

# FK-MCP 1,5/ 3-ST-3,81GY31BDWH3 - PCB connector



1710640

<https://www.phoenixcontact.com/us/products/1710640>

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PCB connector, nominal cross section: 1.5 mm<sup>2</sup>, color: blue grey, nominal current: 8 A, rated voltage (III/2): 160 V, contact surface: Sn, contact connection type: Socket, number of potentials: 3, number of rows: 1, number of positions: 3, number of connections: 3, product range: FK-MCP 1,5/..-ST, pitch: 3.81 mm, connection method: Push-in spring connection, conductor/PCB connection direction: 0 °, plug-in system: COMBICON MC 1,5, locking: without, mounting method: without, type of packaging: packed in cardboard

## Your advantages

- Time saving push-in connection, tools not required
- Defined contact force ensures that contact remains stable over the long term
- Intuitive operation due to color-coded actuating push button
- Operation and conductor connection from one direction enable integration into front of device
- Quick and convenient testing using integrated test option

## Commercial data

|                                      |                                |
|--------------------------------------|--------------------------------|
| Item number                          | 1710640                        |
| Packing unit                         | 50 pc                          |
| Minimum order quantity               | 50 pc                          |
| Note                                 | Made to order (non-returnable) |
| Product key                          | AABFNA                         |
| GTIN                                 | 4055626169958                  |
| Weight per piece (including packing) | 3.097 g                        |
| Weight per piece (excluding packing) | 2.657 g                        |
| Country of origin                    | DE                             |

## Technical data

### Product properties

|                       |                       |
|-----------------------|-----------------------|
| Product type          | PCB connector         |
| Product family        | FK-MCP 1,5/...-ST     |
| Product line          | COMBICON Connectors S |
| Number of positions   | 3                     |
| Pitch                 | 3.81 mm               |
| Number of connections | 3                     |
| Number of rows        | 1                     |
| Number of potentials  | 3                     |

### Electrical properties

#### Properties

|                             |        |
|-----------------------------|--------|
| Nominal current $I_N$       | 8 A    |
| Nominal voltage $U_N$       | 160 V  |
| Contact resistance          | 1.4 mΩ |
| Rated voltage (III/3)       | 160 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)        | 320 V  |
| Rated surge voltage (II/2)  | 2.5 kV |

### Connection data

#### Connection technology

|                         |                     |
|-------------------------|---------------------|
| Type                    | Standard            |
| Connector system        | COMBICON MC 1,5     |
| Nominal cross section   | 1.5 mm <sup>2</sup> |
| Contact connection type | Socket              |

#### Interlock

|               |         |
|---------------|---------|
| Locking type  | without |
| Mounting type | without |

#### Conductor connection

|                                                                       |                                               |
|-----------------------------------------------------------------------|-----------------------------------------------|
| Connection method                                                     | Push-in spring connection                     |
| Conductor/PCB connection direction                                    | 0 °                                           |
| Conductor cross-section rigid                                         | 0.14 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>  |
| Conductor cross-section flexible                                      | 0.14 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>  |
| Conductor cross-section AWG                                           | 26 ... 16                                     |
| Conductor cross-section flexible, with ferrule without plastic sleeve | 0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>  |
| Conductor cross-section, flexible, with ferrule, with plastic sleeve  | 0.25 mm <sup>2</sup> ... 0.75 mm <sup>2</sup> |

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|                                    |                     |
|------------------------------------|---------------------|
| Cylindrical gauge a x b / diameter | 2.4 mm x 1.5 mm / - |
| Stripping length                   | 9 mm                |

## Specifications for ferrules without insulating collar

|                                                              |                                                              |
|--------------------------------------------------------------|--------------------------------------------------------------|
| recommended crimping tool                                    | 1212034 CRIMPFOX 6                                           |
| ferrules without insulating collar, according to DIN 46228-1 | Cross section: 0.25 mm <sup>2</sup> ; Length: 7 mm           |
|                                                              | Cross section: 0.34 mm <sup>2</sup> ; Length: 7 mm           |
|                                                              | Cross section: 0.5 mm <sup>2</sup> ; Length: 8 mm ... 10 mm  |
|                                                              | Cross section: 0.75 mm <sup>2</sup> ; Length: 8 mm ... 10 mm |
|                                                              | Cross section: 1 mm <sup>2</sup> ; Length: 8 mm ... 10 mm    |
|                                                              | Cross section: 1.5 mm <sup>2</sup> ; Length: 10 mm           |

