

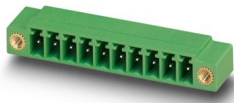
# MC 1,5/13-GF-3,81 - PCB header



1827978

<https://www.phoenixcontact.com/pc/products/1827978>

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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, contact connection type: Pin, number of potentials: 13, number of rows: 1, number of positions: 13, number of connections: 13, product range: MC 1,5/..-GF, pitch: 3.81 mm, mounting: Wave soldering, pin layout: Linear pinning, solder pin [P]: 3.4 mm, number of solder pins per potential: 1, plug-in system: COMBICON MC 1,5, Pin connector pattern alignment: Standard, locking: Screw locking mechanism, mounting: Threaded flange, type of packaging: packed in cardboard

## Your advantages

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

## Commercial data

Item number	1827978
Packing unit	50 pc
Minimum order quantity	1 pc
Product key	AABSBB
Catalog page	Page 225 (C-1-2013)
GTIN	4017918050429
Weight per piece (including packing)	4.59 g
Weight per piece (excluding packing)	2.27 g
Customs tariff number	85366930
Country of origin	DE

# MC 1,5/13-GF-3,81 - PCB header



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## Technical data

### Product properties

Product type	PCB headers
Product family	MC 1,5/..-GF
Product line	COMBICON Connectors S
Type	Standard
Number of positions	13
Pitch	3.81 mm
Number of connections	13
Number of rows	1
Number of potentials	13
Mounting flange	Threaded flange
Pin layout	Linear pinning
Solder pins per potential	1

### Electrical properties

Nominal current $I_N$	8 A
Nominal voltage $U_N$	160 V
Degree of pollution	3
Contact resistance	1.3 m $\Omega$
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)	250 V
Rated surge voltage (II/2)	2.5 kV

### Mounting

Mounting type	Wave soldering
Pin layout	Linear pinning
Drive form screw head	Slotted

### Flange

Tightening torque	0.3 Nm
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### 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 (3 - 5 $\mu\text{m}$ Sn)
Metal surface contact area (middle layer)	Nickel (1 - 3 $\mu\text{m}$ Ni)

# MC 1,5/13-GF-3,81 - PCB header

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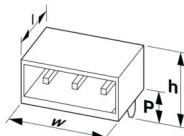
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Metal surface soldering area (top layer)	Tin (3 - 5 µm Sn)
Metal surface soldering area (middle layer)	Nickel (1 - 3 µm Ni)

## Material data - housing

Color (Housing)	green (6021)
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]	59.92 mm
Height [h]	10.3 mm
Length [l]	9.2 mm
Installed height	6.9 mm
Solder pin length [P]	3.4 mm
Pin dimensions	0.8 x 0.8 mm

## PCB design

Hole diameter	1.2 mm
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## 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
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Contact holder in insert Requirements >20 N	Test passed
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## Insertion and withdrawal forces

Result	Test passed
No. of cycles	25
Insertion strength per pos. approx.	6 N
Withdraw strength per pos. approx.	4 N

## 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
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 225
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)	2.5 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)	250 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)	2.5 mm

## 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

### Durability test

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Specification	IEC 60512-9-1:2010-03
Impulse withstand voltage at sea level	2.95 kV
Contact resistance $R_1$	1.3 m $\Omega$
Contact resistance $R_2$	1.5 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
Power-frequency withstand voltage	1.39 kV

