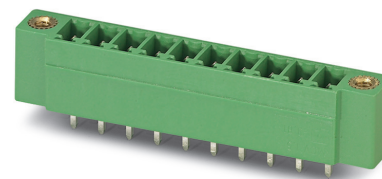


Data sheet

Order No.: 1830664

Type: MCV 1,5/ 9-GF-3,81

PCB header



The figure shows a 10-position version of the product

1 Main features



- | | | | |
|-------------------------|---------------------|------------------------|---------------------|
| • No. of pos. | 9 | • Nominal current | 8 A |
| • Nominal cross section | 1.5 mm ² | • 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.

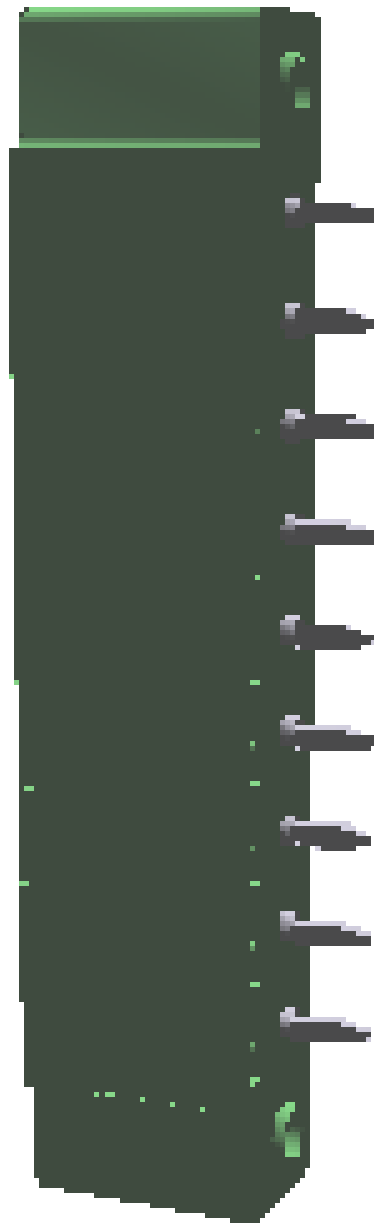
It can be downloaded at: phoenixcontact.net/product/1830664

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1830664 MCV 1,5/ 9-GF-3,81

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



1830664 MCV 1,5/ 9-GF-3,81**5 General Technical Data****5.1 item properties**

Order No.	1830664
Type	MCV 1,5/ 9-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	9
Number of levels	1
Number of connections	9
Number of potentials	9
Mounting type	Wave soldering
Connection direction of the connector to the PCB	90 °
Pin layout	Linear pinning
Solder pins per potential	1
Type	Standard