## Specifications for ferrules with insulating collar

|                                                           |                                                             |
|-----------------------------------------------------------|-------------------------------------------------------------|
| recommended crimping tool                                 | 1212034 CRIMPFOX 6                                          |
| ferrules with insulating collar, according to DIN 46228-4 | Cross section: 0.14 mm <sup>2</sup> ; Length: 8 mm          |
|                                                           | Cross section: 0.25 mm <sup>2</sup> ; Length: 8 mm          |
|                                                           | Cross section: 0.34 mm <sup>2</sup> ; Length: 8 mm          |
|                                                           | Cross section: 0.5 mm <sup>2</sup> ; Length: 8 mm ... 10 mm |
|                                                           | Cross section: 0.75 mm <sup>2</sup> ; Length: 10 mm         |

## 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                  | hot-dip tin-plated                                                               |
| Metal surface terminal point (top layer) | Tin (4 - 8 µm Sn)                                                                |
| Metal surface contact area (top layer)   | Tin (4 - 8 µm Sn)                                                                |

### Material data - housing

|                                                                   |                  |
|-------------------------------------------------------------------|------------------|
| Color (Housing)                                                   | blue grey (7031) |
| Insulating material                                               | PA               |
| Insulating material group                                         | I                |
| CTI according to IEC 60112                                        | 600              |
| Flammability rating according to UL 94                            | V0               |
| Glow wire flammability index GWFI according to EN 60695-2-12      | 850              |
| Glow wire ignition temperature GWIT according to EN 60695-2-13    | 775              |
| Temperature for the ball pressure test according to EN 60695-10-2 | 125 °C           |

### Material data – actuating element

|                            |               |
|----------------------------|---------------|
| Color (Actuating element)  | orange (2003) |
| Insulating material        | POM           |
| Insulating material group  | I             |
| CTI according to IEC 60112 | 600           |

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Flammability rating according to UL 94

HB

## Dimensions

Dimensional drawing



Pitch

3.81 mm

Width [w]

12.22 mm

Height [h]

12.4 mm

Length [l]

21 mm

## Mechanical tests

Conductor connection

Specification

IEC 60999-1:1999-11

Result

Test passed

Test for conductor damage and slackening

Specification

IEC 60999-1:1999-11

Result

Test passed

Repeated connection and disconnection

Specification

IEC 60999-1:1999-11

Result

Test passed

Pull-out test

Specification

IEC 60999-1:1999-11

Conductor cross-section/conductor type/tractive force  
setpoint/actual value0.14 mm<sup>2</sup> / solid / > 10 N0.14 mm<sup>2</sup> / flexible / > 10 N1.5 mm<sup>2</sup> / solid / > 40 N1.5 mm<sup>2</sup> / flexible / > 40 N

Insertion and withdrawal forces

Specification

IEC 60512-13-2:2006-02

Result

Test passed

No. of cycles

25

Insertion strength per pos. approx.

8 N

Withdraw strength per pos. approx.

6 N

Resistance of inscriptions

Specification

IEC 60068-2-70:1995-12

Result

Test passed

Polarization and coding

Specification

IEC 60512-13-5:2006-02

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|        |             |
|--------|-------------|
| Result | Test passed |
|--------|-------------|

## Visual inspection

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

## Dimension check

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

## Environmental and real-life conditions

## 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           |

## Durability test

|                                        |                       |
|----------------------------------------|-----------------------|
| Specification                          | IEC 60512-9-1:2010-03 |
| Impulse withstand voltage at sea level | 2.95 kV               |
| Contact resistance R <sub>1</sub>      | 1.4 mΩ                |
| Contact resistance R <sub>2</sub>      | 1.5 mΩ                |
| Insertion/withdrawal cycles            | 25                    |

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

## Ambient conditions

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

## Electrical tests

## Thermal test | Test group C

|                            |                       |
|----------------------------|-----------------------|
| Specification              | IEC 60512-5-1:2002-02 |
| Tested number of positions | 20                    |

## Insulation resistance

|               |                       |
|---------------|-----------------------|
| Specification | IEC 60512-3-1:2002-02 |
|---------------|-----------------------|

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|                                              |        |
|----------------------------------------------|--------|
| Insulation resistance, neighboring positions | > 5 MΩ |
|----------------------------------------------|--------|

