

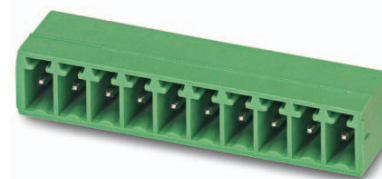
# Data sheet

2018-03-23  
Product version 05  
Document revision 0

**Order No.: 1803358**

**Type: MC 1,5/10-G-3,81**

**Header**



## 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               | • Connection direction | 0 °                 |
| • Pitch                 | 3.81 mm             | • Type of packaging    | packed in cardboard |
| • Mounting type         | Wave soldering      |                        |                     |

## 2 Your advantages

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



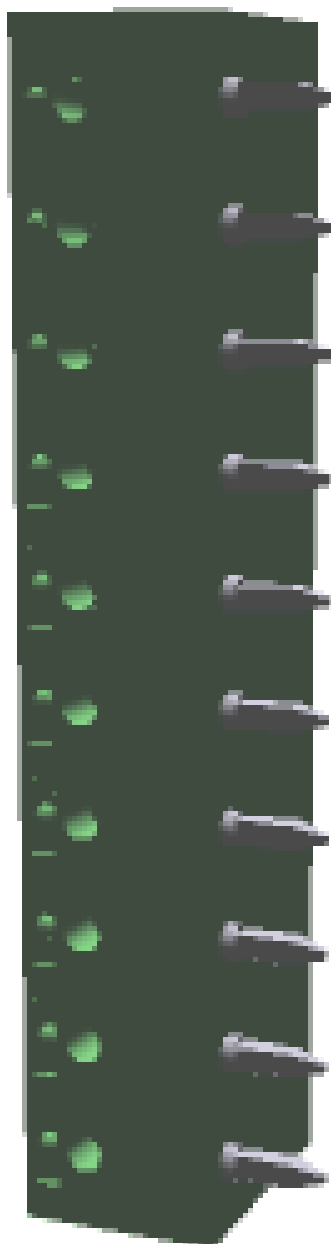
Make sure you always use the latest documentation.  
It can be downloaded at: [phoenixcontact.net/product/1803358](https://phoenixcontact.net/product/1803358)

**3 Table of contents**

1	Main features .....	1
2	Your advantages .....	1
3	Table of contents .....	2
4	3D model in PDF can be activated (Acrobat Reader only) .....	3
5	item properties .....	4
5.1	Material data .....	4
6	Dimensions .....	4
6.1	Dimensions for the product .....	4
6.2	Dimensions for PCB design .....	4
7	Series drawing .....	5
8	Packaging information .....	6
9	Application .....	6
9.1	Temperature limit values .....	6
10	Mechanical tests .....	7
11	Electrical tests .....	8
11.1	Electrical data .....	8
11.2	Air and creepage distances .....	8
12	Current carrying capacity/derating curves .....	9
13	Environmental and durability tests .....	10
13.1	Vibration test .....	10
14	Classification for connectors .....	10
15	Approvals .....	10
16	Commercial Data .....	12
17	corresponding plugs .....	12
18	Accessories .....	12
19	Combination tests .....	13

1803358 MC 1,5/10-G-3,81

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



**1803358 MC 1,5/10-G-3,81****5 item properties**

Order No.	1803358
Type	MC 1,5/10-G-3,81
Type of contact	Male connector
Range of articles	MC 1,5/..-G
Pitch	3.81 mm
Number of positions	10
Drive form screw head	Slotted (L)
Locking	without
Mounting type	Wave soldering
Pin layout	Linear pinning

**5.1 Material data**

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	Ni 1 µm ... 3 µm , Sn 3 µm ... 5 µm	
Soldering area surface	Ni 1 µm ... 3 µm , Sn 3 µm ... 5 µm	
Surface characteristics	Tin-plated	
Insulating material data	Housing	Housing
Insulating material	PBT	
CTI according to IEC 60112	225	
Flammability rating according to UL 94	V0	
Color	green (6021)	

