



# Han® 3A RJ45 Hybrid Cat6



## General information

|                          |   |
|--------------------------|---|
| Design                   | Hybrid connector for Ethernet communication and power supply                  |
| Product standard         | IEC 61076-3-106 (Variant 5)   |
| No. of contacts          | 8 + 4 (2x4 for Ethernet + 4x power)   |
| Transmission rate        | 10 / 100 Mbit/s and 1 / 2,5 / 5 / 10 Gbit/s                                   |
| Transmission performance | Category 6/6A / Class EA up to 500 MHz acc. to ISO/IEC 11801:2002, EN 50173-1 |
| Shielding                | Fully shielded, 360° shielding contact  |
| Degree of protection     | IP65/67   |
| Mating cycles            | Min. 500  |
| UL certification         | E 102079  |
| RoHS - complainant       | yes   |
| Lead free                | yes   |

## Cable specification and termination details for the plug side

Cable diameter (plug) 6 to 12 mm

### Ethernet

#### IDC types (Cat. 6)

|                         |                                       |
|-------------------------|---------------------------------------|
| Conductor cross section | AWG 27 to AWG 22 (solid and stranded) |
| Conductor diameter      | Max. 1,6 mm                           |

#### Piercing types (Cat. 6A)

|                         |                                 |
|-------------------------|---------------------------------|
| Conductor cross section | AWG 28/7 to AWG 24/7 (stranded) |
| Conductor diameter      | Max. 1,05 mm                    |

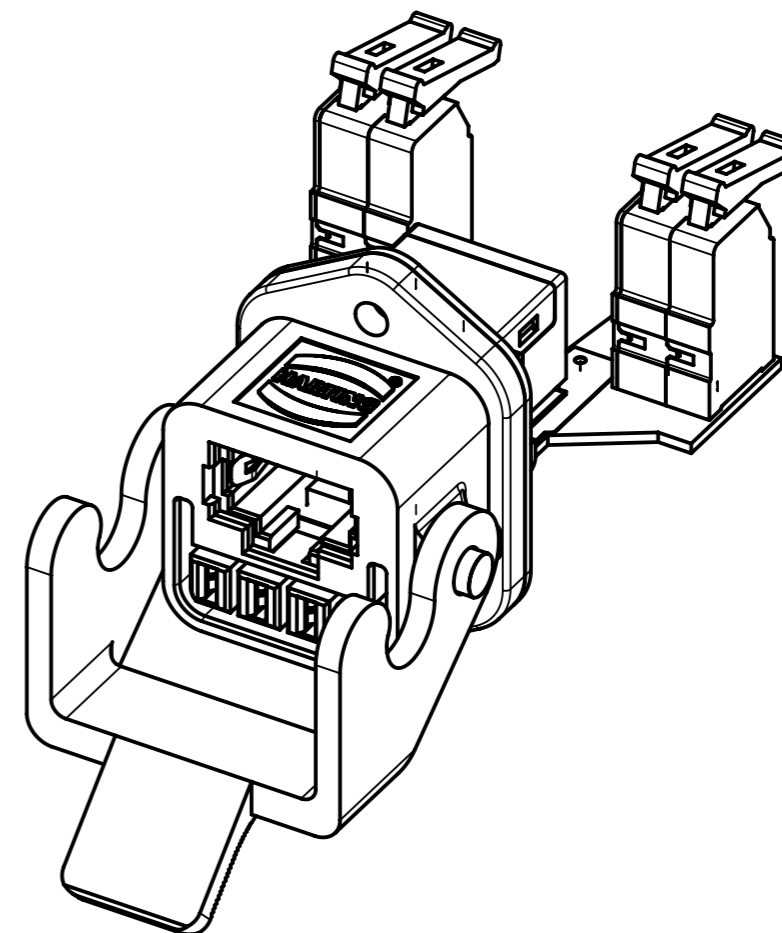
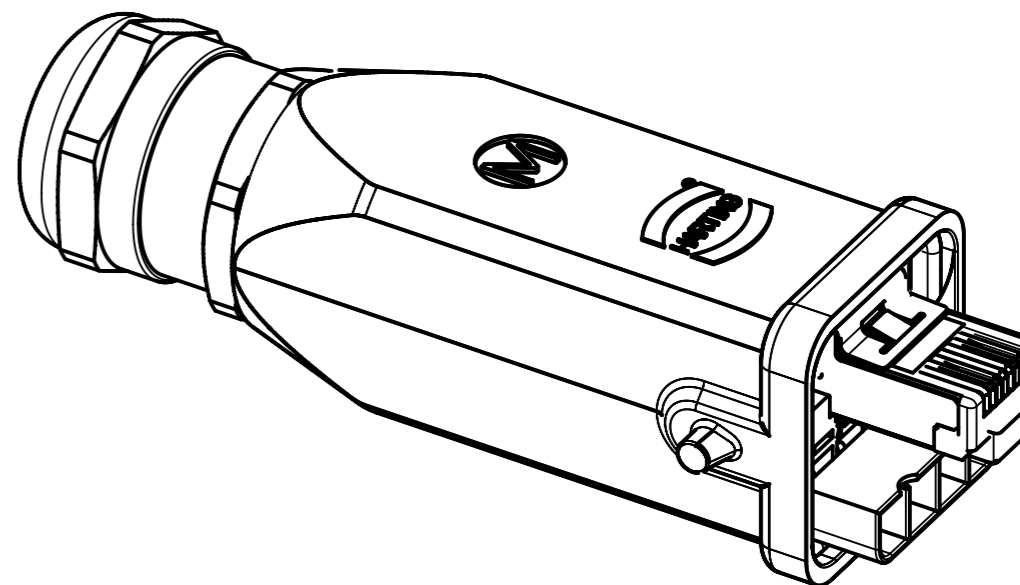
Power IDC contacts 4x 1,5 mm<sup>2</sup> (stranded)

