



Pushing Performance
Since 1945



PEOPLE. POWER. PARTNERSHIP.

HARTING

Ethernet Portfolio Guide

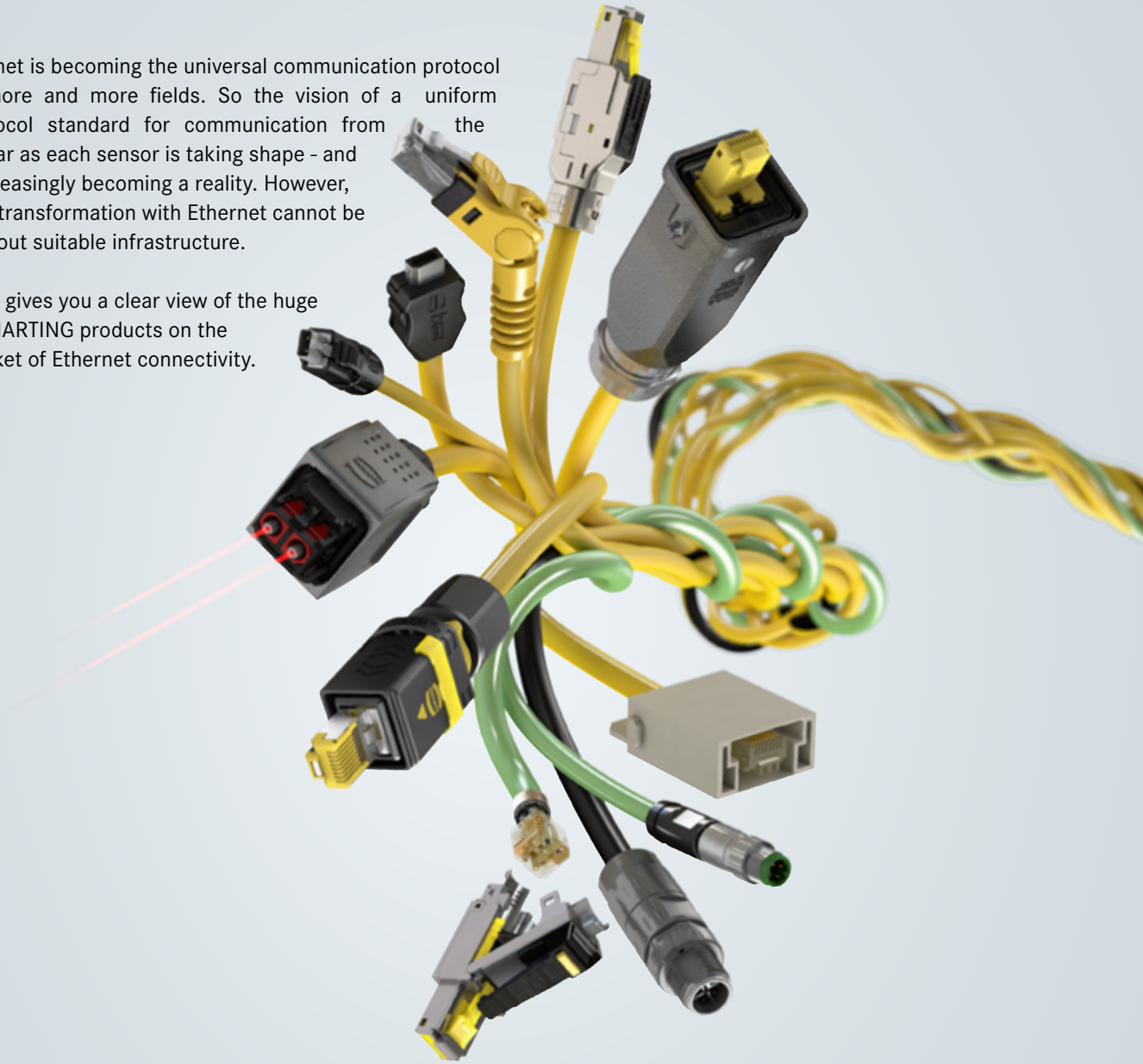
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Introduction

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.

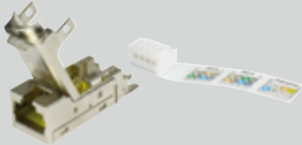



DIGITALISATION IN INDUSTRIAL AUTOMATION IS ADVANCING WITH GREAT STRIDES.

RJ Industrial® RJ45 connectors

 		<p>RJ Industrial® connector straight</p> <ul style="list-style-type: none"> ■ 4 IDC contacts, can be assembled in the field without tools ■ Conductors AWG 27-22, solid/stranded ■ Transmission rate: 10/100 Mbit/s 	09 45 151 1120
 		<p>RJ Industrial® connector, angled 45° (4 possible directions)</p> <ul style="list-style-type: none"> ■ 4 IDC contacts, can be assembled in the field without tools ■ Conductors AWG 27-22, solid/stranded ■ Transmission rate: 10/100 Mbit/s 	09 45 151 1121
 		<p>RJ Industrial® connector EtherRail® straight</p> <ul style="list-style-type: none"> ■ 4 IDC contacts, can be assembled in the field without tools ■ Conductors AWG 27-22, solid/stranded ■ Transmission rate: 10/100 Mbit/s 	09 45 151 1122
 		<p>RJ Industrial® connector straight</p> <ul style="list-style-type: none"> ■ 8 IDC contacts, can be assembled in the field without tools ■ Conductors AWG 27-22, solid/stranded ■ Transmission rate: 10/100 Mbit/s and 1/10 Gbit/s 	09 45 151 1560
 		<p>RJ Industrial® connector, angled 45° (4 possible directions)</p> <ul style="list-style-type: none"> ■ 8 IDC contacts, can be assembled in the field without tools ■ Conductors AWG 27-22, solid/stranded ■ Transmission rate: 10/100 Mbit/s and 1/10 Gbit/s 	09 45 151 1561
 		<p>RJ Industrial® connector Multi-Featured</p> <ul style="list-style-type: none"> ■ 4 IDC contacts, can be assembled in the field without tools ■ Conductors AWG 26-22, solid/stranded ■ Transmission rate: 10/100 Mbit/s ■ Integrated blades cut the wire cores to the correct length 	09 45 151 1140
 		<p>RJ Industrial® connector Multi-Featured angled 90° (4 possible directions)</p> <ul style="list-style-type: none"> ■ 4 IDC contacts, can be assembled in the field without tools ■ Conductors AWG 26-22, solid/stranded ■ Transmission rate: 10/100 Mbit/s ■ Integrated blades cut the wire cores to the correct length 	09 45 151 1141
 		<p>RJ Industrial® connector Multi-Featured angled 35° (4 possible directions)</p> <ul style="list-style-type: none"> ■ 4 IDC contacts, can be assembled in the field without tools ■ Conductors AWG 26-22, solid/stranded ■ Transmission rate: 10/100 Mbit/s ■ Integrated blades cut the wire cores to the correct length 	09 45 151 1142
 		<p>RJ Industrial® connector Multi-Featured</p> <ul style="list-style-type: none"> ■ 8 IDC contacts, can be assembled in the field without tools ■ Conductors AWG 26-22, solid/stranded ■ Transmission rate: 10/100 Mbit/s and 1/10 Gbit/s ■ Integrated blades cut the wire cores to the correct length 	09 45 151 1570
 		<p>RJ Industrial® connector Multi-Featured angled 90° (4 possible directions)</p> <ul style="list-style-type: none"> ■ 8 IDC contacts, can be assembled in the field without tools ■ Conductors AWG 26-22, solid/stranded ■ Transmission rate: 10/100 Mbit/s and 1/10 Gbit/s ■ Integrated blades cut the wire cores to the correct length 	09 45 151 1571
 		<p>RJ Industrial® connector Multi-Featured angled 35° (4 possible directions)</p> <ul style="list-style-type: none"> ■ 8 IDC contacts, can be assembled in the field without tools ■ Conductors AWG 26-22, solid/stranded ■ Transmission rate: 10/100 Mbit/s and 1/10 Gbit/s ■ Integrated blades cut the wire cores to the correct length 	09 45 151 1572


