

# MCO 1,5/ 6-GR-3,81 - PCB header



1861688

<https://www.phoenixcontact.com/us/products/1861688>

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The figure shows a 10-position version of the product

PCB headers, nominal cross section: 1.5 mm<sup>2</sup>, color: green, nominal current: 8 A, rated voltage (III/2): 160 V, contact surface: Sn, contact connection type: Pin, number of potentials: 6, number of rows: 1, number of positions: 6, number of connections: 6, product range: MCO 1,5/...-GR, pitch: 3.81 mm, mounting: Wave soldering, pin layout: Linear pinning, solder pin [P]: 3 mm, number of solder pins per potential: 1, plug-in system: COMBICON MC 1,5, Pin connector pattern alignment: Orthogonal, locking: without, mounting method: without, type of packaging: packed in cardboard

## Your advantages

- Maximum flexibility when it comes to device design – one header for connectors with different connection technologies
- Well-known mounting principle allows worldwide use

## Commercial data

|                                      |                                |
|--------------------------------------|--------------------------------|
| Item number                          | 1861688                        |
| Packing unit                         | 50 pc                          |
| Minimum order quantity               | 50 pc                          |
| Note                                 | Made to order (non-returnable) |
| Sales key                            | AA02                           |
| Product key                          | AABSOC                         |
| GTIN                                 | 4017918133450                  |
| Weight per piece (including packing) | 3.65 g                         |
| Weight per piece (excluding packing) | 3.63 g                         |
| Customs tariff number                | 85366930                       |
| Country of origin                    | PL                             |

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## Technical data

### Product properties

|                           |                                 |
|---------------------------|---------------------------------|
| Product type              | PCB headers                     |
| Product family            | MCO 1,5/..-GR                   |
| Product line              | COMBICON Connectors S           |
| Type                      | Header perpendicular to the PCB |
| Number of positions       | 6                               |
| Pitch                     | 3.81 mm                         |
| Number of connections     | 6                               |
| Number of rows            | 1                               |
| Number of potentials      | 6                               |
| Mounting type             | without                         |
| Pin layout                | Linear pinning                  |
| Solder pins per potential | 1                               |

### Electrical properties

#### Properties

|                             |        |
|-----------------------------|--------|
| Nominal current $I_N$       | 8 A    |
| Nominal voltage $U_N$       | 160 V  |
| Contact resistance          | 3 mΩ   |
| Rated voltage (III/3)       | 125 V  |
| Rated surge voltage (III/3) | 2.5 kV |
| Rated voltage (III/2)       | 160 V  |
| Rated surge voltage (III/2) | 2.5 kV |
| Rated voltage (II/2)        | 200 V  |
| Rated surge voltage (II/2)  | 2.5 kV |

### Mounting

|               |                |
|---------------|----------------|
| Mounting type | Wave soldering |
| Pin layout    | Linear pinning |

### Material specifications

#### Material data - contact

|  |  |
|--|--|
| Note                                     | WEEE/RoHS-compliant, free of whiskers according to IEC 60068-2-82/JEDEC JESD 201 |
| Contact material                         | Cu alloy   |
| Surface characteristics                  | tin-plated   |
| Metal surface contact area (top layer)   | Tin (5 μm - 7 μm Sn)   |
| Metal surface soldering area (top layer) | Tin (5 μm - 7 μm Sn)   |

#### Material data - housing

|                 |              |
|-----------------|--------------|
| Color (Housing) | green (6021) |
|-----------------|--------------|

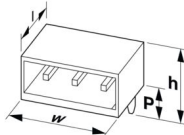
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|  |      |
|--|------|
| Insulating material                    | PBT  |
| Insulating material group              | IIIa |
| CTI according to IEC 60112             | 225  |
| Flammability rating according to UL 94 | V0   |

## Dimensions

|                       |  |
|-----------------------|--|
| Dimensional drawing   |  |
| Pitch                 | 3.81 mm  |
| Width [w]             | 24.25 mm   |
| Height [h]            | 11 mm  |
| Length [l]            | 37.05 mm   |
| Installed height      | 11 mm  |
| Solder pin length [P] | 3 mm   |
| Pin dimensions        | 0.9 x 0.32 mm  |

## PCB design

|               |        |
|---------------|--------|
| Hole diameter | 1.2 mm |
|---------------|--------|

## Mechanical tests

### Visual inspection

|               |                       |
|---------------|-----------------------|
| Specification | IEC 60512-1-1:2002-02 |
| Result        | Test passed           |