## Panel feed-through

|                          |  |
|--------------------------|--|
| Mating interface extern: | RJ45 acc. to IEC 60603-7 for Ethernet and 4 power contacts |
| Mating interface intern: | RJ45 acc. to IEC 60603-7 for Ethernet and 4 PCB terminals  |

### Power

Conductor cross section PCB terminal 0,5 to 2,5mm<sup>2</sup> (solid and stranded)



|   |  |                                   |                       |  |  |                        |
|---|--|-----------------------------------|-----------------------|--|--|------------------------|
|   | All Dimensions in mm<br>Original Size DIN A3 | Scale<br>1:1                      | Free size tol.        | Ref.<br>Sub. DS 21 03 520 10 01 / EC04876 / 13.04.2010 |  |                        |
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| HARTING Electronics GmbH<br>D-32339 Espelkamp |  | Title<br>Han® 3A RJ45 Hybrid Cat6 |                       |  | Doc-Key / ECM-Nr.<br>100637182/UGD/000/A<br>500000109451 |                        |
|   |  | Type<br>DS                        | Number<br>09452251760 |  | Rev.<br>A  | Page<br>1/3            |



# Han® 3A RJ45 Hybrid Cat6



### Electrical specification

#### RJ45 Ethernet connection

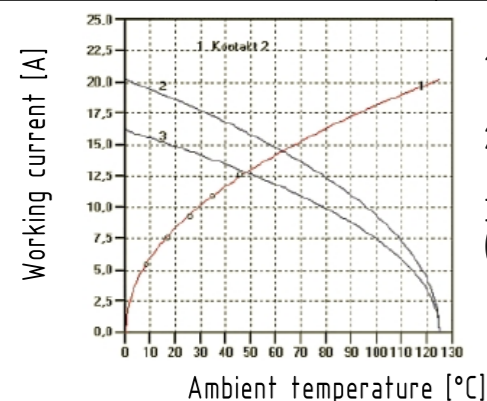
|   |  |
|---|--|
| Rated current   | 1,5 A (all pins) values at 20°C  |
| Rated voltage   | 50 V AC / 60 V DC  |
| Contact Resistance  | RJ45 Signal: $\Delta RD \leq 20 \text{ m}\Omega$ / RJ45 Shielding: $RD \leq 100 \text{ m}\Omega$ / Power: $\Delta RD \leq 4 \text{ m}\Omega$ |
| Insulation Resistance   | 500 M $\Omega$ min. (500 V DC)   |
| Voltage Proof   | Contact / Contact: 1kV dc or ac peak; Contact / Test panel: 1.5kV dc or ac peak  |
| Mechanical operation with electrical load (IEC 60512 - test 9c) | Unmating under electrical load with: 1,2 A / 50 V 50 cycles for each polarity  |