1830664 MCV 1,5/ 9-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

1830664 MCV 1,5/ 9-GF-3,81

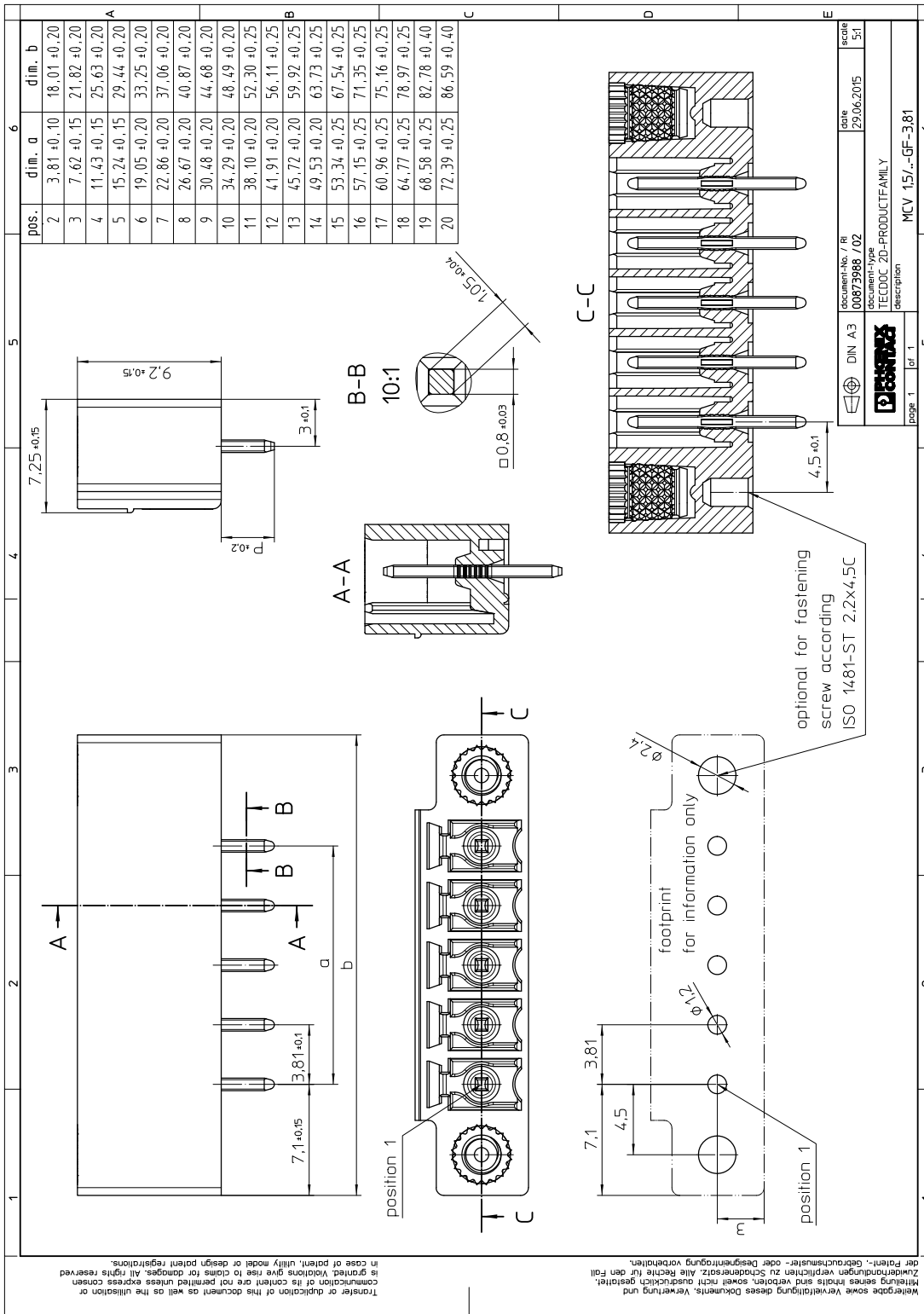
8 Dimensions

8.1 Dimensions for the product

Length	7.25 mm
Width	44.68 mm
Height (without solder pin)	9.2 mm
Total height	12.6 mm
Solder pin [P]	3.4 mm

1830664 MCV 1,5/ 9-GF-3,81

9 Series drawing



DIN A3	document-No. / ri	date	scale
00879988 / 02	00879988 / 02	29.06.2015	1:5:1
TECDOC 2D-PRODUCTFAMILY	document-type		
MCV 1,5/-GF-3,81	description		
page 1	of 1		

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)

1830664 MCV 1,5/ 9-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

1830664 MCV 1,5/ 9-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

1830664 MCV 1,5/ 9-GF-3,81**14 Electrical tests**

Rated current / conductor cross section	8 A / 1.5 mm ²
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

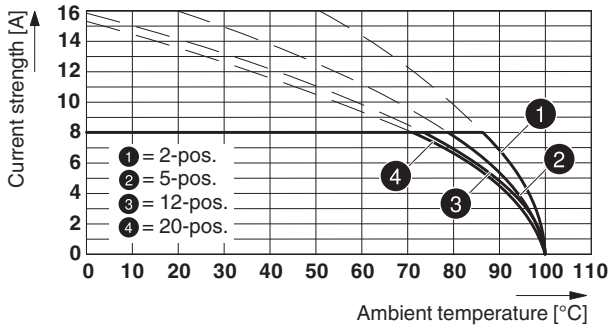
Component	PCB header		
Specification	IEC 60664-1:2007-04		
Mains type	unearthed mains		
Insulating material group	IIIa		
Comparative tracking index (IEC 60112:2003-01)	CTI 225		
Rated insulation voltage	160 V	160 V	250 V
Rated surge voltage	2.5 kV	2.5 kV	2.5 kV
Degree of pollution	3	2	2
Overvoltage category	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

