

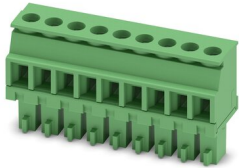
# MCVR 1,5/ 9-ST-3,81 - PCB connector



1827198

<https://www.phoenixcontact.com/in/products/1827198>

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PCB connector, nominal cross section: 1.5 mm<sup>2</sup>, color: green, nominal current: 8 A, rated voltage (III/2): 160 V, contact surface: Tin, type of contact: Socket, number of potentials: 9, number of rows: 1, number of positions: 9, number of connections: 9, product range: MCVR 1,5/..-ST, pitch: 3.81 mm, connection method: Screw connection with tension sleeve, screw head form: L Slotted, conductor/PCB connection direction: 90 °, plug-in system: COMBICON MC 1,5, locking: without, mounting: without, type of packaging: packed in cardboard

## Your advantages

- Well-known connection principle allows worldwide use
- Low temperature rise, thanks to maximum contact force
- Allows connection of two conductors

## Commercial Data

|                                      |                     |
|--------------------------------------|---------------------|
| Item number                          | 1827198             |
| Packing unit                         | 50 pc               |
| Minimum order quantity               | 50 pc               |
| Sales Key                            | AAB                 |
| Product Key                          | AABAEA              |
| Catalog Page                         | Page 192 (C-1-2013) |
| GTIN                                 | 4017918114329       |
| Weight per Piece (including packing) | 7.508 g             |
| Weight per Piece (excluding packing) | 7.058 g             |
| Customs tariff number                | 85366990            |
| Country of origin                    | IN                  |

# MCVR 1,5/ 9-ST-3,81 - PCB connector



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## Technical Data

### Product properties

|                       |                       |
|-----------------------|-----------------------|
| Type                  | Standard              |
| Product line          | COMBICON Connectors S |
| Product type          | PCB plug              |
| Product family        | MCVR 1,5/..-ST        |
| Number of positions   | 9                     |
| Pitch                 | 3.81 mm               |
| Number of connections | 9                     |
| Number of rows        | 1                     |
| Mounting flange       | without               |
| Number of potentials  | 9                     |

### Electrical properties

|                             |        |
|-----------------------------|--------|
| Nominal current $I_N$       | 8 A    |
| Nominal voltage $U_N$       | 160 V  |
| Degree of pollution         | 3      |
| Contact resistance          | 3.4 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> |
| Type of contact       | Socket              |

#### Interlock

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

#### Conductor connection

|  |  |
|--|--|
| Connection method  | Screw connection with tension sleeve         |
| Conductor/PCB connection direction                             | 90 °   |
| 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                                    | 28 ... 16                                    |
| Conductor cross section flexible, with ferrule without plastic | 0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> |

# MCVR 1,5/ 9-ST-3,81 - PCB connector

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|   |   |
|---|---|
| sleeve  |   |
| Conductor cross section, flexible, with ferrule, with plastic sleeve                      | 0.25 mm <sup>2</sup> ... 0.5 mm <sup>2</sup>  |
| 2 conductors with same cross section, solid   | 0.08 mm <sup>2</sup> ... 0.5 mm <sup>2</sup>  |
| 2 conductors with same cross section, flexible  | 0.08 mm <sup>2</sup> ... 0.75 mm <sup>2</sup> |
| 2 conductors with same cross section, flexible, with ferrule without plastic sleeve       | 0.25 mm <sup>2</sup> ... 0.34 mm <sup>2</sup> |
| 2 conductors with the same cross section, flexible, with TWIN ferrule with plastic sleeve | 0.5 mm <sup>2</sup> ... 0.5 mm <sup>2</sup>   |
| Cylindrical gauge a x b / diameter  | 2.4 mm x 1.5 mm / 1.6 mm                      |
| Stripping length  | 7 mm  |
| Tightening torque   | 0.22 Nm ... 0.25 Nm                           |