### Dimension check

|               |                       |
|---------------|-----------------------|
| Specification | IEC 60512-1-2:2002-02 |
| Result        | Test passed           |

### Resistance of inscriptions

|               |                        |
|---------------|------------------------|
| Specification | IEC 60068-2-70:1995-12 |
| Result        | Test passed            |

### Polarization and coding

|               |                        |
|---------------|------------------------|
| Specification | IEC 60512-13-5:2006-02 |
| Result        | Test passed            |

### Contact holder in insert

|   |                        |
|---|------------------------|
| Specification                               | IEC 60512-15-1:2008-05 |
| Contact holder in insert Requirements >20 N | Test passed            |

### Insertion and withdrawal forces

|               |                        |
|---------------|------------------------|
| Specification | IEC 60512-13-2:2006-02 |
|---------------|------------------------|

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|                                     |             |
|-------------------------------------|-------------|
| Result                              | Test passed |
| No. of cycles                       | 25          |
| Insertion strength per pos. approx. | 8 N         |
| Withdraw strength per pos. approx.  | 6 N         |

## Electrical tests

### Thermal test | Test group C

|                            |                       |
|----------------------------|-----------------------|
| Specification              | IEC 60512-5-1:2002-02 |
| Tested number of positions | 10                    |

### Insulation resistance

|  |                       |
|--|-----------------------|
| Specification                                | IEC 60512-3-1:2002-02 |
| Insulation resistance, neighboring positions | > 5 M $\Omega$        |

### Air clearances and creepage distances |

|  |                     |
|--|---------------------|
| Specification  | IEC 60664-1:2007-04 |
| Insulating material group                              | IIIa                |
| Comparative tracking index (IEC 60112)                 | CTI 225             |
| Rated insulation voltage (III/3)                       | 125 V               |
| Rated surge voltage (III/3)                            | 2.5 kV              |
| minimum clearance value - non-homogenous field (III/3) | 1.5 mm              |
| minimum creepage distance (III/3)                      | 2.4 mm              |
| Rated insulation voltage (III/2)                       | 160 V               |
| Rated surge voltage (III/2)                            | 2.5 kV              |
| minimum clearance value - non-homogenous field (III/2) | 1.5 mm              |
| minimum creepage distance (III/2)                      | 1.6 mm              |
| Rated insulation voltage (II/2)                        | 200 V               |
| Rated surge voltage (II/2)                             | 2.5 kV              |
| minimum clearance value - non-homogenous field (II/2)  | 1.5 mm              |
| minimum creepage distance (II/2)                       | 2 mm                |

## Environmental and real-life conditions

### Durability test

|  |                       |
|--|-----------------------|
| Specification                                | IEC 60512-9-1:2010-03 |
| Impulse withstand voltage at sea level       | 2.95 kV               |
| Contact resistance R <sub>1</sub>            | 3 m $\Omega$          |
| Contact resistance R <sub>2</sub>            | 3.2 m $\Omega$        |
| Insertion/withdrawal cycles                  | 25                    |
| Insulation resistance, neighboring positions | > 5 M $\Omega$        |

### Climatic test

|                  |   |
|------------------|---|
| Specification    | ISO 6988:1985-02  |
| Corrosive stress | 0.2 dm <sup>3</sup> SO <sub>2</sub> on 300 dm <sup>3</sup> /40 °C/1 cycle |
| Thermal stress   | 100 °C/168 h  |

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|                                   |         |
|-----------------------------------|---------|
| Power-frequency withstand voltage | 1.39 kV |
|-----------------------------------|---------|

## Vibration test

|                        |                             |
|------------------------|-----------------------------|
| Specification          | IEC 60068-2-6:2007-12       |
| Frequency              | 10 - 150 - 10 Hz            |
| Sweep speed            | 1 octave/min                |
| Amplitude              | 0.35 mm (10 Hz ... 60.1 Hz) |
| Acceleration           | 5g (60.1 Hz ... 150 Hz)     |
| Test duration per axis | 2.5 h                       |
| Test directions        | X-, Y- and Z-axis           |

## Ambient conditions

|   |   |
|---|---|
| Ambient temperature (storage/transport) | -40 °C ... 70 °C                                    |
| Relative humidity (storage/transport)   | 30 % ... 70 %                                       |
| Ambient temperature (assembly)          | -5 °C ... 100 °C                                    |
| Ambient temperature (operation)         | -40 °C ... 100 °C (dependent on the derating curve) |