## Temperature cycles

|               |                     |
|---------------|---------------------|
| Specification | IEC 60999-1:1999-11 |
| Result        | Test passed         |

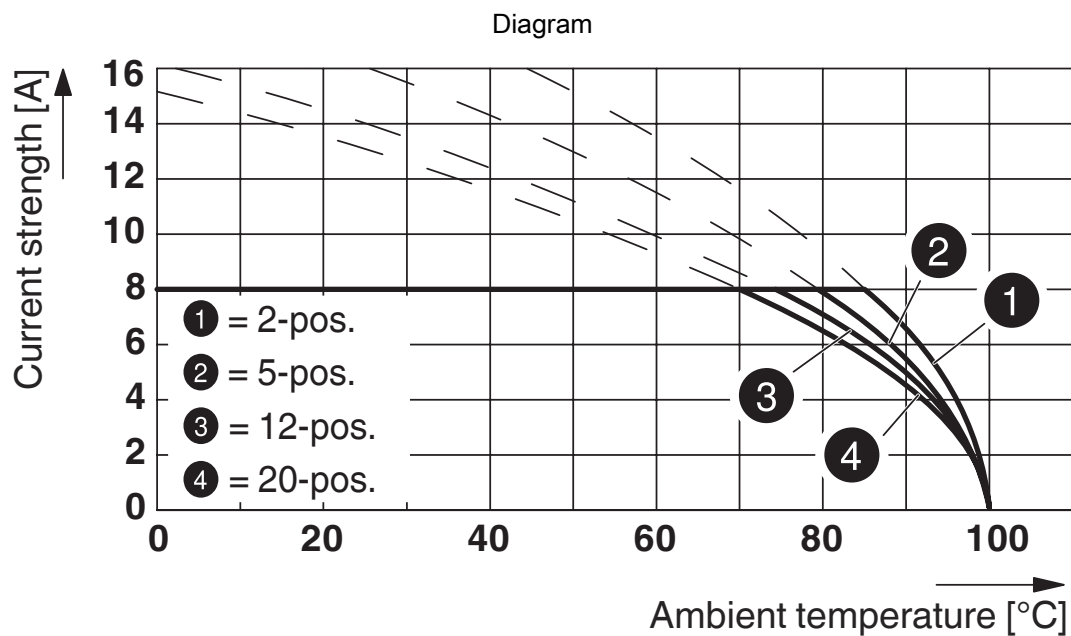
## Air clearances and creepage distances |

|                                                        |                     |
|--------------------------------------------------------|---------------------|
| Specification                                          | IEC 60664-1:2007-04 |
| Insulating material group                              | I                   |
| Comparative tracking index (IEC 60112)                 | CTI 600             |
| Rated insulation voltage (III/3)                       | 160 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 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)                      | 1.5 mm              |
| Rated insulation voltage (II/2)                        | 320 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)                       | 1.6 mm              |

