

## Printed-circuit board connector - FMC 1,5/10-STF-3,81 - 1748435

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PCB connector, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 10, pitch: 3.81 mm, connection method: Push-in spring connection, color: green, contact surface: Tin




The figure shows a 10-position version of the product

### Your advantages

- ✓ Time saving push-in connection, tools not required
- ✓ Defined contact force ensures that contact remains stable over the long term
- ✓ Intuitive use through colour coded actuation lever
- ✓ Operation and conductor connection from one direction enable integration into front of device
- ✓ Screwable flange for superior mechanical stability



### Key Commercial Data

|                                      |   |
|--------------------------------------|---|
| Packing unit                         | 1 pc  |
| Minimum order quantity               | 50 pc   |
| GTIN                                 | <br>4 046356 311472 |
| GTIN                                 | 4046356311472   |
| Weight per Piece (excluding packing) | 6.600 g   |
| Custom tariff number                 | 85366990  |
| Country of origin                    | Germany   |

### Technical data

#### Item properties

|                           |                                 |
|---------------------------|---------------------------------|
| Brief article description | Printed-circuit board connector |
| Plug-in system            | MINI COMBICON                   |
| Type of contact           | Female connector                |

## Printed-circuit board connector - FMC 1,5/10-STF-3,81 - 1748435

### Technical data

#### Item properties

|                       |                           |
|-----------------------|---------------------------|
| Range of articles     | FMC 1,5/...-STF           |
| Pitch                 | 3.81 mm                   |
| Number of positions   | 10                        |
| Connection method     | Push-in spring connection |
| Locking               | Screw flange              |
| Number of levels      | 1                         |
| Number of connections | 10                        |
| Number of potentials  | 10                        |

#### Electrical parameters

|              |       |
|--------------|-------|
| Nom. voltage | 160 V |
|--------------|-------|

#### Connection capacity

|   |   |
|---|---|
| Connection method   | Push-in spring connection                     |
| pluggable   | Yes   |
| Conductor cross section solid   | 0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>   |
| Conductor cross section flexible                                      | 0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>   |
| Conductor cross section AWG / kcmil                                   | 24 ... 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> |
| Stripping length  | 10 mm   |

#### Specifications for ferrules

|  |  |
|--|--|
| Recommended crimping pliers                                  | 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           |
| Recommended crimping pliers                                  | 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 ... 10 mm |
|  | Cross section: 0.34 mm <sup>2</sup> ; Length: 8 mm ... 10 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 data - contact

|      |   |
|------|---|
| Note | WEEE/RoHS-compliant, free of whiskers according to IEC 60068-2-82/ JEDEC JESD 201 |
|------|---|

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## Technical data

### Material data - contact

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

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

|  |     |
|--|-----|
| Insulating material                    | PBT |
| CTI according to IEC 60112             | 600 |
| Flammability rating according to UL 94 | V0  |

### Dimensions for the product

|                             |          |
|-----------------------------|----------|
| Length [ l ]                | 22.9 mm  |
| Width [ w ]                 | 48.19 mm |
| Height [ h ]                | 7.8 mm   |
| Pitch                       | 3.81 mm  |
| Height (without solder pin) | 7.8 mm   |
| Dimension a                 | 34.29 mm |

### Packaging information

|                            |                     |
|----------------------------|---------------------|
| Type of packaging          | packed in cardboard |
| Pieces per package         | 50                  |
| Denomination packing units | Pcs.                |

### Ambient conditions

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

### Termination and connection method

|                           |   |
|---------------------------|---|
| Conductor connection test | The stripped-off ends of the largest conductor can be completely inserted in the opening of the terminal point without using excessive force. |
| Test result               | Test passed   |

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## Technical data

### Termination and connection method

|  |                     |
|--|---------------------|
| Test – repeated connection and release   | IEC 60999-1:1999-11 |
|  | Test passed         |
| Test for conductor damage and slackening | IEC 60999-1:1999-11 |
|  | Test passed         |

### Pull-out test

|  |   |
|--|---|
| Pull-out test  | IEC 60999-1:1999-11                     |
|  | Test passed                             |
| Conductor cross section / conductor type / tensile force | 0.2 mm <sup>2</sup> / solid / > 10 N    |
|  | 0.2 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 |