## Packaging specifications

|                   |                     |
|-------------------|---------------------|
| Type of packaging | packed in cardboard |
|-------------------|---------------------|

# MCO 1,5/ 6-GR-3,81 - PCB header

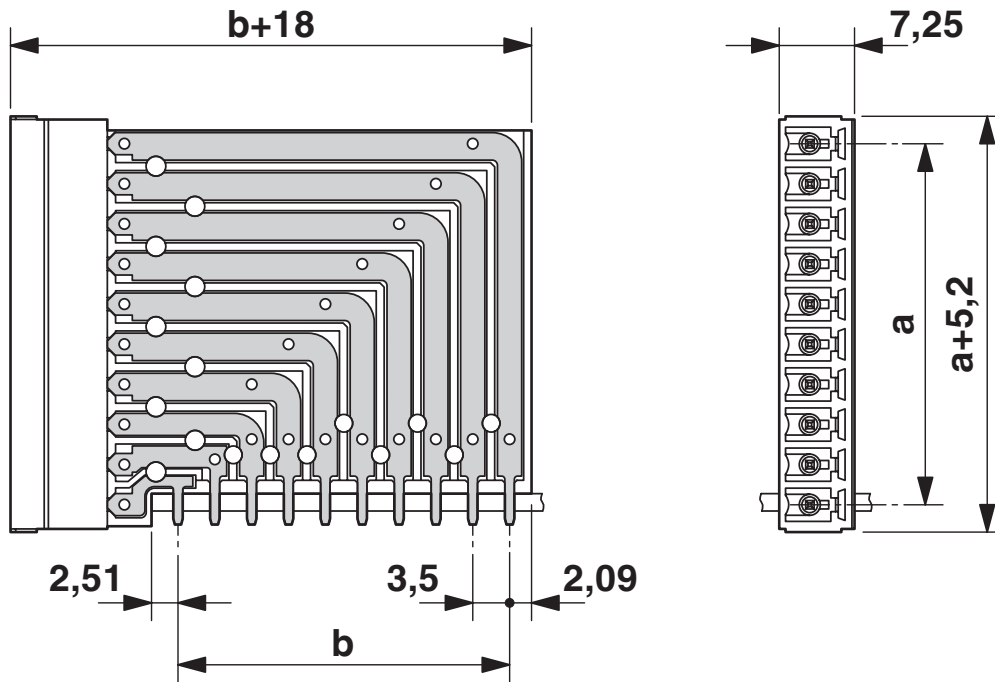


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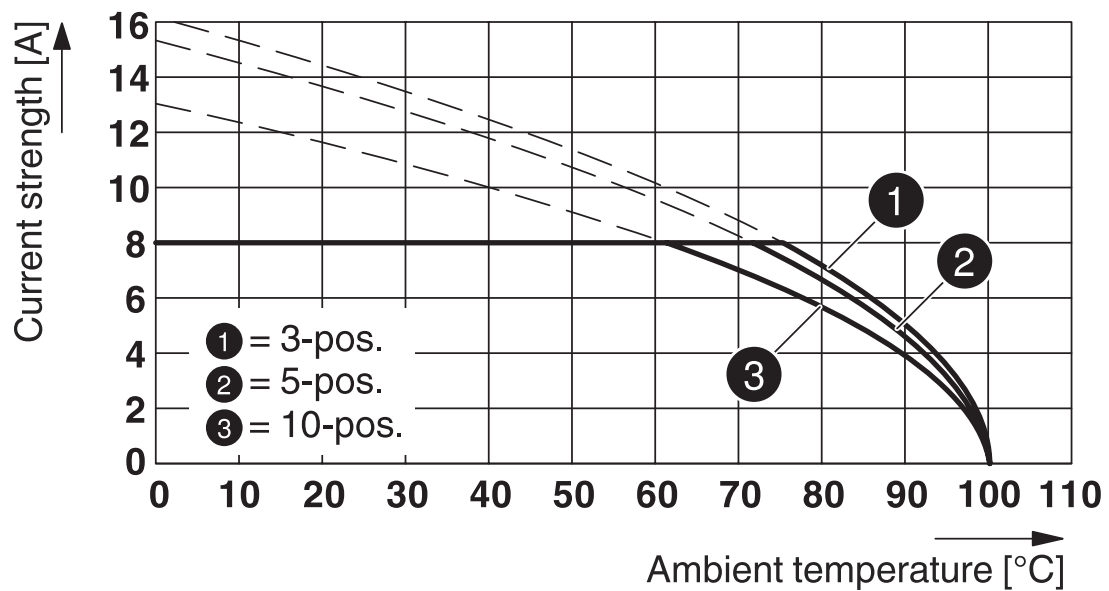
<https://www.phoenixcontact.com/us/products/1861688>