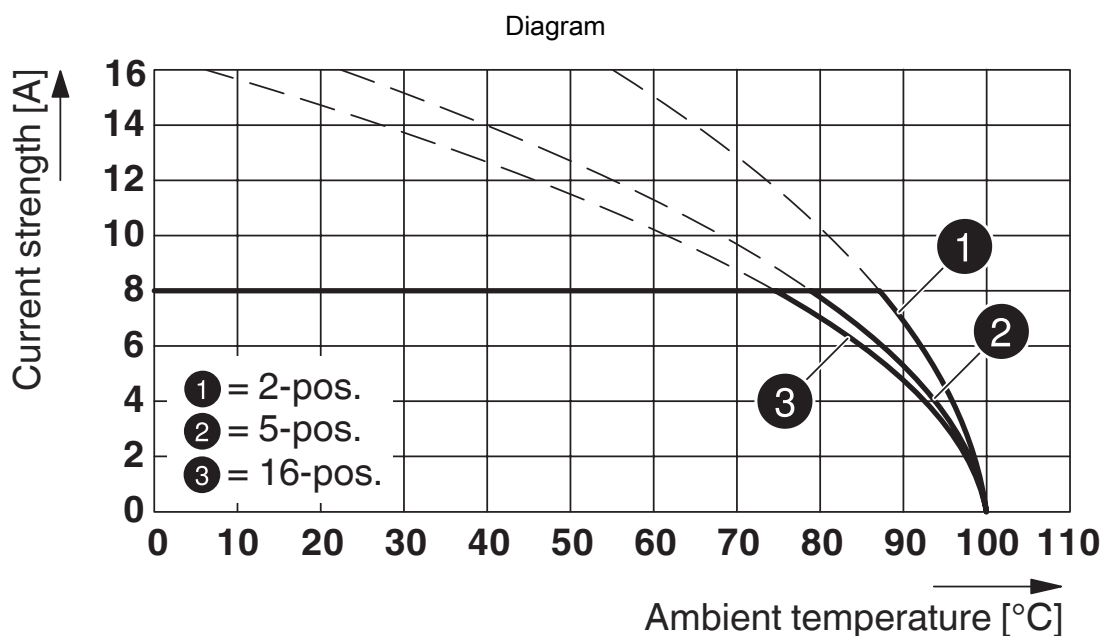
## Packaging specifications

|                      |                     |
|----------------------|---------------------|
| Type of packaging    | packed in cardboard |
| Outer packaging type | Carton              |