### Mechanical tests according to standard

|                                     |                                    |
|-------------------------------------|------------------------------------|
| Test specification                  | IEC 61984                          |
| Visual examination                  | Test passed IEC 60512-1-1:2002-02  |
| Dimensional test                    | Test passed IEC 60512-1-2:2002-02  |
| Resistance of marking               | Test passed IEC 60068-2-70:1995-12 |
| Result                              | Test passed                        |
| Specification                       | IEC 60512-13-2:2006-02             |
| No. of cycles                       | 25                                 |
| Insertion strength per pos. approx. | 8 N                                |
| Withdraw strength per pos. approx.  | 6 N                                |
| Polarization and coding             | Test passed IEC 60512-13-5:2006-02 |
| Result                              | Test passed                        |
| Specification                       | IEC 60512-15-1:2008-05             |
| Test force per pos.                 | 27 N                               |

### Air clearances and creepage distances

|   |                     |
|---|---------------------|
| Clearances and creepage distances               | IEC 60664-1:2007-04 |
| Specification                                   | IEC 60664-1:2007-04 |
| Rated insulation voltage (III/3)                | 160 V               |
| Rated insulation voltage (III/2)                | 160 V               |
| Rated insulation voltage (II/2)                 | 320 V               |
| Rated surge voltage (III/3)                     | 2.5 kV              |
| Rated surge voltage (III/2)                     | 2.5 kV              |
| Rated surge voltage (II/2)                      | 2.5 kV              |
| Minimum clearance - inhomogeneous field (III/3) | 1.5 mm              |
| Minimum clearance - inhomogeneous field (III/2) | 1.5 mm              |

## Printed-circuit board connector - FMC 1,5/10-STF-3,81 - 1748435

### Technical data

#### Air clearances and creepage distances

|  |        |
|--|--------|
| Minimum clearance - inhomogeneous field (II/2) | 1.5 mm |
| Minimum creepage distance value (III/3)        | 2 mm   |
| Minimum creepage distance value (III/2)        | 1.5 mm |
| Minimum creepage distance value (II/2)         | 1.6 mm |

#### Electrical tests - Function

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

#### Temperature cycles

|                    |                     |
|--------------------|---------------------|
| Specification      | IEC 60999-1:1999-11 |
| Temperature cycles | 192                 |

#### Current carrying capacity / derating curves

|               |           |
|---------------|-----------|
| Specification | IEC 61984 |
|---------------|-----------|

#### Mechanical tests (A)

|  |             |
|--|-------------|
| Test specification                           | IEC 61984   |
| Insertion strength per pos. approx.          | 8 N         |
| Withdraw strength per pos. approx.           | 6 N         |
| Polarization when inserted requirement >20 N | Test passed |
| Contact holder in insert requirements >20 N  | Test passed |

#### Durability tests (B)

|  |                       |
|--|-----------------------|
| Specification                                | IEC 60512-9-1:2010-03 |
| Contact resistance R <sub>1</sub>            | 1.8 mΩ                |
| Insertion/withdrawal cycles                  | 25                    |
| Contact resistance R <sub>2</sub>            | 2 mΩ                  |
| Impulse withstand voltage at sea level       | 2.95 kV               |
| Power-frequency withstand voltage            | 1.39 kV               |
| Insulation resistance, neighboring positions | > 80 GΩ               |

#### Climatic tests (D)

|  |   |
|--|---|
| Specification                          | ISO 6988:1985-02  |
| Cold stress                            | -40 °C/2 h  |
| Thermal stress                         | 100 °C/168 h  |
| Corrosive stress                       | 0.2 dm <sup>3</sup> SO <sub>2</sub> on 300 dm <sup>3</sup> /40 °C/1 cycle |
| Impulse withstand voltage at sea level | 2.95 kV   |
| Power-frequency withstand voltage      | 1.39 kV   |

#### Environmental and durability tests (E)

|               |                   |
|---------------|-------------------|
| Specification | IEC 61984:2008-10 |
|---------------|-------------------|