## Drawings

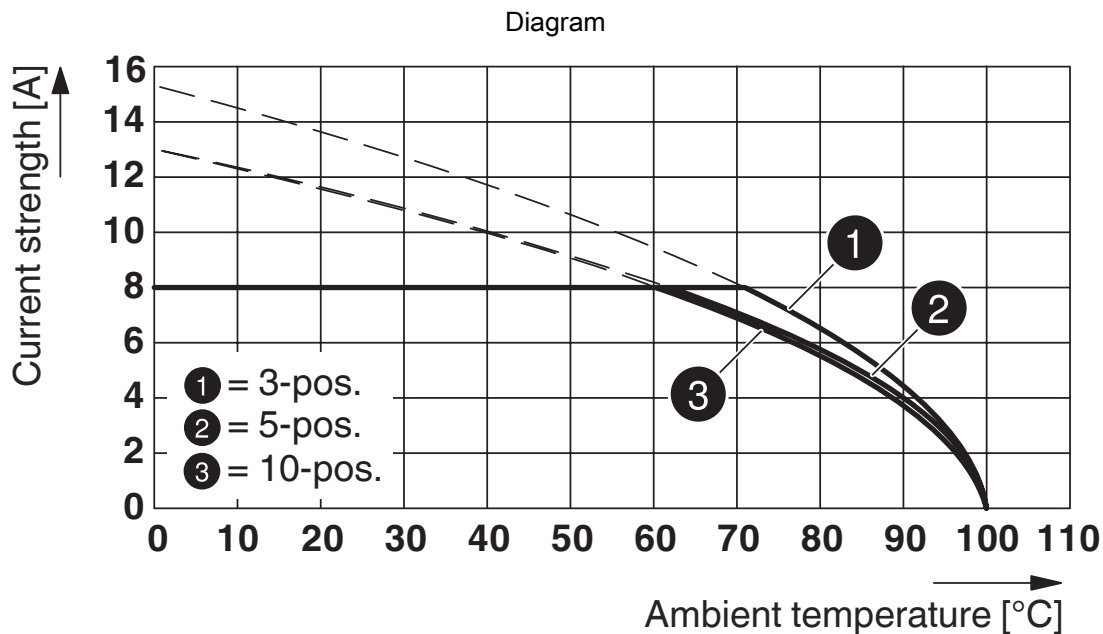
Dimensional drawing



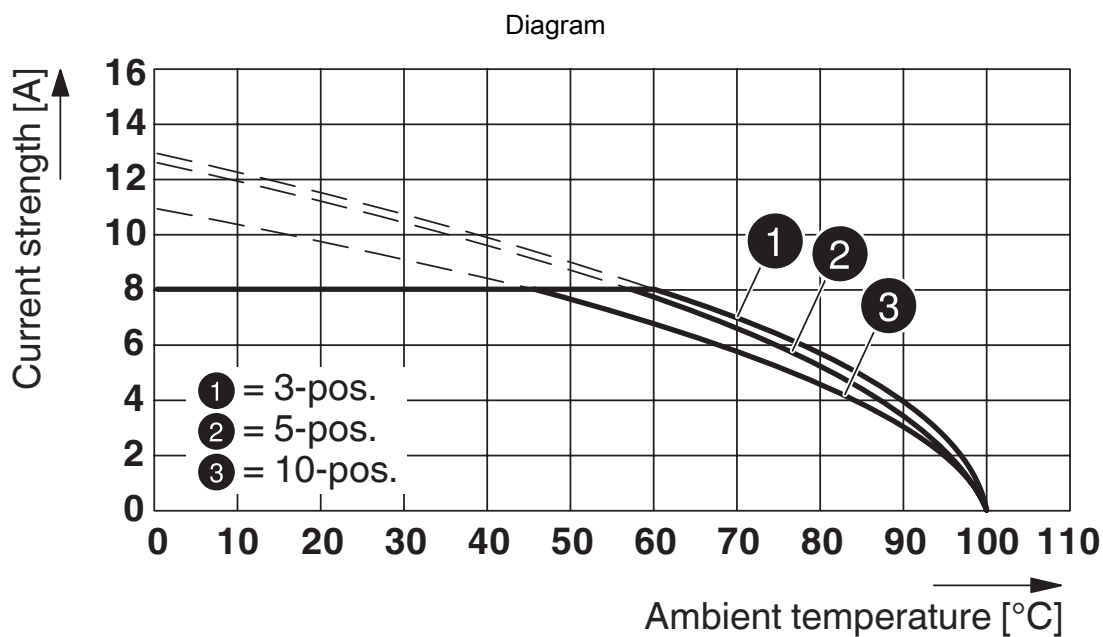
Diagram



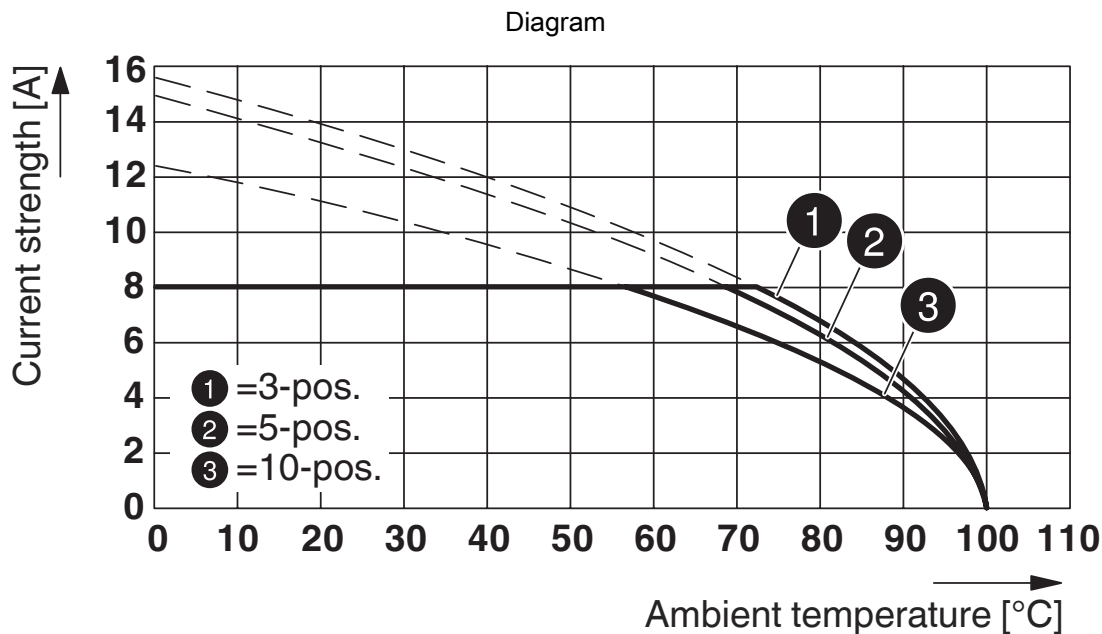
