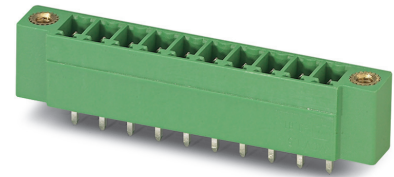


# Data sheet

Order No.: 1830677

Type: MCV 1,5/10-GF-3,81

PCB header



The figure shows a 10-position version of the product

## 1 Main features



- |                         |                     |                        |                     |
|-------------------------|---------------------|------------------------|---------------------|
| • No. of pos.           | 10                  | • Nominal current      | 8 A                 |
| • Nominal cross section | 1.5 mm <sup>2</sup> | • Nominal voltage      | 160 V               |
| • Color                 | green (6021)        | • Connection direction | 90 °                |
| • Pitch                 | 3.81 mm             | • Type of packaging    | packed in cardboard |
| • Mounting type         | Wave soldering      |                        |                     |

## 2 Your advantages

- ✓ Well-known mounting principle allows worldwide use
- ✓ Screwable flange for superior mechanical stability
- ✓ Vertical connection enables multi-row arrangement on the PCB
- ✓ Maximum flexibility when it comes to device design – one header for connectors with different connection technologies



Make sure you always use the latest documentation.

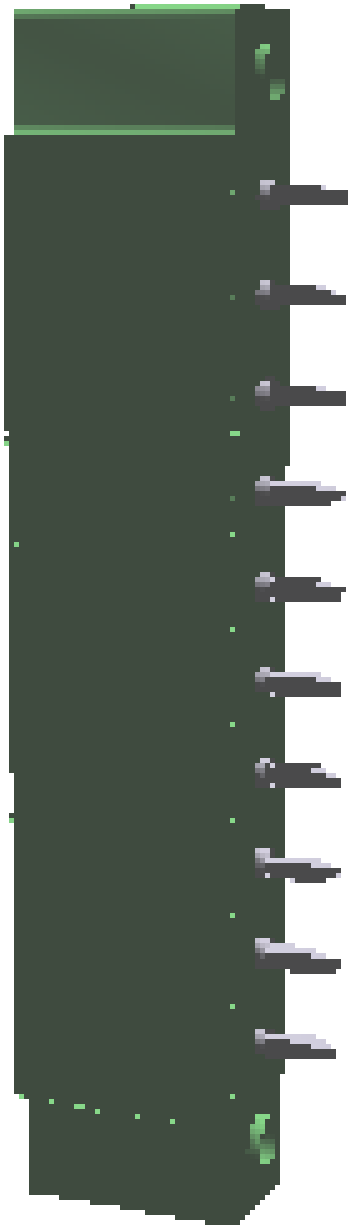
It can be downloaded at: [phoenixcontact.net/product/1830677](https://phoenixcontact.net/product/1830677)

**1830677 MCV 1,5/10-GF-3,81****3 Table of contents**

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1830677 MCV 1,5/10-GF-3,81

4 3D model in PDF can be activated (Acrobat Reader only)



**1830677 MCV 1,5/10-GF-3,81****5 General Technical Data****5.1 item properties**

Order No.	1830677
Type	MCV 1,5/10-GF-3,81
Plug-in system	MINI COMBICON
Product type	PCB header
Type of contact	Male connector
Range of articles	MCV 1,5/..-GF
Pitch	3.81 mm
Number of positions	10
Number of levels	1
Number of connections	10
Number of potentials	10
Mounting type	Wave soldering
Connection direction of the connector to the PCB	90 °
Pin layout	Linear pinning
Solder pins per potential	1
Type	Standard

