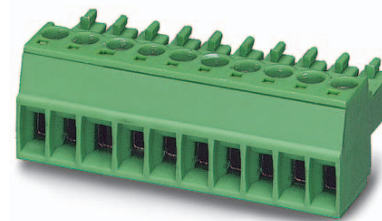


# Data sheet

Order No.: 1803659

Type: MC 1,5/10-ST-3,81

Plug component, Screw connection with tension sleeve



## 1 Main features



• No. of pos.	10	• Nominal current	8 A
• Conductor 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
• Connection method	Screw connection with tension sleeve		

## 2 Your advantages

- ✓ Well-known connection principle allows worldwide use
- ✓ Low temperature rise, thanks to maximum contact force
- ✓ Allows connection of two conductors



Make sure you always use the latest documentation.

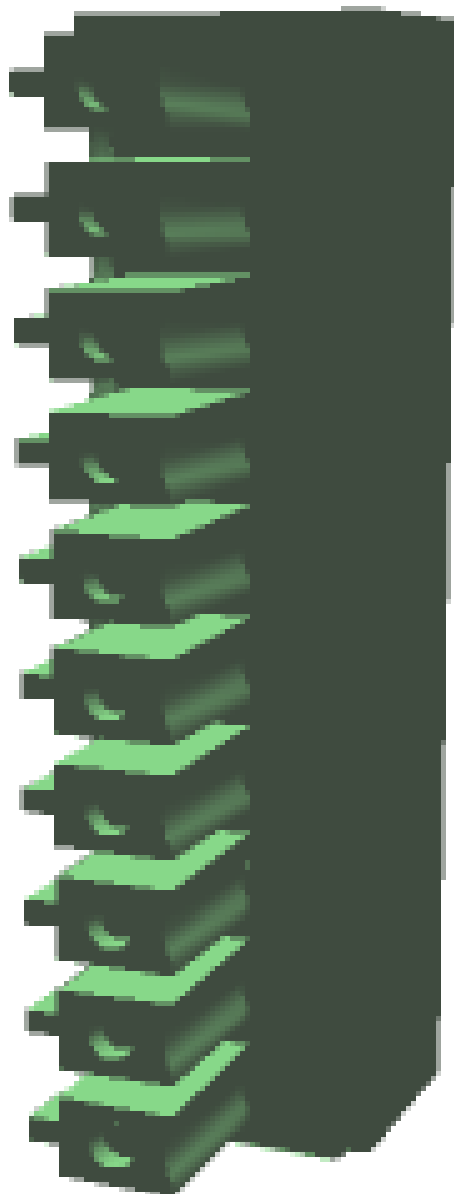
It can be downloaded at: [phoenixcontact.net/product/1803659](https://phoenixcontact.net/product/1803659)

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1803659 MC 1,5/10-ST-3,81

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



**1803659 MC 1,5/10-ST-3,81****5 item properties**

Order No.	1803659
Type	MC 1,5/10-ST-3,81
Type of contact	Female connector
Range of articles	MC 1,5/..-ST
Pitch	3.81 mm
Number of positions	10
Connection method	Screw connection with tension sleeve
Drive form screw head	Slotted (L)
Screw thread	M2
Tightening torque	0.22 Nm ... 0.25 Nm
Note on tightening torque	
Locking	without

**5.1 Connection capacity**

Conductor cross section, solid	0.14 mm <sup>2</sup> to 1.5 mm <sup>2</sup>
Conductor cross section, flexible	0.14 mm <sup>2</sup> to 1.5 mm <sup>2</sup>
Conductor cross section AWG/kcmil	28 to 16
2 conductors with same cross section, solid	0.08 mm <sup>2</sup> to 0.5 mm <sup>2</sup>
2 conductors with same cross section, stranded	0.08 mm <sup>2</sup> to 0.75 mm <sup>2</sup>
Conductor cross section flexible, with ferrule without plastic sleeve	0.25 mm <sup>2</sup> to 1.5 mm <sup>2</sup>
Conductor cross section flexible, with ferrule with plastic sleeve	0.25 mm <sup>2</sup> to 0.5 mm <sup>2</sup>
2 conductors with same cross section, stranded, with ferrule without plastic sleeve	0.25 mm <sup>2</sup> to 0.34 mm <sup>2</sup>
2 conductors with same cross section, stranded, with TWIN ferrules with plastic sleeve	0.5 mm <sup>2</sup> to 0.5 mm <sup>2</sup>
Cylindrical gauge a x b / diameter	2.4 mm x 1.5 mm / 1.6 mm
Stripping length	7 mm