## 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)  |

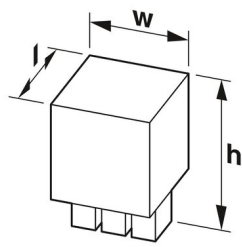
### Material data - housing

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

## Dimensions

|                     |  |
|---------------------|--|
| Dimensional drawing |  |
| Pitch               | 3.81 mm  |

# MCVR 1,5/ 9-ST-3,81 - PCB connector



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|            |          |
|------------|----------|
| Width [w]  | 35.08 mm |
| Height [h] | 19.1 mm  |
| Length [l] | 10.4 mm  |

## Mounting

|                       |             |
|-----------------------|-------------|
| Drive form screw head | Slotted (L) |
| Drive form screw head | Slotted (L) |

## Mechanical tests

### Test for conductor damage and slackening

|               |                     |
|---------------|---------------------|
| 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 value | 0.14 mm <sup>2</sup> / solid / > 10 N    |
|   | 0.14 mm <sup>2</sup> / flexible / > 10 N |
|   | 1.5 mm <sup>2</sup> / solid / > 40 N     |
|   | 1.5 mm <sup>2</sup> / flexible / > 40 N  |

### Insertion and withdrawal forces

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

### Torque test

|               |                     |
|---------------|---------------------|
| Specification | IEC 60999-1:1999-11 |
|---------------|---------------------|

### Contact holder in insert

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

### Visual inspection

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

### Dimension check

|               |                       |
|---------------|-----------------------|
| Specification | IEC 60512-1-2:2002-02 |
|---------------|-----------------------|

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|        |             |
|--------|-------------|
| 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) |
| Sweep speed            | 5g (60.1 Hz ... 150 Hz)     |
| Test duration per axis | 2.5 h                       |

### Durability test

|  |                       |
|--|-----------------------|
| Specification                                | IEC 60512-9-1:2010-03 |
| Impulse withstand voltage at sea level       | 2.95 kV               |
| Contact resistance R <sub>1</sub>            | 3.4 mΩ                |
| Contact resistance R <sub>2</sub>            | 3.5 mΩ                |
| Contact resistance R <sub>2</sub> 2nd level  | 4.4 mΩ                |
| Insertion/withdrawal cycles                  | 25                    |
| Insulation resistance, neighboring positions | > 5 MΩ                |

### 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 | 16                    |

### Insulation resistance

|  |                       |
|--|-----------------------|
| Specification                                | IEC 60512-3-1:2002-02 |
| Insulation resistance, neighboring positions | > 5 MΩ                |

### Air clearances and creepage distances |

|  |                     |
|--|---------------------|
| Specification                          | IEC 60664-1:2007-04 |
| Insulating material group              | I                   |
| Comparative tracking index (IEC 60112) | CTI 600             |