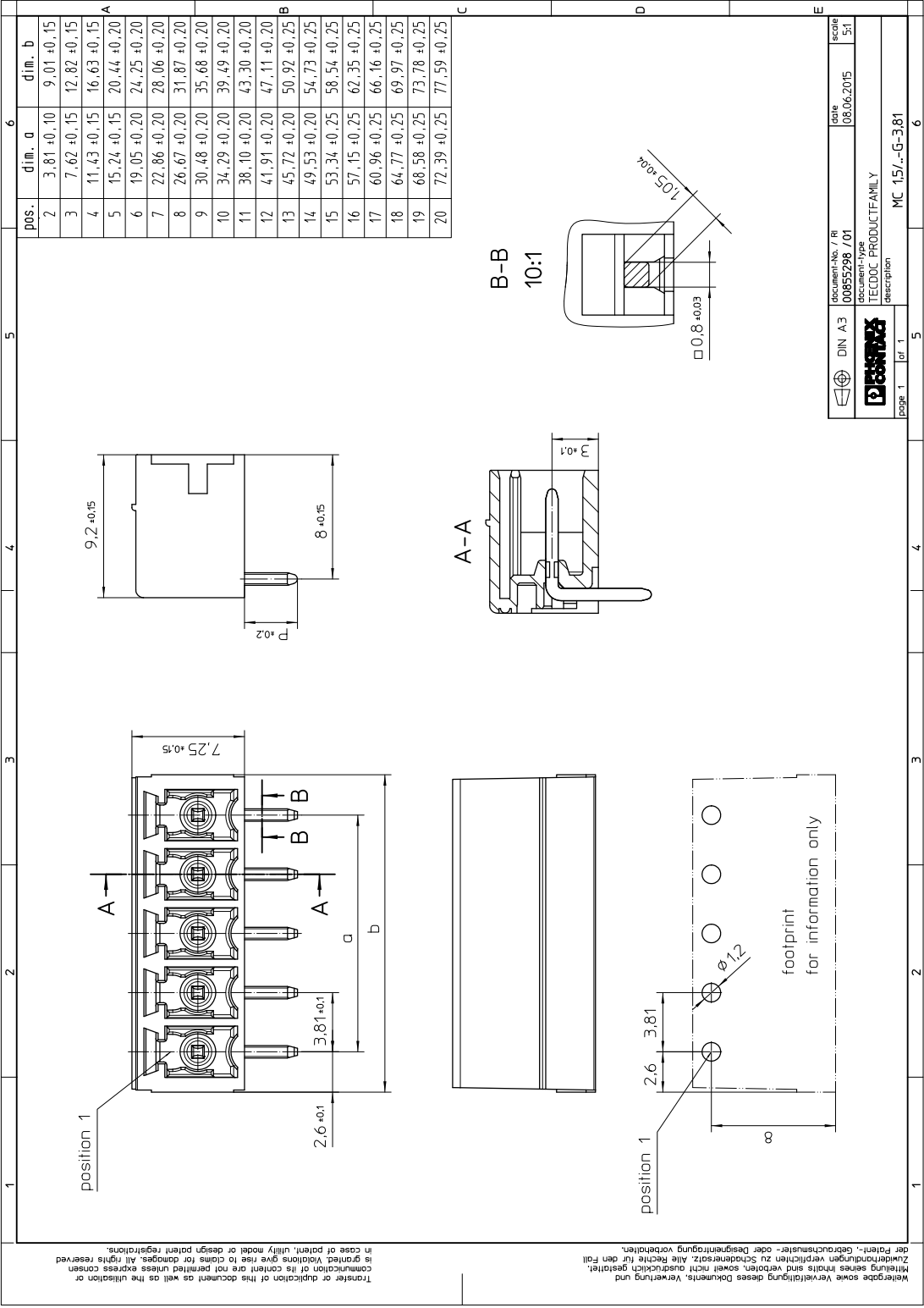
**6 Dimensions****6.1 Dimensions for the product**

