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Since 1945



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# HARTING

## Ethernet Portfolio Guide

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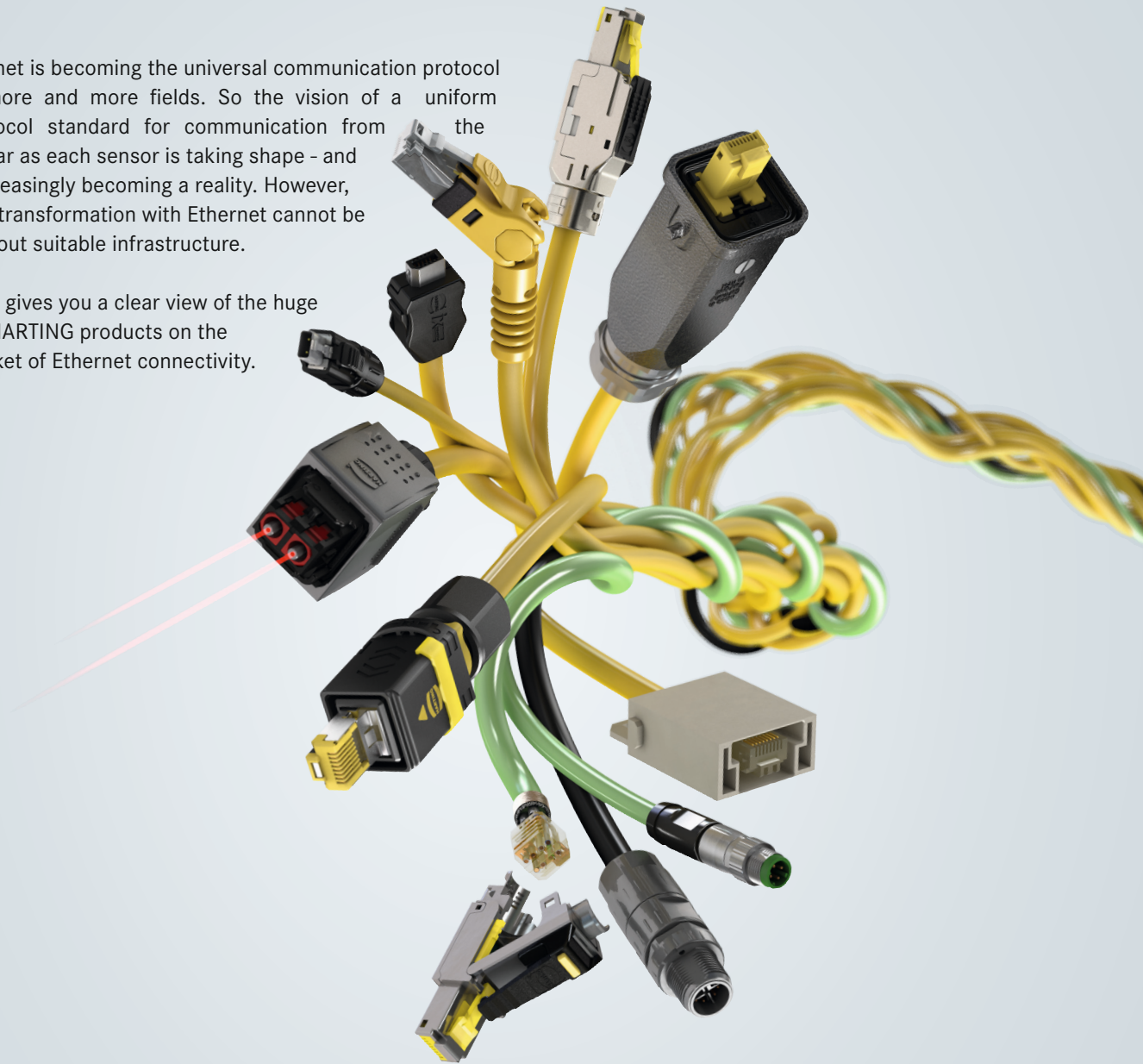
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# Introduction

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**E**thernet 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.

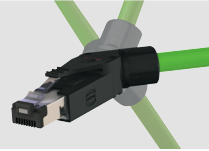
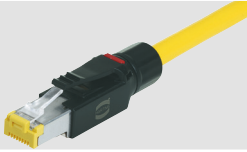
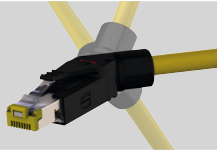
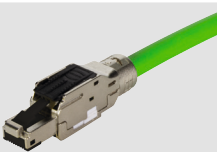
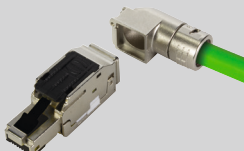
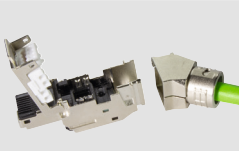
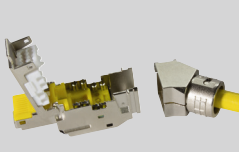
This guide gives you a clear view of the huge range of HARTING products on the large market of Ethernet connectivity.



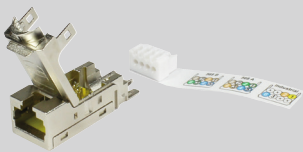
**DIGITALISATION IN INDUSTRIAL AUTOMATION IS ADVANCING WITH GREAT STRIDES.**



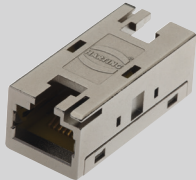
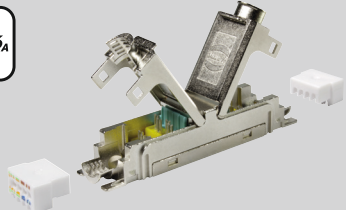
## RJ Industrial® RJ45 connectors

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

## RJ Industrial® RJ45 connectors

|                                                                                                                |                                                                                                                                                                                 |                |
|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <b>CAT. 6<sub>A</sub></b><br> | RJ Industrial® inserts<br>■ HIFF format<br>■ 8 IDC contacts, can be assembled in the field without tools<br>■ Shielded<br>■ Transmission rate 10/100 Mbit/s and 1/10 Gbit/s     |                |
|                                                                                                                | Conductors AWG 28-24, solid/stranded                                                                                                                                            | 09 45 545 1561 |
|                                                                                                                | Conductors AWG 24-22, solid/stranded                                                                                                                                            | 09 45 545 1562 |
| <b>CAT. 6<sub>A</sub></b><br> | RJ Industrial® inserts<br>■ Keystone format<br>■ 8 IDC contacts, can be assembled in the field without tools<br>■ Shielded<br>■ Transmission rate 10/100 Mbit/s and 1/10 Gbit/s |                |
|                                                                                                                | Conductors AWG 28-24, solid/stranded                                                                                                                                            | 09 45 545 1563 |
|                                                                                                                | Conductors AWG 24-22, solid/stranded                                                                                                                                            | 09 45 545 1564 |

## RJ Industrial® couplers

|                                                                                                                  |                                                                                                                                                                                                                   |                |
|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <b>CAT. 6</b><br>              | RJ Industrial® coupler RJ45<br>■ HIFF format<br>■ Shielded<br>■ Transmission rate 10/100 Mbit/s and 1/10 Gbit/s                                                                                                   | 09 45 545 1560 |
| <b>CAT. 6</b><br>             | RJ Industrial® coupler RJ45<br>■ Keystone format<br>■ Shielded<br>■ Transmission rate 10/100 Mbit/s and 1/10 Gbit/s                                                                                               | 09 45 545 1568 |
| <b>CAT. 6<sub>A</sub></b><br> | HARTING RJ Industrial® 10G extender<br>■ 8 IDC contacts, can be assembled in the field without tools<br>■ Conductors AWG 24-22, solid/stranded<br>■ Shielded<br>■ Transmission rate 10/100 Mbit/s and 1/10 Gbit/s | 09 45 545 1569 |
| <b>IP65<br/>IP67</b><br>      | RJ Industrial® RJ45 cable to cable housing<br>■ Polyamide (PA)<br>■ Compatible with 09 45 545 1569<br>■ Degree of protection IP65/IP67                                                                            | 09 45 805 0000 |

## RJ Industrial® coupling box

|                                                                                   |                                                                                                                                                                                            |                       |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
|  | <p>RJ Industrial® RJ45 cable to cable housing</p> <ul style="list-style-type: none"> <li>Degree of protection IP65 / IP67</li> <li>Polyamide (PA)</li> <li>360° shielded insert</li> </ul> | <p>09 45 805 1560</p> |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|

## DualBoot® RJ45 system cables

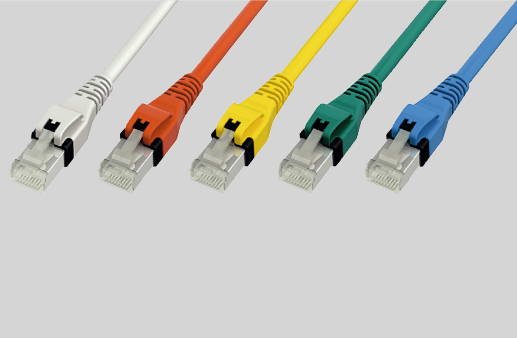
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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------|
|                                                                                                                                                                                                                                                       | 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  |
|  <div>CAT. 6<sub>A</sub></div>                                                                                                                                                                                                                      | 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  |
|  <div>+80<br/>-40</div> <div></div> <div></div> <div>CAT. 6<sub>A</sub></div> | 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  |

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 (10 cm)

DualBoot® RJ45 PushPull system cables

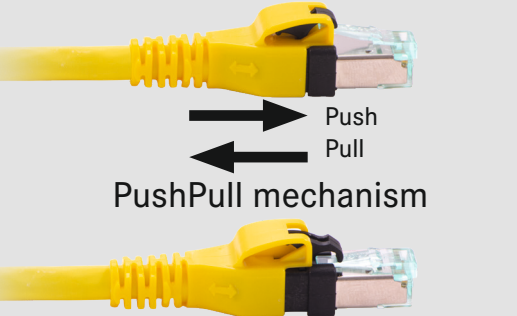


DualBoot® RJ45 PushPull Ethernet system cables

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

**CAT. 5**  
**CAT. 5e**

|        |  |                   |
|--------|--|-------------------|
| 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 |



DualBoot® RJ45 PushPull Ethernet system cables

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

**CAT. 6<sub>A</sub>**

|        |  |                   |
|--------|--|-------------------|
| 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 |

■ Pull: pull on the housing or bend protection mechanism to unplug the connector.