RJ Industrial® RJ45 jacks

 <p>CAT. 6_A</p>	<p>RJ Industrial® jacks</p> <ul style="list-style-type: none"> ■ HIFF format ■ 8 IDC contacts, can be assembled in the field without tools ■ Shielded ■ Transmission rate: 10/100 Mbit/s and 1/10 Gbit/s 		
		Conductors AWG 28-24, solid/stranded	09 45 545 156 1
			Conductors AWG 24-22, solid/stranded
 <p>CAT. 6_A</p>	<p>RJ Industrial® jacks</p> <ul style="list-style-type: none"> ■ Keystone format ■ 8 IDC contacts, can be assembled in the field without tools ■ Shielded ■ Transmission rate: 10/100 Mbit/s and 1/10 Gbit/s 		
		Conductors AWG 28-24, solid/stranded	09 45 545 156 3
			Conductors AWG 24-22, solid/stranded

RJ Industrial® couplers

 <p>CAT. 6</p>	<p>RJ Industrial® coupler RJ45</p> <ul style="list-style-type: none"> ■ HIFF format ■ Shielded ■ Transmission rate: 10/100 Mbit/s and 1/10 Gbit/s 	09 45 545 156 0
 <p>CAT. 6</p>	<p>RJ Industrial® coupler RJ45</p> <ul style="list-style-type: none"> ■ Keystone format ■ Shielded ■ Transmission rate: 10/100 Mbit/s and 1/10 Gbit/s 	09 45 545 156 8
 <p>CAT. 6_A</p>	<p>HARTING RJ Industrial® 10G extender</p> <ul style="list-style-type: none"> ■ 8 IDC contacts, can be assembled in the field without tools ■ Conductors AWG 24-22, solid/stranded ■ Shielded ■ Transmission rate: 10/100 Mbit/s and 1/10 Gbit/s 	09 45 545 156 9
 <p>IP65 IP67</p>	<p>RJ Industrial® RJ45 coupler housing</p> <ul style="list-style-type: none"> ■ Polyamide (PA) ■ Compatible with 09 45 545 156 9 ■ Degree of protection IP65/IP67 	09 45 805 000 0

RJ Industrial® coupler housing




RJ Industrial® RJ45 coupler housing

- Degree of protection IP65 / IP67
- Polyamide (PA)
- 360° shielded insert

09 45 805 1560

PoE+ IP65 IP67 CAT. 6A

DualBoot® RJ45 system cables




DualBoot® RJ45 Ethernet system cables

- FRNC cable - S/FTP
- Halogen free, RoHS

Grey	09 48 868 6569 xxx
Red	09 48 868 6570xxx
Yellow	09 48 868 6571xxx
Green	09 48 868 6572xxx
Blue	09 48 868 6573xxx

CAT. 5 CAT. 5e

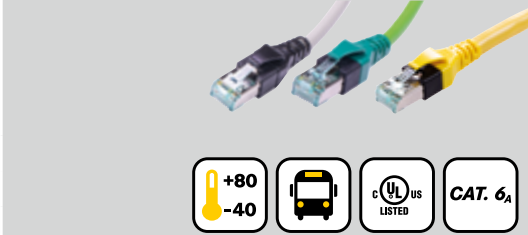


DualBoot® RJ45 Ethernet system cables

- FRNC cable - S/FTP
- Halogen free, RoHS

White	09 48 878 7584xxx
Grey	09 48 878 7585xxx
Red	09 48 878 7586xxx
Yellow	09 48 878 7587xxx
Green	09 48 878 7588xxx
Blue	09 48 878 7589xxx
Black	09 48 878 7590xxx

CAT. 6A



DualBoot® RJ45 Ethernet system cables

- PUR cable - S/FTP
- Halogen free, RoHS
- UN ECE-R118
- UL listed

Grey	09 48 474 7743xxx
Green	09 48 474 7744xxx
Yellow	09 48 474 7756xxx

+80 -40

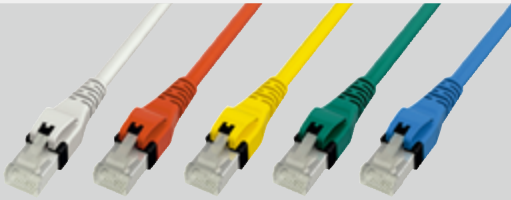






UL LISTED CAT. 6A

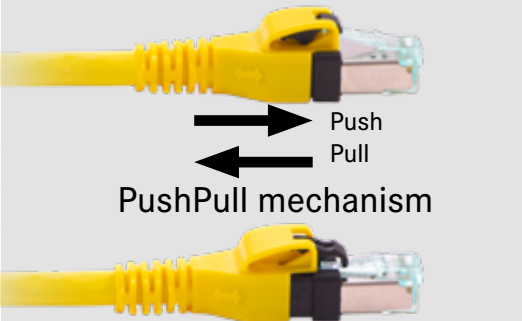







xxx = Length of cable

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 (in 10 cm steps)

DualBoot® RJ45 PushPull system cables

	DualBoot® RJ45 PushPull Ethernet system cables		<div style="border: 1px solid black; 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 9595xxx
	Red			09 48 898 9596xxx
	Yellow			09 48 898 9597xxx
	Green			09 48 898 9594xxx
Blue		09 48 898 9598xxx		
Orange		09 48 898 9593xxx		

 <p>■ Pull: pull on the housing or bend protection mechanism to unplug the connector.</p>	DualBoot® RJ45 PushPull Ethernet system cables		<div style="border: 1px solid black; 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 8574xxx
	Black			09 48 888 8575xxx
	Grey			09 48 888 8576xxx
	Red			09 48 888 8577xxx
	Yellow			09 48 888 8578xxx
	Green			09 48 888 8579xxx
	Blue			09 48 888 8580xxx
Orange		09 48 888 8592xxx		

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 (in 10 cm steps)

DualBoot® RJ45 - Characteristics and advantages

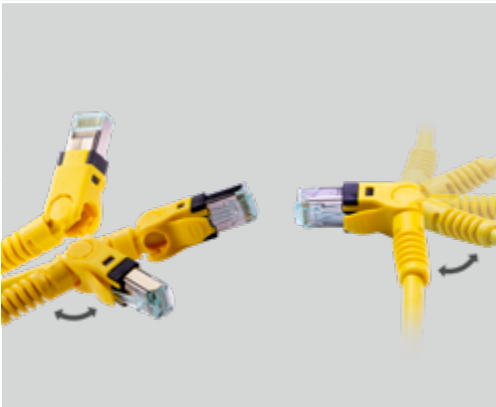


















The DualBoot® RJ45 is an overmoulded RJ45 that is specially customise for industrial requirements.