Length	9.2 mm
Width	39.49 mm
Height (without solder pin)	7.25 mm
Total height	10.65 mm
Solder pin [P]	3.4 mm
Dimension a	34.29 mm

**6.2 Dimensions for PCB design**

Hole diameter	1.2 mm
Pin dimensions	0,8 x 0,8

7 Series drawing



**1803358 MC 1,5/10-G-3,81**

## 8 Packaging information

Type of packaging	packed in cardboard
Pieces per package	100

## 9 Application

### 9.1 Temperature limit values

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

**1803358 MC 1,5/10-G-3,81****10 Mechanical tests****Mechanical test group A**

Specification	IEC 61984:2008-10
Visual examination	Test passed
Specification	IEC 60512-1-1:2002-02
Dimensional test	Test passed
Specification	IEC 60512-1-2:2002-02
Resistance of marking	Test passed
Specification	IEC 60068-2-70:1995-12
Insertion and withdrawal force	Test passed
Specification	IEC 60512-13-2:2006-02
No. of cycles	25
Insertion strength per pos. approx.	6 N
Withdraw strength per pos. approx.	4 N
Polarization and coding	Test passed
Specification	IEC 60512-13-5:2006-02
Test force	20 N
Contact retention in insert	Test passed
Specification	IEC 60512-15-1:2008-05
Test force per pos.	21 N

**1803358 MC 1,5/10-G-3,81****11 Electrical tests****11.1 Electrical data**

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	1.3 mΩ
Degree of pollution	2

**11.2 Air and creepage distances**

Component	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

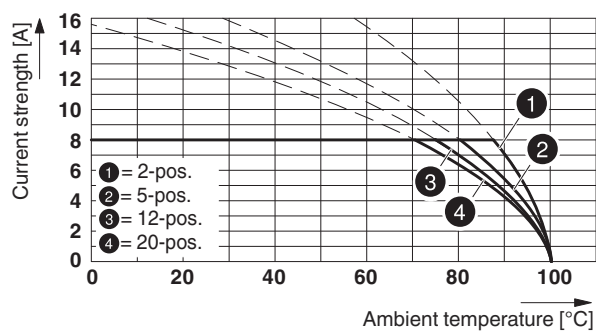


## 1803358 MC 1,5/10-G-3,81

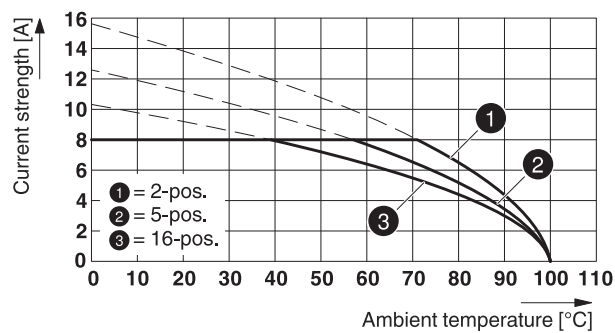
## 12 Current carrying capacity/derating curves

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

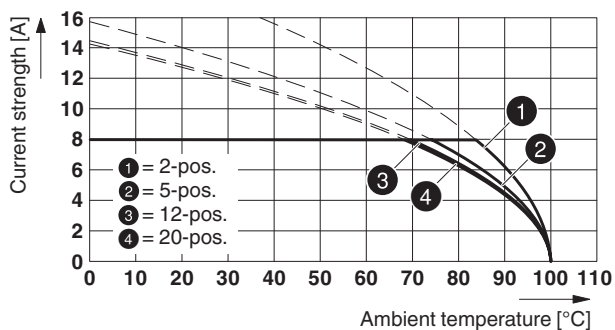
## Type: MC 1,5/...-ST-3,81 with MC 1,5/...-G-3,81



## Type: MCVW 1,5/...-ST-3,81 with MC 1,5/...-G-3,81



## Type: FMC 1,5/...-ST-3,81 with MC 1,5/...-G-3,81




**1803358 MC 1,5/10-G-3,81****13 Environmental and durability tests****13.1 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