Type: FMC 1,5/...-ST-3,81 with MCO 1,5/...-GR-3,81



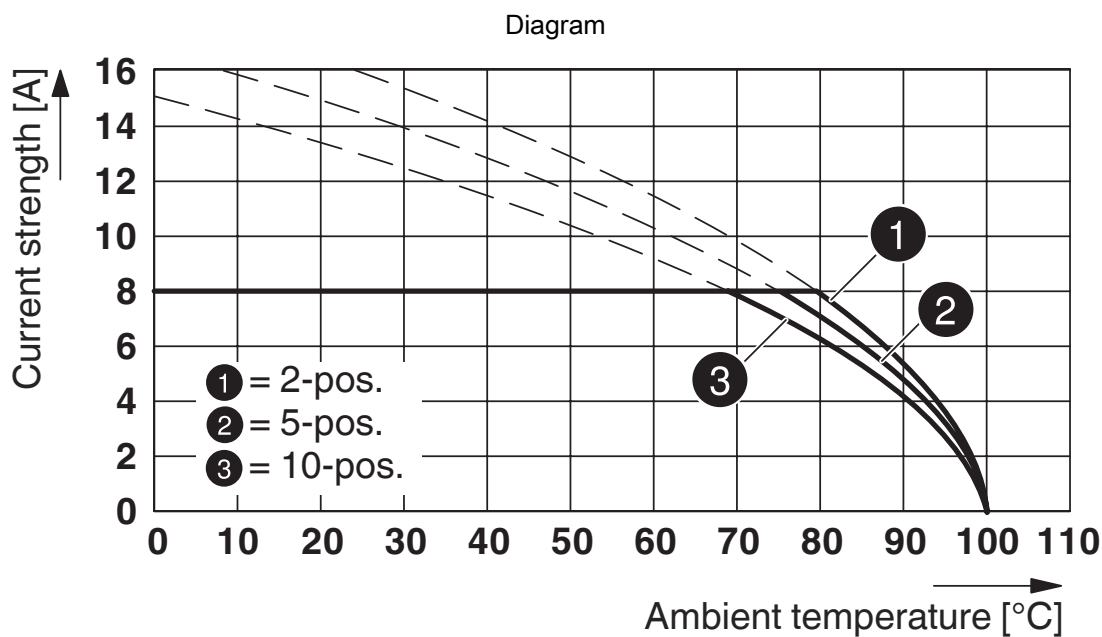
Type: FK-MCP 1,5/...-ST-3,81 with MCO 1,5/...-GR-3,81