**5.2 Material data**

<b>Material of metal parts</b>		
Note	WEEE/RoHS-compliant, whisker-free acc. to IEC 60068-2-82/JEDEC JESD 201	
Contact material	Cu alloy	
Terminal point surface	Sn 4 µm ... 8 µm	
Surface contact area	Sn 4 µm ... 8 µm	
Surface characteristics	hot-dip tin-plated	
<b>Insulating material data</b>		
Insulating material	Housing	Housing
CTI according to IEC 60112	PA	
Flammability rating according to UL 94	600	
Flammability rating according to UL 94	V0	
Color	green (6021)	
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	

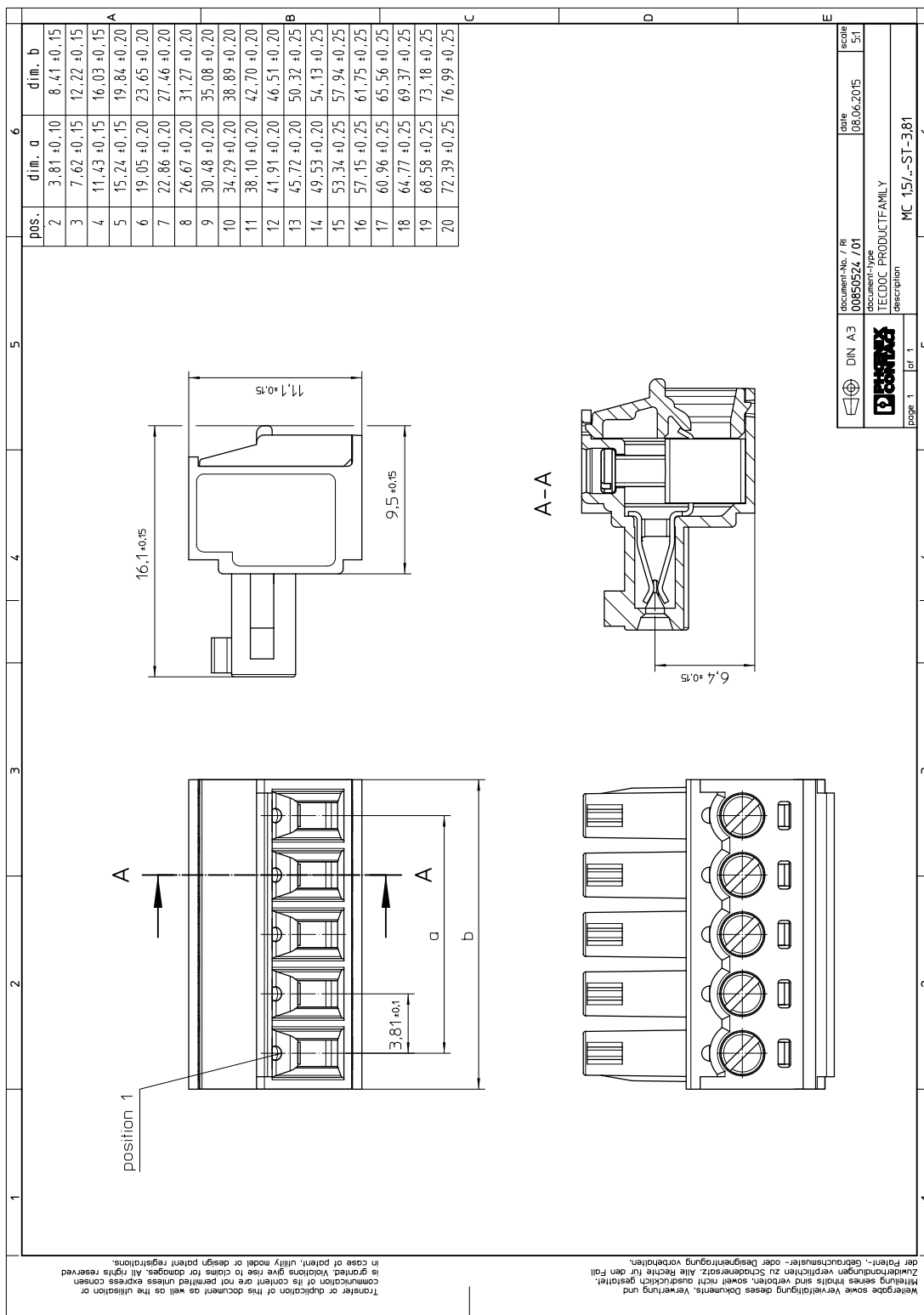
**6 Dimensions**

**1803659 MC 1,5/10-ST-3,81****6.1 Dimensions for the product**

Length	16.1 mm
Width	38.89 mm
Total height	11.1 mm
Dimension a	34.29 mm

1803659 MC 1,5/10-ST-3,81

7 Series drawing



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**1803659 MC 1,5/10-ST-3,81**

## 8 Packaging information

Type of packaging	packed in cardboard
Pieces per package	50

## 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)

**1803659 MC 1,5/10-ST-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

**10.1 Termination and connection method**

Specification	IEC 60999-1:1999-11
Check for damage to conductor or loosening	Test passed