**1830677 MCV 1,5/10-GF-3,81****6 Mounting****6.1 Flange mounting**

Type of locking	Screw locking
Mounting flange	Threaded flange
Torque	0.3 Nm

**7 Material properties****7.1 Material of metal parts**

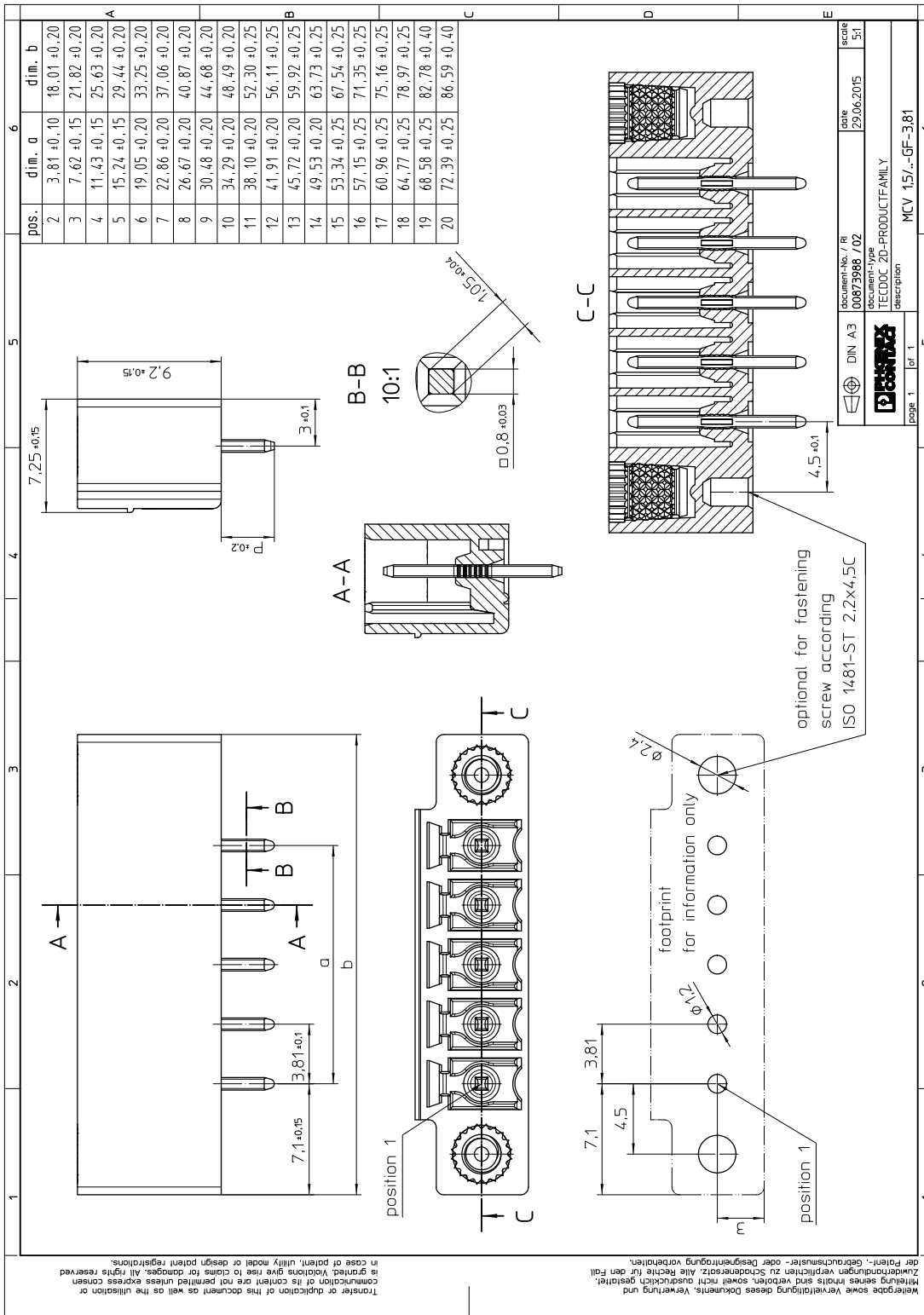
Note	WEEE/RoHS-compliant, whisker-free acc. to IEC 60068-2-82/JEDEC JESD 201
Contact material	Cu alloy
Surface contact area	Nickel (1 - 3 µm Ni) , Tin (3 - 5 µm Sn)
Soldering area surface	Nickel (1 - 3 µm Ni) , Tin (3 - 5 µm Sn)
Surface characteristics	Tin-plated
Insulating material data	Housing
Color	green (6021)
Insulating material	PBT
Insulating material group	IIIa
CTI according to IEC 60112	225
Flammability rating according to UL 94	V0