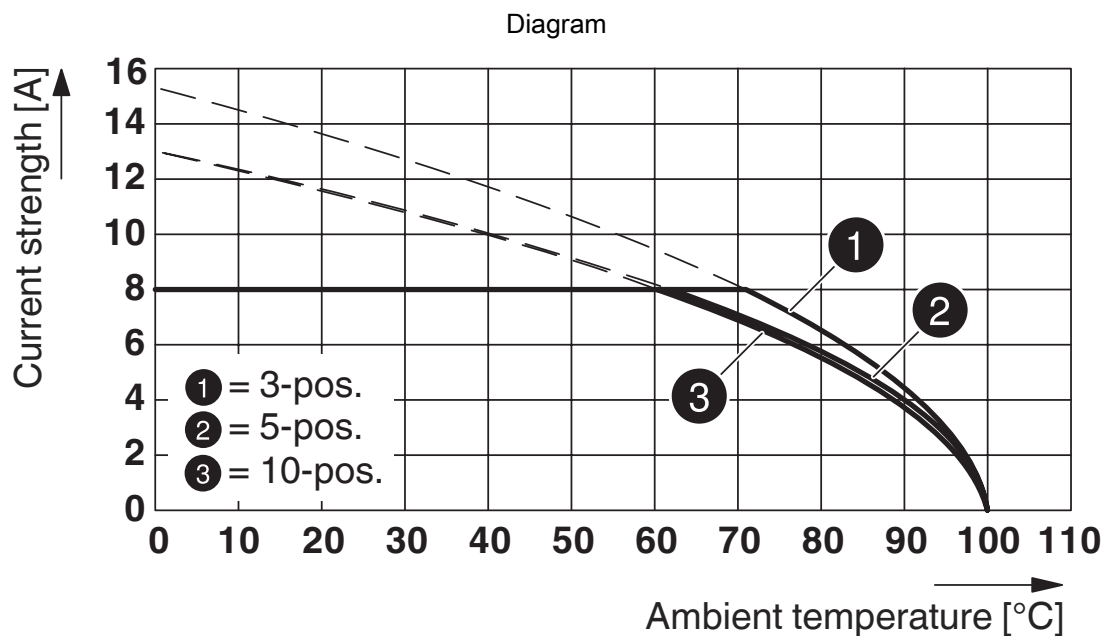
## Drawings



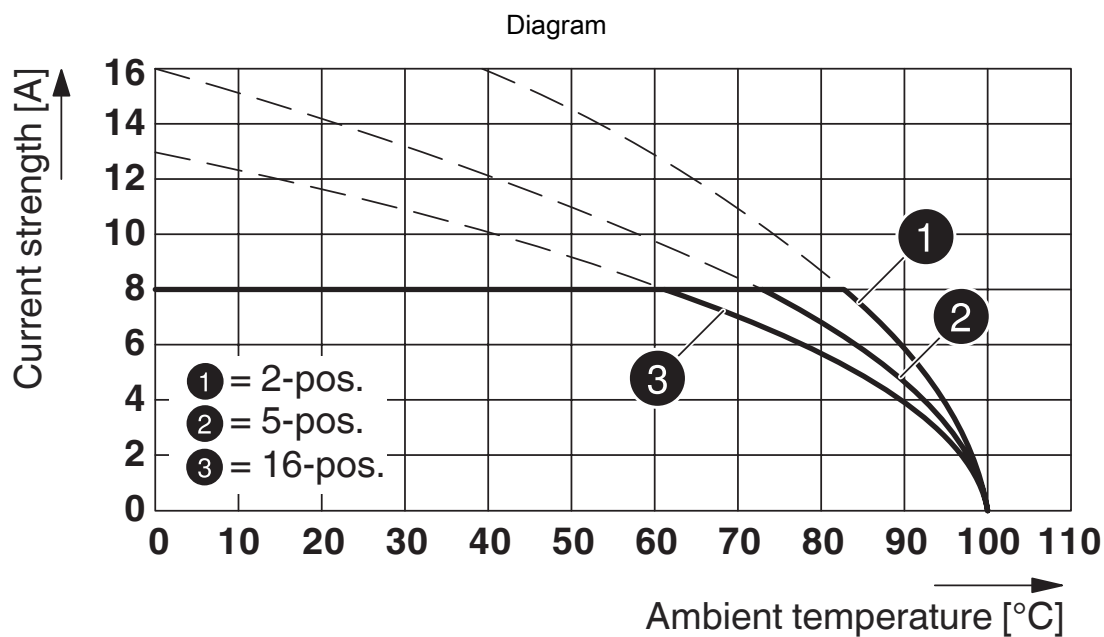
Type: FK-MCP 1,5/...-ST-3,81 with MC 1,5/...-G-3,81 P... THR