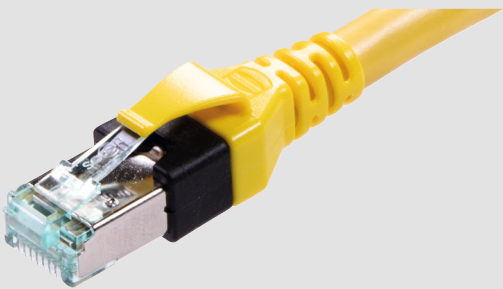
xxx = Length of cable

|             |             |             |             |             |             |             |            |            |            |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|------------|------------|
| 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 (10 cm)

DualBoot® RJ45 - Characteristics and advantages

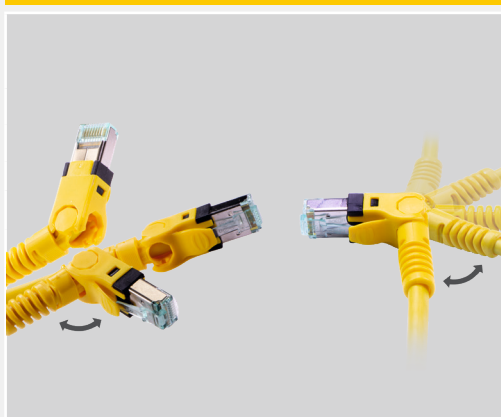
The DualBoot® RJ45 is an overmoulded RJ45 that is specially customise for industrial requirements.



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



## VarioBoot® RJ45 system cables

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

xxx = Length of cable

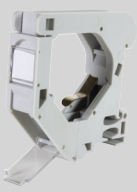
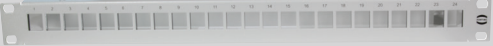
|             |             |             |             |             |             |             |            |            |            |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|------------|------------|
| 005 = 0.5 m | 010 = 1.0 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 (10 cm)

1 = UaD: Up and Down

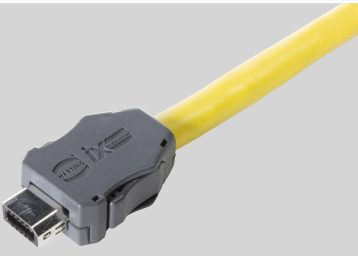
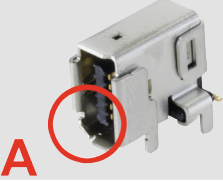
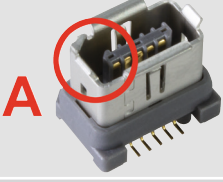
2 = LaR: Left and Right

## Accessories - Mounting of RJ45 Keystone inserts and couplers

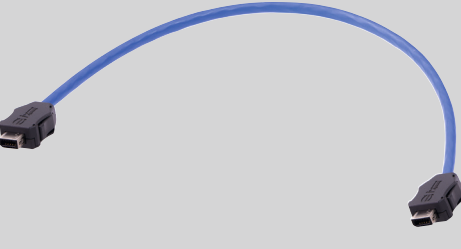
|                                                                                                                                                                     |                                                                                                          |                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-------------------------------------------|
|   | Bracket for mounting on DIN rail<br>■ For RJ45 connectors in Keystone format<br>■ With ground connection | 09 45 851 0000                            |
|                                                                                                                                                                     |                                                                                                          | Set of 2 protective covers 09 45 851 0001 |
|   | Bracket for mounting on DIN rail<br>■ For RJ45 connectors in Keystone format<br>■ With ground connection | 09 45 851 0002                            |
|                                                                                                                                                                     |                                                                                                          | Protection cover 09 45 851 0003           |
|                                                                                    | 19" panel, 24 RJ45 ports<br>■ Compatible with RJ45 inserts and couplers in Keystone format               | 20 82 400 0002                            |
|                                                                                   | Distribution box IP44<br>■ For 2 RJ45 connectors in Keystone format                                      | 09 45 851 0015                            |
|                                                                                  | Earthing cable<br>■ 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"> <li>8 conductors + 2 GND</li> <li>70% more compact than RJ45</li> <li>Stronger with its metal locking lugs</li> <li>≥ 5000 mating cycles</li> <li>Shielded 360°</li> </ul> |                   |
|                                                                                     | 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"> <li>8 conductors + 2 GND</li> <li>≥ 5000 mating cycles</li> <li>Shielded 360°</li> </ul>                                                         |                   |
|                                                                                     | 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"> <li>90° angled, PCB socket, SMD data contacts + THR shield contacts</li> </ul>                                                                                             | 09 45 281 2560    |
|  | ix Industrial® connector Type A <ul style="list-style-type: none"> <li>Flat mounting, PCB socket, SMD data contacts + THR shield contacts</li> </ul>                                                                                          | 09 45 281 2561    |
|  | ix Industrial® straight connector, type A <ul style="list-style-type: none"> <li>Straight, PCB socket, SMD data contacts + THR shield contacts</li> </ul>                                                                                     | 09 45 281 2562    |
|  | ix Industrial® tool <ul style="list-style-type: none"> <li>Needed to assemble the cable connector</li> <li>With ratchet mechanism</li> </ul>                                                                                                  | 09 45 800 0181    |

## ix Industrial® Ethernet system cables

|                                                                                     |                                                                                                                                        |                       |        |  |                |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------|--|----------------|
|    | ix Industrial® Ethernet system cables<br>■ PVC cable - S/FTP yellow<br>■ Use with Ethernet switch<br>eCon 2000 Advanced ix Industrial® |                       |        |  | <b>CAT. 6A</b> |
|                                                                                     | Connector 1                                                                                                                            | Connector 2           |        |  |                |
|                                                                                     | ix Industrial®                                                                                                                         | ix Industrial®        | Yellow |  |                |
|                                                                                     | ix Industrial®                                                                                                                         | RJ45 Gigalink Compact | Yellow |  |                |
|    | ix Industrial® Ethernet system cables<br>■ FRNC cable - S/FTP<br>■ Halogen free, RoHS                                                  |                       |        |  |                |
|                                                                                     | Connector 1                                                                                                                            | Connector 2           |        |  |                |
|                                                                                     | ix Industrial®                                                                                                                         | ix Industrial®        | blue   |  |                |
|                                                                                     | ix Industrial®                                                                                                                         | ix Industrial®        | White  |  |                |
|                                                                                     | ix Industrial®                                                                                                                         | ix Industrial®        | Grey   |  |                |
|                                                                                     | ix Industrial®                                                                                                                         | ix Industrial®        | Red    |  |                |
|                                                                                     | ix Industrial®                                                                                                                         | ix Industrial®        | Yellow |  |                |
|                                                                                     | ix Industrial®                                                                                                                         | ix Industrial®        | Green  |  |                |
|                                                                                     | ix Industrial®                                                                                                                         | ix Industrial®        | Black  |  |                |
|  | Connector 1                                                                                                                            | Connector 2           |        |  |                |
|                                                                                     | ix Industrial®                                                                                                                         | DualBoot® RJ45        | blue   |  |                |
|                                                                                     | ix Industrial®                                                                                                                         | DualBoot® RJ45        | White  |  |                |
|                                                                                     | ix Industrial®                                                                                                                         | DualBoot® RJ45        | Grey   |  |                |
|                                                                                     | ix Industrial®                                                                                                                         | DualBoot® RJ45        | Red    |  |                |
|                                                                                     | ix Industrial®                                                                                                                         | DualBoot® RJ45        | Yellow |  |                |
|                                                                                     | ix Industrial®                                                                                                                         | DualBoot® RJ45        | Green  |  |                |
|                                                                                     | ix Industrial®                                                                                                                         | DualBoot® RJ45        | Black  |  |                |
|                                                                                     | ix Industrial®                                                                                                                         | DualBoot® RJ45        | Orange |  |                |