## 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.)

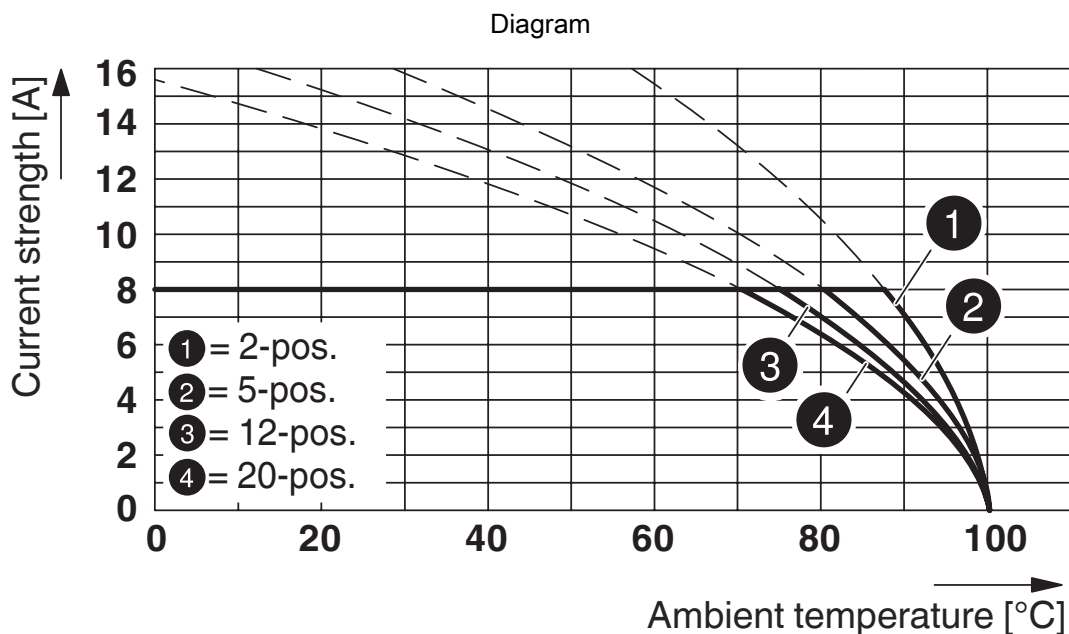
## Ambient conditions

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

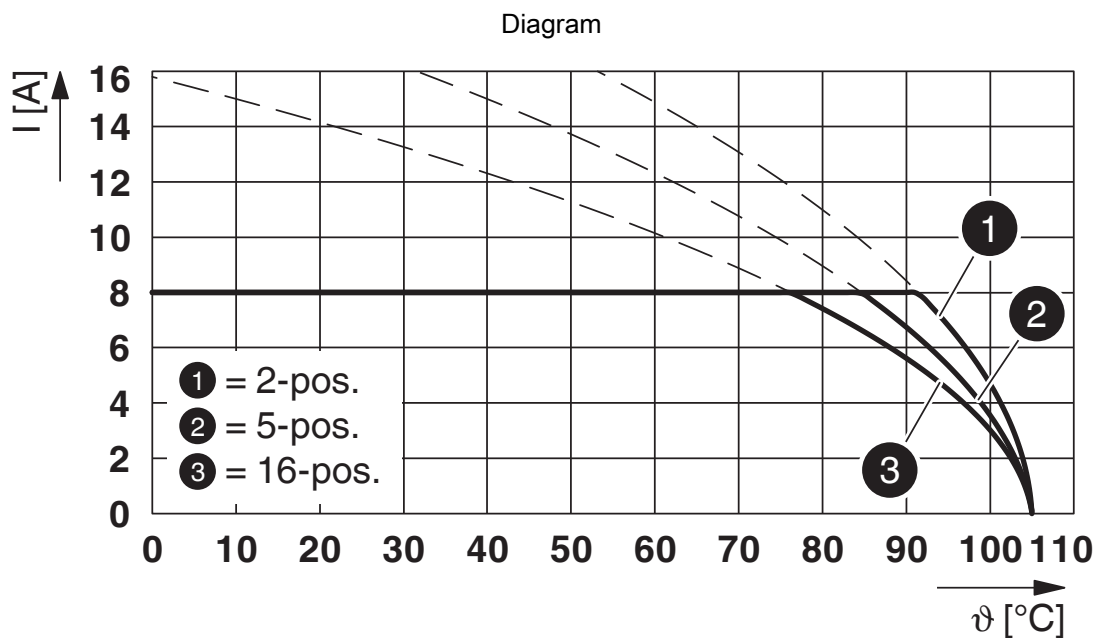
## Packaging specifications

Type of packaging	packed in cardboard
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Drawings