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



VarioBoot® RJ45 system cables

	Connector 1	Connector 2			
	VarioBoot® RJ45 UaD ¹	DualBoot® RJ45	Yellow		09 48 844 7745xxx
	VarioBoot® RJ45 UaD ¹	VarioBoot® RJ45 UaD ¹	Yellow		09 48 848 4745xxx
	VarioBoot® RJ45 UaD ¹	VarioBoot® RJ45 LaR ²	Yellow		09 48 848 5745xxx
	VarioBoot® RJ45 LaR ²	DualBoot® RJ45	Yellow		09 48 854 7745xxx
	VarioBoot® RJ45 LaR ²	VarioBoot® RJ45 LaR ²	Yellow		09 48 858 5745xxx
	VarioBoot® RJ45 LaR ²	RJ45 insert HIFF	Yellow		09 48 841 1745 xxx
PUR cable S/FTP					
	FRNC cable - S/FTP				
	Connector 1	Connector 2			
	VarioBoot® RJ45 LaR ²	DualBoot® RJ45	Grey		09 48 858 7585xxx
	VarioBoot® RJ45 LaR ²	DualBoot® RJ45	Red		09 48 858 7586xxx
	VarioBoot® RJ45 LaR ²	DualBoot® RJ45	Yellow		09 48 858 7587xxx
	VarioBoot® RJ45 LaR ²	DualBoot® RJ45	Green		09 48 858 7588xxx
	VarioBoot® RJ45 LaR ²	DualBoot® RJ45	Blue		09 48 858 7589xxx
	FRNC cable - S/FTP				
	Connector 1	Connector 2			
	VarioBoot® RJ45 LaR ²	VarioBoot® RJ45 LaR ²	Grey		09 48 858 5585xxx
	VarioBoot® RJ45 LaR ²	VarioBoot® RJ45 LaR ²	Red		09 48 858 5586xxx
VarioBoot® RJ45 LaR ²	VarioBoot® RJ45 LaR ²	Yellow		09 48 858 5587xxx	
VarioBoot® RJ45 LaR ²	VarioBoot® RJ45 LaR ²	Green		09 48 858 5588xxx	
VarioBoot® RJ45 LaR ²	VarioBoot® RJ45 LaR ²	Blue		09 48 858 5589xxx	

xxx = Length of cable

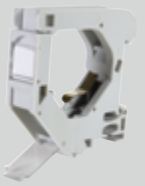



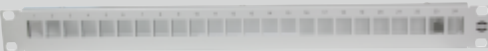

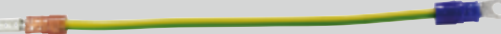
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Other lengths available on request (in 10 cm steps)

1 = UaD: Up and Down

2 = LaR: Left and Right




Accessories - Mounting of RJ45 Keystone inserts and couplers

		<p>Bracket for mounting on DIN rail</p> <ul style="list-style-type: none"> ■ For RJ45 connectors in Keystone format ■ With ground connection 	09 45 851 0000
Set of 2 protective covers		09 45 851 0001	
		<p>Bracket for mounting on DIN rail</p> <ul style="list-style-type: none"> ■ For RJ45 connectors in Keystone format ■ With ground connection 	09 45 851 0002
Protection cover		09 45 851 0003	
		<p>19" panel, 24 RJ45 ports</p> <ul style="list-style-type: none"> ■ Compatible with RJ45 inserts and couplers in Keystone format 	20 82 400 0002
		<p>Distribution box IP44</p> <ul style="list-style-type: none"> ■ For 2 RJ45 connectors in Keystone format 	09 45 851 0015
		<p>Earthing cable</p> <ul style="list-style-type: none"> ■ Ensures the PE connection for RJ45 inserts 	09 45 500 0002

ix Industrial® connectors

	ix Industrial® connector Type A <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
	IDC contacts, AWG 22	09 45 181 2563 XL
	ix Industrial® connectors according to type A, 90° angled <ul style="list-style-type: none"> ■ 8 conductors + 2 GND ■ ≥ 5000 mating cycles ■ Shielded 360° 	
	Angled down version:	
	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
	IDC contacts, AWG 22	09 45 181 2583 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
IDC contacts, AWG 22	09 45 181 2588 XL	
	ix Industrial® connector Type A <ul style="list-style-type: none"> ■ 90° angled, PCB socket, SMD data contacts + THR shield contacts 	09 45 281 2560
		ix Industrial® connector Type A <ul style="list-style-type: none"> ■ Flat mounting, PCB socket, SMD data contacts + THR shield contacts
		ix Industrial® straight connector, type A <ul style="list-style-type: none"> ■ Straight, PCB socket, SMD data contacts + THR shield contacts
		ix Industrial® tool <ul style="list-style-type: none"> ■ Needed to assemble the cable connector ■ With ratchet mechanism

ix Industrial® Ethernet system cables





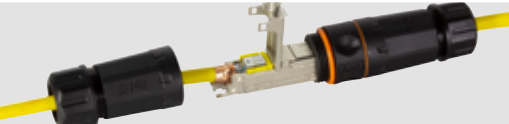


	ix Industrial® Ethernet system cables ■ PVC cable - S/FTP yellow ■ Use with Ethernet switch eCon 2000 Advanced ix Industrial®		CAT. 6A	
	Connector 1	Connector 2		
	ix Industrial®	ix Industrial®	Yellow	33 48 060 6830xxx
ix Industrial®	RJ45 Gigalink Compact	Yellow	33 48 065 3830xxx	
	ix Industrial® Ethernet system cables ■ FRNC cable - S/FTP ■ Halogen free, RoHS			
	Connector 1	Connector 2		
	ix Industrial®	ix Industrial®	Blue	33 48 010 1822xxx
	ix Industrial®	ix Industrial®	White	33 48 010 1823xxx
	ix Industrial®	ix Industrial®	Grey	33 48 010 1824xxx
	ix Industrial®	ix Industrial®	Red	33 48 010 1825xxx
	ix Industrial®	ix Industrial®	Yellow	33 48 010 1826xxx
	ix Industrial®	ix Industrial®	Green	33 48 010 1827xxx
	ix Industrial®	ix Industrial®	Black	33 48 010 1828xxx
ix Industrial®	ix Industrial®	Orange	33 48 010 1829xxx	
	Connector 1	Connector 2		
	ix Industrial®	DualBoot® RJ45	Blue	33 48 014 7822xxx
	ix Industrial®	DualBoot® RJ45	White	33 48 014 7823xxx
	ix Industrial®	DualBoot® RJ45	Grey	33 48 014 7824xxx
	ix Industrial®	DualBoot® RJ45	Red	33 48 014 7825xxx
	ix Industrial®	DualBoot® RJ45	Yellow	33 48 014 7826xxx
	ix Industrial®	DualBoot® RJ45	Green	33 48 014 7827xxx
	ix Industrial®	DualBoot® RJ45	Black	33 48 014 7828xxx
	ix Industrial®	DualBoot® RJ45	Orange	33 48 014 7829xxx