**1830677 MCV 1,5/10-GF-3,81****8 Dimensions****8.1 Dimensions for the product**

Length	7.25 mm
Width	48.49 mm
Height (without solder pin)	9.2 mm
Total height	12.6 mm
Solder pin [P]	3.4 mm

1830677 MCV 1,5/10-GF-3,81

9 Series drawing



**1830677 MCV 1,5/10-GF-3,81**

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**10 Application****11 Packaging information**

Type of packaging	packed in cardboard
Pieces per package	100

**11.1 Temperature limit values**

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)



**1830677 MCV 1,5/10-GF-3,81****12 Mechanical tests****12.1 Visual examination**

Specification	IEC 61984:2008-10
Visual examination	Test passed
Specification	IEC 60512-1-1:2002-02

**12.2 Dimensional test**

Dimensional test	Test passed
Specification	IEC 60512-1-2:2002-02

**12.3 Resistance of marking**

Resistance of marking	Test passed
Specification	IEC 60068-2-70:1995-12

**12.4 Polarization and coding**

Polarization and coding	Test passed
Specification	IEC 60512-13-5:2006-02
Test force	20 N

**12.5 Contact retention in insert**

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

**1830677 MCV 1,5/10-GF-3,81****13 Insertion and withdrawal forces**

Insertion and withdrawal force	
Specification	Test passed
No. of cycles	25
Insertion strength per pos. approx.	7 N
Withdraw strength per pos. approx.	5 N

**1830677 MCV 1,5/10-GF-3,81****14 Electrical tests**

Rated current / conductor cross section	8 A / 1.5 mm <sup>2</sup>
Rated insulation voltage (III/2)	160 V
Rated surge voltage (III/2)	2.5 kV
Contact resistance	1.6 mΩ
Degree of pollution	2

**14.1 Air and creepage distances**

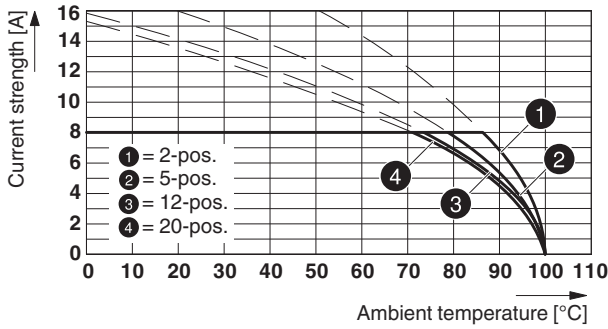
Component	PCB header		
Specification	IEC 60664-1:2007-04		
Mains type	unearthed mains		
Insulating material group	IIIa		
Comparative tracking index (IEC 60112:2003-01)	CTI 225		
Rated insulation voltage	160 V	160 V	250 V
Rated surge voltage	2.5 kV	2.5 kV	2.5 kV
Degree of pollution	3	2	2
Overvoltage category	III	III	II
Minimum clearance case A (inhomogeneous field)	1.5 mm	1.5 mm	1.5 mm
Minimum value of the creepage path requirement in acc. with table	2.5 mm	1.6 mm	2.5 mm

1830677 MCV 1,5/10-GF-3,81

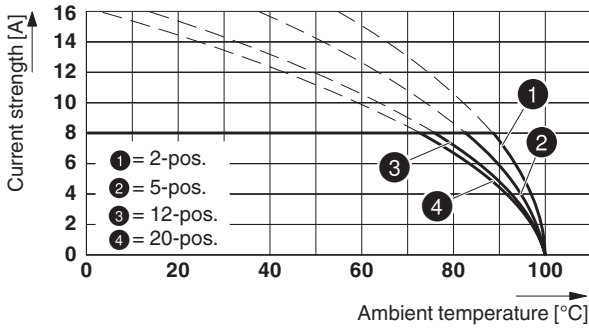
15 Current carrying capacity/derating curves