Type: MC 1,5/...-STF-3,81 with MC 1,5/...-GF-3,81



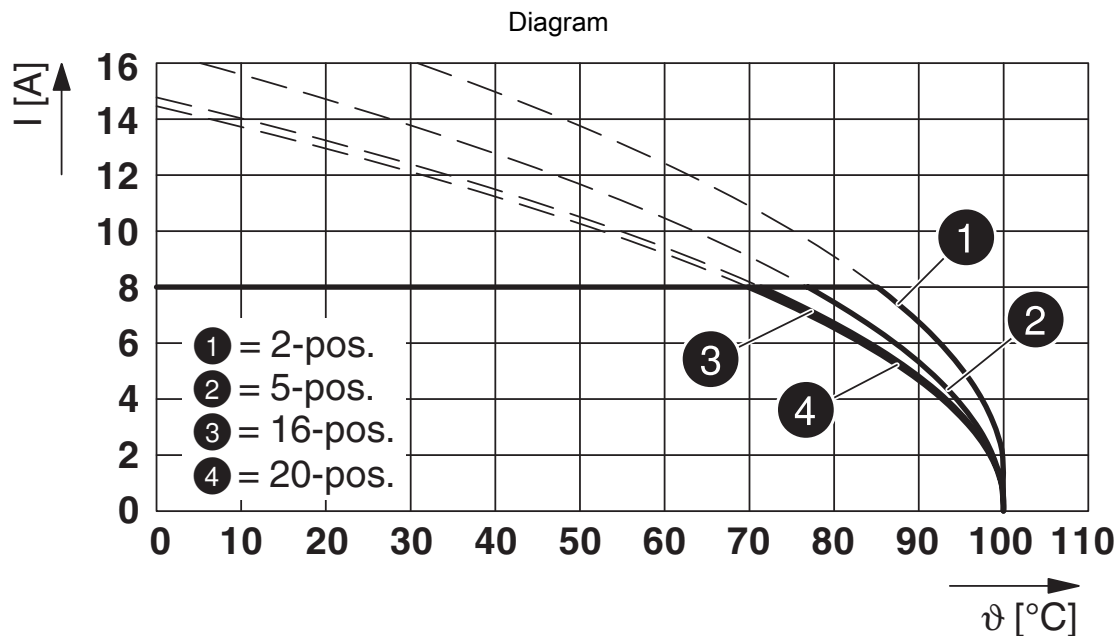
Type: LPC 1,5/...-STF-3,81 with MC 1,5/...-GF-3,81

# MC 1,5/13-GF-3,81 - PCB header

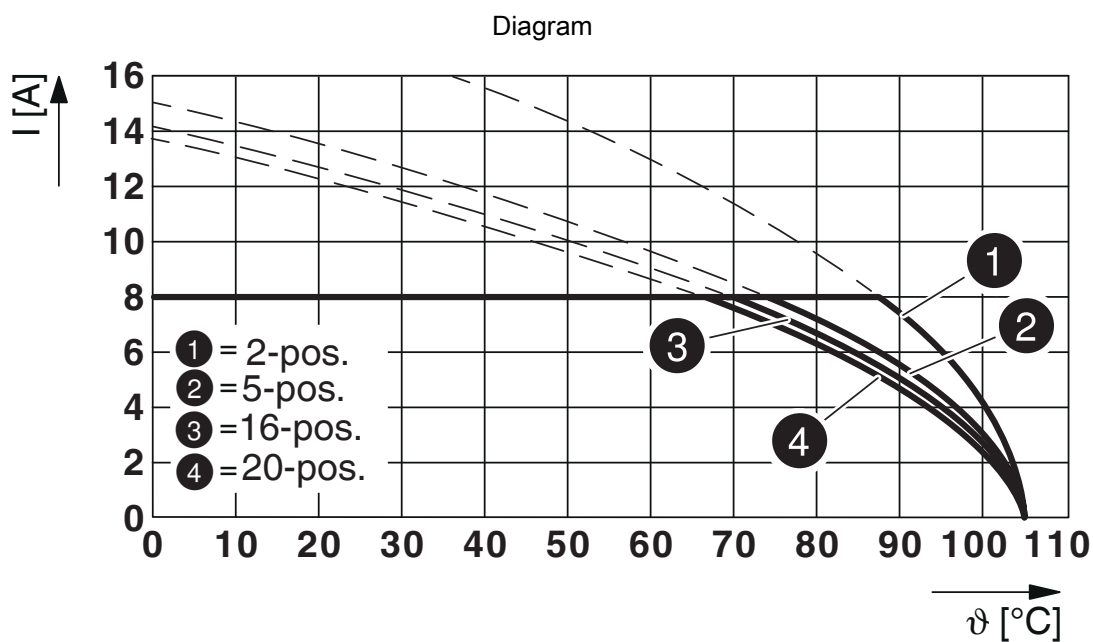


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Type: FK-MCP 1,5/...-STF-3,81 with MC 1,5/...-GF-3,81