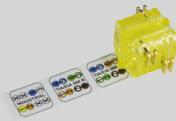
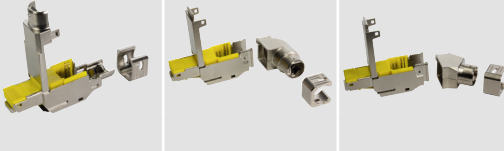
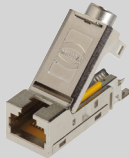
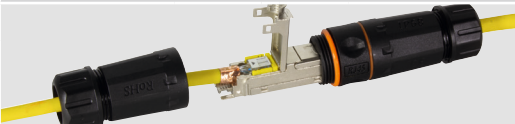
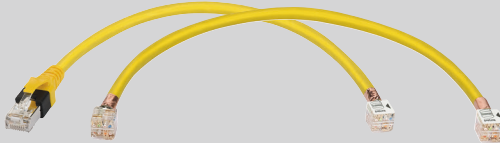
xxx = Length of cable

|             |             |             |             |             |             |            |
|-------------|-------------|-------------|-------------|-------------|-------------|------------|
| 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 |
|-------------|-------------|-------------|-------------|-------------|-------------|------------|

xxx = Length of cable

Other lengths available on request (10 cm)

## preLink®

|                                                                                     |                                                                                   |  |  |                                                                                                                                                                                                                        |                                                                                     |                               |                                                                                       |                |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------|----------------|
|    |  |  |  | Connection of preLink® cables                                                                                                                                                                                          |                                                                                     | <div>CAT. 6<sub>A</sub></div> |                                                                                       |                |
| 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                                                                                                                                                                                                |                                                                                     | <div>CAT. 6<sub>A</sub></div> |                                                                                       |                |
|                                                                                     |                                                                                   |  |  | 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® inserts in Keystone format                                                                                                                                                                               |                                                                                     | <div>CAT. 6<sub>A</sub></div> |                                                                                       |                |
|                                                                                     |                                                                                   |  |  | Straight version                                                                                                                                                                                                       |                                                                                     |                               | 20 82 500 0001                                                                        |                |
|                                                                                     |                                                                                   |  |  | Angled 90° version                                                                                                                                                                                                     |                                                                                     |                               | 20 82 500 0002                                                                        |                |
|    |                                                                                   |  |  | RJ45 preLink® insert in HIFF format                                                                                                                                                                                    |                                                                                     |                               | 20 82 000 0002                                                                        |                |
|   |                                                                                   |  |  | preLink® extender                                                                                                                                                                                                      |                                                                                     |                               | 20 82 101 0001                                                                        |                |
|  |                                                                                   |  |  | RJ Industrial® waterproof box                                                                                                                                                                                          |                                                                                     |                               | 09 45 805 0000                                                                        |                |
|                                                                                     |                                                                                   |  |  | <div> Polyamide (PA)</div> <div> IP65/IP67</div> |                                                                                     |                               |                                                                                       |                |
|  |                                                                                   |  |  | preLink® tool                                                                                                                                                                                                          |                                                                                     |                               | 20 82 000 9901                                                                        |                |
|  |                                                                                   |  |  | preLink® system cables                                                                                                                                                                                                 |                                                                                     |                               |                                                                                       |                |
|                                                                                     |                                                                                   |  |  | <div> PUR cable - S/FTP</div>                                                                                                       |                                                                                     |                               |                                                                                       |                |
|                                                                                     |                                                                                   |  |  | Connector 1                                                                                                                                                                                                            | Connector 2                                                                         |                               |                                                                                       |                |
|                                                                                     |                                                                                   |  |  | preLink®                                                                                                                                                                                                               | preLink®                                                                            | Yellow                        |  | 20 82 600 2xxx |
|                                                                                     |                                                                                   |  |  | DualBoot® RJ45                                                                                                                                                                                                         | preLink®                                                                            | Yellow                        |  | 20 82 601 1xxx |

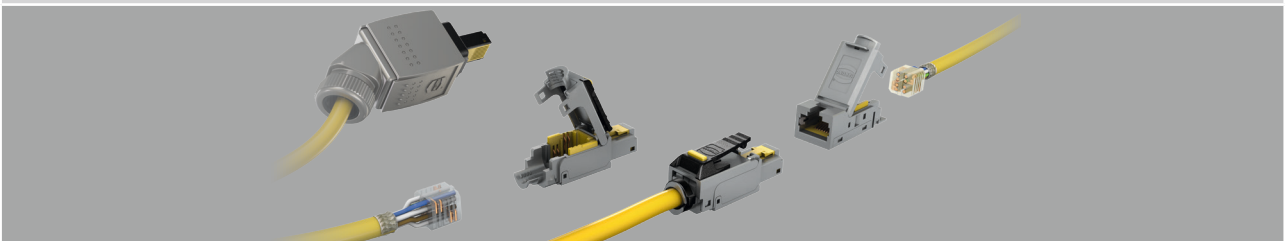
xxx = Length of cable

|             |             |             |             |             |             |             |            |            |            |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|------------|------------|
| 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 |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|------------|------------|

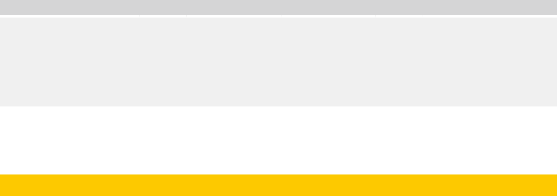
Other lengths available on request (10 cm)

## preLink® - Characteristics and advantages

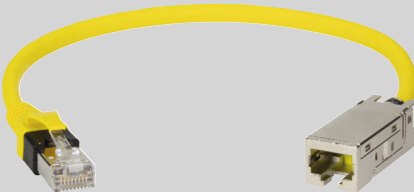
preLink® is a cabling strategy that provides flexibility, reliability and ease of use for Ethernet networks.  
 The termination system creates a detachable connection between the cable and connector.



## har-port panel feed-throughs

|                                                                                     |  |  |                                                                                                             |                                                                                       |                |
|-------------------------------------------------------------------------------------|--|--|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------|
|    |  |  | har-port RJ45 coupler<br>■ Shielded 360°                                                                    |                                                                                       | <b>CAT. 6</b>  |
|                                                                                     |  |  | Silver                                                                                                      |    |                |
|                                                                                     |  |  | Black                                                                                                       |    |                |
|                                                                                     |  |  | White                                                                                                       |    |                |
|    |  |  | 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<br>■ Compatible with inserts with HIFF format<br>(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 |
|  |  |  | Protection cover IP65/IP67                                                                                  |                                                                                       |                |
|                                                                                     |  |  | Black rubber                                                                                                |  | 09 45 502 0000 |
|                                                                                     |  |  | transparent plastic                                                                                         |  | 09 45 502 0005 |
|                                                                                     |  |  | Plastic, black                                                                                              |  | 09 45 502 0008 |
|  |  |  | Label holder                                                                                                |                                                                                       | 09 45 502 0002 |
|                                                                                     |  |  | Label                                                                                                       |                                                                                       | 09 45 502 0003 |
|                                                                                     |  |  | Blind cover                                                                                                 |                                                                                       | 09 45 502 0004 |
|  |  |  | Aluminum protection cover<br>■ IP65/IP67/IPx9k<br>■ Type: Screw connection                                  |                                                                                       | 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    |
| <br><b>CAT. 6<sub>A</sub></b> | 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 |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|------------|------------|

Other lengths available on request (10 cm)

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

|                                                                                   |                                                                                                                                |                   |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-------------------|
|  | T1 Industrial connector<br>■ Single Pair Ethernet<br>■ 2 crimp contacts<br>■ Shielded 360°                                     | 09 45 181 2810 XL |
|                                                                                   | Crimp contacts AWG 28-26                                                                                                       | 09 45 500 2810    |
|                                                                                   | Crimp contacts AWG 24-22                                                                                                       | 09 45 500 2812    |
|  | T1 Industrial PCB jack<br>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<br>■ SPE cable, PUR - S/FTP<br>■ Overmoulded T1 SPE IP20 cable assemblies<br>■ 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 |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|------------|------------|

Other lengths available on request (10 cm)

## 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   |

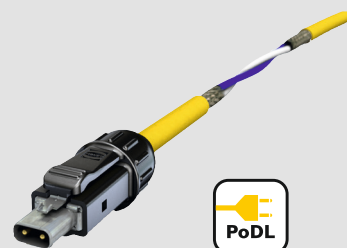
Capable of being used over distances up to 1 km, SPE has all the features to replace old field buses or analog networks as current loops 4...20 mA. It is also a good support for connecting actuators and sensors with Ethernet-based automation networks.