**10.2 Pull-out test**

Termination and connection method: pull-out test	
Specification	IEC 60999-1:1999-11
Result	Test passed
Conductor cross section/conductor type/tractive force actual value	0.14 mm <sup>2</sup> / solid / > 7 N
Conductor cross section/conductor type/tractive force actual value	0.14 mm <sup>2</sup> / stranded / > 7 N
Conductor cross section/conductor type/tractive force actual value	1.5 mm <sup>2</sup> / solid / > 40 N
Conductor cross section/conductor type/tractive force actual value	1.5 mm <sup>2</sup> / stranded / > 40 N

**1803659 MC 1,5/10-ST-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**

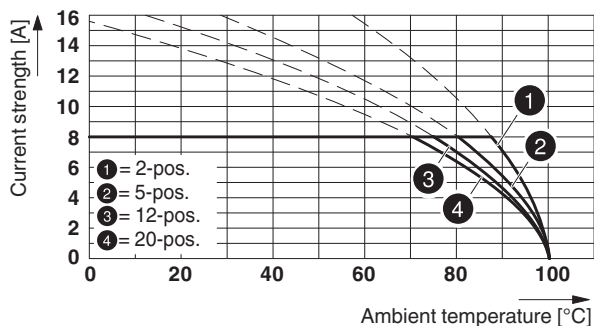
Component	Plug component		
Specification	IEC 60664-1:2007-04		
Mains type	unearthed mains		
Insulating material group	I		
Comparative tracking index (IEC 60112:2003-01)	CTI 600		
Rated insulation voltage	160 V	160 V	320 V
Rated surge voltage	2.5 kV	2.5 kV	2.5 kV
Degree of pollution	3	2	2
Overvoltage 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 mm	1.5 mm	1.6 mm
Note on connection cross section	With connected conductor 1.5 mm <sup>2</sup> (solid).		

1803659 MC 1,5/10-ST-3,81

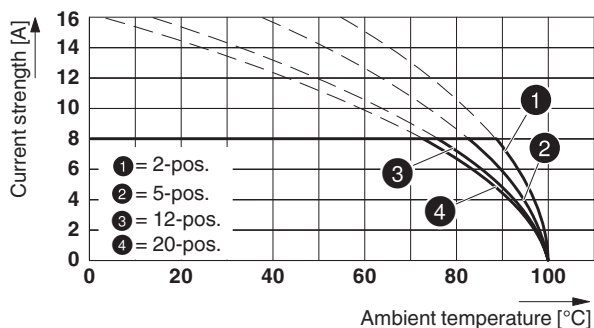
12 Current carrying capacity/derating curves