xxx = Length of cable

005 = 0.5 m	010 = 1.0 m	020 = 2.0 m	030 = 3.0 m	050 = 5.0 m	075 = 7.5 m	100 = 10 m
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Other lengths available on request (in 10 cm steps)

preLink®

		Connection of preLink® cables		CAT. 6_A	
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		CAT. 6_A	
		Straight	20 82 101 0020		
		90° angled (with 4 directions)	20 82 101 0021		
		35° angled (with 4 directions)	20 82 101 0022		
		RJ45 preLink® jacks in Keystone format		CAT. 6_A	
		Straight version	20 82 500 0001		
		Angled 90° version	20 82 500 0002		
		RJ45 preLink® jack in HIFF format		20 82 000 0002	
		preLink® extender		20 82 101 0001	
		RJ Industrial® waterproof coupler housing		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® system cables			
		■ PUR cable - S/FTP			
		Connector 1	Connector 2		
		preLink®	preLink®	Yellow	20 82 600 2xxx
		DualBoot® RJ45	preLink®	Yellow	20 82 601 1xxx

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 (in 10 cm steps)

preLink® - Characteristics and advantages















preLink® is a cabling strategy that provides flexibility, reliability and ease of use for Ethernet networks. The termination system creates a detachable connection between the cable and connector.



har-port panel feed-throughs

	<p><i>har-port</i> RJ45 coupler</p> <ul style="list-style-type: none"> Shielded 360° 	<div style="border: 1px solid black; border-radius: 10px; padding: 2px; display: inline-block;">CAT. 6</div>
		Silver  09 45 452 1560
		Black  09 45 452 1561
		White  09 45 452 1562
	<p><i>har-port</i> USB 2.0 A-A coupler</p>	
		Silver  09 45 452 1901
		Black  09 45 452 1903
		White  09 45 452 1918
	<p><i>har-port</i> USB 3.0 A-A coupler</p>	
		Silver  09 45 452 1902
		Black  09 45 452 1904
		White  09 45 452 1919
	<p><i>har-port</i> USB 3.0 A-A black</p>	
		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
	<p><i>har-port</i> USB 3.0 A-A silver</p>	
		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
	<p><i>har-port</i> HIFF</p> <ul style="list-style-type: none"> Compatible with inserts with HIFF format (RJ45 connectors, 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
	<p>Protection cover IP65/IP67</p>	
		Black rubber  09 45 502 0000
		transparent plastic  09 45 502 0005
		Plastic, black  09 45 502 0008
	<p>Label holder</p> <p>Label</p> <p>Blind cover</p>	
		09 45 502 0002
		09 45 502 0003
		09 45 502 0004
	<p>Aluminum protection cover</p> <ul style="list-style-type: none"> IP65/IP67/IPx9k Type: Screw connection 	<div style="border: 1px solid black; border-radius: 10px; padding: 2px; display: inline-block;">IP69K</div>
		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 coupler 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 coupler 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 insert, pre-assembled with DualBoot® RJ45 system 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 insert, pre-assembled with VarioBoot® RJ45 system cable	09 48 841 1745xxx	

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 (in 10 cm steps)

T1 Industrial - SPE connectors and system cables (Single Pair Ethernet)



	T1 Industrial connector	09 45 181 2810 XL
	<ul style="list-style-type: none"> ■ Single Pair Ethernet ■ 2 crimp contacts ■ Shielded 360° 	
	Crimp contacts AWG 28-26	09 45 500 2810
	Crimp contacts AWG 24-22	09 45 500 2812
	T1 Industrial PCB jack Flat mounting, soldered contact pins on PCB	09 45 281 2810
	Crimping tool	
	T1 Industrial hand crimping tool AWG 28-26	09 45 800 2810
	T1 Industrial hand crimping tool AWG 24-22	09 45 800 2811
	T1 SPE system cable	
	<ul style="list-style-type: none"> ■ SPE cable, PUR - S/FTP ■ Overmoulded T1 SPE IP20 cable assemblies ■ 10/100 Mbit/s - 1/10 Gbit/s 	
	2 x AWG 26/7	33 28 020 2001xxx
	2 x AWG 22/7	33 28 020 2002xxx

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 (in 10 cm steps)

T1 M12 / T1 Industrial connector - Characteristics and 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 802.3cg	10BASE-T1 - 10 Mbit/s - 20 MHz	25.0 m non-shielded / 1000 m shielded
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 802.3ch	2.5/5/10 GBASE-T1 - 2.5/5/10 Gbit/s - 4 GHz	15.0 m shielded
IEEE 802.3bu	Power over Data Line (PoDL)	12 V / 24 V / 48 V / 5.0 ... 50.0 W

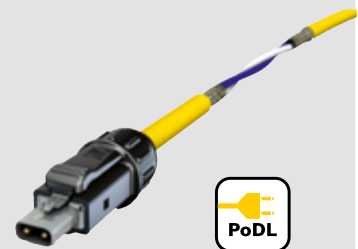
Capable of being used over distances up to 1 km, SPE has all the features to replace old field buses or analog networks as current loops 4...20 mA. It is also a good support for connecting actuators and sensors with Ethernet-based automation networks.

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).
- Less expensive cable (cheaper than Ethernet cable with 4 or 8 cores)
- 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, 1/10 Gbit/s
- Bandwidth: 4 GHz
- ≥ 1000 mating cycles
- Designed for industrial environments M₃I₃C₃E₃