# MCVR 1,5/ 9-ST-3,81 - PCB connector



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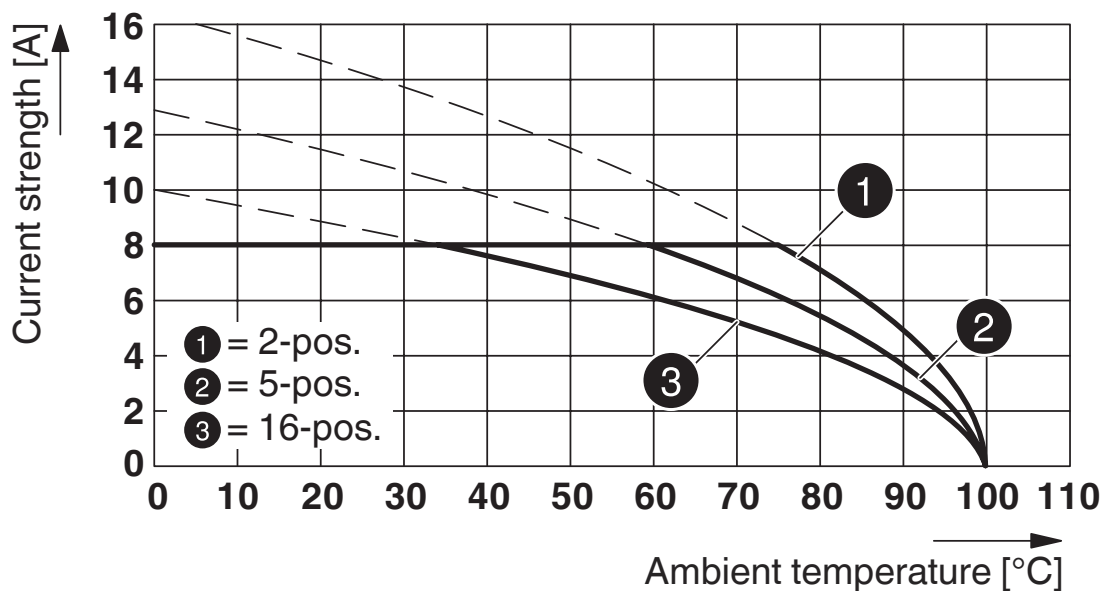
|  |   |
|--|---|
| Rated insulation voltage (III/3)                       | 160 V   |
| Rated surge voltage (III/3)                            | 2.5 kV  |
| minimum clearance value - non-homogenous field (III/3) | 1.5 mm  |
| minimum creepage distance (III/3)                      | 2 mm  |
| Note on connection cross section                       | With connected conductor 1.5 mm <sup>2</sup> (solid). |
| 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 |
|-------------------|---------------------|