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>

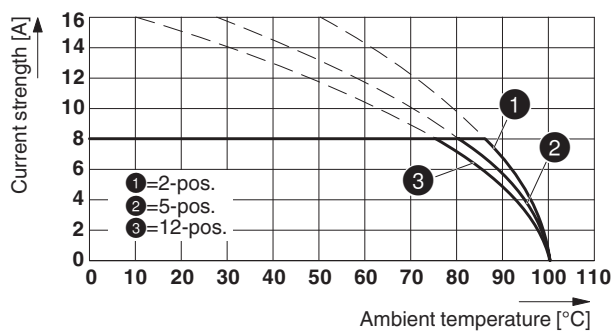
Type: MC 1,5/...-ST-3,81 with MC 1,5/...-G-3,81



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

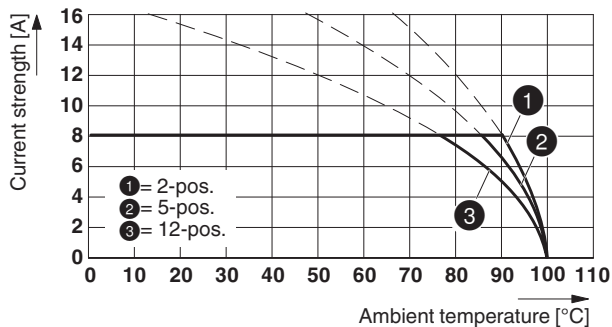


Type: MC 1,5/...-ST-3,81 with MC 1,5/...-G-3,81 THT

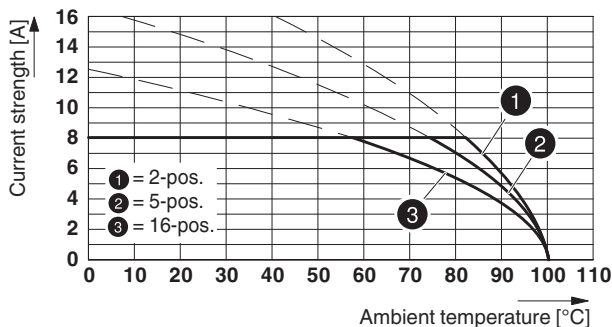


**1803659 MC 1,5/10-ST-3,81**

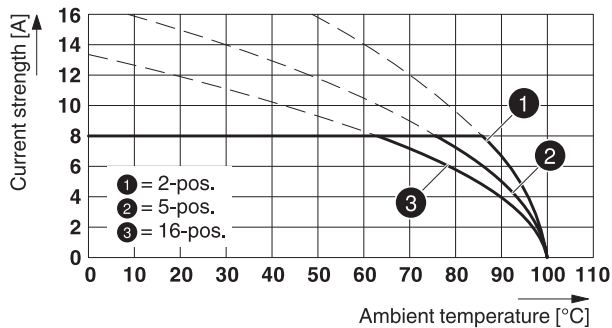
**Type: MC 1,5/...-ST-3,81 with MCV 1,5/...-G-3,81 P26 THR**



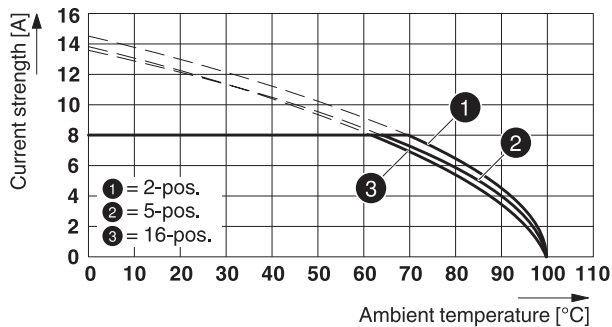
**Type: MC 1,5/...-ST-3,81 with MCD 1,5/...-G1-3,81**



**Type: MC 1,5/...-ST-3,81 with MCDV 1,5/...-G1-3,81**



**Type: MC 1,5/...-ST-3,81 with MCVU 1,5/...-GFD-3,81**



2018-03-23

XX

Document revision 0

**1803659 MC 1,5/10-ST-3,81**

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**Type: MC 1,5/...-ST-3,81 with MCO 1,5/...-GR-3,81**