**14 Classification for connectors**

Specification	IEC 61984:2008-10
Main features	Connectors without switching capacity (COC)
Construction form	Fixed connectors
Strain relief elements	without strain relief
Protection against electric shock	Not encapsulated - touch-proof when inserted
Protection class	
Protective conductor	without PE
Lock	no


**15 Approvals**

CSA 				
Use group	B	D		
mm <sup>2</sup> /AWG/kcmil				
Voltage	300 V	300 V		
Current	8 A	8 A		

VDE Gutachten mit Fertigungsüberwachung 				
mm <sup>2</sup> /AWG/kcmil				
Voltage	160 V			
Current	8 A			

IECEE CB Scheme 				
mm <sup>2</sup> /AWG/kcmil				
Voltage	160 V			
Current	8 A			

CCA				
mm <sup>2</sup> /AWG/kcmil				
Voltage	160 V			
Current	8 A			

**1803358 MC 1,5/10-G-3,81**cULus Recognized 

Use group	B	D		
mm <sup>2</sup> /AWG/kcmil				
Voltage	300 V	300 V		
Current	8 A	8 A		

EAC 

**1803358 MC 1,5/10-G-3,81****16 Commercial Data**

Order No.	1803358
Type	MC 1,5/10-G-3,81
Pieces per package	100
Net weight	2.6 g
GTIN	4017918045661
	Information that applies locally, see link on page 1
Country of origin	Information that applies locally, see link on page 1

**17 corresponding plugs**

Order No.	Type
1748053	FMC 1,5/10-ST-3,81
1803659	MC 1,5/10-ST-3,81
1827059	MCVW 1,5/10-ST-3,81
1827208	MCVR 1,5/10-ST-3,81
1850741	FRONT-MC 1,5/10-ST-3,81
1851122	FK-MCP 1,5/10-ST-3,81
1852257	MCC 1/10-STZ-3,81
1897474	QC 0,5/10-ST-3,81

**18 Accessories**

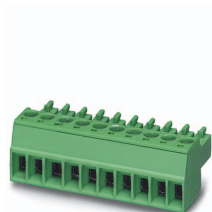
Description	Order No.	Type
	0804109	SK 3,81/2,8:FORTL.ZAHLEN
	0805399	SK 3,81/2,8:UNBEDRUCKT
	0805056	SK 3,81/2,8:SO
Coding profile, is inserted into the slot on the plug or inverted header, red insulating material	1734634	CP-MSTB
MINI-COMBICON optical fibers, pitch 3.81 mm, 10-position, divisible, are snapped into the back of the MC header, color: transparent, dimension a: 1.5 mm	1841174	MC 1,5/10-LWL 1,5-3,81
MINI-COMBICON optical fibers, pitch 3.81 mm, 10-position, divisible, are snapped into the back of the MC header, color: transparent, dimension a: 2.3 mm	1841190	MC 1,5/10-LWL 2,3-3,81
MINI-COMBICON optical fibers, pitch 3.81 mm, 10-position, divisible, are snapped into the back of the MC header, color: transparent, dimension a: 4.0 mm	1841213	MC 1,5/10-LWL 4-3,81
Marker pen, for manual labeling of unprinted Zack strips, smear-proof and waterproof, line thickness 0.5 mm	1051993	B-STIFT