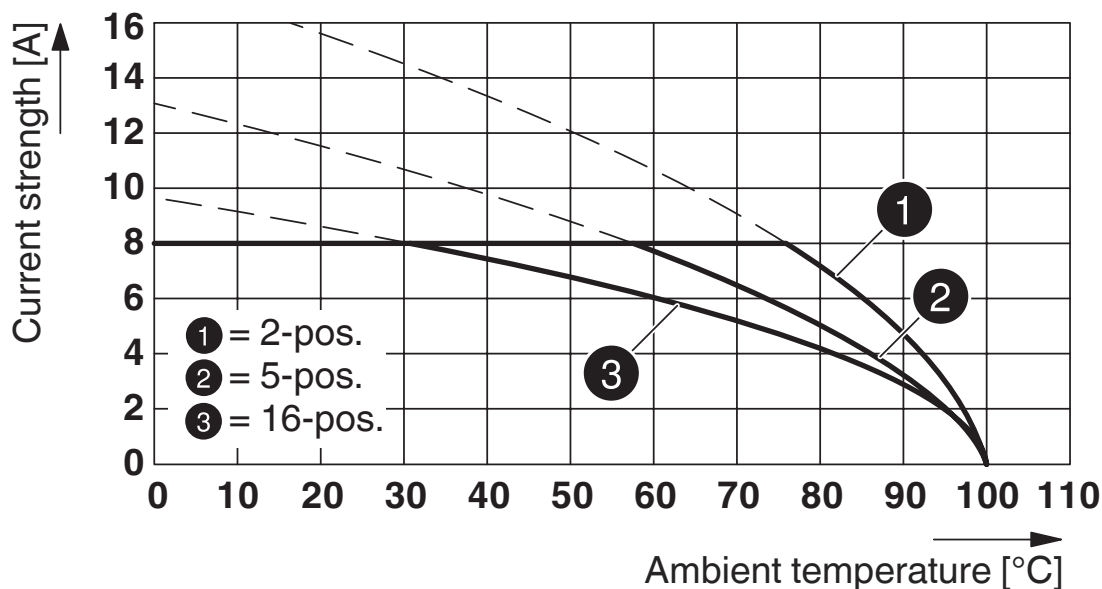
## Drawings

Diagram

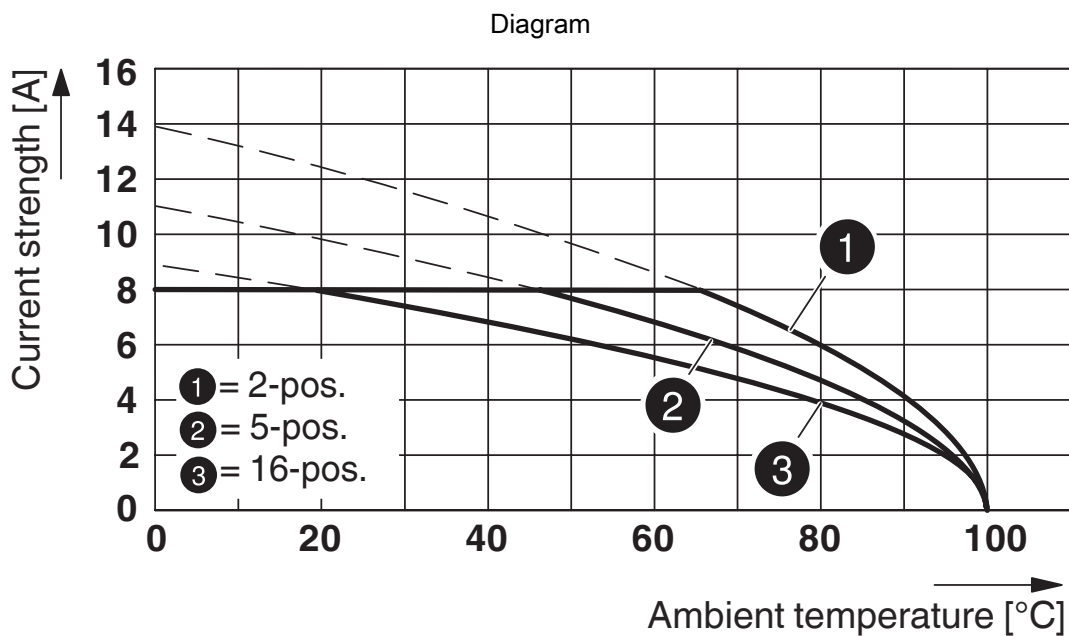


Type: MCV(W/R) 1,5/...-ST-3,81 with MCDV 1,5/...-G1-3,81

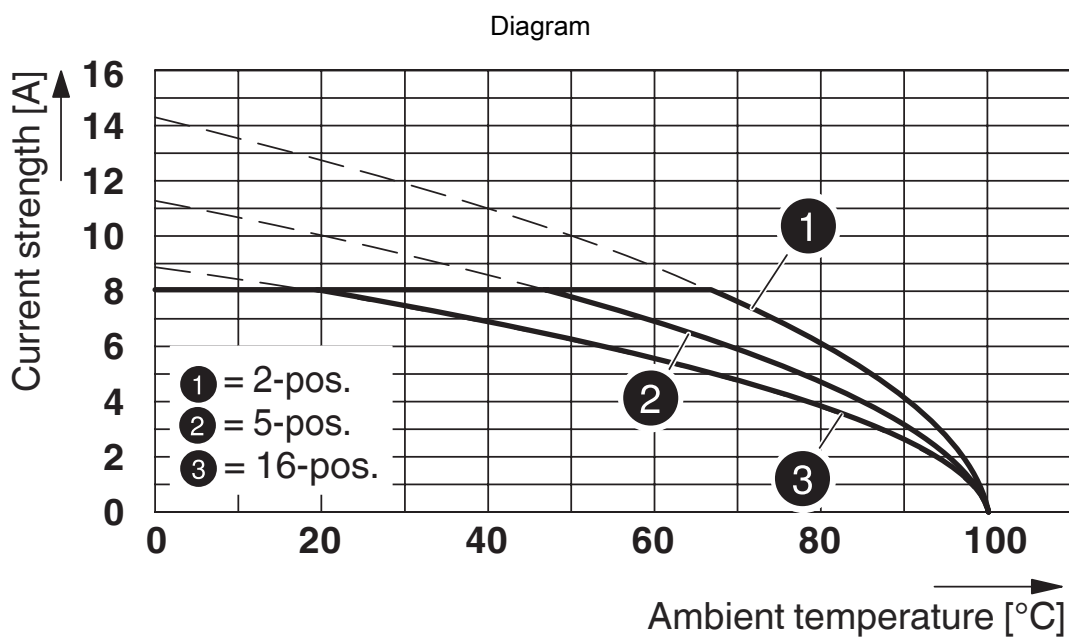
Diagram