86537\_2000\_en

**Type: MC 1,5/...-ST-3,81 with IMC 1,5/...-ST-3,81**

88323\_1000\_en




**1803659 MC 1,5/10-ST-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
Connection method	Can be reconnected
Protection against electric shock	Not encapsulated - touch-proof when inserted
Protective conductor	without PE
Lock	no
Connection method	Screw terminal points

**15 Approvals**

CSA 				
Use group	B	D		
mm <sup>2</sup> /AWG/kcmil	28-16	28-16		
Voltage	300 V	300 V		
Current	8 A	8 A		
VDE Gutachten mit Fertigungsüberwachung 				
mm <sup>2</sup> /AWG/kcmil	0.2-1.5			
Voltage	160 V			
Current	8 A			
IECEE CB Scheme 				
mm <sup>2</sup> /AWG/kcmil	0.2-1.5			
Voltage	160 V			
Current	8 A			
CCA				
mm <sup>2</sup> /AWG/kcmil	0.2-1.5			
Voltage	160 V			
Current	8 A			

**1803659 MC 1,5/10-ST-3,81**

Document revision 0

cULus Recognized 

Use group	B	D		
mm <sup>2</sup> /AWG/kcmil	30-14	30-14		
Voltage	300 V	300 V		
Current	8 A	8 A		

EAC 

**1803659 MC 1,5/10-ST-3,81****16 Commercial Data**

Order No.	1803659
Type	MC 1,5/10-ST-3,81
Pieces per package	50
Net weight	7.024 g
GTIN	4017918045968
	Information that applies locally, see link on page 1
Country of origin	Information that applies locally, see link on page 1

**17 corresponding headers**

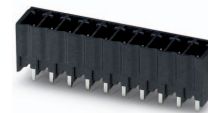
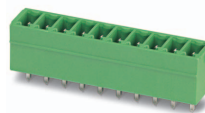
Order No.	Type
1707081	MCV 1,5/10-G-3,81 P14 THR
1707502	MCV 1,5/10-G-3,81 P26 THR
1712966	MCV 1,5/10-G-3,81 P26 THRR56
1782653	MC 1,5/10-G-3,81 P20 THRR56
1803358	MC 1,5/10-G-3,81
1803507	MCV 1,5/10-G-3,81
1827350	SMC 1,5/10-G-3,81
1830033	MCD 1,5/10-G-3,81
1830486	MCDV 1,5/10-G-3,81
1837515	MCVDU 1,5/10-G-3,81
1843156	MCD 1,5/10-G1-3,81
1847819	MCDV 1,5/10-G1-3,81
1860728	EMCV 1,5/10-G-3,81
1861727	MCO 1,5/10-GR-3,81
1861808	MCO 1,5/10-GL-3,81
1897885	EMC 1,5/10-G-3,81
1908842	MC 1,5/10-G-3,81 THT
1943836	MC 1,5/10-G-3,81 THT-R56

**18 Accessories**

Description	Order No.	Type
	0804109	SK 3,81/2,8:FORTL.ZAHLEN
Screwdriver, slot-headed, VDE insulated, size: 0.4 x 2.5 x 80 mm, 2-component grip, with non-slip grip	1205037	SZS 0,4X2,5 VDE
	1834424	KGK-MC 1,5/10
	0803883	SK U/2,8 WH:UNBEDRUCKT
	0805056	SK 3,81/2,8:SO
Marker pen, for manual labeling of unprinted Zack strips, smear-proof and waterproof, line thickness 0.5 mm	1051993	B-STIFT
Insertion bridge for plugs featuring a screw connection with a 3.81 mm pitch	1733495	EBPL 2-3,81
Insertion bridge for plugs featuring a screw connection with a 3.81 mm pitch	1733505	EBPL 3-3,81
Insertion bridge for plugs featuring a screw connection with a 3.81 mm pitch	1733518	EBPL 4-3,81