# Printed-circuit board connector - FMC 1,5/10-STF-3,81 - 1748435

## Technical data

### Environmental and durability tests (E)

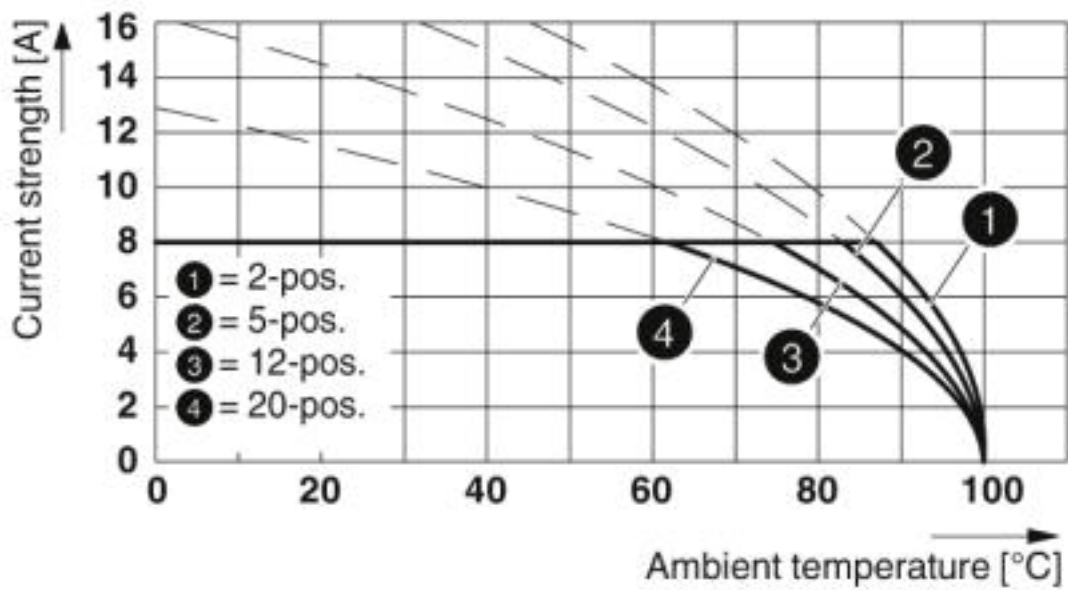
|                                       |                                     |
|---------------------------------------|-------------------------------------|
| Result, degree of protection, IP code | Finger safety with IP20 test finger |
|---------------------------------------|-------------------------------------|

### Environmental Product Compliance

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

## Drawings

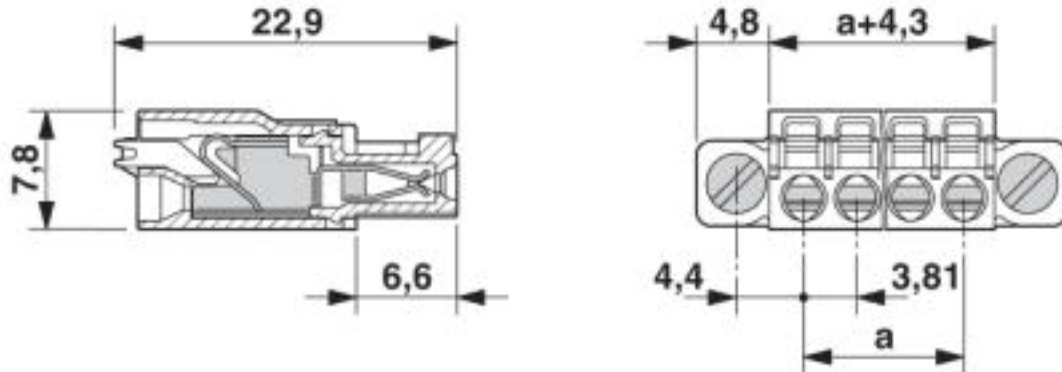
Diagram



Type: FMC 1,5/...-STF-3,81 with MCV 1,5/...-GF-3,81 P... THR

# Printed-circuit board connector - FMC 1,5/10-STF-3,81 - 1748435

Dimensional drawing



## Classifications

### eCl@ss

|            |          |
|------------|----------|
| eCl@ss 4.0 | 27260700 |
| eCl@ss 4.1 | 27260700 |
| eCl@ss 5.0 | 27260700 |
| eCl@ss 5.1 | 27260700 |
| eCl@ss 6.0 | 27260700 |
| eCl@ss 7.0 | 27440309 |
| eCl@ss 8.0 | 27440309 |
| eCl@ss 9.0 | 27440309 |

