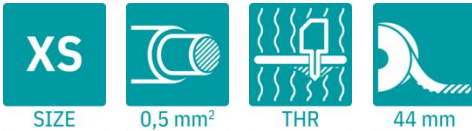


# MC 0,5/ 9-G-2,54 P20 THR R44 - PCB header

1821313

<https://www.phoenixcontact.com/us/products/1821313>

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PCB headers, nominal cross section: 0.5 mm<sup>2</sup>, color: black, nominal current: 6 A, rated voltage (III/2): 160 V, contact surface: Au, contact connection type: Pin, number of potentials: 9, number of rows: 1, number of positions: 9, number of connections: 9, product range: MC 0,5/..-G-THR, pitch: 2.54 mm, mounting: THR soldering / wave soldering, pin layout: Linear pinning, solder pin [P]: 2 mm, number of solder pins per potential: 1, plug-in system: COMBICON FMC 0,5, Pin connector pattern alignment: Standard, locking: without, mounting method: without, type of packaging: 44 mm wide tape

## Your advantages

- Designed for integration into the SMT soldering process
- Additional solder anchors reduce the mechanical strain on the soldering spots
- Gold-plated contacts ensure transfer quality remains stable over the long term
- Supplied in tape-on-reel packing according to IEC 60286-3 for automated mounting

## Commercial data

|                                      |                                |
|--------------------------------------|--------------------------------|
| Item number                          | 1821313                        |
| Packing unit                         | 465 pc                         |
| Minimum order quantity               | 465 pc                         |
| Note                                 | Made to order (non-returnable) |
| Sales key                            | AA01                           |
| Product key                          | AAATAA                         |
| GTIN                                 | 4046356789479                  |
| Weight per piece (including packing) | 2.245 g                        |
| Weight per piece (excluding packing) | 2.245 g                        |
| Customs tariff number                | 85366930                       |
| Country of origin                    | PL                             |

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## Technical data

### Product properties

|                           |  |
|---------------------------|--|
| Product type              | PCB headers                                |
| Product family            | MC 0,5/..-G-THR                            |
| Product line              | COMBICON Connectors XS                     |
| Type                      | Component suitable for through hole reflow |
| Number of positions       | 9  |
| Pitch                     | 2.54 mm                                    |
| Number of connections     | 9  |
| Number of rows            | 1  |
| Number of potentials      | 9  |
| Mounting type             | without                                    |
| Pin layout                | Linear pinning                             |
| Solder pins per potential | 1  |

### Electrical properties

#### Properties

|                             |                |
|-----------------------------|----------------|
| Nominal current $I_N$       | 6 A            |
| Nominal voltage $U_N$       | 160 V          |
| Contact resistance          | 2.1 m $\Omega$ |
| Rated voltage (III/3)       | 32 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)        | 160 V          |
| Rated surge voltage (II/2)  | 2.5 kV         |

### Mounting

|               |                                |
|---------------|--------------------------------|
| Mounting type | THR soldering / wave soldering |
| Pin layout    | Linear pinning                 |

#### Processing notes

|                                  |                       |
|----------------------------------|-----------------------|
| Process                          | Reflow/wave soldering |
| Moisture Sensitive Level         | MSL 1                 |
| Classification temperature $T_c$ | 260 °C                |
| Solder cycles in the reflow      | 3                     |

### 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   |

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|   |                         |
|---|-------------------------|
| Surface characteristics                     | Completely gold-plated  |
| Metal surface contact area (top layer)      | Gold (min. 0.25 µm Au)  |
| Metal surface contact area (middle layer)   | Nickel (2 µm - 4 µm Ni) |
| Metal surface soldering area (top layer)    | Gold (0.25 µm Au)       |
| Metal surface soldering area (middle layer) | Nickel (2 µm - 4 µm Ni) |

## Material data - housing

|  |              |
|--|--------------|
| Color (Housing)                        | black (9005) |
| Insulating material                    | LCP          |
| Insulating material group              | IIIa         |
| CTI according to IEC 60112             | 175          |
| Flammability rating according to UL 94 | V0           |