An SPE cable has many advantages:

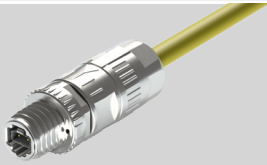
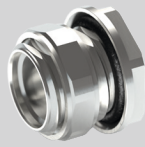
- Thinner lighter cable
- Better performance to industrial requirements, especially in cyclic translation on a drag chain or in torsion (robotic).
- Less expensive cable (cheaper than Ethernet cable with 4 or 8 cores)
- Simpler cabling

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 M313C3E3



## M12 Circular connectors

|                                |             |                                                                                                                                                                         |                                                                                                                                                                                                                         |                |
|--------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| T1 Industrial coding (2 wires) | Cable side  |       | T1 Industrial M12 slim design connectors<br><ul style="list-style-type: none"> <li>2 crimp contacts</li> <li>Conductors AWG 28-22</li> <li>10/100 Mbit/s - 1/10 Gbit/s</li> </ul>                                       | 21 03 839 1205 |
|                                |             |                                                                                                                                                                         | Crimp contacts AWG 28-26                                                                                                                                                                                                | 09 45 500 2810 |
|                                |             |                                                                                                                                                                         | Crimp contacts AWG 24-22                                                                                                                                                                                                | 09 45 500 2812 |
|                                | Connectors  |       | T1 Industrial M12 connector, straight 12.5 mm<br><ul style="list-style-type: none"> <li>THR soldering</li> <li>Shielded</li> <li>Straight, soldered contact pins on PCB</li> <li>10/100 Mbit/s - 1/10 Gbit/s</li> </ul> | 21 03 339 2202 |
|                                |             |                                                                                                                                                                         | T1 Industrial M12 connector, straight 8 mm<br><ul style="list-style-type: none"> <li>THR soldering</li> <li>Shielded</li> <li>Straight, soldered contact pins on PCB</li> <li>10/100 Mbit/s - 1/10 Gbit/s</li> </ul>    | 21 03 339 2201 |
|                                |             |       | T1 Industrial M12 connector, angled<br><ul style="list-style-type: none"> <li>THR soldering</li> <li>Shielded</li> <li>Flat mounting, soldered contact pins on PCB</li> <li>10/100 Mbit/s - 1/10 Gbit/s</li> </ul>      | 21 03 339 4201 |
|                                |             |                                                                                                                                                                         | T1 Industrial M12 panel feed-through for rear mounting<br><ul style="list-style-type: none"> <li>Screw locking</li> </ul>                                                                                               | 21 03 339 2000 |
|                                | Device side |   | T1 Industrial M12 flange socket for front mounting<br><ul style="list-style-type: none"> <li>Screw locking and PushPull</li> </ul>                                                                                      | 21 03 339 2001 |
|                                |             |                                                                                                                                                                         |                                                                                                                                                                                                                         |                |
|                                | 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<br>■ 4 contacts (IDC)<br>■ Shielded 360°                                                       |                |
|                            |             |                                                                                     | Conductors AWG 26                                                                                                             | 21 03 382 1410 |
|                            |             |                                                                                     | Conductors AWG 22                                                                                                             | 21 03 382 1400 |
|                            |             |    | M12 connector male D-coded<br>■ 4 contacts (IDC)<br>■ Shielded 360°<br>■ Conductors AWG 26-22                                 | 21 03 281 1405 |
|                            |             |                                                                                     |                                                                                                                               |                |
|                            | Device side |    | M12 PushPull connector male D-coded<br>■ 4 contacts (IDC)<br>■ Shielded 360°                                                  |                |
|                            |             |                                                                                     | Conductors AWG 26                                                                                                             | 21 03 382 1411 |
|                            |             |                                                                                     | Conductors AWG 22                                                                                                             | 21 03 382 1401 |
|                            |             |    | M12 connector male D-coded<br>■ preLink® (AWG 27-22)<br>■ Shielded 360°                                                       | 20 82 005 0001 |
|                            |             |                                                                                     |                                                                                                                               |                |
|                            | Device side |  | M12 slim design D-coded, female<br>■ 4 contacts (IDC)<br>■ Shielded 360°                                                      |                |
|                            |             |                                                                                     | Conductors AWG 26                                                                                                             | 21 03 382 2410 |
|                            |             |                                                                                     | Conductors AWG 22                                                                                                             | 21 03 382 2400 |
|                            |             |  | M12 connector female, D-coded<br>■ 4 contacts (IDC)<br>■ Shielded 360°<br>■ Conductors AWG 26-22                              | 21 03 281 2405 |
|                            |             |                                                                                     |                                                                                                                               |                |
|                            | Device side |  | M12 connector female D-coded<br>■ PFT (panel feed-through)<br>■ 4 contacts (IDC)<br>■ Shielded 360°<br>■ Conductors AWG 26-22 | 21 03 381 2425 |
|                            |             |                                                                                     | M12 PushPull, D-coded<br>■ PFT (panel feed-through)<br>■ preLink® (AWG 27-22)<br>■ 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 |
|-------------|-------------|-------------|-------------|

Other lengths available on request (10 cm)

|                                                                                                              |                                                                                                                                                     |                                                                                                              |                                                                                                                      |                |
|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------------|
| X-coded - Cat. 6A (8 wires)                                                                                  | Cable side                                                                                                                                          | <div>IP65<br/>IP67</div>    | M12 slim design, X-coded, male<br>■ 8 crimp contacts<br>■ Shielded 360°                                              | 21 03 881 1805 |
|                                                                                                              |                                                                                                                                                     |                                                                                                              | Crimp contacts AWG 28-24                                                                                             | 21 01 100 9014 |
|                                                                                                              |                                                                                                                                                     |                                                                                                              | Crimp contacts AWG 26-23                                                                                             | 21 01 100 9019 |
|                                                                                                              |                                                                                                                                                     | <div>IP65<br/>IP67</div>    | M12 slim design PushPull, X-coded, male<br>■ 8 crimp contacts<br>■ Shielded 360°                                     | 21 03 881 1830 |
|                                                                                                              |                                                                                                                                                     |                                                                                                              | Crimp contacts AWG 28-24                                                                                             | 21 01 100 9014 |
|                                                                                                              |                                                                                                                                                     |                                                                                                              | Crimp contacts AWG 26-23                                                                                             | 21 01 100 9019 |
|                                                                                                              | <div>IP65<br/>IP67</div>                                           | M12 male, X-coded<br>■ preLink® (AWG 27-22)<br>■ Shielded 360°                                               | 20 82 005 0002                                                                                                       |                |
|                                                                                                              | Device side                                                                                                                                         | <div>IP65<br/>IP67</div>    | M12 slim design, X-coded, female<br>■ 8 crimp contacts<br>■ Shielded 360°                                            | 21 03 881 2805 |
|                                                                                                              |                                                                                                                                                     |                                                                                                              | Crimp contacts AWG 28-24                                                                                             | 21 01 100 9023 |
|                                                                                                              |                                                                                                                                                     |                                                                                                              | Crimp contacts AWG 26-23                                                                                             | 21 01 100 9021 |
|                                                                                                              |                                                                                                                                                     | <div>IP65<br/>IP67</div>  | M12 slim design PFT PushPull, X-coded, female<br>■ PFT (panel feed-through)<br>■ 8 crimp contacts<br>■ Shielded 360° | 21 03 881 2825 |
|                                                                                                              |                                                                                                                                                     |                                                                                                              | Crimp contacts AWG 28-24                                                                                             | 21 01 100 9023 |
|                                                                                                              |                                                                                                                                                     | Crimp contacts AWG 26-23                                                                                     | 21 01 100 9021                                                                                                       |                |
| <div>IP65<br/>IP67</div>  | M12 PushPull connector female X-coded<br>■ PFT (panel feed-through)<br>■ preLink® (AWG 27-22)<br>■ Shielded 360°                                    | 20 82 006 2001                                                                                               |                                                                                                                      |                |
| <div>IP65<br/>IP67</div>  | M12 PushPull connector female X-coded pre-assembled<br>■ PFT (panel feed-through)<br>■ 8 crimp contacts on cable S/FTP PUR black<br>■ 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.

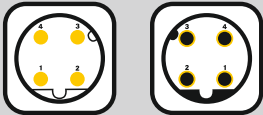


D-coded  
Cat. 5 (10/100 Mbit/s - 100 MHz)



X-coded  
Cat. 6<sub>A</sub> (1/10 Gbit/s - 500 MHz)

M12 D-coded system cable



CAT. 5



21

34

XXX

XXXX

xxx

92

93

94

95

00

92

93

94

95

4

05

77

005

010

015

020

050

075

100

0.5 m

1.0 m

1.5 m

2.0 m

5.0 m

7.5 m

10.0 m

Connector 1

Connector 2

No. of Contacts

Cable jacket

Length of cable

M12 connector male straight

M12 connector female straight

M12 connector male angled

M12 connector female angled

Open end

M12 connector male straight

M12 connector female straight

M12 connector male angled

M12 connector female angled

4 poles

PVC

PUR

0.5 m

1.0 m

1.5 m

2.0 m

5.0 m

7.5 m

10.0 m

CAT. 6A



M12 Ethernet system cable, X-coded

Cable S/FTP yellow

Male Slim Press & Go

| Jacket | Connector 1      | Connector 2 |                   |
|--------|------------------|-------------|-------------------|
| PVC    | M12 X-coded male | Open end    | 21 33 050 0855xxx |
| PUR    | M12 X-coded male | Open end    | 21 33 050 0850xxx |
| PVC    | M12 X-coded male | M12 X-coded | 21 33 050 5855xxx |
| PUR    | M12 X-coded male | M12 X-coded | 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 |
|-------------|-------------|-------------|-------------|-------------|------------|

Other lengths available on request (10 cm)

|                                                                                   |                                         |                             |  |                   |
|-----------------------------------------------------------------------------------|-----------------------------------------|-----------------------------|--|-------------------|
|  | RJ45/ M12 Ethernet system cable D-coded |                             |  |                   |
|                                                                                   | ■ 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 |
|-------------|-------------|-------------|-------------|-------------|------------|

xxx = Length of cable

005 = 0.5 m

010 = 1.0 m

020 = 2.0 m

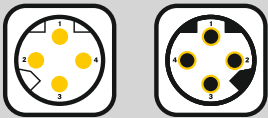
030 = 3.0 m

050 = 5.0 m

100 = 10 m

Other lengths available on request (10 cm)