T1 M12 Circular connectors



T1 Industrial coding (2 wires)	Cable side			T1 Industrial M12 slim design connectors	21 03 839 1205
				<ul style="list-style-type: none"> 2 crimp contacts Conductors AWG 28-22 10/100 Mbit/s - 1/10 Gbit/s 	
				Crimp contacts AWG 28-26	09 45 500 2810
	Connectors			T1 Industrial M12 connector, straight 12.5 mm	21 03 339 2202
				<ul style="list-style-type: none"> THR soldering Shielded Straight, soldered contact pins on PCB 10/100 Mbit/s - 1/10 Gbit/s 	
				T1 Industrial M12 connector, straight 8 mm	21 03 339 2201
				<ul style="list-style-type: none"> THR soldering Shielded Straight, soldered contact pins on PCB 10/100 Mbit/s - 1/10 Gbit/s 	
				T1 Industrial M12 connector, angled	21 03 339 4201
	<ul style="list-style-type: none"> THR soldering Shielded Flat mounting, soldered contact pins on PCB 10/100 Mbit/s - 1/10 Gbit/s 				
	Device side			T1 Industrial M12 panel feed-through for rear mounting	21 03 339 2000
				<ul style="list-style-type: none"> Screw locking 	
				T1 Industrial M12 flange socket for front mounting	21 03 339 2001
<ul style="list-style-type: none"> Screw locking and PushPull 					
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 slim design, D-coded, male ■ 4 contacts (IDC) ■ Shielded 360°	
			Conductors AWG 26	21 03 382 1410
			Conductors AWG 22	21 03 382 1400
			M12 connector male D-coded ■ 4 contacts (IDC) ■ Shielded 360° ■ Conductors AWG 26-22	21 03 281 1405
				M12 PushPull connector male D-coded ■ 4 contacts (IDC) ■ Shielded 360°
	Conductors AWG 26	21 03 382 1411		
	Conductors AWG 22	21 03 382 1401		
	Device side		M12 connector male D-coded ■ preLink® (AWG 27-22) ■ Shielded 360°	20 82 005 0001
				M12 slim design D-coded, female ■ 4 contacts (IDC) ■ Shielded 360°
		Conductors AWG 26		21 03 382 2410
Conductors AWG 22		21 03 382 2400		
		M12 connector female, D-coded ■ 4 contacts (IDC) ■ Shielded 360° ■ Conductors AWG 26-22	21 03 281 2405	
		M12 connector female D-coded ■ PFT (panel feed-through) ■ 4 contacts (IDC) ■ Shielded 360° ■ Conductors AWG 26-22	21 03 381 2425	
		M12 PushPull, D-coded ■ PFT (panel feed-through) ■ preLink® (AWG 27-22) ■ Shielded 360°	20 82 005 2001	

xxx = Length of cable

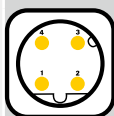
003 = 0.3 m	005 = 0.5 m	010 = 1.0 m	015 = 1.5 m
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Other lengths available on request (in 10 cm steps)

X-coded - Cat. 6A (8 wires)	Cable side		M12 slim design, X-coded, male <ul style="list-style-type: none"> ■ 8 crimp contacts ■ Shielded 360° 	21 03 881 1805
			Crimp contacts AWG 28-24	21 01 100 9014
			Crimp contacts AWG 26-23	21 01 100 9019
			M12 slim design PushPull, X-coded, male <ul style="list-style-type: none"> ■ 8 crimp contacts ■ Shielded 360° 	21 03 881 1830
			Crimp contacts AWG 28-24	21 01 100 9014
		Crimp contacts AWG 26-23	21 01 100 9019	
	Device side		M12 male, X-coded <ul style="list-style-type: none"> ■ preLink® (AWG 27-22) ■ Shielded 360° 	20 82 005 0002
			M12 slim design, X-coded, female <ul style="list-style-type: none"> ■ 8 crimp contacts ■ Shielded 360° 	21 03 881 2805
			Crimp contacts AWG 28-24	21 01 100 9023
			Crimp contacts AWG 26-23	21 01 100 9021
		M12 slim design PFT PushPull, X-coded, female <ul style="list-style-type: none"> ■ PFT (panel feed-through) ■ 8 crimp contacts ■ Shielded 360° 	21 03 881 2825	
		Crimp contacts AWG 28-24	21 01 100 9023	
	Crimp contacts AWG 26-23	21 01 100 9021		
	M12 PushPull connector female X-coded <ul style="list-style-type: none"> ■ PFT (panel feed-through) ■ preLink® (AWG 27-22) ■ Shielded 360° 	20 82 006 2001		
	M12 PushPull connector female X-coded pre-assembled <ul style="list-style-type: none"> ■ PFT (panel feed-through) ■ 8 crimp contacts on cable S/FTP PUR black ■ Shielded 360° 			
	Black cable 	21 33 080 0850xxx		

M12 connector - Characteristics and 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.

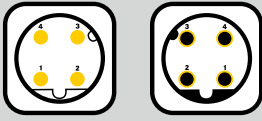


D-coded
Cat. 5 (10/100 Mbit/s - 100 MHz)




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

M12 D-coded system cable



CAT. 5



2 1	3 4	X X X	X X X X	x x x
-----	-----	-------	---------	-------


9 2		M12 connector male straight	Connector 1
9 3		M12 connector female straight	
9 4		M12 connector male angled	
9 5		M12 connector female angled	

0	0	Open end	Connector 2
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	No. of Contacts
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0 5		PVC	Cable jacket
7 7		PUR	


0 0 5		0.5 m	Length of cable
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	

<div style="border: 1px solid black; padding: 5px; border-radius: 10px; display: inline-block;">CAT. 6_A</div> 	M12 Ethernet system cable, X-coded			
	<ul style="list-style-type: none"> ■ Cable S/FTP yellow ■ Male Slim Press & Go 			
	Jacket	Connector 1	Connector 2	
	PVC	M12 X-coded male	Open end	
	PUR	M12 X-coded male	Open end	
PVC	M12 X-coded male	M12 X-coded		
PUR	M12 X-coded male	M12 X-coded		
			21 33 050 0855xxx	
			21 33 050 0850xxx	
			21 33 050 5855xxx	
			21 33 050 5850xxx	

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 (in 10 cm steps)

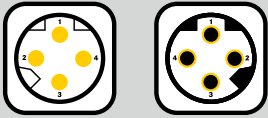
	RJ45/ M12 Ethernet system cable D-coded			
	<ul style="list-style-type: none"> ■ Cable 4 x AWG22 green ■ Overmoulded connectors 			
	Jacket	Connector 1	Connector 2	
	PUR	DualBoot® RJ45	M12 connector male straight	09 48 689 6018xxx
PUR	DualBoot® RJ45	M12 connector male angled	09 48 688 3018xxx	

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 (in 10 cm steps)

M8 D-coded system cable



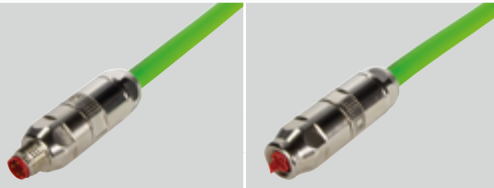



CAT. 5



2	1	3	4	X	X	X	X	X	X	X	X	x	x	x		
				C	7							M8 connector male straight			Connector 1	
				D	7							M8 connector female straight				
				0	0							No connector			Connector 2	
				C	7							M8 connector male straight				
				D	7							M8 connector female straight				
				4								4 poles			No. of Contacts	
				0	5							PVC			Cable jacket	
				7	7							PUR				
				0	0	5							0.5 m			Length of cable
				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			

M8 Circular connectors

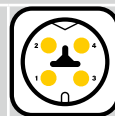
D-coded - Cat. 5 (4 wires)		M8 connector D-coded <ul style="list-style-type: none"> 4 contacts (IDC) Shielded Conductors AWG 22 	IP65 IP67	
				Male 21 02 185 1405
		M8 PushPull connector male D-coded <ul style="list-style-type: none"> 4 contacts (IDC) Shielded Conductors AWG 22 	IP65 IP67	21 02 185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

M8 connector - Characteristics and 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 system cable