## Dimensions

|                       |                |
|-----------------------|----------------|
| Dimensional drawing   |                |
| Pitch                 | 2.54 mm        |
| Width [w]             | 27.44 mm       |
| Height [h]            | 6.85 mm        |
| Length [l]            | 7.1 mm         |
| Installed height      | 4.85 mm        |
| Solder pin length [P] | 2 mm           |
| Pin dimensions        | 0.64 x 0.64 mm |

## PCB design

|               |         |
|---------------|---------|
| Pin spacing   | 2.54 mm |
| 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

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|               |                        |
|---------------|------------------------|
| 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<br>Requirements >20 N | Test passed            |

## Insertion and withdrawal forces

|                                     |                        |
|-------------------------------------|------------------------|
| Specification                       | IEC 60512-13-2:2006-02 |
| Result                              | Test passed            |
| No. of cycles                       | 100                    |
| Insertion strength per pos. approx. | 2 N                    |
| Withdraw strength per pos. approx.  | 3 N                    |

## 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                              | IIIa                |
| Comparative tracking index (IEC 60112)                 | CTI 175             |
| Rated insulation voltage (III/3)                       | 32 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)                      | 1.5 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)                        | 160 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              |

## Environmental and real-life conditions

### Durability test

|  |                       |
|--|-----------------------|
| Specification                          | IEC 60512-9-1:2010-03 |
| Impulse withstand voltage at sea level | 2.95 kV               |

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|  |                |
|--|----------------|
| Contact resistance $R_1$                     | 2.1 m $\Omega$ |
| Contact resistance $R_2$                     | 2.1 m $\Omega$ |
| Insertion/withdrawal cycles                  | 100            |
| Insulation resistance, neighboring positions | > 5 M $\Omega$ |

## Climatic test

|                                   |   |
|-----------------------------------|---|
| Specification                     | DIN 50018:2013-05   |
| Corrosive stress                  | 1.0 dm <sup>3</sup> SO <sub>2</sub> on 300 dm <sup>3</sup> /40 °C/1 cycle |
| Thermal stress                    | 105 °C/168 h  |
| Power-frequency withstand voltage | 1.39 kV   |

## Vibration test

|                        |                             |
|------------------------|-----------------------------|
| Specification          | IEC 60068-2-6:2007-12       |
| Frequency              | 10 - 500 - 10 Hz            |
| Sweep speed            | 1 octave/min                |
| Amplitude              | 0.35 mm (10 Hz ... 60.1 Hz) |
| Acceleration           | 5g (60.1 Hz ... 500 Hz)     |
| Test duration per axis | 2 h                         |
| Test directions        | X-, Y- and Z-axis           |

## Shocks

|                 |                                   |
|-----------------|-----------------------------------|
| Specification   | IEC 60068-2-27:2008-02            |
| Pulse shape     | Semi-sinusoidal                   |
| Acceleration    | 30g                               |
| Shock duration  | 18 ms                             |
| Test directions | X-, Y- and Z-axis (pos. and neg.) |

## Railway application: Oscillation/broadband noise

|                        |  |
|------------------------|--|
| Specification          | DIN EN 50155 (VDE 0115-200):2018-05              |
|                        | IEC 61373:2010-05                                |
| Spectrum               | Long life test category 1, class B, body mounted |
| Frequency              | $f_1 = 5$ Hz to $f_2 = 150$ Hz                   |
| ASD level              | 0.964 (m/s <sup>2</sup> )/Hz                     |
| Acceleration           | 0.572 g  |
| Test duration per axis | 5 h  |
| Test directions        | X-, Y- and Z-axis                                |
| Contact interruption   | < 1 $\mu$ s                                      |
| Result                 | Test passed                                      |

## Railway application: Shocks

|                                |                                     |
|--------------------------------|-------------------------------------|
| Specification                  | DIN EN 50155 (VDE 0115-200):2018-05 |
|                                | IEC 61373:2010-05                   |
| Pulse shape                    | Semi-sinusoidal                     |
| Acceleration                   | 30g                                 |
| Shock duration                 | 18 ms                               |
| Number of shocks per direction | 3                                   |