### ETIM

|          |          |
|----------|----------|
| ETIM 3.0 | EC001121 |
| ETIM 4.0 | EC002638 |
| ETIM 5.0 | EC002638 |
| ETIM 6.0 | EC002638 |
| ETIM 7.0 | EC002638 |

### UNSPSC

|               |          |
|---------------|----------|
| UNSPSC 6.01   | 30211810 |
| UNSPSC 7.0901 | 39121409 |
| UNSPSC 11     | 39121409 |
| UNSPSC 12.01  | 39121409 |
| UNSPSC 13.2   | 39121409 |
| UNSPSC 18.0   | 39121409 |
| UNSPSC 19.0   | 39121409 |
| UNSPSC 20.0   | 39121409 |

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## Classifications

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 21.0 | 39121409 |
|-------------|----------|

## Approvals


### Approvals


### Approvals


IECEE CB Scheme / VDE Gutachten mit Fertigungsüberwachung / EAC / cULus Recognized

### Ex Approvals

## Approval details

|                            |  |   |                |
|----------------------------|--|---|----------------|
| IECEE CB Scheme            |  | <a href="http://www.iecee.org/">http://www.iecee.org/</a> | DE1-60987-B1B2 |
| Nominal voltage UN         | 160 V  |   |                |
| Nominal current IN         | 8 A  |   |                |
| mm <sup>2</sup> /AWG/kcmil | 0.2-1.5  |   |                |

|   |   |   |          |
|---|---|---|----------|
| VDE Gutachten mit Fertigungsüberwachung |  | <a href="http://www2.vde.com/de/Institut/Online-Service/VDE-gepruefteProdukte/Seiten/Online-Suche.aspx">http://www2.vde.com/de/Institut/Online-Service/VDE-gepruefteProdukte/Seiten/Online-Suche.aspx</a> | 40011723 |
| Nominal voltage UN                      | 160 V   |   |          |
| Nominal current IN                      | 8 A   |   |          |
| mm <sup>2</sup> /AWG/kcmil              | 0.2-1.5   |   |          |

|     |   |         |
|-----|---|---------|
| EAC |  | B.01742 |
|-----|---|---------|



# Printed-circuit board connector - FMC 1,5/10-STF-3,81 - 1748435

## Approvals

|                            |       |   |                 |
|----------------------------|-------|---|-----------------|
| cULus Recognized           |       | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | E60425-19920306 |
|                            | B     | C   |                 |
| Nominal voltage UN         | 300 V | 50 V  |                 |
| Nominal current IN         | 8 A   | 8 A   |                 |
| mm <sup>2</sup> /AWG/kcmil | 24-16 | 24-16   |                 |

## Accessories

### Accessories

#### Crimping tool

Crimping pliers - CRIMPFOX 6 - 1212034



Crimping pliers, for ferrules without insulating collar according to DIN 46228 Part 1 and ferrules with insulating collar according to DIN 46228 Part 4, 0.25 mm<sup>2</sup> ... 6.0 mm<sup>2</sup>, lateral entry, trapezoidal crimp

#### Labeled terminal marker

Marker card - SK 3,81/2,8:FORTL.ZAHLEN - 0804109



Marker card, 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

#### Screwdriver tools

Screwdriver - SZS 0,4X2,5 VDE - 1205037



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

#### Additional products

## Printed-circuit board connector - FMC 1,5/10-STF-3,81 - 1748435

### Accessories

#### Printed-circuit board connector - MCV 1,5/10-GF-3,81 P14 THR - 1707298

PCB headers, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 10, pitch: 3.81 mm, color: black, contact surface: Tin, mounting: THR soldering, pin layout: Linear pinning, solder pin [P]: 1.4 mm, User information and design recommendations for through hole reflow technology can be found under "Downloads"



#### Printed-circuit board connector - MCV 1,5/10-GF-3,81 P26 THR - 1707719

PCB headers, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 10, pitch: 3.81 mm, color: black, contact surface: Tin, mounting: THR soldering, pin layout: Linear pinning, solder pin [P]: 2.6 mm, User information and design recommendations for through hole reflow technology can be found under "Downloads"