| PoE   | PoE IEEE 802.3af<br>PoE+ IEEE 802.3at<br>4PPoE IEEE 802.3bt  |

#### Power connection

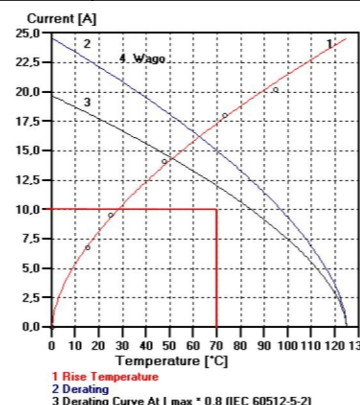
|               |           |
|---------------|-----------|
| Rated voltage | 48 V / DC |
| Rated current | 16 A      |

#### Derating diagram acc. to IEC512 (Current carrying capacity)

Current-carrying capacity 1,76 A @ 0°C



- 1 Temperature rise
- 2 Derating
- 3 Derating curve at  $I_{max} * 0.8$  (DIN IEC 512)



- 1 Rise Temperature
- 2 Derating
- 3 Derating Curve At  $I_{max} * 0.8$  (IEC 60512-5-2)

### Mechanical specification

|                      |  |
|----------------------|--|
| Insertion force      | 30 N max   |
| Withdrawal force     | 30 N max   |
| Mechanical Operation | 500 times insertions and extractions / mating speed: 10 mm/s max. / rest: 5s, min.(unmated)                        |
| Lock Strength        | Min. 100 N (for the mating axis direction in state in fitted with applicable connector)                            |
| Wrenching Strength   | Applying 25times of 30 N 1 s for 2 axis direction on tip of plug case in state in fitted with applicable connector |

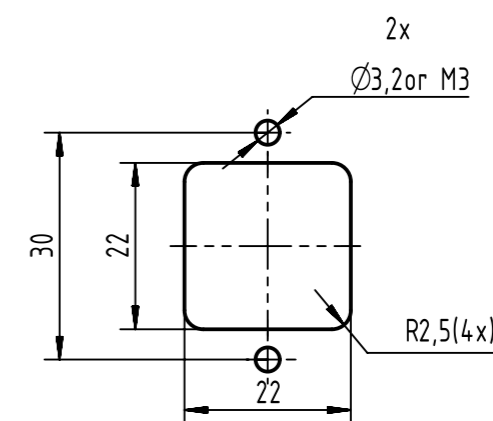
### Environment specification

|   |   |
|---|---|
| Storage temperature range                   | -40°C to +70°C (95% RH max.)  |
| Operating temperature range                 | -40°C to +70°C (95% RH max.)  |
| Rapid change of temperature (IEC 60512-11d) | 10 cycles between -55°C and 85°C with 30 minutes dwell at temp. extremes and 1 minute transition between temperatures |
| Dry heat (IEC 60512-11i)                    | Temperature 70°C, duration 5d   |
| Damp heat cyclic (IEC 60068-2-38)           | 25°C to 65°C; cold sub-cycle - 10°C; humidity 93 % RH 25 cycles, 1 cycle/24 h   |
| Cold (IEC 60512-11j)                        | -40°C duration 2h   |