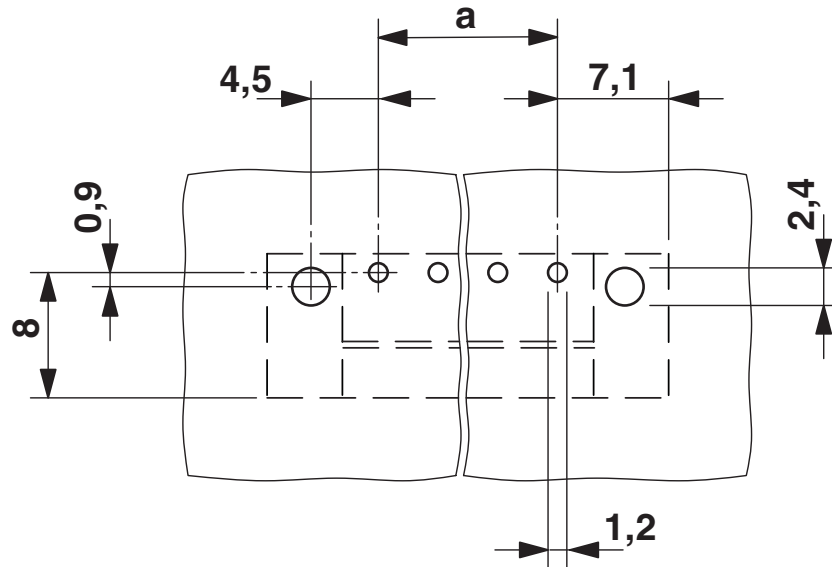
Type: FMC 1,5/...-STF-3,81 with MC 1,5/...-GF-3,81

# MC 1,5/13-GF-3,81 - PCB header

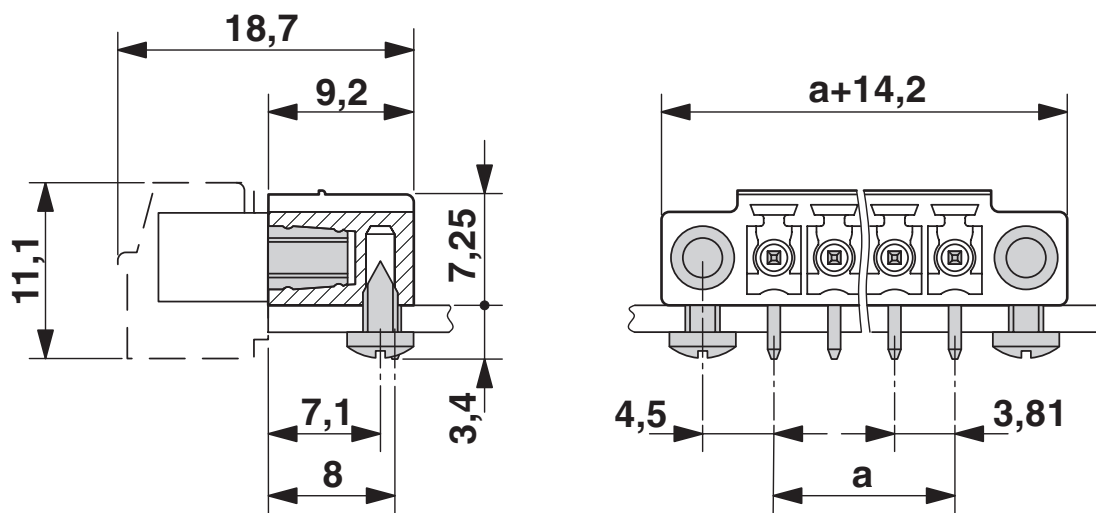
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Drilling plan/solder pad geometry