Type: FK-MCP 1,5/...-ST-3,81 with SMC 1,5/...-G-3,81

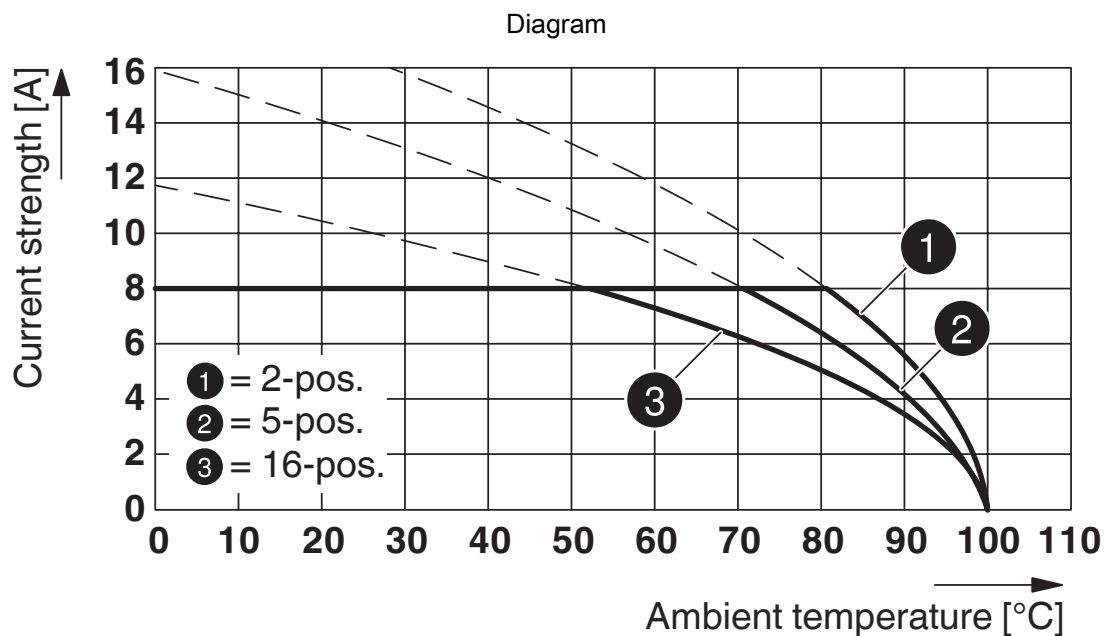


Type: FK-MCP 1,5/...-ST-3,81 with MCO 1,5/...-GR-3,81

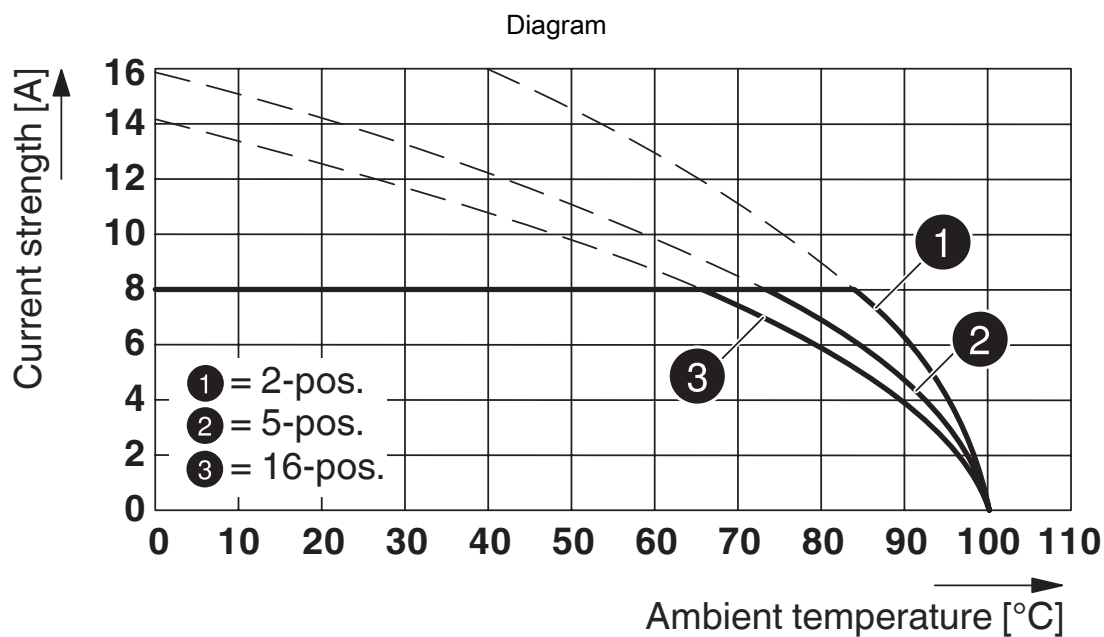


Type: FK-MCP 1,5/...-ST-3,81 with MCD 1,5/...-G-3,81

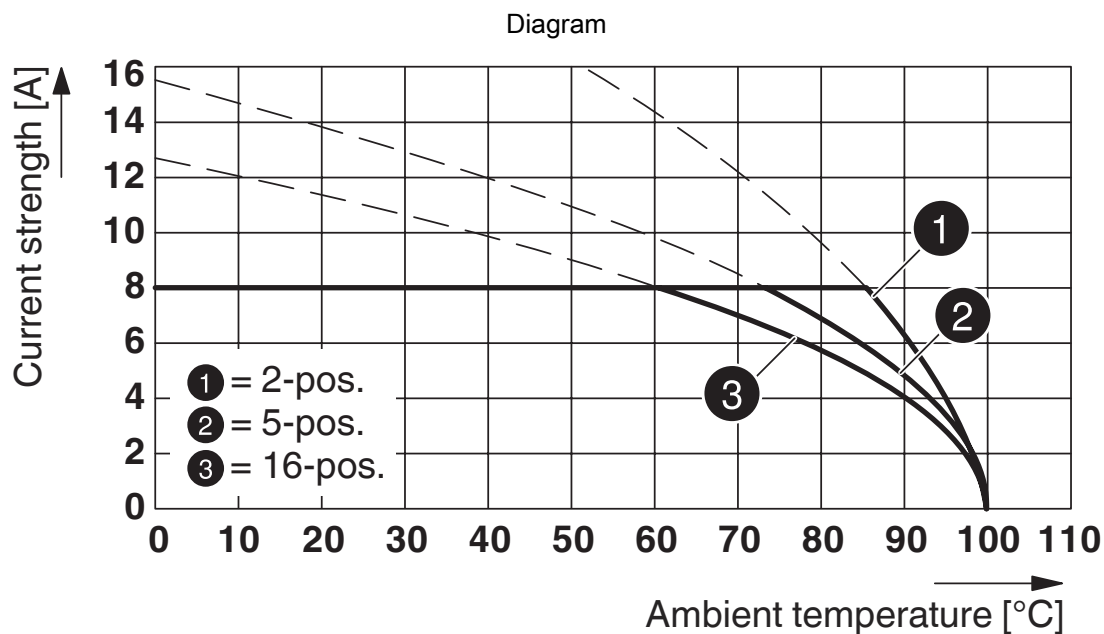
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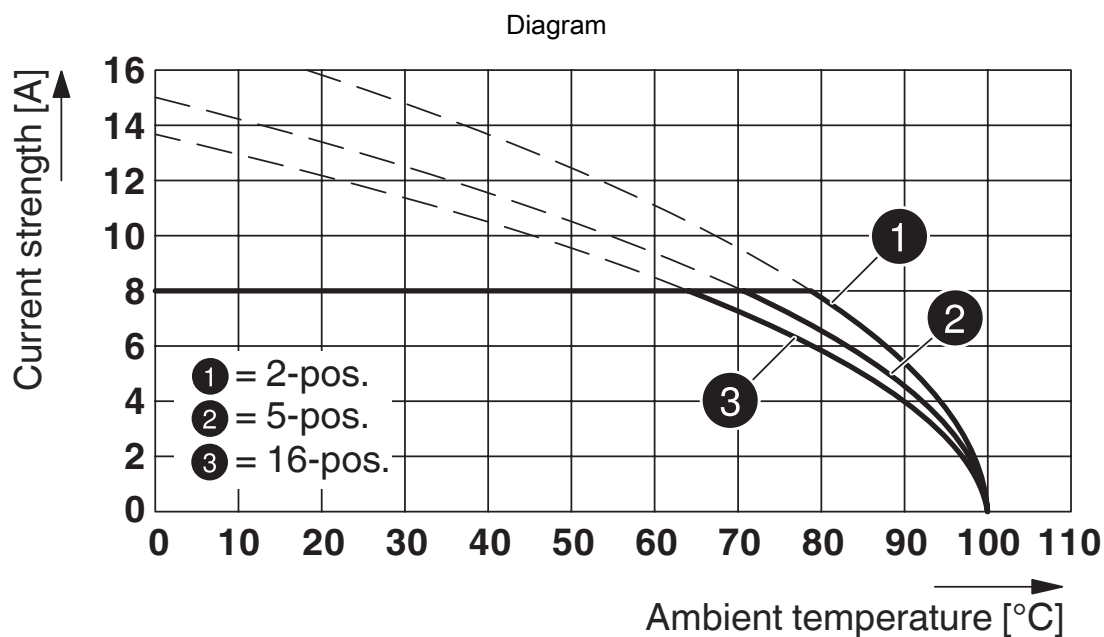
Type: FK-MCP 1,5/...-ST-3,81 with MCD 1,5/...-G1-3,81