Type: MCV(W/R) 1,5/...-ST-3,81 with MCD 1,5/...-G1-3,81



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



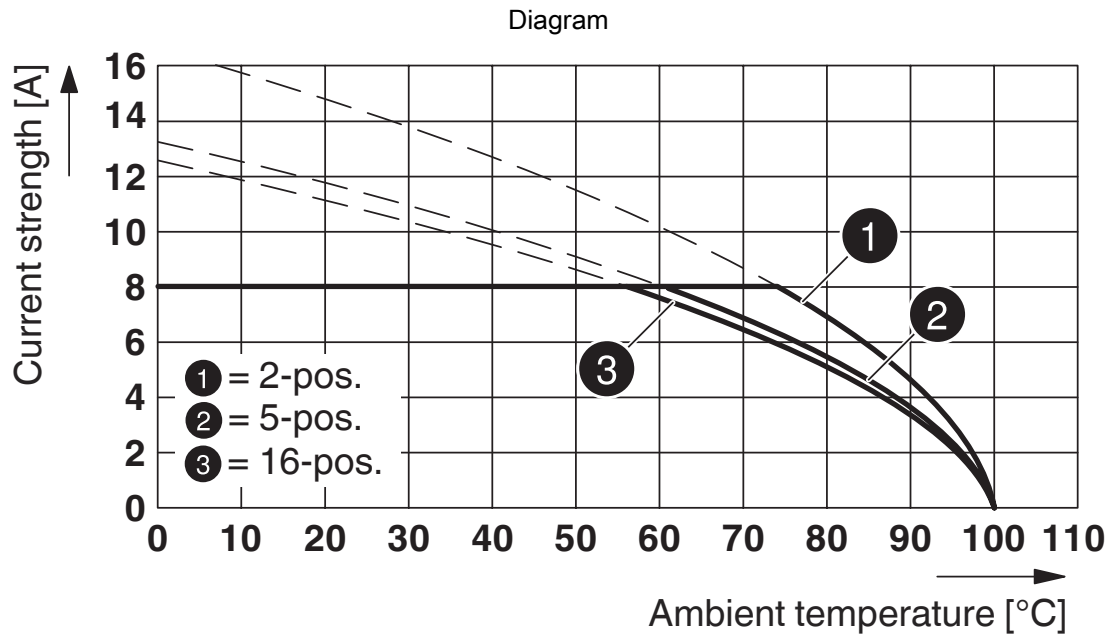
Type: MCVR 1,5/...-ST-3,81 with MCD 1,5/...-G-3,81