#### Feed-through header - MCV 1,5/10-GF-3,81 P26 THRR72 - 1713428

PCB headers, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 10, pitch: 3.81 mm, color: black, contact surface: Tin, mounting: THR soldering, pin layout: Linear pinning, solder pin [P]: 2.6 mm, User information and design recommendations for through hole reflow technology can be found under "Downloads"



#### Printed-circuit board connector - MC 1,5/10-GF-3,81 P20 THRR72 - 1782103

PCB headers, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 10, pitch: 3.81 mm, color: black, contact surface: Tin, mounting: THR soldering, pin layout: Linear pinning, solder pin [P]: 2 mm



#### Feed-through header - SMC 1,5/10-GF-3,81 - 1827509

PCB headers, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 10, pitch: 3.81 mm, color: green, contact surface: Tin, mounting: Wave soldering, pin layout: Linear pinning, solder pin [P]: 3.4 mm



## Printed-circuit board connector - FMC 1,5/10-STF-3,81 - 1748435

### Accessories

#### Printed-circuit board connector - MC 1,5/10-GF-3,81 - 1827949

PCB headers, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 10, pitch: 3.81 mm, color: green, contact surface: Tin, mounting: Wave soldering, pin layout: Linear pinning, solder pin [P]: 3.4 mm



#### Feed-through header - MCD 1,5/10-GF-3,81 - 1830185

PCB headers, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 10, pitch: 3.81 mm, color: green, contact surface: Tin, mounting: Wave soldering, pin layout: Linear pinning, solder pin [P]: 3.5 mm, In combination with MCV plug components, both an MCVW and an MCVR plug must be used.



#### Feed-through header - MCDV 1,5/10-GF-3,81 - 1830334

PCB headers, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 10, pitch: 3.81 mm, color: green, contact surface: Tin, mounting: Wave soldering, pin layout: Linear pinning, solder pin [P]: 3.4 mm, In combination with MCV plug components, both an MCVW and an MCVR plug must be used.



#### Feed-through header - MCV 1,5/10-GF-3,81 - 1830677

PCB headers, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 10, pitch: 3.81 mm, color: green, contact surface: Tin, mounting: Wave soldering, pin layout: Linear pinning, solder pin [P]: 3.4 mm



#### Feed-through header - MCDV 1,5/10-G1F-3,81 - 1842843

PCB headers, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 10, pitch: 3.81 mm, color: green, contact surface: Tin, mounting: Wave soldering, pin layout: Linear pinning, solder pin [P]: 3.4 mm, In combination with MCV plug components, both an MCVW and an MCVR plug must be used.



## Printed-circuit board connector - FMC 1,5/10-STF-3,81 - 1748435

### Accessories

#### Printed-circuit board connector - MCD 1,5/10-G1F-3,81 - 1842995



PCB headers, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 10, pitch: 3.81 mm, color: green, contact surface: Tin, mounting: Wave soldering, pin layout: Linear pinning, solder pin [P]: 3.5 mm, In combination with MCV plug components, both an MCVW and an MCVR plug must be used.

#### Feed-through header - EMCV 1,5/10-GF-3,81 - 1879366



PCB headers, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 10, pitch: 3.81 mm, color: green, contact surface: Tin, mounting: Press-in technology, pin layout: Linear pinning, solder pin [P]: 3.8 mm

#### Feed-through header - EMC 1,5/10-GF-3,81 - 1897021



PCB headers, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 10, pitch: 3.81 mm, color: green, contact surface: Tin, mounting: Press-in technology, pin layout: Linear pinning, solder pin [P]: 3.5 mm

#### Feed-through header - MC 1,5/10-GF-3,81 THT - 1909113



PCB headers, number of positions: 10, pitch: 3.81 mm, color: black, contact surface: Tin, pin layout: Linear pinning, solder pin [P]: 3.4 mm, User information and design recommendations for through hole reflow technology can be found under "Downloads"

#### Feed-through header - MC 1,5/10-GF-3,81 THT-R72 - 1996618



PCB headers, number of positions: 10, pitch: 3.81 mm, color: black, contact surface: Tin, pin layout: Linear pinning, User information and design recommendations for through hole reflow technology can be found under "Downloads"