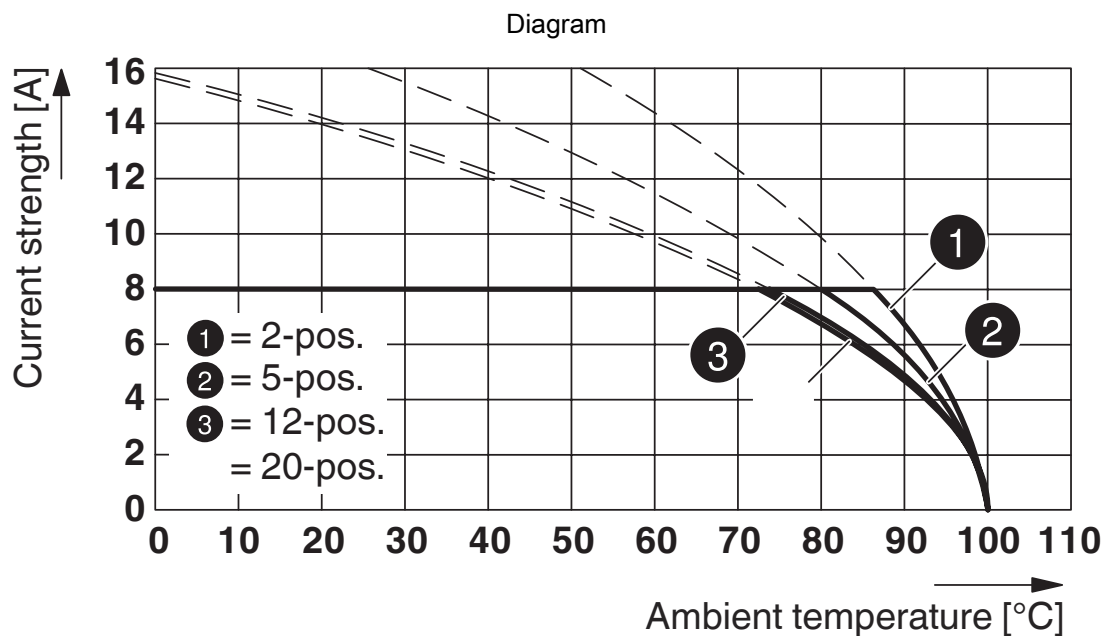
Type: FK-MCP 1,5/...-ST-3,81 with MCDV 1,5/...-G-3,81