## M8 D-coded system cable



CAT. 5



2

1

3

4

X

X

X

X

X

X

X

x

x

x

C

7

D

7

M8 connector male straight  
M8 connector female straight

**Connector 1**

0

0

C

7

D

7

No connector  
M8 connector male straight  
M8 connector female straight

**Connector 2**

4

4 poles

**No. of Contacts**

0

5

7

7

PVC  
PUR

**Cable jacket**

0

0

5

0

1

0

0

1

5

0

2

0

0

5

0

0

7

5

1

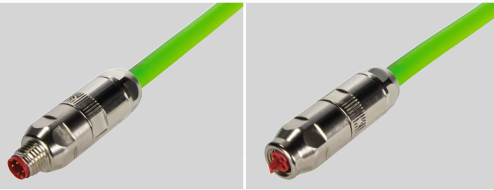
0

0

0.5 m  
1.0 m  
1.5 m  
2.0 m  
5.0 m  
7.5 m  
10.0 m

**Length of cable**

M8 Circular connectors

|                            |                                                                                   |                                                                                                                                                                         |                |
|----------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| D-coded - Cat. 5 (4 wires) |  | M8 connector D-coded <ul style="list-style-type: none"><li>4 contacts (IDC)</li><li>Shielded</li><li>Conductors AWG 22</li></ul> <div>IP65<br/>IP67</div>               |                |
|                            |                                                                                   | Male                                                                                                                                                                    | 21 02 185 1405 |
|                            |                                                                                   | Female contact                                                                                                                                                          | 21 02 185 2405 |
|                            |  | M8 PushPull connector male D-coded <ul style="list-style-type: none"><li>4 contacts (IDC)</li><li>Shielded</li><li>Conductors AWG 22</li></ul> <div>IP65<br/>IP67</div> | 21 02 185 1430 |
| P-coded - Cat. 5 (4 wires) |  | M8 connector P-coded <ul style="list-style-type: none"><li>4 contacts (IDC)</li><li>Shielded</li><li>Conductors AWG 22</li></ul> <div>IP65<br/>IP67</div>               |                |
|                            |                                                                                   | Male                                                                                                                                                                    | 21 02 145 1405 |
|                            |                                                                                   | Female contact                                                                                                                                                          | 21 02 145 2405 |
|                            |  | M8 PushPull connector male P-coded <ul style="list-style-type: none"><li>4 contacts (IDC)</li><li>Shielded</li><li>Conductors AWG 22</li></ul> <div>IP65<br/>IP67</div> | 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<br>Cat. 5 (10/100 Mbit/s - 100 MHz) |  | P-coded<br>Cat. 5 (10/100 Mbit/s - 100 MHz) |
|-------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------|

PushPull (V4) RJ45 Ethernet system cable

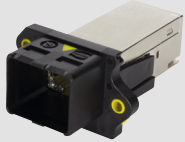
|                                                                                                        |                                                                                                             |               |                |  |                   |
|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|---------------|----------------|--|-------------------|
| <div>CAT. 6A</div>  | Overmoulded PushPull RJ45 Ethernet system cable <ul style="list-style-type: none"><li>Cable S/FTP</li></ul> |               |                |  |                   |
|                                                                                                        | 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 |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|------------|------------|

Other lengths available on request (10 cm)

## PushPull (V4) connectors

|             |                                                                                     |                                                                                                                                                                                                                                                             |                                            |                |
|-------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|----------------|
| Cable side  |    | PushPull (V4) RJ45 connector <ul style="list-style-type: none"> <li>4 IDC contacts, can be assembled in the field without tools</li> <li>Shielded</li> <li>Conductors AWG 24-22</li> <li>Transmission rate 10/100 Mbit/s</li> </ul>                         | <b>CAT. 5</b> <b>IP65 IP67</b>             | 09 45 145 1106 |
|             |    | PushPull (V4) RJ45 connector <ul style="list-style-type: none"> <li>8 IDC contacts, can be assembled in the field without tools</li> <li>Shielded</li> <li>Conductors AWG 27-22</li> <li>Transmission rate 10/100 Mbit/s and 1/10 Gbit/s</li> </ul>         | <b>CAT. 6</b> <b>IP65 IP67</b>             | 09 45 145 1561 |
|             |    | PushPull RJ45 coupler <ul style="list-style-type: none"> <li>Shielded</li> <li>Transmission rate 10/100 Mbit/s and 1/10 Gbit/s</li> </ul>                                                                                                                   | <b>CAT. 6<sub>A</sub></b> <b>IP65 IP67</b> | 09 45 345 1560 |
| Device side |    | PushPull RJ45 panel feed through <ul style="list-style-type: none"> <li>Surface mounting</li> <li>Shielded</li> <li>Transmission rate 10/100 Mbit/s and 1/10 Gbit/s</li> </ul>                                                                              | <b>CAT. 6</b> <b>IP65 IP67</b>             | 09 45 245 1561 |
|             |  | PushPull HIFF housing <ul style="list-style-type: none"> <li>Compatible with inserts with HIFF format (RJ45 connectors, RJ45 coupler, USB coupler)</li> </ul>                                                                                               | <b>IP65 IP67</b>                           | 09 45 545 0041 |
| Accessories |  | 2 port outlet with covers <ul style="list-style-type: none"> <li>2 PushPull RJ45 ports</li> <li>IDC contacts, can be assembled in the field without tools</li> <li>Conductors AWG 24-22</li> <li>Transmission rate 10/100 Mbit/s and 1/10 Gbit/s</li> </ul> | <b>IP65 IP67</b> <b>CAT. 6<sub>A</sub></b> | 09 45 845 1562 |
|             |                                                                                     | 2 port outlet, empty <ul style="list-style-type: none"> <li>2 PushPull RJ45 ports</li> <li>Mounting of 2 RJ45 inserts with HIFF format for cabling</li> </ul>                                                                                               | <b>IP65 IP67</b>                           | 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  |    | <b>CAT. 5</b>             | Han® 3 A RJ45 insert<br>■ 4 IDC contacts, can be assembled in the field without tools<br>■ Shielded<br>■ Transmission rate 10 / 100 Mbit/s                                         |                |
|             |                                                                                     |                           | Conductors AWG 26                                                                                                                                                                  | 09 45 100 1110 |
|             |                                                                                     |                           | Conductors AWG 24-22                                                                                                                                                               | 09 45 100 1100 |
|             |    | <b>CAT. 6</b>             | Han® 3 A RJ45 insert<br>■ 8 IDC contacts, can be assembled in the field without tools<br>■ Shielded<br>■ Conductors AWG 27-22<br>■ Transmission rate 10/100 Mbit/s and 1/10 Gbit/s | 09 45 100 1560 |
|             |    | <b>CAT. 6<sub>A</sub></b> | Han® 3 A RJ45 preLink® insert<br>■ preLink® (AWG 27-22)<br>■ Shielded<br>■ Transmission rate 10/100 Mbit/s and 1/10 Gbit/s                                                         | 20 82 002 0001 |
|             |   | <b>IP65<br/>IP67</b>      | Han® 3 A Housing<br>■ With glued seal<br>■ M20 output                                                                                                                              |                |
|             |                                                                                     |                           | Metal, grey                                                                                                                                                                        | 19 20 003 1443 |
| Device side |                                                                                     |                           | 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 |
|             |  | <b>CAT. 6</b>             | Han® 3 A RJ45 female insert<br>■ Shielded<br>■ Transmission rate 10/100 Mbit/s and 1/10 Gbit/s                                                                                     | 09 45 200 1560 |
|             |  |                           | Han® 3 A HIFF adapter<br>■ Compatible with inserts with HIFF format (RJ45 connectors, RJ45 coupler, USB coupler)                                                                   | 09 45 515 0024 |
|             |  | <b>IP65<br/>IP67</b>      | 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 |
|             |  | <b>IP65<br/>IP67</b>      | Han® 3 A bulkhead housing<br>■ 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 |  |                                                                                     | <b>IP65</b><br><b>IP67</b>                                                          | 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 |
|                         |  |                                                                                     | <b>CAT. 5</b><br><b>CAT. 5e</b><br><b>IP65</b><br><b>IP67</b>                       | 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                                          |                |
|                         |                                                                                   |                                                                                     |                                                                                     |                                              | ■ Compatible with USB cables                                  |                |
|                         |                                                                                   |                                                                                     |                                                                                     |                                              | 09 12 001 3091                                                |                |
|                         | Equipment                                                                         |    |                                                                                     |                                              | Han-Brid® USB insert<br>USB extender                          |                |
|                         |                                                                                   |                                                                                     |                                                                                     |                                              | USB 3.0                                                       | 09 12 001 2793 |
|                         |                                                                                   |                                                                                     |                                                                                     |                                              | USB 2.0                                                       | 09 45 215 1110 |
| Han® 3 A RJ45 kit       | Cable side                                                                        |  |  | Han® 3 A RJ45 connector                      |                                                               |                |
|                         |                                                                                   |                                                                                     |                                                                                     |                                              | ■ 8 IDC contacts, can be assembled in the field without tools | <b>CAT. 6</b>  |
|                         |                                                                                   |                                                                                     |                                                                                     |                                              | ■ 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                                                                         |  |  | Han® 3 A RJ45 M12 Panel feed through         |                                                               |                |
|                         |                                                                                   |                                                                                     |                                                                                     |                                              | ■ RJ45 coupler                                                | <b>CAT. 6</b>  |
|                         |                                                                                   |                                                                                     |                                                                                     |                                              | ■ Transmission rate 10/100 Mbit/s and 1/10 Gbit/s             |                |
|                         |                                                                                   |                                                                                     |                                                                                     |                                              | Plastic version, black                                        |                |
|                         |                                                                                   |                                                                                     |                                                                                     | 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.