# MCVR 1,5/ 9-ST-3,81 - PCB connector

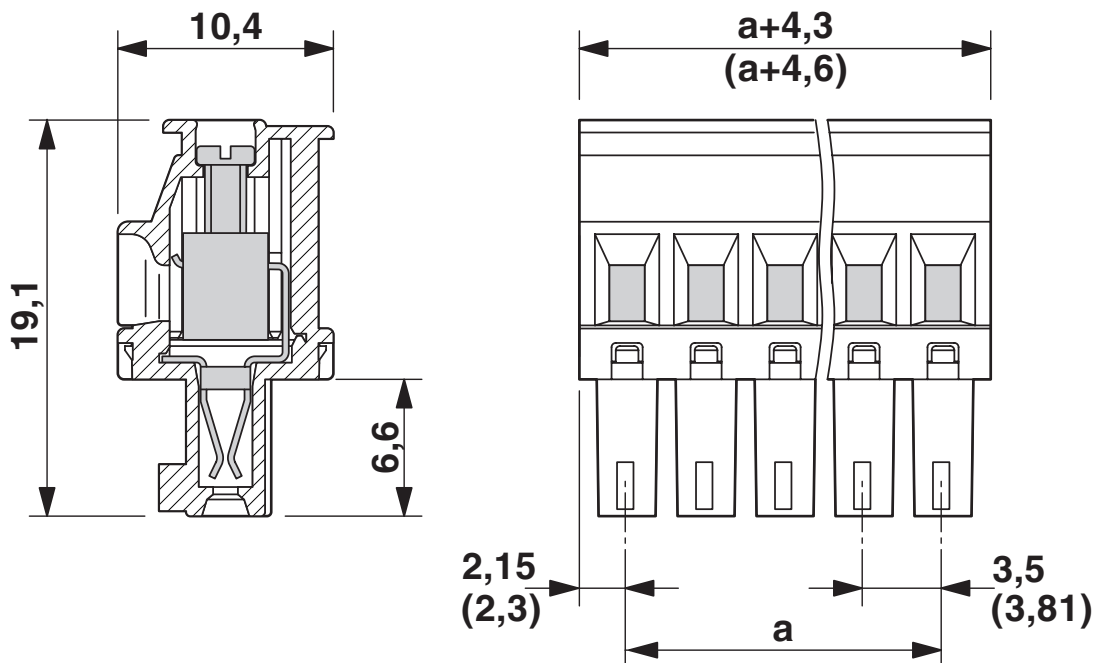
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Type: MCV(W/R) 1,5/...-STF-3,81 with IMC 1,5/...-ST-3,81