Type: MCVR 1,5/...-ST-3,81 with MCO 1,5/...-GR-3,81



Type: FRONT-MC 1,5/...-ST-3,81 with MCO 1,5/...-GR-3,81



Type: MC 1,5/...-ST-3,81 with MCO 1,5/...-GR-3,81

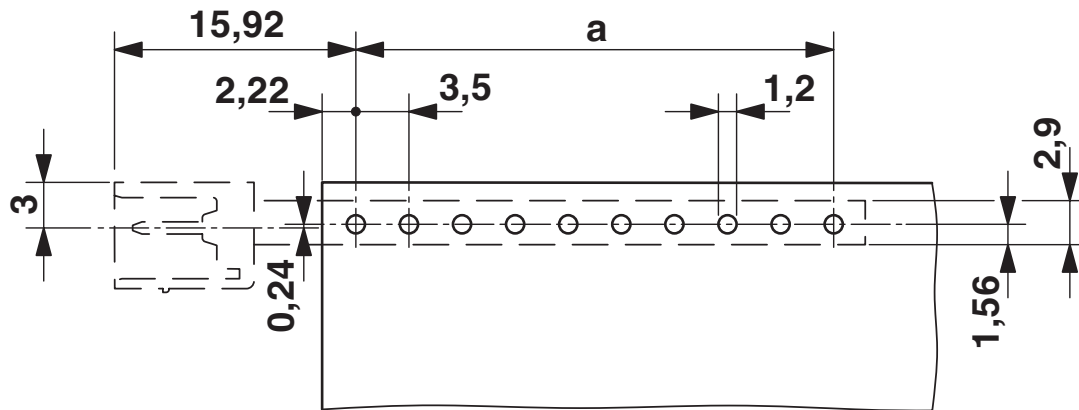
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Drilling plan/solder pad geometry



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1861688>

|  <b>cULus Recognized</b><br>Approval ID: E60425-20050718 |                       |                       |                   |                             |
|---|-----------------------|-----------------------|-------------------|-----------------------------|
|   | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
| B   | 300 V                 | 8 A                   | -                 | -                           |
| D   | 300 V                 | 8 A                   | -                 | -                           |

|  <b>VDE approval of drawings</b><br>Approval ID: 40011723 |  |
|--|--|
|--|--|

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

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27460201 |
| ECLASS-15.0 | 27460201 |

### ETIM

|           |          |
|-----------|----------|
| ETIM 10.0 | EC002637 |
|-----------|----------|

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 21.0 | 39121400 |
|-------------|----------|

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## Environmental product compliance

### EU RoHS

|   |                    |
|---|--------------------|
| Fulfills EU RoHS substance requirements | Yes, No exemptions |
|---|--------------------|

### China RoHS

|  |  |
|--|--|
| Environment friendly use period (EFUP) | EFUP-E                                   |
|  | No hazardous substances above the limits |

### EU REACH SVHC

|                                     |                            |
|-------------------------------------|----------------------------|
| REACH candidate substance (CAS No.) | No substance above 0.1 wt% |
|-------------------------------------|----------------------------|

### EF3.1 Climate Change

|         |               |
|---------|---------------|
| CO2e kg | 0.076 kg CO2e |
|---------|---------------|

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