Dimensional drawing

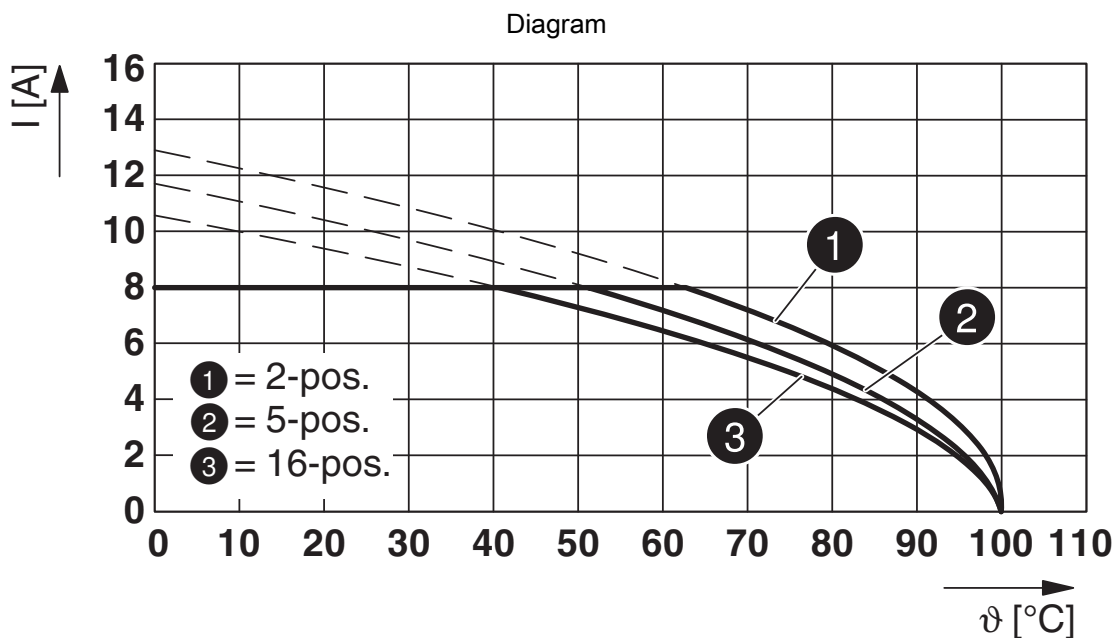


# MC 1,5/13-GF-3,81 - PCB header

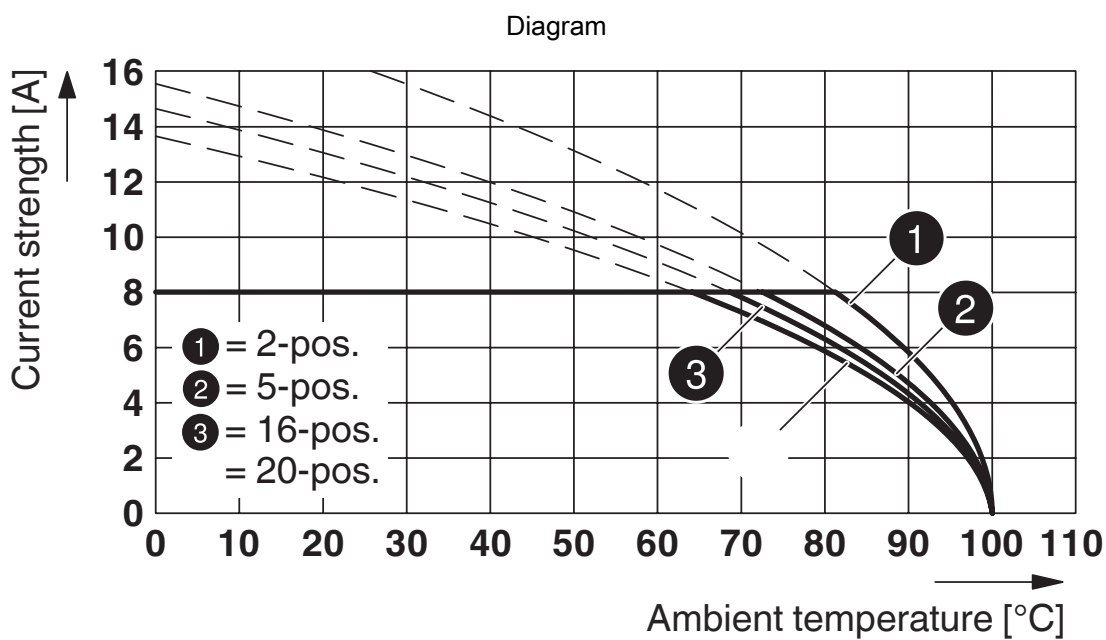


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Type: MCV(W/R) 1,5/...-STF-3,81 with MC 1,5/...-GF-3,81