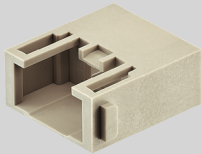
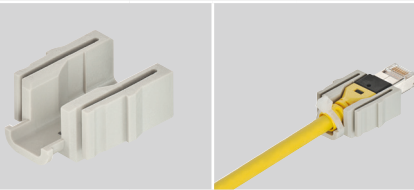
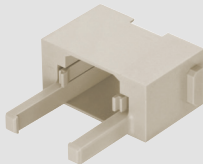
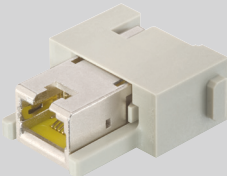
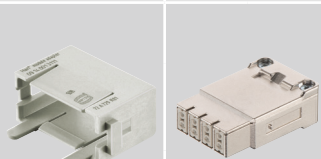
Han® 3 A is a compact version available in several versions:

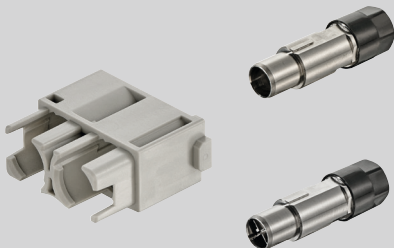
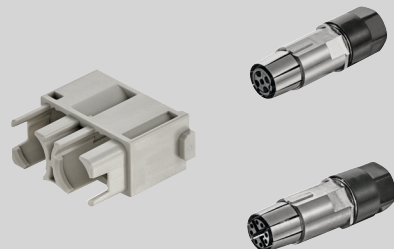
- Standard (zinc with epoxy finish)
- Gray or black plastic (polycarbonate)
- Han® EMC for environments subject to electromagnetic disturbances
- Han-INOX® for increased resistance to saline environments
- Han® HPR for harsh external environments (IP69k)
- Han® Ex for zones exposed to explosion hazard

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<br>■ 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 <sub>A</sub>                                                               | RJ45 insert - 8 IDC contacts                                                                   |                |
|                                                                                     |                                                                                     |                                                                                   | Conductors AWG 27-22                                                                           | 09 45 400 1560 |
|    |                                                                                     | RJ45 insert<br>■ Compatible with DualBoot® RJ45 system cables                     | 09 14 000 9966                                                                                 |                |
| Han® Gigabit module                                                                 |   |                                                                                   | Han® RJ45 female module<br>■ Compatible with separate RJ45 inserts from the Han-Modular series | 09 14 001 4722 |
|                                                                                     |  |                                                                                   | Han® RJ45 coupler module<br>■ Shielded                                                         | 09 14 001 4721 |
|                                                                                     |  | CAT. 8.2                                                                          | Han® Gigabit male module<br>■ Mounting insert of the Han® Gigabit male module                  |                |
| Han® Gigabit male insert<br>■ 8 crimp contacts<br>■ Shielded                        |                                                                                     |                                                                                   | 09 14 008 3034                                                                                 |                |
| Crimp contacts, male<br>■ AWG 26-22                                                 |                                                                                     |                                                                                   | 09 67 000 5576                                                                                 |                |
|  | CAT. 8.2                                                                            | Han® Gigabit female module<br>■ Mounting insert of the Han® Gigabit female module |                                                                                                | 09 14 001 3111 |
|                                                                                     |                                                                                     | Han® Gigabit female insert<br>■ 8 crimp contacts<br>■ Shielded                    |                                                                                                | 09 14 008 3134 |
|                                                                                     |                                                                                     | Crimp contact, female<br>■ 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<br>■ Mounting of 2 Han® M12 male inserts                     | 09 14 002 3061 |
|  | Han® M12 D-coded male insert<br>■ 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<br>■ 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<br>■ Mounting of 2 Han® M12 female inserts                 | 09 14 002 3161 |
|                                                                                   | Han® M12 D-coded female insert<br>■ 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<br>■ 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 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

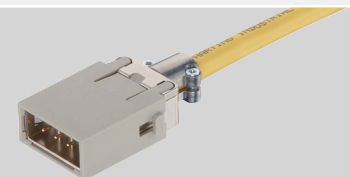
The various available housing materials and coatings ensure that the Han-Modular® is suitable for all types of industrial environments.

- 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

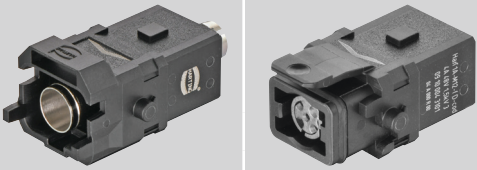
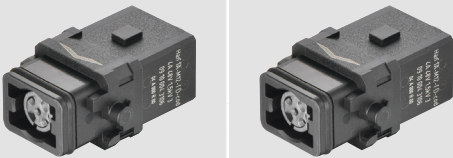


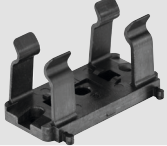
## Han® Gigabit - Characteristics and advantages

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

|                                                                                     |  |                                                                                                                                                                   |                |         |      |            |
|-------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------|------|------------|
|    |  | Han® 1A, M12 D-coded inserts<br><ul style="list-style-type: none"> <li>With snap-in latches</li> <li>4 crimp contacts AWG 26-18</li> <li>Shielded 360°</li> </ul> |                | CAT. 5  | IP65 | +90<br>-30 |
|                                                                                     |  | Male insert                                                                                                                                                       | 09 10 004 3001 |         |      |            |
|                                                                                     |  | Female insert                                                                                                                                                     | 09 10 004 3101 |         |      |            |
|    |  | Han® 1A, M12 D-coded inserts<br><ul style="list-style-type: none"> <li>With locking lever</li> <li>4 crimp contacts AWG 26-18</li> <li>Shielded 360°</li> </ul>   |                | CAT. 5  | IP65 | +90<br>-30 |
|                                                                                     |  | Male insert                                                                                                                                                       | 09 10 004 3006 |         |      |            |
|                                                                                     |  | Female insert                                                                                                                                                     | 09 10 004 3106 |         |      |            |
|    |  | Crimp contacts, male M12 D-coded                                                                                                                                  |                |         |      |            |
|                                                                                     |  | 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 |         |      |            |
|    |  | Crimp contacts, female M12 D-coded                                                                                                                                |                |         |      |            |
|                                                                                     |  | AWG 18-22                                                                                                                                                         | 09 67 000 3476 |         |      |            |
|                                                                                     |  | AWG 24-20                                                                                                                                                         | 09 67 000 8476 |         |      |            |
|                                                                                     |  | AWG 26-22                                                                                                                                                         | 09 67 000 5476 |         |      |            |
|                                                                                     |  | AWG 28-24                                                                                                                                                         | 09 67 000 7476 |         |      |            |
|  |  | Han® 1A, M12 X-coded inserts<br><ul style="list-style-type: none"> <li>With snap-in latches</li> <li>8 crimp contacts AWG 28-23</li> <li>Shielded 360°</li> </ul> |                | CAT. 6A | IP65 | +90<br>-30 |
|                                                                                     |  | Male insert                                                                                                                                                       | 09 10 008 3001 |         |      |            |
|                                                                                     |  | Female insert                                                                                                                                                     | 09 10 008 3101 |         |      |            |
|  |  | Han® 1A, M12 X-coded inserts<br><ul style="list-style-type: none"> <li>With locking lever</li> <li>8 crimp contacts AWG 28-23</li> <li>Shielded 360°</li> </ul>   |                | CAT. 6A | IP65 | +90<br>-30 |
|                                                                                     |  | Male insert                                                                                                                                                       | 09 10 008 3006 |         |      |            |
|                                                                                     |  | Female insert                                                                                                                                                     | 09 10 008 3106 |         |      |            |
|  |  | Crimp contacts, male M12 X-coded                                                                                                                                  |                |         |      |            |
|                                                                                     |  | har-speed male, crimp contact AWG 28-24                                                                                                                           | 21 01 100 9014 |         |      |            |
|                                                                                     |  | har-speed male, crimp contact AWG 26-23                                                                                                                           | 21 01 100 9019 |         |      |            |
|                                                                                     |  | har-speed female, crimp contact AWG 28-24                                                                                                                         | 21 01 100 9023 |         |      |            |
|                                                                                     |  | har-speed female, crimp contact AWG 26-23                                                                                                                         | 21 01 100 9021 |         |      |            |

|                                                                                                                                                                     |                                             |                                                               |                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|---------------------------------------------------------------|----------------|
|   | Bulkhead mounting<br>■ Includes seal (IP65) |                                                               |                |
|                                                                                                                                                                     |                                             | Straight                                                      | 09 10 000 0300 |
|                                                                                                                                                                     |                                             | angled                                                        | 09 10 000 0800 |
|   | Cable junction                              |                                                               |                |
|                                                                                                                                                                     |                                             | 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 |
|                                                                                    | Han® 1A stainless steel locking lever       |                                                               | 09 10 000 5200 |
|                                                                                    | Mounting frame<br>■ Wall mounting           |                                                               | 09 10 000 9908 |
|                                                                                   | Mounting frame<br>■ Mounting on DIN rail    |                                                               | 09 10 000 9912 |

## 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 performance

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



### eCon 2000 Ethernet switches

- Flat type
- Fast Ethernet
- 3 – 16 ports

|  |               |                |
|--|---------------|----------------|
|  | 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 |