Specification	IEC 61984:2008-10
Note	Representation based on IEC 60512-5-2:2002-02
Note	For number of positions, see diagram
Reduction factor	0.8
Conductor cross section	1.5 mm <sup>2</sup>

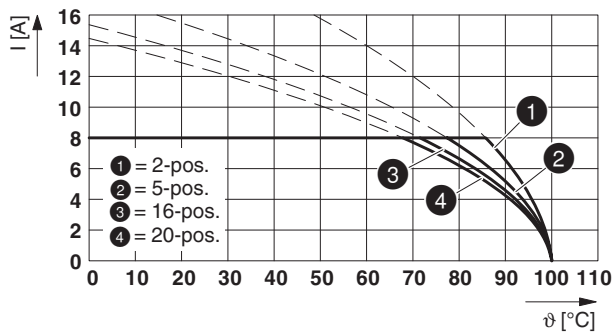
Type: FRONT-MC 1,5/...-STF-3,81 with MCV 1,5/...-GF-3,81



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

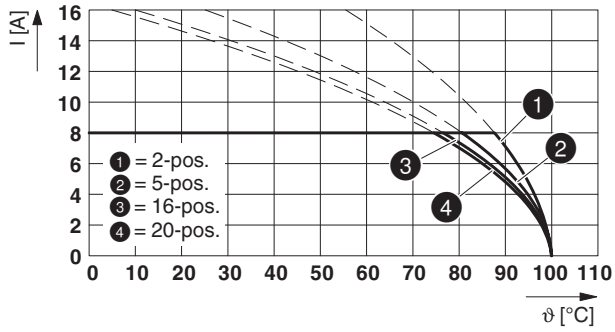


Type: FMC 1,5/...-STF-3,81 with MCV 1,5/...-GF-3,81



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

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



1830677 MCV 1,5/10-GF-3,81

## 16 Environmental and durability tests







### 16.1 Vibration test

Specification	IEC 60068-2-6:2007-12
Result	Test passed
Frequency	10 - 150 - 10 Hz
Sweep speed	1 octave/min
Amplitude	0.35 mm (10 - 60.1 Hz)
Acceleration	5 g (60.1 - 150 Hz)
Test duration per axis	2.5 h
Test directions	X-, Y- and Z-axis
Note	The connected conductor loops were guided to the test sample at a distance of approx. 10 cm.

### 16.2 Insulation resistance

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

**1830677 MCV 1,5/10-GF-3,81****17 Approvals / Certificates**

CSA 	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm <sup>2</sup> ]
<b>Usegroup B</b>				
	300 V	8 A	-	-
<b>Usegroup D</b>				
	300 V	8 A	-	-
IECEE CB Scheme 	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm <sup>2</sup> ]
	160 V	8 A	-	-
EAC 				
VDE Gutachten mit Fertigungsüberwachung 	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm <sup>2</sup> ]
	160 V	8 A	-	-
cULus Recognized 	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm <sup>2</sup> ]
<b>Usegroup B</b>				
	300 V	8 A	-	-
<b>Usegroup D</b>				
	300 V	8 A	-	-
VDE Gutachten mit Fertigungsüberwachung 	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm <sup>2</sup> ]
	160 V	8 A	-	-

**1830677 MCV 1,5/10-GF-3,81****18 Commercial Data**

Order No.	1830677
Type	MCV 1,5/10-GF-3,81
Pieces per package	100
Net weight	3.822 g
GTIN	4017918051327
	Information that applies locally, see link on page 1
Country of origin	Information that applies locally, see link on page 1

**19 corresponding plugs**

Order No.	Type
1748435	FMC 1,5/10-STF-3,81
1827787	MC 1,5/10-STF-3,81
1828427	MCVR 1,5/10-STF-3,81
1828579	MCVW 1,5/10-STF-3,81
1850932	FRONT-MC 1,5/10-STF-3,81
1851313	FK-MCP 1,5/10-STF-3,81
1852448	MCC 1/10-STZF-3,81
1897623	QC 0,5/10-STF-3,81