Type: FRONT-MC 1,5/...-STF-3,81 with MC 1,5/...-GF-3,81

# MC 1,5/13-GF-3,81 - PCB header





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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/pc/products/1827978>

 <b>CSA</b> Approval ID: 13631				
	Nominal voltage $U_N$	Nominal current $I_N$	Cross section AWG	Cross section $\text{mm}^2$
Use group B				
	300 V	8 A	-	-
Use group D				
	300 V	8 A	-	-

 <b>cULus Recognized</b> Approval ID: E60425-20110128				
	Nominal voltage $U_N$	Nominal current $I_N$	Cross section AWG	Cross section $\text{mm}^2$
Use group B				
	300 V	8 A	-	-
Use group D				
	300 V	8 A	-	-

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

# MC 1,5/13-GF-3,81 - PCB header



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## Classifications

### ECLASS

ECLASS-11.0	27460201
ECLASS-12.0	27460201
ECLASS-13.0	27460201

### ETIM

ETIM 9.0	EC002637
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### UNSPSC

UNSPSC 21.0	39121400
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# MC 1,5/13-GF-3,81 - PCB header



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## Environmental product compliance

### EU RoHS

Fulfills EU RoHS substance requirements	Yes, No exemptions
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### 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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# MC 1,5/13-GF-3,81 - PCB header

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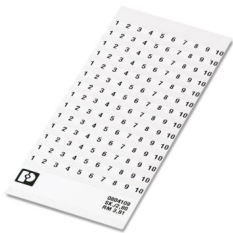


## Accessories

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

0804109

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



Marker card, Sheet, 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, Number of individual labels: 14

### CP-MSTB - Coding profile

1734634

<https://www.phoenixcontact.com/pc/products/1734634>



Coding profile, is inserted into the slot on the plug or inverted header, red insulating material

# MC 1,5/13-GF-3,81 - PCB header

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## MC 1,5/10-LWL 1,5-3,81 - Fiber optic

1841174

<https://www.phoenixcontact.com/pc/products/1841174>

MINI COMBICON fiber optics, 3.81 mm pitch, 10-pos., separable for other numbers of positions (minimum: 2-pos.), inserts into the back of the MC header, color: transparent, dimension a: 1.5 mm



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## MC 1,5/10-LWL 2,3-3,81 - Fiber optic

1841190

<https://www.phoenixcontact.com/pc/products/1841190>

MINI COMBICON fiber optics, 3.81 mm pitch, 10-pos., separable for other numbers of positions (minimum: 2-pos.), inserts into the back of the MC header, color: transparent, dimension a: 2.3 mm



## MC 1,5/13-GF-3,81 - PCB header

1827978

<https://www.phoenixcontact.com/pc/products/1827978>



## MC 1,5/10-LWL 4-3,81 - Fiber optic

1841213

<https://www.phoenixcontact.com/pc/products/1841213>

MINI COMBICON fiber optics, 3.81 mm pitch, 10-pos., separable for other numbers of positions (minimum: 2-pos.), inserts into the back of the MC header, color: transparent, dimension a: 4 mm



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## FMC 1,5/13-STF-3,81 - PCB connectors

1748464

<https://www.phoenixcontact.com/pc/products/1748464>

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, contact connection type: Socket, number of potentials: 13, number of rows: 1, number of positions: 13, number of connections: 13, product range: FMC 1,5/..-STF, pitch: 3.81 mm, connection method: Push-in spring connection, conductor/PCB connection direction: 0 °, plug-in system: COMBICON MC 1,5, locking: Screw locking mechanism, mounting: Screw flange, type of packaging: packed in cardboard



# MC 1,5/13-GF-3,81 - PCB header

1827978

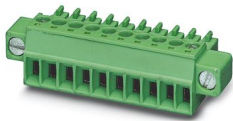
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## MC 1,5/13-STF-3,81 - PCB connector

1827813

<https://www.phoenixcontact.com/pc/products/1827813>



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, contact connection type: Socket, number of potentials: 13, number of rows: 1, number of positions: 13, number of connections: 13, product range: MC 1,5/..-STF, pitch: 3.81 mm, connection method: Screw connection with tension sleeve, screw head form: L Slotted, conductor/PCB connection direction: 0 °, pin layout: Linear pinning, plug-in system: COMBICON MC 1,5, locking: Screw locking mechanism, mounting: Screw flange, type of packaging: packed in cardboard