## 1803358 MC 1,5/10-G-3,81

## 19 Combination tests



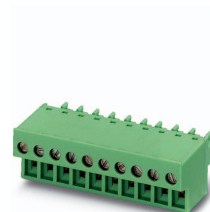
MC 1,5/..-G



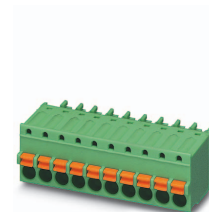
MC 1,5/..-ST



MCVW 1,5/..-ST



FRONT-MC 1,5/..-ST



FK-MCP 1,5/..-ST

Specification	IEC 61984	IEC 61984	IEC 61984	IEC 61984
<b>Mechanical tests (A)</b>				
Insertion/withdrawal force per position	approx. 6 N / 4 N	approx. 8 N / 6 N		
Polarization when inserted Requirement >20 N	Test passed	Test passed		
Contact holder in insert Requirements >20 N	Test passed	Test passed		
<b>Durability tests (B)</b>				
Contact resistance $R_1$	1.3 mΩ	3.7 mΩ		
Insertion/withdrawal cycles	25	25		
Contact resistance $R_2$	1.5 mΩ	3.9 mΩ		
Rated impulse voltage at sea level Voltage waveform $\geq (1.2/50 \mu s)$	2.95 kV	4.8 kV		
Power-frequency withstand voltage Voltage waveform $\geq (50/60 \text{ Hz})$	1.39 kV	2.21 kV		
Insulation resistance Requirements > 5 MΩ	15 TΩ	> 0.2 TΩ		
<b>Thermal tests (C)</b>				
Tested number of positions	20	16		
Tested conductor cross section	1.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>		
Test current	8 A DC	8 A		
Upper limiting temperature Requirements < 100°C	Test passed	Test passed		
<b>Climatic tests (D)</b>				
Test sequence 1: low temperature storage	-40 °C/2 h	-40 °C/2 h		
Test sequence 2: heat storage	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 cycle	0.2 dm <sup>3</sup> SO <sub>2</sub> on 300 dm <sup>3</sup> / 40 °C/1 cycle		
Rated impulse voltage at sea level Voltage waveform $\geq (1.2/50 \mu s)$	2.95 kV	4.8 kV		
Power-frequency withstand voltage Voltage waveform $\geq (50/60 \text{ Hz})$	1.39 kV	2.21 kV		
<b>Environmental and endurance tests (E)</b>				
Specification	IEC 61984:2008-10	IEC 61984:2008-10		
Degree of protection	Finger safety with IP20 test finger	Finger safety with IP20 test finger		

**1803358 MC 1,5/10-G-3,81****MC 1,5/..-G**

Specification

**Mechanical tests (A)**

Insertion/withdrawal force per position

Polarization when inserted  
Requirement >20 NContact holder in insert  
Requirements >20 N**Durability tests (B)**Contact resistance  $R_1$ 

Insertion/withdrawal cycles

Contact resistance  $R_2$ Rated impulse voltage at sea level  
Voltage waveform  $\geq (1.2/50 \mu s)$ Power-frequency withstand voltage  
Voltage waveform  $\geq (50/60 \text{ Hz})$ Insulation resistance  
Requirements > 5 M $\Omega$ **Thermal tests (C)**

Tested number of positions

Tested conductor cross section

Test current

Upper limiting temperature  
Requirements < 100°C**Climatic tests (D)**

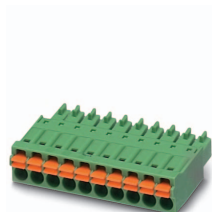
Test sequence 1: low temperature storage

Test sequence 2: heat storage

Test sequence 3: noxious gas storage  
(ISO 6988)Rated impulse voltage at sea level  
Voltage waveform  $\geq (1.2/50 \mu s)$ Power-frequency withstand voltage  
Voltage waveform  $\geq (50/60 \text{ Hz})$ **Environmental and endurance tests (E)**

Specification

Degree of protection

**FMC 1,5/..-ST**

IEC 61984

approx. 8 N / 6 N

Test passed

Test passed

1.7 m $\Omega$ 

25

2 m $\Omega$ 

2.95 kV

1.39 kV

> 0.2 T $\Omega$ 

20

1.5 mm<sup>2</sup>

Test passed

-40 °C/2 h

100 °C/168 h

0.2 dm<sup>3</sup> SO<sub>2</sub> on 300 dm<sup>3</sup>/  
40 °C/1 cycle

2.95 kV

1.39 kV

IEC 61984:2008-10

Finger safety with IP20  
test finger