1830664 MCV 1,5/ 9-GF-3,81

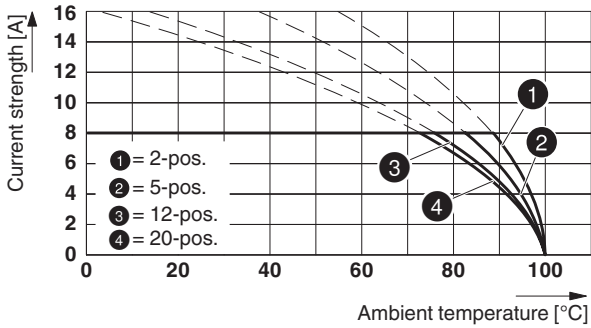
15 Current carrying capacity/derating curves

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 ²

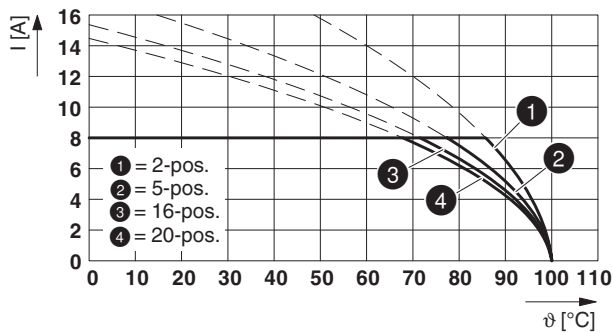
Type: FRONT-MC 1,5/...-STF-3,81 with MCV 1,5/...-GF-3,81



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

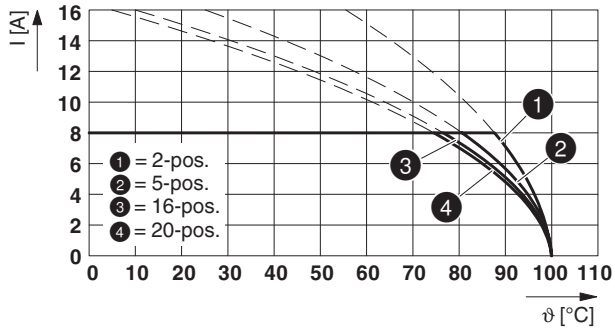


Type: FMC 1,5/...-STF-3,81 with MCV 1,5/...-GF-3,81



1830664 MCV 1,5/ 9-GF-3,81

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



1830664 MCV 1,5/ 9-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

1830664 MCV 1,5/ 9-GF-3,81

17 Approvals / Certificates

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

1830664 MCV 1,5/ 9-GF-3,81**18 Commercial Data**

Order No.	1830664
Type	MCV 1,5/ 9-GF-3,81
Pieces per package	100
Net weight	3.588 g
GTIN	4017918051310
	Information that applies locally, see link on page 1
Country of origin	Information that applies locally, see link on page 1

19 corresponding plugs

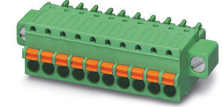
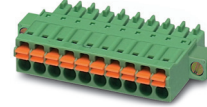
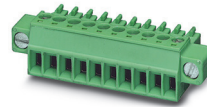
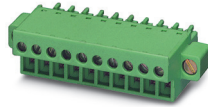
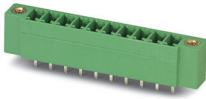
Order No.	Type
1748422	FMC 1,5/ 9-STF-3,81
1827774	MC 1,5/ 9-STF-3,81
1828414	MCVR 1,5/ 9-STF-3,81
1828566	MCVW 1,5/ 9-STF-3,81
1850929	FRONT-MC 1,5/ 9-STF-3,81
1851300	FK-MCP 1,5/ 9-STF-3,81
1852435	MCC 1/ 9-STZF-3,81
1897610	QC 0,5/ 9-STF-3,81

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

1830664 MCV 1,5/ 9-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 R₁ 1st level

1.6 mΩ

1.2 mΩ

1.5 mΩ

1.2 mΩ

Contact resistance R₁ 2nd level

Insertion/withdrawal cycles

25

25

25

25

Contact resistance R₂

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 mm²1.5 mm²1.5 mm²1.5 mm²

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 dm³ SO₂ on 300 dm³/
40 °C/1 cycle0.2 dm³ SO₂ on 300 dm³/
40 °C/1 cycle0.2 dm³ SO₂ on 300 dm³/
40 °C/1 cycle0.2 dm³ SO₂ on 300 dm³/
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