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## MCVR 1,5/13-STF-3,81 - PCB connector

1828456

<https://www.phoenixcontact.com/pc/products/1828456>



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, contact connection type: Socket, number of potentials: 13, number of rows: 1, number of positions: 13, number of connections: 13, product range: MCVR 1,5/..-STF, 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: Screw locking mechanism, mounting: Screw flange, type of packaging: packed in cardboard

# MC 1,5/13-GF-3,81 - PCB header

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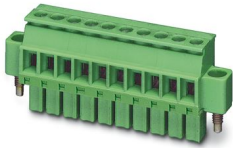
<https://www.phoenixcontact.com/pc/products/1827978>



## MCVW 1,5/13-STF-3,81 - PCB connector

1828605

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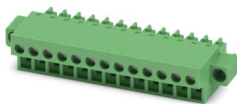
PCB connector, nominal cross section: 1.5 mm<sup>2</sup>, color: green, nominal current: 8 A, rated voltage (III/2): 160 V, contact surface: Tin, contact connection type: Socket, number of potentials: 13, number of rows: 1, number of positions: 13, number of connections: 13, product range: MCVW 1,5/..-STF, 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: Screw locking mechanism, mounting: Screw flange, type of packaging: packed in cardboard

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## FRONT-MC 1,5/13-STF-3,81 - PCB connectors

1850961

<https://www.phoenixcontact.com/pc/products/1850961>



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, contact connection type: Socket, number of potentials: 13, number of rows: 1, number of positions: 13, number of connections: 13, product range: FRONT-MC 1,5/..-STF, pitch: 3.81 mm, connection method: Front screw connection, screw head form: L Slotted, conductor/PCB connection direction: 0 °, plug-in system: COMBICON MC 1,5, locking: Screw locking mechanism, mounting: Screw flange, type of packaging: packed in cardboard

# MC 1,5/13-GF-3,81 - PCB header

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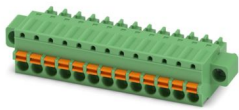
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## FK-MCP 1,5/13-STF-3,81 - PCB connector

1851342

<https://www.phoenixcontact.com/pc/products/1851342>



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, contact connection type: Socket, number of potentials: 13, number of rows: 1, number of positions: 13, number of connections: 13, product range: FK-MCP 1,5/...-STF, pitch: 3.81 mm, connection method: Push-in spring connection, conductor/PCB connection direction: 0 °, plug-in system: COMBICON MC 1,5, locking: Screw locking mechanism, mounting: Screw flange, type of packaging: packed in cardboard

## MCC 1/13-STZF-3,81 - PCB connector

1852477

<https://www.phoenixcontact.com/pc/products/1852477>



PCB connector, nominal cross section: 1 mm<sup>2</sup>, color: green, nominal current: 8 A, rated voltage (III/2): 160 V, contact connection type: Socket, number of potentials: 13, number of rows: 1, number of positions: 13, number of connections: 13, product range: MCC 1/...-STZF, pitch: 3.81 mm, connection method: Crimp connection, conductor/PCB connection direction: 0 °, plug-in system: COMBICON MC 1,5, locking: Screw locking mechanism, mounting: Screw flange, type of packaging: packed in cardboard, Corresponding female crimp contacts with current [A] and conductor cross section range [mm<sup>2</sup>] data: 5A/MCC-MT 0,2-0,35 (1859988); 8A/MCC-MT 0,5-1,0 (1859991)

# MC 1,5/13-GF-3,81 - PCB header

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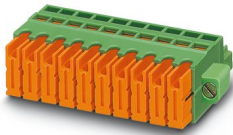
<https://www.phoenixcontact.com/pc/products/1827978>



## QC 0,5/13-STF-3,81 - PCB connectors

1897652

<https://www.phoenixcontact.com/pc/products/1897652>



PCB connector, nominal cross section: 0.5 mm<sup>2</sup>, color: green, nominal current: 6 A, rated voltage (III/2): 200 V, contact surface: Tin, contact connection type: Socket, number of potentials: 13, number of rows: 1, number of positions: 13, number of connections: 13, product range: QC 0,5/...-STF, pitch: 3.81 mm, connection method: Displacement connection, conductor/PCB connection direction: 0 °, plug-in system: COMBICON MC 1,5, locking: Screw locking mechanism, mounting: Screw flange, type of packaging: packed in cardboard

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