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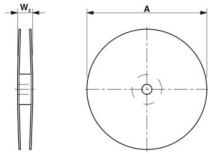
<https://www.phoenixcontact.com/us/products/1821313>

|                      |                                   |
|----------------------|-----------------------------------|
| Test directions      | X-, Y- and Z-axis (pos. and neg.) |
| Contact interruption | < 1 $\mu$ s                       |
| Result               | Test passed                       |

## 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

|                             |  |
|-----------------------------|--|
| Dimensional drawing         |  |
| Type of packaging           | 44 mm wide tape  |
| [W] tape width              | 44 mm  |
| [W2] coil overall dimension | $\leq 50.4$ mm   |
| [A] coil diameter           | $\leq 330$ mm  |
| Outer packaging type        | Transparent-Bag  |

Drawings

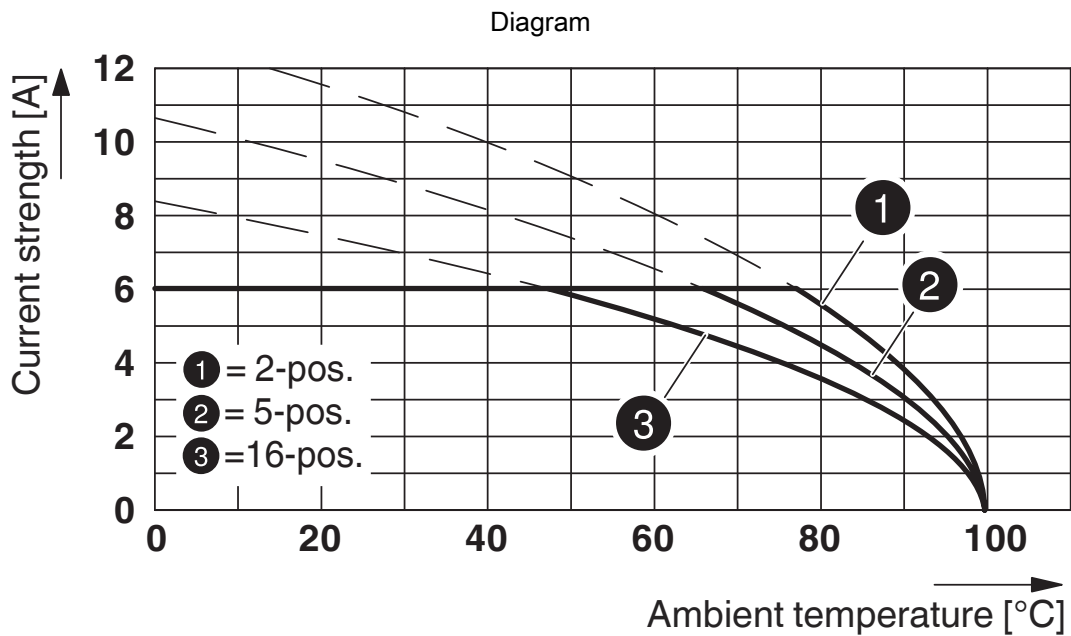
Dimensional drawing



Diagram



Type: MCC 0,5/...-ST-2,54 with MC 0,5/...-G-2,54 P20 THR R...



Type: FMC 0,5/...-ST-2,54 with MC 0,5/...-G-2,54 P20 THR R..

Drilling plan/solder pad geometry



# MC 0,5/ 9-G-2,54 P20 THR R44 - PCB header



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1821313>

|  <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>B</b>  |                       |                       |                   |                             |
| Field wiring  | 150 V                 | 6 A                   | -                 | -                           |
| <b>C</b>  |                       |                       |                   |                             |
| Factory wiring  | 50 V                  | 6 A                   | -                 | -                           |

|  <b>VDE report with production monitoring</b><br>Approval ID: 40042258 |                       |                       |                   |                             |
|---|-----------------------|-----------------------|-------------------|-----------------------------|
|   | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
| keine   |                       |                       |                   |                             |
|   | 160 V                 | 6 A                   | -                 | -                           |

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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% |
|-------------------------------------|----------------------------|

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