### eCon 2000 Ethernet switches

- Flat type
- 5 – 16 ports



|  |               |                |
|--|---------------|----------------|
|  | 5 RJ45 ports  | 24 02 405 0030 |
|  | 7 RJ45 ports  | 24 02 407 0030 |
|  | 16 RJ45 ports | 24 02 416 0010 |
|  | 5 RJ45 ports  | 24 02 405 0020 |
|  | 7 RJ45 ports  | 24 02 407 0020 |
|  | 16 RJ45 ports | 24 02 416 0000 |



### eCon 2000 Advanced ix Industrial® Ethernet switches

- Flat type
- More compact and robust than RJ45 Ethernet switches because of ix Industrial®



|  |            |                |
|--|------------|----------------|
|  | 5 ix ports | 24 14 405 0000 |
|  | 8 ix ports | 24 14 408 0000 |



### eCon 3000 Ethernet switches

- Thin type
- Fast Ethernet
- 6 – 16 ports

|  |               |                |
|--|---------------|----------------|
|  | 6 RJ45 ports  | 24 03 006 0010 |
|  | 8 RJ45 ports  | 24 03 008 0010 |
|  | 16 RJ45 ports | 24 03 016 0010 |
|  | 6 RJ45 ports  | 24 03 006 0000 |
|  | 8 RJ45 ports  | 24 03 008 0000 |
|  | 16 RJ45 ports | 24 03 016 0000 |



### eCon 3000 Ethernet switches

- Thin type
- 5 – 16 ports



|  |               |                |
|--|---------------|----------------|
|  | 5 RJ45 ports  | 24 03 405 0010 |
|  | 7 RJ45 ports  | 24 03 407 0010 |
|  | 16 RJ45 ports | 24 03 416 0010 |
|  | 5 RJ45 ports  | 24 03 405 0000 |
|  | 7 RJ45 ports  | 24 03 407 0000 |
|  | 16 RJ45 ports | 24 03 416 0000 |



## 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.

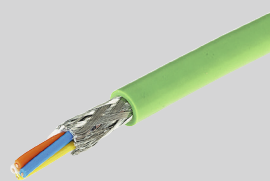
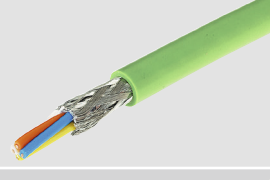
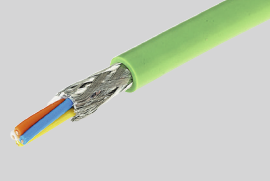
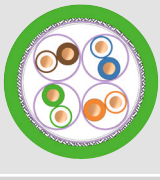
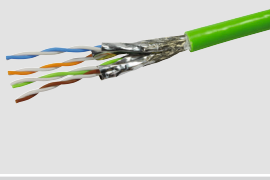
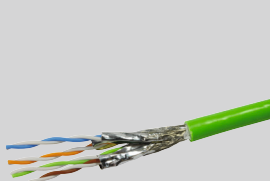
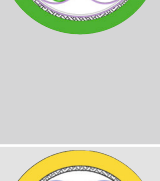
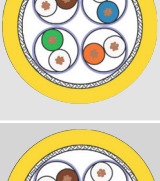
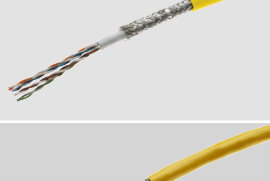
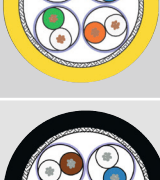
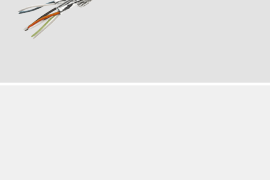
New generation HARTING Ethernet switches easily manage all Full Gigabit Ethernet ports, even when the devices are very data consuming cameras.



24 13 416 0000



## Industrial Ethernet cables

|                                                                                     |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |    | Cable, Profinet type A - PVC - Star quad - 4 x AWG 22/1                                                                                                                                                                                                                                                                                                                                         |                                                                                                  | 20 m  09 45 600 0130<br>50 m  09 45 600 0140<br>100 m  09 45 600 0100<br>500 m  09 45 600 0110         |
|    |    | Cable, Profinet type B - PVC - Star quad - 4 x AWG 22/7                                                                                                                                                                                                                                                                                                                                         |                                                                                                  | 20 m  09 45 600 0132<br>50 m  09 45 600 0142<br>100 m  09 45 600 0102<br>500 m  09 45 600 0112         |
|    |    | Cable, Profinet type C - PUR - Star quad - 4 x AWG 22/7<br> 3,000,000 cycles of bending in translation Ø of bending 200 mm<br>speed 4 m/s - acceleration 4 m/s <sup>2</sup><br> 30,000 cycles of torsion to +/- 180° on 1.0 m |                                                                                                  | 20 m  09 45 600 0131<br>50 m  09 45 600 0141<br>100 m  09 45 600 0101<br>500 m  09 45 600 0111         |
|   |   | Cable, Profinet type A - PVC - S/FTP - 4 x 2 x AWG 23/1                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                | 20 m  09 45 600 1200<br>50 m  09 45 600 1210<br>100 m  09 45 600 1220<br>500 m  09 45 600 1230      |
|  |  | Cable, Profinet type B - PVC - S/FTP - 4 x 2 x AWG 24/7                                                                                                                                                                                                                                                                                                                                         |                                                                                          | 20 m  09 45 600 1211<br>50 m  09 45 600 1221<br>100 m  09 45 600 1231<br>500 m  09 45 600 1241 |
|  |  | Cable, Profinet type B - PVC - S/FTP - 4 x 2 x AWG 24/7                                                                                                                                                                                                                                                                                                                                         |                                                                                          | 20 m  09 45 600 0236<br>50 m  09 45 600 0246<br>100 m  09 45 600 0206<br>500 m  09 45 600 0256 |
|  |  | Cable, PUR - drag chain - SF/UTP - 4 x 2 x AWG 26/19                                                                                                                                                                                                                                                                                                                                            |      | 20 m  09 45 600 0236<br>50 m  09 45 600 0246<br>100 m  09 45 600 0206<br>500 m  09 45 600 0256 |
|  |  | Cable, PVC - S/FTP - 4 x 2 x AWG 26/7                                                                                                                                                                                                                                                                                                                                                           |                                                                                          | 20 m  09 45 600 0532<br>50 m  09 45 600 0542<br>100 m  09 45 600 0502<br>500 m  09 45 600 0522 |
|  |  | Cable, PVC Outdoor - S/FTP - 4 x 2 x AWG 26/7                                                                                                                                                                                                                                                                                                                                                   |                                                                                          | 20 m  09 45 600 0531<br>50 m  09 45 600 0541<br>100 m  09 45 600 0501<br>500 m  09 45 600 0521 |