 	Overmoulded PushPull RJ45 Ethernet system cable				
	Cable S/FTP				
	Jacket	Connector 1	Connector 2		
	PUR	PushPull RJ45	PushPull RJ45		09 48 282 8756xxx
	PVC	PushPull RJ45	PushPull RJ45		09 48 282 8757xxx
	PUR	PushPull RJ45	DualBoot® RJ45		09 48 284 7744xxx
	PUR	PushPull RJ45	DualBoot® RJ45		09 48 284 7756xxx
	PVC	PushPull RJ45	DualBoot® RJ45		09 48 284 7757xxx
	PVC Outdoor	PushPull RJ45	PushPull RJ45		09 48 282 2758xxx
	PVC Outdoor	PushPull RJ45	DualBoot® RJ45		09 48 284 7758xxx

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 (in 10 cm steps)

PushPull (V4) connectors

Cable side		PushPull (V4) RJ45 connector ■ 4 IDC contacts, can be assembled in the field without tools ■ Shielded ■ Conductors AWG 24-22 ■ Transmission rate: 10/100 Mbit/s	CAT. 5 IP65 IP67	09 45 145 1106
		PushPull (V4) RJ45 connector ■ 8 IDC contacts, can be assembled in the field without tools ■ Shielded ■ Conductors AWG 27-22 ■ Transmission rate: 10/100 Mbit/s and 1/10 Gbit/s	CAT. 6 IP65 IP67	09 45 145 1561
		PushPull RJ45 coupler ■ Shielded ■ Transmission rate: 10/100 Mbit/s and 1/10 Gbit/s	CAT. 6 IP65 IP67	09 45 345 1560
Device side		PushPull RJ45 panel feed through ■ Surface mounting ■ Shielded ■ Transmission rate: 10/100 Mbit/s and 1/10 Gbit/s	CAT. 6 IP65 IP67	09 45 245 1561
		PushPull HIFF housing ■ Compatible with inserts with HIFF format (RJ45 connectors, RJ45 coupler, USB coupler)	IP65 IP67	09 45 545 0041
Accessories		2 port outlet with covers ■ 2 PushPull RJ45 ports ■ IDC contacts, can be assembled in the field without tools ■ Conductors AWG 24-22 ■ Transmission rate: 10/100 Mbit/s and 1/10 Gbit/s	IP65 IP67 CAT. 6_A	09 45 845 1562
		2 port outlet, empty ■ 2 PushPull RJ45 ports ■ Mounting of 2 RJ45 inserts with HIFF format for cabling	IP65 IP67	09 45 845 1560

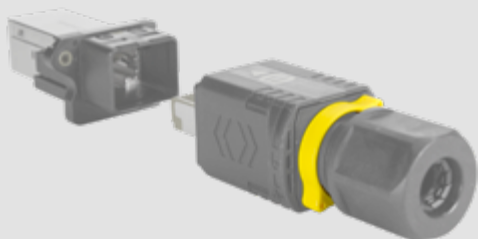
PushPull connector - Characteristics and advantages

The PushPull connector has all the advantages for intensive use:

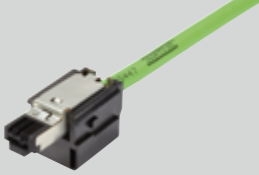





- Speedy connection and disconnection
- Easy to use with audible click on connection
- Minimal force for insertion and removal (PushPull)





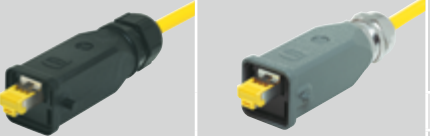

- Once connected, a locking ring can prevent accidental disconnections.

- Visual marking for easy connection



HARTING RJ Industrial® Han® 3 A RJ45

Cable side		CAT. 5 Han® 3 A RJ45 insert ■ 4 IDC contacts, can be assembled in the field without tools ■ Shielded ■ Transmission rate 10 / 100 Mbit/s	Conductors AWG 26	09 45 100 1110
			Conductors AWG 24-22	09 45 100 1100
		CAT. 6 Han® 3 A RJ45 insert ■ 8 IDC contacts, can be assembled in the field without tools ■ Shielded ■ Conductors AWG 27-22 ■ Transmission rate 10/100 Mbit/s and 1/10 Gbit/s	09 45 100 1560	
		CAT. 6_A Han® 3 A RJ45 preLink® insert ■ preLink® (AWG 27-22) ■ Shielded ■ Transmission rate 10/100 Mbit/s and 1/10 Gbit/s	20 82 002 0001	
		IP65 IP67 Han® 3 A Housing ■ With glued seal ■ M20 output	Metal, grey	19 20 003 1443
			Metal, black	19 37 003 1443
			Plastic, grey	19 20 003 0423
			Plastic, black	19 20 003 0426
EMC			19 62 003 1443	
Stainless steel			19 44 003 1443	
Device side		CAT. 6 Han® 3 A RJ45 female insert ■ Shielded ■ Transmission rate 10/100 Mbit/s and 1/10 Gbit/s	09 45 200 1560	
		Han® 3 A HIFF adapter ■ Compatible with inserts with HIFF format (RJ45 connectors, RJ45 coupler, USB coupler)	09 45 515 0024	
		IP65 IP67 Han® 3 A 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® 3 A 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® 3 A 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		
		EMC		19 62 003 1750				
			CAT. 5 CAT. 5e IP65 IP67	Han® 3 A RJ45 coupler				
				■ 8 poles				
				Metal, grey		09 45 215 1107		
				Metal, black		09 45 215 1110		
		Plastic, black		09 45 225 1107				
USB	Cable side			Han-Brid® USB insert			09 12 001 3091	
				■ Compatible with USB cables				
	Equipment			Han-Brid® USB insert USB extender				
	USB 3.0				09 12 001 2793			
	USB 2.0				09 12 001 2794			
Han® 3 A RJ45 kit	Cable side			Han® 3 A RJ45 connector			CAT. 6	
				■ 8 IDC contacts, can be assembled in the field without tools				
				■ AWG 27-22				
			■ Transmission rate: 10/100 Mbit/s and 1/10 Gbit/s					
			Plastic version, black		09 45 125 1560			
			Metal version, grey		09 45 115 1560			
Equipment			CAT. 6	Han® 3 A RJ45 Panel feed through				
				■ RJ45 coupler				
				■ Transmission rate: 10/100 Mbit/s and 1/10 Gbit/s				
				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® 3 A Connector - Characteristics and 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® 3 A is a compact version available in several versions:

- 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 in the Han® 3 A size are available for connecting power, signals and data (copper, coaxial, fibre optic).