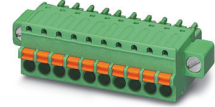
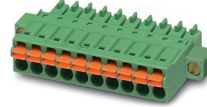
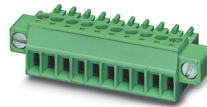
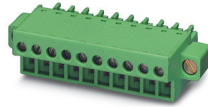
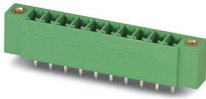
**20 Accessories**

Description	Order No.	Type
	0804109	SK 3,81/2,8:FORTL.ZAHLEN
Coding profile, is inserted into the slot on the plug or inverted header, red insulating material	1734634	CP-MSTB



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

## 21 Combination tests

**MCV 1,5/..-GF****FRONT-MC 1,5/..-STF****MC 1,5/..-STF****FMC 1,5/..-STF****FK-MCP 1,5/..-STF**

IEC 61984

IEC 61984

IEC 61984

IEC 61984

IEC 61984

**Mechanical tests (A)**

Insertion/withdrawal force per position

approx. 7 N / 5 N

approx. 7 N / 5 N

approx. 8 N / 6 N

approx. 8 N / 6 N

Polarization when inserted  
Requirement >20 N

Test passed

Test passed

Test passed

Test passed

Contact holder in insert  
Requirements >20 N

Test passed

Test passed

Test passed

Test passed

**Durability tests (B)**Contact resistance R<sub>1</sub> 1st level

1.6 mΩ

1.2 mΩ

1.5 mΩ

1.2 mΩ

Contact resistance R<sub>1</sub> 2nd level

Insertion/withdrawal cycles

25

25

25

25

Contact resistance R<sub>2</sub>

1.7 mΩ

1.2 mΩ

1.7 mΩ

1.3 mΩ

Rated impulse voltage at sea level  
Voltage waveform ≥ (1.2/50 μs)

2.95 kV

2.95 kV

2.95 kV

2.95 kV

Power-frequency withstand voltage  
Voltage waveform ≥ (50/60 Hz)

1.39 kV

1.39 kV

1.39 kV

1.39 kV

**Thermal tests (C)**

Tested number of positions

20

20

20

20

Tested conductor cross section

1.5 mm<sup>2</sup>1.5 mm<sup>2</sup>1.5 mm<sup>2</sup>1.5 mm<sup>2</sup>

Test current

8 A DC

8 A DC

8 A

8 A

Upper limiting temperature  
Requirements < 100°C

Test passed

Test passed

Test passed

Test passed

**Climatic tests (D)**

Test sequence 1: low temperature storage

-40 °C/2 h

-40 °C/2 h

-40 °C/2 h

-40 °C/2 h

Test sequence 2: heat storage

100 °C/168 h

100 °C/168 h

100 °C/168 h

100 °C/168 h

Test sequence 3: noxious gas storage  
(ISO 6988)0.2 dm<sup>3</sup> SO<sub>2</sub> on 300 dm<sup>3</sup>/  
40 °C/1 cycle0.2 dm<sup>3</sup> SO<sub>2</sub> on 300 dm<sup>3</sup>/  
40 °C/1 cycle0.2 dm<sup>3</sup> SO<sub>2</sub> on 300 dm<sup>3</sup>/  
40 °C/1 cycle0.2 dm<sup>3</sup> SO<sub>2</sub> on 300 dm<sup>3</sup>/  
40 °C/1 cycleRated impulse voltage at sea level  
Voltage waveform ≥ (1.2/50 μs)

2.95 kV

2.95 kV

2.95 kV

2.95 kV

Power-frequency withstand voltage  
Voltage waveform ≥ (50/60 Hz)

1.39 kV

1.39 kV

1.39 kV

1.39 kV

**Environmental and endurance tests (E)**

Specification

IEC 61984:2008-10

IEC 61984:2008-10

IEC 61984:2008-10

IEC 61984:2008-10

Degree of protection

Finger safety with IP20  
test fingerFinger safety with IP20  
test fingerFinger safety with IP20  
test fingerFinger safety with IP20  
test finger