARTING connector

Crimping tool - Characteristics & advantages

Crimp contacts are recommended in certain cases, especially in extreme use conditions with high mechanical stresses (large and cyclical vibrations and shocks).

The HARTING crimping tool, dedicated and calibrated for HARTING contacts, ensures excellent crimping quality for you.

- Repeatability of quality and crimping operations
- Constant contact resistance
- Corrosion-free connection resulting from cold welding
- The Go/No-Go gauge lets you check tool calibration.



Tools

Stripping		RJ Industrial® stripping tool ■ Ethernet cable ■ With blade cassette	09 45 800 0000
		Blade cassette	09 45 800 0001
Shear		RJ Industrial® stripping tool ■ Ethernet cable	09 45 800 0002
		Cable shear	09 45 800 0004
Crimping		Cable shear for conductors	09 45 800 0005
		Crimping tool ■ Crimping to MIL 22 520/2-01 Locator for contacts ■ AWG 26-22 - Han® Gigabit Locator for <i>har</i> -speed male contacts ■ AWG 28-23 - M12 X-coded Locator for <i>har</i> -speed female contacts ■ AWG 28-23 - M12 X-coded Locator for Sub-D contacts ■ AWG 28-18 - M12 D-coded	09 99 000 0501 09 99 000 0897 09 99 000 0525 09 99 000 0635 09 99 000 0531
Mounting		Go/No-Go check gauge	09 99 000 0617
		<i>har</i> -port mounting tool ■ Torque tightening of fixing nut	09 45 502 0007



Pushing Performance



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