Han-Modular®

Han® RJ45 module			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
				Conductors AWG 24-22	09 45 400 1100
		CAT. 6_A	RJ45 insert - 8 IDC contacts		
				Conductors AWG 27-22	09 45 400 1560
			RJ45 insert ■ Compatible with DualBoot® RJ45 system cables	09 14 000 9966	
			Han® RJ45 female module ■ Compatible with separate RJ45 inserts from the Han-Modular series	09 14 001 4722	
			Han® RJ45 coupler module ■ Shielded	09 14 001 4721	
	Han® Gigabit module			CAT. 8.2 ■ Mounting insert of the Han® Gigabit male module ■ 8 crimp contacts ■ Shielded	Han® Gigabit male module
Han® Gigabit male insert					09 14 008 3034
Crimp contacts, male ■ AWG 26-22					09 67 000 5576
			CAT. 8.2 ■ Mounting insert of the Han® Gigabit female module ■ 8 crimp contacts ■ Shielded	Han® Gigabit female module	09 14 001 3111
				Han® Gigabit female insert	09 14 008 3134
				Crimp contact, female ■ AWG 26-22	09 67 000 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 module		Han® M12 male module	09 14 002 3061
		<ul style="list-style-type: none"> ■ Mounting of 2 Han® M12 male inserts 	
		Han® M12 D-coded male insert	09 14 881 1405
		<ul style="list-style-type: none"> ■ 4 crimp contacts AWG 26-18 	
		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	09 14 881 1805
		<ul style="list-style-type: none"> ■ 8 crimp contacts AWG 28-23 	
		<ul style="list-style-type: none"> har-speed crimp contact AWG 28-24 har-speed crimp contact AWG 26-23 	21 01 100 9014 21 01 100 9019
Han® M12 module		Han® M12 female module	09 14 002 3161
		<ul style="list-style-type: none"> ■ Mounting of 2 Han® M12 female inserts 	
		Han® M12 D-coded female insert	09 14 881 2405
		<ul style="list-style-type: none"> ■ 4 crimp contacts AWG 26-18 	
		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	09 14 881 2805
		<ul style="list-style-type: none"> ■ 8 crimp contacts AWG 28-23 	
		<ul style="list-style-type: none"> har-speed crimp contact AWG 28-24 har-speed crimp contact AWG 26-23 	21 01 100 9023 21 01 100 9021

Han-Modular® - Characteristics and advantages

Han-Modular® is the market standard for modular industrial 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 a single connector
- By connector size, from 1 to 12 slots

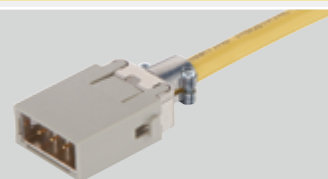
The various available housing materials and coatings ensure that the Han-Modular® is suitable for all types of industrial environments.

- Standard (moulded aluminum with epoxy treatment)
- Han-Eco® (glass-fibre 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 and advantages

HARTING's Han-Modular® portfolio offers a suitable variant of the Gigabit module for all application types. This module features transmission rates of Cat. 6 and Cat. 8.2, with the option to use the module for up to 10,000 mating cycles.



Han® 1A

	<p>Han® 1A, M12 D-coded inserts</p> <ul style="list-style-type: none"> ■ With snap-in latches ■ 4 crimp contacts AWG 26-18 ■ Shielded 360° 	<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>09 10 004 3001</td> </tr> <tr> <td>Female insert</td> <td>09 10 004 3101</td> </tr> </table>	Male insert	09 10 004 3001	Female insert	09 10 004 3101			
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		<p>Bulkhead mounting</p> <ul style="list-style-type: none"> Includes seal (IP65) 				
		<table border="1"> <tr> <td>Straight</td> <td>09 10 000 0300</td> </tr> <tr> <td>angled</td> <td>09 10 000 0800</td> </tr> </table>	Straight	09 10 000 0300	angled	09 10 000 0800
Straight	09 10 000 0300					
angled	09 10 000 0800					
		<p>Cable junction</p>				
		<table border="1"> <tr> <td>Tor strain relief with cable tie (IP20)</td> <td>09 10 000 5300</td> </tr> <tr> <td>For strain relief with integrated cable gland and seal (IP65)</td> <td>09 10 000 0400</td> </tr> </table>	Tor strain relief with cable tie (IP20)	09 10 000 5300	For strain relief with integrated cable gland and seal (IP65)	09 10 000 0400
Tor strain relief with cable tie (IP20)	09 10 000 5300					
For strain relief with integrated cable gland and seal (IP65)	09 10 000 0400					
		<p>Han® 1A stainless steel locking lever</p> <p>09 10 000 5200</p>				
		<p>Mounting frame</p> <ul style="list-style-type: none"> Wall mounting <p>09 10 000 9908</p>				
		<p>Mounting frame</p> <ul style="list-style-type: none"> Mounting on DIN rail <p>09 10 000 9912</p>				

Han® 1A - Characteristics and advantages

Han® 1A: Compact, robust and versatile

Smallest Han® connector:

- Up to 30% smaller than the Han® 3 A

Versatile use:

- Transmission of data, signals and power

Very flexible:

- Modular system for IP20 and IP65 applications

Faster installation:

- Fast connection using snap-in technology

Minimal stockpiling:




































- Clearly structured connector system based on only a few basic elements

Reduced costs:

- Affordable installation connector



Ethernet switches

	<p>eCon 2000 Ethernet switches</p> <ul style="list-style-type: none"> Flat type Fast Ethernet 3 - 16 ports <table border="1"> <tbody> <tr> <td rowspan="3">  </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>16 RJ45 ports</td> <td>24 02 016 0010</td> </tr> <tr> <td rowspan="3">  </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> <tr> <td>16 RJ45 ports</td> <td>24 02 016 0000</td> </tr> </tbody> </table>		5 RJ45 ports	24 02 005 0010	8 RJ45 ports	24 02 008 0010	16 RJ45 ports	24 02 016 0010		5 RJ45 ports	24 02 005 0000	8 RJ45 ports	24 02 008 0000	16 RJ45 ports	24 02 016 0000
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eCon Ethernet switches - Characteristics and 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 voltage supply range: 9/18 - 60 V DC
- Strong and light with aluminum box
- Limited installation space required due to flat or narrow size
- Minimal consumption
- Available with/without PoE+
- Available with fibre optic connections (SC duplex or LC)
- ECE-R10 (E1) approved for use in vehicles




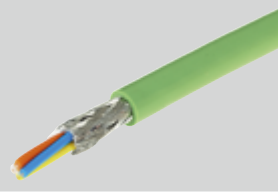











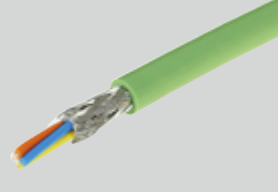





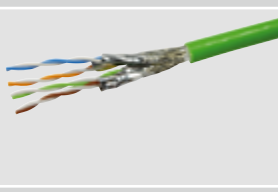




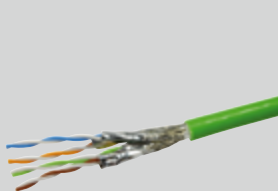









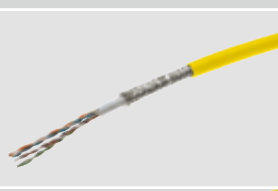






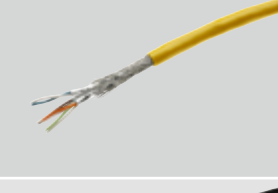










Industry 4.0 and efficient connected devices mean increasingly high data flows. This is why Ethernet switches have to simultaneously transfer images and high data flows without altering network performance.

















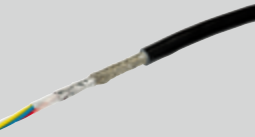






























































New generation HARTING Ethernet switches easily manage all Full Gigabit Ethernet ports, even when the devices are very data consuming cameras.