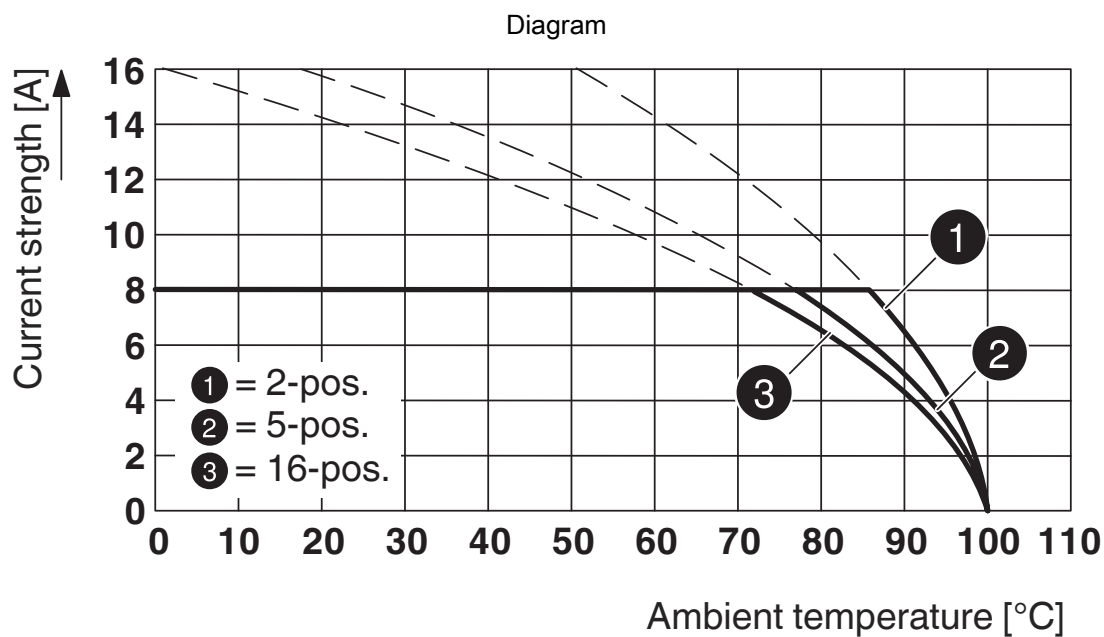
Type: FK-MCP 1,5/...-ST-3,81 with MCDV 1,5/...-G1-3,81



Type: FK-MCP 1,5/...-ST-3,81 with MCVU 1,5/...-GFD-3,81



Type: FK-MCP 1,5/...-ST-3,81 with MCV 1,5/...-G-3,81



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

# FK-MCP 1,5/ 3-ST-3,81GY31BDWH3 - PCB connector



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1710640>

|  <b>cULus Recognized</b><br>Approval ID: E60425-19920306 |                       |                       |                   |                             |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-------------------|-----------------------------|
|                                                                                                                                           | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
| B                                                                                                                                         |                       |                       |                   |                             |
|                                                                                                                                           | 300 V                 | 8 A                   | 28 - 16           | -                           |
| D                                                                                                                                         |                       |                       |                   |                             |
|                                                                                                                                           | 300 V                 | 8 A                   | 28 - 16           | -                           |

|  <b>VDE Zeichengenehmigung</b><br>Approval ID: 40011723 |                       |                       |                   |                             |
|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-------------------|-----------------------------|
|                                                                                                                                          | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
| keine                                                                                                                                    |                       |                       |                   |                             |
|                                                                                                                                          | 160 V                 | 8 A                   | -                 | 0.2 - 1.5                   |

# FK-MCP 1,5/ 3-ST-3,81GY31BDWH3 - PCB connector



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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27460202 |
| ECLASS-15.0 | 27460202 |

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC002638 |
|----------|----------|

### UNSPSC

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

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%               |
| EF3.0 Climate Change                    |                                          |
| CO2e kg                                 | 0.05 kg CO2e                             |