## Dimensional drawing

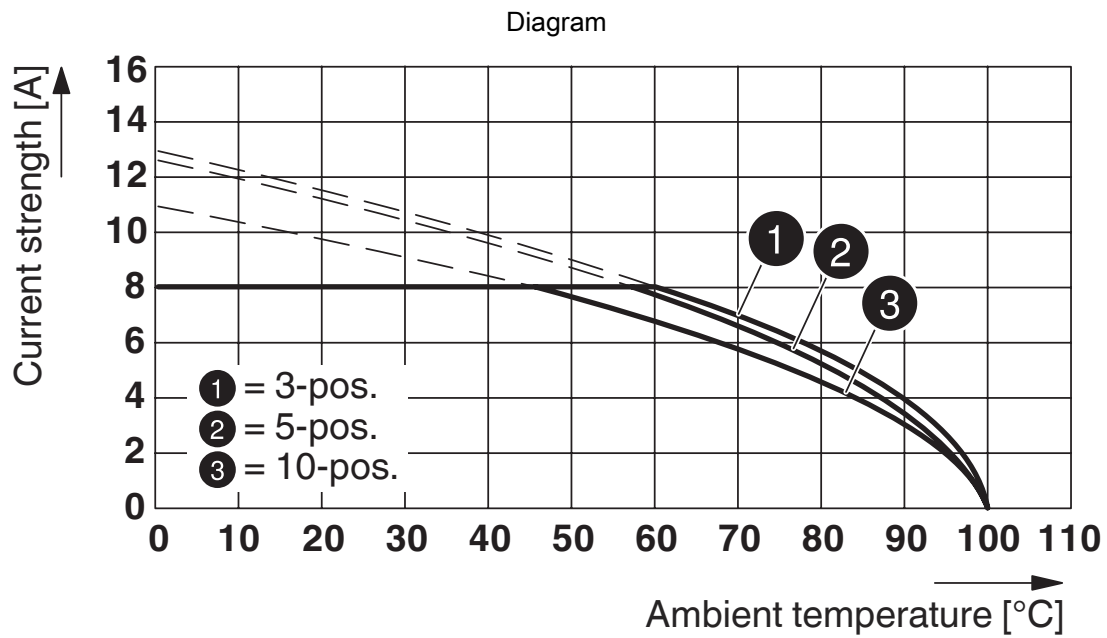


# MCVR 1,5/ 9-ST-3,81 - PCB connector



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


# MCVR 1,5/ 9-ST-3,81 - PCB connector



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## Approvals

|  <b>CSA</b><br>Approval ID: 13631 |                       |                       |                   |                             |
|--|-----------------------|-----------------------|-------------------|-----------------------------|
|  | Nominal Voltage $U_N$ | Nominal Current $I_N$ | Cross Section AWG | Cross Section $\text{mm}^2$ |
|  | 300 V                 | 8 A                   | 28 - 16           | -                           |
|  | 300 V                 | 8 A                   | 28 - 16           | -                           |

|  <b>IECEE CB Scheme</b><br>Approval ID: DE1-60987-B1B2 |                       |                       |                   |                             |
|---|-----------------------|-----------------------|-------------------|-----------------------------|
|   | Nominal Voltage $U_N$ | Nominal Current $I_N$ | Cross Section AWG | Cross Section $\text{mm}^2$ |
|   | 160 V                 | 8 A                   | -                 | 0.2 - 1.5                   |

|  <b>EAC</b><br>Approval ID: B.01687 |  |  |  |  |
|--|--|--|--|--|
|--|--|--|--|--|

|  <b>cULus Recognized</b><br>Approval ID: E60425-20110128 |                       |                       |                   |                             |
|---|-----------------------|-----------------------|-------------------|-----------------------------|
|   | Nominal Voltage $U_N$ | Nominal Current $I_N$ | Cross Section AWG | Cross Section $\text{mm}^2$ |
|   | 300 V                 | 8 A                   | 30 - 14           | -                           |
|   | 300 V                 | 8 A                   | 30 - 14           | -                           |

|  <b>VDE Zeichengenehmigung</b><br>Approval ID: 40011723 |                       |                       |                   |                             |
|--|-----------------------|-----------------------|-------------------|-----------------------------|
|  | Nominal Voltage $U_N$ | Nominal Current $I_N$ | Cross Section AWG | Cross Section $\text{mm}^2$ |
|  | 160 V                 | 8 A                   | -                 | -                           |

# MCVR 1,5/ 9-ST-3,81 - PCB connector



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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-11.0 | 27460202 |
| ECLASS-12.0 | 27460202 |
| ECLASS-13.0 | 27460202 |

### ETIM

|          |          |
|----------|----------|
| ETIM 8.0 | EC002638 |
|----------|----------|

### UNSPSC

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

# MCVR 1,5/ 9-ST-3,81 - PCB connector



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<https://www.phoenixcontact.com/in/products/1827198>

## Environmental Product Compliance

|            |   |
|------------|---|
| China RoHS | Environmentally friendly use period: unlimited = EFUP-e<br>No hazardous substances above threshold values |
|------------|---|

# MCVR 1,5/ 9-ST-3,81 - PCB connector

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## Accessories

### SZS 0,4X2,5 VDE - Screwdriver

1205037

<https://www.phoenixcontact.com/in/products/1205037>



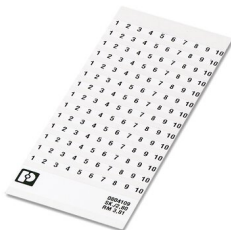
Screwdriver, slot-headed, VDE insulated, size: 0.4 x 2.5 x 80 mm, 2-component grip, with non-slip grip