24 13 416 0000

Industrial Ethernet cables

		Cable, Profinet type A - PVC - Star quad - 4 x AWG 22/1	   	<table border="1"> <tr><td>20 m</td><td>■</td><td>09 45 600 0130</td></tr> <tr><td>50 m</td><td>■</td><td>09 45 600 0140</td></tr> <tr><td>100 m</td><td>■</td><td>09 45 600 0100</td></tr> <tr><td>500 m</td><td>■</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	   	<table border="1"> <tr><td>20 m</td><td>■</td><td>09 45 600 0132</td></tr> <tr><td>50 m</td><td>■</td><td>09 45 600 0142</td></tr> <tr><td>100 m</td><td>■</td><td>09 45 600 0102</td></tr> <tr><td>500 m</td><td>■</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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		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	   	<table border="1"> <tr><td>20 m</td><td>■</td><td>09 45 600 0131</td></tr> <tr><td>50 m</td><td>■</td><td>09 45 600 0141</td></tr> <tr><td>100 m</td><td>■</td><td>09 45 600 0101</td></tr> <tr><td>500 m</td><td>■</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 A - PVC - S/FTP - 4 x 2 x AWG 23/1	  	<table border="1"> <tr><td>20 m</td><td>■</td><td>09 45 600 1200</td></tr> <tr><td>50 m</td><td>■</td><td>09 45 600 1210</td></tr> <tr><td>100 m</td><td>■</td><td>09 45 600 1220</td></tr> <tr><td>500 m</td><td>■</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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500 m	■	09 45 600 1230														
		Cable, Profinet type B - PVC - S/FTP - 4 x 2 x AWG 24/7	   	<table border="1"> <tr><td>20 m</td><td>■</td><td>09 45 600 1211</td></tr> <tr><td>50 m</td><td>■</td><td>09 45 600 1221</td></tr> <tr><td>100 m</td><td>■</td><td>09 45 600 1231</td></tr> <tr><td>500 m</td><td>■</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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50 m	■	09 45 600 0246														
100 m	■	09 45 600 0206														
500 m	■	09 45 600 0256														
		Cable, PUR - drag chain - SF/UTP - 4 x 2 x AWG 26/19	    	<table border="1"> <tr><td>20 m</td><td>■</td><td>09 45 600 0236</td></tr> <tr><td>50 m</td><td>■</td><td>09 45 600 0246</td></tr> <tr><td>100 m</td><td>■</td><td>09 45 600 0206</td></tr> <tr><td>500 m</td><td>■</td><td>09 45 600 0256</td></tr> </table>	20 m	■	09 45 600 0236	50 m	■	09 45 600 0246	100 m	■	09 45 600 0206	500 m	■	09 45 600 0256
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50 m	■	09 45 600 0246														
100 m	■	09 45 600 0206														
500 m	■	09 45 600 0256														
		Cable, PVC - S/FTP - 4 x 2 x AWG 26/7	   	<table border="1"> <tr><td>20 m</td><td>■</td><td>09 45 600 0532</td></tr> <tr><td>50 m</td><td>■</td><td>09 45 600 0542</td></tr> <tr><td>100 m</td><td>■</td><td>09 45 600 0502</td></tr> <tr><td>500 m</td><td>■</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
20 m	■	09 45 600 0532														
50 m	■	09 45 600 0542														
100 m	■	09 45 600 0502														
500 m	■	09 45 600 0522														
		Cable, PVC Outdoor - S/FTP - 4 x 2 x AWG 26/7	   	<table border="1"> <tr><td>20 m</td><td>■</td><td>09 45 600 0531</td></tr> <tr><td>50 m</td><td>■</td><td>09 45 600 0541</td></tr> <tr><td>100 m</td><td>■</td><td>09 45 600 0501</td></tr> <tr><td>500 m</td><td>■</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		   	20 m  09 45 600 0630 50 m  09 45 600 0640 100 m  09 45 600 0600 500 m  09 45 600 0620
			 	100 m  09 45 600 0711 500 m  09 45 600 0721 1000 m  09 45 600 0751
 	Cable, EtherRail® - Star quad - 4 x AWG 22/7		   	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
			   	10 m  09 45 600 1400 50 m  09 45 600 1410 100 m  09 45 600 1420 500 m  09 45 600 1430 1000 m  09 45 600 1440
 	Cable, EtherRail® - Star quad - 4 x AWG 22/19 Ultra flexible		   	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		   	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 26/7    	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 and 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® cable approved according to EN 45545-2, railway standard for fire protection



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	8	BI_DC+	Blue	Blue					
5	5	7	BI_DC-	White/Blue	White/Blue					
7	6	4	BI_DB-	Orange	Green	Green	Blue	RX-	4	6
9	7	5	BI_DD+	White/Brown	White/Brown					
10	8	6	BI_DD-	Brown	Brown					
3,8 GND										

Ethernet transmission categories sorted by connectors

Categories	Characteristics	Band-width	Ethernet	Transmission rate	Number 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 - 1/10 Gbits/s	8
Cat. 7 Class F	10G BASE-T	600 MHz	Ethernet 10 GB	10/100 Mbits/s - 1/10 Gbits/s	8
Cat. 7 _A Class 7 _A	10G BASE-T	1000 MHz	Ethernet 10 GB	10/100 Mbits/s - 1/10 Gbits/s	8

HARTING connectors

Han® Gigabit

Han® Megabit

Han-Quintax®

HARTING ix Industrial®

M12 X-coded

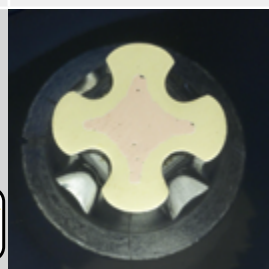
M12 D-coded

RJ45

Crimping tool - Characteristics and 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 tools		RJ Industrial® cable stripping tool	09 45 800 0000
		<ul style="list-style-type: none"> ■ For Ethernet cables ■ Blade cassette included 	
		Blade cassette	09 45 800 0001
		RJ Industrial® stripping tool	09 45 800 0002
		<ul style="list-style-type: none"> ■ For Ethernet cables 	
Cutting tools		RJ Industrial® wire cutters	09 45 800 0005
Crimping tools		Crimping tool	09 99 000 0501
		<ul style="list-style-type: none"> ■ Crimping to MIL 22 520/2-01 	
		Locator for contacts	09 99 000 0897
		<ul style="list-style-type: none"> ■ AWG 26-22 - Han® Gigabit 	
		Locator for <i>har</i> -speed male contacts	09 99 000 0525
		<ul style="list-style-type: none"> ■ AWG 28-23 - M12 X-coded 	
		Locator for <i>har</i> -speed female contacts	09 99 000 0635
		<ul style="list-style-type: none"> ■ AWG 28-23 - M12 X-coded 	
		Locator for Sub-D contacts	09 99 000 0531
		<ul style="list-style-type: none"> ■ AWG 28-18 - M12 D-coded 	
		Go/No-Go check gauge	09 99 000 0617
Mounting		<i>har</i> -port mounting tool	09 45 502 0007
		<ul style="list-style-type: none"> ■ Defined tightening torque of fixing nut 	



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local website.