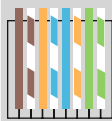
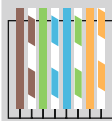
|        |  |                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |  |                |      |  |                |       |  |                |       |  |                |        |  |                |       |  |                |        |  |                |       |  |                |       |  |                |        |  |                |
|--------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--|----------------|------|--|----------------|-------|--|----------------|-------|--|----------------|--------|--|----------------|-------|--|----------------|--------|--|----------------|-------|--|----------------|-------|--|----------------|--------|--|----------------|
|        |  | <p>Cable, PUR - S/FTP - 4 x 2 x AWG 26/7</p> <div><div><div><div>+90</div><div>-40</div></div></div><div><div>CAT. 5</div></div><div></div><div></div></div> <div><div><div><div>+70</div><div>-40</div></div></div><div><div>CAT. 7</div></div></div>                                                        | <table><tr><td>20 m</td><td></td><td>09 45 600 630</td></tr><tr><td>50 m</td><td></td><td>09 45 600 640</td></tr><tr><td>100 m</td><td></td><td>09 45 600 600</td></tr><tr><td>500 m</td><td></td><td>09 45 600 620</td></tr><tr><td>100 m</td><td></td><td>09 45 600 711</td></tr><tr><td>500 m</td><td></td><td>09 45 600 721</td></tr><tr><td>1000 m</td><td></td><td>09 45 600 751</td></tr></table>                                                                                                                                                                            | 20 m |  | 09 45 600 630  | 50 m |  | 09 45 600 640  | 100 m |  | 09 45 600 600  | 500 m |  | 09 45 600 620  | 100 m  |  | 09 45 600 711  | 500 m |  | 09 45 600 721  | 1000 m |  | 09 45 600 751  |       |  |                |       |  |                |        |  |                |
| 20 m   |  | 09 45 600 630                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |  |                |      |  |                |       |  |                |       |  |                |        |  |                |       |  |                |        |  |                |       |  |                |       |  |                |        |  |                |
| 50 m   |  | 09 45 600 640                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |  |                |      |  |                |       |  |                |       |  |                |        |  |                |       |  |                |        |  |                |       |  |                |       |  |                |        |  |                |
| 100 m  |  | 09 45 600 600                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |  |                |      |  |                |       |  |                |       |  |                |        |  |                |       |  |                |        |  |                |       |  |                |       |  |                |        |  |                |
| 500 m  |  | 09 45 600 620                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |  |                |      |  |                |       |  |                |       |  |                |        |  |                |       |  |                |        |  |                |       |  |                |       |  |                |        |  |                |
| 100 m  |  | 09 45 600 711                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |  |                |      |  |                |       |  |                |       |  |                |        |  |                |       |  |                |        |  |                |       |  |                |       |  |                |        |  |                |
| 500 m  |  | 09 45 600 721                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |  |                |      |  |                |       |  |                |       |  |                |        |  |                |       |  |                |        |  |                |       |  |                |       |  |                |        |  |                |
| 1000 m |  | 09 45 600 751                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |  |                |      |  |                |       |  |                |       |  |                |        |  |                |       |  |                |        |  |                |       |  |                |       |  |                |        |  |                |
|        |  | <p>Cable, EtherRail® - Star quad - 4 x AWG 22/7</p> <div><div><div><div>+80</div><div>-20</div></div></div><div><div>CAT. 6A</div></div><div></div><div></div></div> <div><div><div><div>+80</div><div>-40</div></div></div><div><div>CAT. 7</div></div><div></div><div></div></div>                          | <table><tr><td>10 m</td><td></td><td>09 45 600 0168</td></tr><tr><td>50 m</td><td></td><td>09 45 600 0178</td></tr><tr><td>100 m</td><td></td><td>09 45 600 0108</td></tr><tr><td>500 m</td><td></td><td>09 45 600 0118</td></tr><tr><td>1000 m</td><td></td><td>09 45 600 0128</td></tr><tr><td>10 m</td><td></td><td>09 45 600 1400</td></tr><tr><td>50 m</td><td></td><td>09 45 600 1410</td></tr><tr><td>100 m</td><td></td><td>09 45 600 1420</td></tr><tr><td>500 m</td><td></td><td>09 45 600 1430</td></tr><tr><td>1000 m</td><td></td><td>09 45 600 1440</td></tr></table> | 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 |
| 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                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |  |                |      |  |                |       |  |                |       |  |                |        |  |                |       |  |                |        |  |                |       |  |                |       |  |                |        |  |                |
|        |  | <p>Cable, EtherRail® - Star quad - 4 x AWG 22/19<br/>Ultra flexible</p> <div><div><div><div>+80</div><div>-40</div></div></div><div><div>CAT. 7</div></div><div></div><div></div></div>                                                                                                                       | <table><tr><td>10 m</td><td></td><td>09 45 600 0188</td></tr><tr><td>50 m</td><td></td><td>09 45 600 0189</td></tr><tr><td>100 m</td><td></td><td>09 45 600 0138</td></tr><tr><td>500 m</td><td></td><td>09 45 600 0148</td></tr><tr><td>1000 m</td><td></td><td>09 45 600 0158</td></tr></table>                                                                                                                                                                                                                                                                                   | 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 |       |  |                |        |  |                |       |  |                |       |  |                |        |  |                |
| 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                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |  |                |      |  |                |       |  |                |       |  |                |        |  |                |       |  |                |        |  |                |       |  |                |       |  |                |        |  |                |
|        |  | <p>Cable, EtherRail® - S/FTP<br/>4 x 2 x AWG 24/7</p> <div><div><div><div>+80</div><div>-40</div></div></div><div><div>CAT. 7</div></div><div></div><div></div></div> <p>4 x 2 x AWG 26/7</p> <div><div><div><div>+80</div><div>-40</div></div></div><div><div>CAT. 7</div></div><div></div><div></div></div> | <table><tr><td>10 m</td><td></td><td>09 45 600 0694</td></tr><tr><td>50 m</td><td></td><td>09 45 600 0693</td></tr><tr><td>100 m</td><td></td><td>09 45 600 0692</td></tr><tr><td>500 m</td><td></td><td>09 45 600 0691</td></tr><tr><td>1000 m</td><td></td><td>09 45 600 0690</td></tr><tr><td>10 m</td><td></td><td>09 45 600 0704</td></tr><tr><td>50 m</td><td></td><td>09 45 600 0703</td></tr><tr><td>100 m</td><td></td><td>09 45 600 0702</td></tr><tr><td>500 m</td><td></td><td>09 45 600 0701</td></tr><tr><td>1000 m</td><td></td><td>09 45 600 0700</td></tr></table> | 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 | 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 |
| 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                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |  |                |      |  |                |       |  |                |       |  |                |        |  |                |       |  |                |        |  |                |       |  |                |       |  |                |        |  |                |
| 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                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |  |                |      |  |                |       |  |                |       |  |                |        |  |                |       |  |                |        |  |                |       |  |                |       |  |                |        |  |                |
|        |  | <p>Cable, SPE (Single Pair Ethernet) - PUR - SF/TP<br/>1 x 2 x AWG 26/7</p> <div><div><div><div>+80</div><div>-40</div></div></div></div> <p>1 x 2 x AWG 22/7</p> <div><div><div><div>+80</div><div>-40</div></div></div></div>                                                                               | <table><tr><td>10 m</td><td></td><td>09 45 600 2004</td></tr><tr><td>50 m</td><td></td><td>09 45 600 2003</td></tr><tr><td>100 m</td><td></td><td>09 45 600 2002</td></tr><tr><td>500 m</td><td></td><td>09 45 600 2001</td></tr><tr><td>10 m</td><td></td><td>09 45 600 2014</td></tr><tr><td>50 m</td><td></td><td>09 45 600 2013</td></tr><tr><td>100 m</td><td></td><td>09 45 600 2012</td></tr><tr><td>500 m</td><td></td><td>09 45 600 2011</td></tr></table>                                                                                                                 | 10 m |  | 09 45 600 2004 | 50 m |  | 09 45 600 2003 | 100 m |  | 09 45 600 2002 | 500 m |  | 09 45 600 2001 | 10 m   |  | 09 45 600 2014 | 50 m  |  | 09 45 600 2013 | 100 m  |  | 09 45 600 2012 | 500 m |  | 09 45 600 2011 |       |  |                |        |  |                |
| 10 m   |  | 09 45 600 2004                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |  |                |      |  |                |       |  |                |       |  |                |        |  |                |       |  |                |        |  |                |       |  |                |       |  |                |        |  |                |
| 50 m   |  | 09 45 600 2003                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |  |                |      |  |                |       |  |                |       |  |                |        |  |                |       |  |                |        |  |                |       |  |                |       |  |                |        |  |                |
| 100 m  |  | 09 45 600 2002                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |  |                |      |  |                |       |  |                |       |  |                |        |  |                |       |  |                |        |  |                |       |  |                |       |  |                |        |  |                |
| 500 m  |  | 09 45 600 2001                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |  |                |      |  |                |       |  |                |       |  |                |        |  |                |       |  |                |        |  |                |       |  |                |       |  |                |        |  |                |
| 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                                                                                 | 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                                                                           |                                                                                   |                                                                                   |                           |                                                                                   |                                                                                   |                     |          |                           |                                                                                     |                                                                                     |

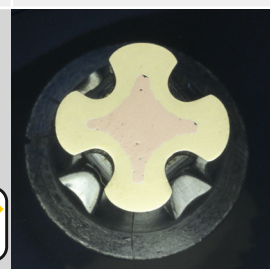
Ethernet transmission categories sorted by connectors

|                                          |                          |            |                  |                               |                 | HARTING connectors     |  |
|------------------------------------------|--------------------------|------------|------------------|-------------------------------|-----------------|------------------------|--|
|                                          |                          |            |                  |                               |                 | Han® Gigabit           |  |
|                                          |                          |            |                  |                               |                 | Han® Megabit           |  |
|                                          |                          |            |                  |                               |                 | Han-Qintax®            |  |
|                                          |                          |            |                  |                               |                 | HARTING ix Industrial® |  |
|                                          |                          |            |                  |                               |                 | M12 X-coded            |  |
|                                          |                          |            |                  |                               |                 | M12 D-coded            |  |
|                                          |                          |            |                  |                               |                 | RJ45                   |  |
| 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 <sub>A</sub> Class E <sub>A</sub> | 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 <sub>A</sub> Class 7 <sub>A</sub> | 10G BASE-T               | 1000 MHz   | Ethernet 10 GB   | 10/100 Mbits/s                | 8               |                        |  |

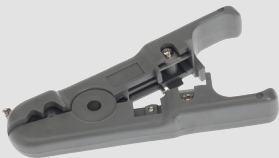
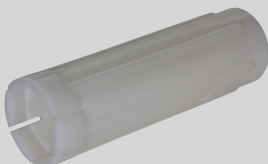
## Crimping tool - Characteristics and advantages

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<br>■ For Ethernet cables<br>■ Blade cassette included | 09 45 800 0000 |
|                 |                                                                                     | Blade cassette                                                                            | 09 45 800 0001 |
|                 |   | RJ Industrial® stripping tool<br>■ For Ethernet cables                                    | 09 45 800 0002 |
| Cutting tools   |  | RJ Industrial® wire cutters                                                               | 09 45 800 0005 |
| Crimping tools  |  | Crimping tool<br>■ Crimping to MIL 22 520/2-01                                            | 09 99 000 0501 |
|                 |                                                                                     | Locator for contacts<br>■ AWG 26-22 - Han® Gigabit                                        | 09 99 000 0897 |
|                 |                                                                                     | Locator for <i>har</i> -speed male contacts<br>■ AWG 28-23 - M12 X-coded                  | 09 99 000 0525 |
|                 |                                                                                     | Locator for <i>har</i> -speed female contacts<br>■ AWG 28-23 - M12 X-coded                | 09 99 000 0635 |
|                 |                                                                                     | Locator for Sub-D contacts<br>■ AWG 28-18 - M12 D-coded                                   | 09 99 000 0531 |
|                 |  | Go/No-Go check gauge                                                                      | 09 99 000 0617 |
| Mounting        |  | <i>har</i> -port mounting tool<br>■ Defined tightening torque of fixing nut               | 09 45 502 0007 |



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