|   |  |
|---|--|
| Flow mixed gas test (IEC 60068-2-60)  | Duration 4 d, Method 4 (mated and unmated)   |
| Corrosion salt mist   | Exposed at 5 % salt water, 35 ± 2°C, duration 48 h (left under unmated condition.)   |
| Vibration Sinusoidal (IEC 60512-test 6d)  | 10 - 500 Hz; 0.35 mm; 49 m/s <sup>2</sup> / 2 h / 3 axis / No contact disturbances ≥ 1 μs  |
| Mechanical shock (IEC 60512-test 6c)  | Half sine shock 300 m/s <sup>2</sup> , duration 11 ms / 3 shocks / both directions / 3 axis - totally 18 shocks / No contact disturbances ≥ 1 μs |
| Mechanical shock (DIN EN 61373 Class 1 cat b) / Additional test to fulfill DIN EN 50155 for railway equipment | Half sine shock 5 g, duration 30 ms / 5 shocks / both directions / 3 axis - totally 30 shocks / No contact disturbances ≥ 1 μs                   |
| Random vibration (DIN EN 61373 Class 1 cat b)   | Class 1 cat b<br>5,72 m/s <sup>2</sup>   |
| Additional test to fulfill DIN EN 50155 for railway equipment   | No contact disturbances ≥ 1 μs   |

### Mounting specification

#### Recommended panel cut out



|                         |      |
|-------------------------|------|
| Maximal panel thickness | 9 mm |
|-------------------------|------|

### Material specification

|                      |   |
|----------------------|---|
| Housing material     | Depending on type zinc die cast or plastic  |
| Isolator material    |   |
| Material             | Isolation body PA / Plug hood PC            |
| Color                | Depending on type black or gray             |
| UL classification    | UL94 V-0                                    |
| Contact RJ45         |   |
| Contact material     | Copper alloy (0.3mm thickness alloy C5210)  |
| Plating contact area | Gold plating (15 μm) over Ni (min. 1,27 μm) |
| Plating solder area  | Tin plating over Ni (min. 1,27 μm)          |
| Shielding shells     |   |
| Material             | Copper alloy                                |
| Plating              | Nickel plated                               |

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

|   |                       |                                   |                       |                             |                    |  |
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### Contact Power

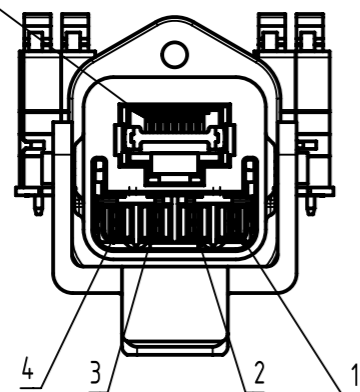
Contact material K55 R650

### Plating

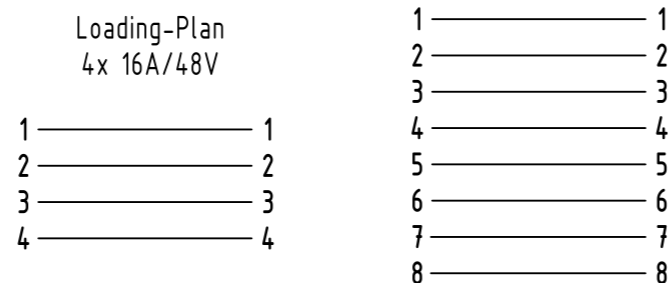
nickel plating: 0.5 + 0.5 µm  
silver plating: 5 + 2µm on contact side  
tin lead plating 5+3µm on SMT termination side

Isolating body VECTRA E 130ID-2

RJ45 mating face acc. to IEC 60603-7



Loading-Plan RJ 45



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

|   |  |  |                        |  |  |                    |
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