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### SK 3,81/2,8:FORTL.ZAHLEN - Marker card

0804109

<https://www.phoenixcontact.com/in/products/0804109>



Marker card, white, labeled, horizontal: consecutive numbers 1 ... 10, 11 ... 20, etc. up to 91 ... (99)100, mounting type: adhesive, for terminal block width: 3.81 mm, lettering field size: 3.81 x 2.8 mm

# MCVR 1,5/ 9-ST-3,81 - PCB connector

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## B-STIFT - Marker pen

1051993

<https://www.phoenixcontact.com/in/products/1051993>



Marker pen, for manual labeling of unprinted Zack strips, smear-proof and waterproof, line thickness 0.5 mm

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## EBPL 2-3,81 - Insertion bridge

1733495

<https://www.phoenixcontact.com/in/products/1733495>



Insertion bridge for plugs featuring a screw connection with a 3.81 mm pitch

# MCVR 1,5/ 9-ST-3,81 - PCB connector

1827198

<https://www.phoenixcontact.com/in/products/1827198>



## EBPL 3-3,81 - Insertion bridge

1733505

<https://www.phoenixcontact.com/in/products/1733505>

Insertion bridge for plugs featuring a screw connection with a 3.81 mm pitch



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## EBPL 4-3,81 - Insertion bridge

1733518

<https://www.phoenixcontact.com/in/products/1733518>

Insertion bridge for plugs featuring a screw connection with a 3.81 mm pitch





# MCVR 1,5/ 9-ST-3,81 - PCB connector



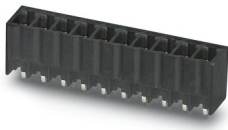
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## MCV 1,5/ 9-G-3,81 P14 THR - PCB header

1707078

<https://www.phoenixcontact.com/in/products/1707078>



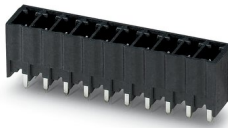
PCB headers, nominal cross section: 1.5 mm<sup>2</sup>, color: black, nominal current: 8 A, rated voltage (III/2): 160 V, contact surface: Tin, type of contact: Pin, number of potentials: 9, number of rows: 1, number of positions: 9, number of connections: 9, product range: MCV 1,5/..-G-THR, pitch: 3.81 mm, mounting: THR soldering, pin layout: Linear pinning, solder pin [P]: 1.4 mm, number of solder pins per potential: 1, plug-in system: COMBICON MC 1,5, Pin connector pattern alignment: Standard, locking: without, mounting: without, type of packaging: packed in cardboard, For user information and design recommendations for through-hole reflow technology, go to: Downloads

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## MCV 1,5/ 9-G-3,81 P26 THR - PCB header

1707492

<https://www.phoenixcontact.com/in/products/1707492>



PCB headers, nominal cross section: 1.5 mm<sup>2</sup>, color: black, nominal current: 8 A, rated voltage (III/2): 160 V, contact surface: Tin, type of contact: Pin, number of potentials: 9, number of rows: 1, number of positions: 9, number of connections: 9, product range: MCV 1,5/..-G-THR, pitch: 3.81 mm, mounting: THR soldering, pin layout: Linear pinning, solder pin [P]: 2.6 mm, number of solder pins per potential: 1, plug-in system: COMBICON MC 1,5, Pin connector pattern alignment: Standard, locking: without, mounting: without, type of packaging: packed in cardboard, For user information and design recommendations for through-hole reflow technology, go to: Downloads

# MCVR 1,5/ 9-ST-3,81 - PCB connector

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## MCO 1,5/ 9-GL-3,81 - PCB header

1861798

<https://www.phoenixcontact.com/in/products/1861798>



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: Tin, type of contact: Pin, number of potentials: 9, number of rows: 1, number of positions: 9, number of connections: 9, product range: MCO 1,5/...-GL, 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, locking: without, mounting: without, type of packaging: packed in cardboard

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