## 1803659 MC 1,5/10-ST-3,81

## 19 Combination tests

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

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

**MC 1,5/..-G**

IEC 61984

**MCV 1,5/..-G**

IEC 61984

**MC 1,5/..-G-THT**

IEC 61984

**MCV 1,5/..-G-THR**

IEC 61984

approx. 6 N / 4 N

approx. 8 N / 6 N

approx. 7 N / 5 N

approx. 8 N / 6 N

Test passed

Test passed

Test passed

Test passed

Test passed

Test passed

Test passed

Test passed

1.3 m $\Omega$ 1.2 m $\Omega$ 1.4 m $\Omega$ 1.1 m $\Omega$ 

25

25

25

25

1.5 m $\Omega$ 1.2 m $\Omega$ 1.8 m $\Omega$ 1.2 m $\Omega$ 

2.95 kV

2.95 kV

2.95 kV

2.95 kV

1.39 kV

1.39 kV

1.39 kV

1.39 kV

15 T $\Omega$ > 11 T $\Omega$ 10<sup>12</sup>  $\Omega$ > 89 T $\Omega$ 

20

20

12

12

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

8 A DC

8 A DC

8 A DC

8 A

Test passed

Test passed

Test passed

Test passed

-40 °C/2 h

-40 °C/2 h

-40 °C/2 h

-40 °C/2 h

100 °C/168 h

100 °C/168 h

100 °C/168 h

100 °C/168 h

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 cycle

2.95 kV

2.95 kV

2.95 kV

2.95 kV

1.39 kV

1.39 kV

1.39 kV

1.39 kV

IEC 61984:2008-10

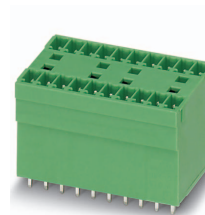
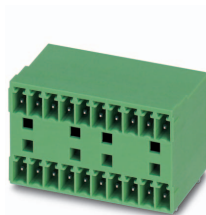
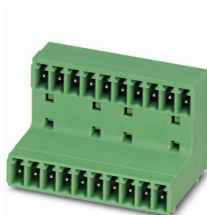
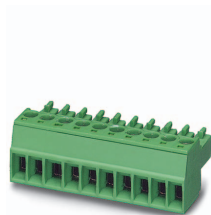
IEC 61984:2008-10

IEC 61984:2008-10

IEC 61984:2008-10

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

**1803659 MC 1,5/10-ST-3,81**



**MC 1,5/10-ST**

**MCD 1,5/10-G**

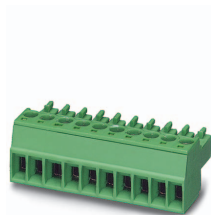
**MCD 1,5/10-G1**

**MCDV 1,5/10-G**

**MCDV 1,5/10-G1**

Specification	IEC 61984	IEC 61984	IEC 61984	IEC 61984
<b>Mechanical tests (A)</b>				
Insertion/withdrawal force per position		approx. 8 N / 5 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>				
Insertion/withdrawal cycles		25		25
Rated impulse voltage at sea level Voltage waveform $\geq (1.2/50 \mu s)$		2.95 kV		2.95 kV
Power-frequency withstand voltage Voltage waveform $\geq (50/60 \text{ Hz})$		1.39 kV		1.39 kV
Insulation resistance Requirements > 5 M $\Omega$		> 2 T $\Omega$		> 0.2 T $\Omega$
<b>Thermal tests (C)</b>				
Tested number of positions		16		16
Tested conductor cross section		1.5 mm <sup>2</sup>		1.5 mm <sup>2</sup>
Test current		8 A		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		2.95 kV
Power-frequency withstand voltage Voltage waveform $\geq (50/60 \text{ Hz})$		1.39 kV		1.39 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

**1803659 MC 1,5/10-ST-3,81**



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

**MCVU 1,5/..-GFD**

**MCO 1,5/..-GR**

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

Specification	IEC 61984	IEC 61984	IEC 61984
<b>Mechanical tests (A)</b>			
Insertion/withdrawal force per position	approx. 8 N / 6 N	approx. 8 N / 6 N	approx. 8 N / 6 N
Polarization when inserted Requirement >20 N	Test passed	Test passed	Test passed
Contact holder in insert Requirements >20 N	Test passed	Test passed	Test passed
<b>Durability tests (B)</b>			
Contact resistance R <sub>1</sub>	3.4 mΩ	2.6 mΩ	1.9 mΩ
Insertion/withdrawal cycles	25	25	25
Contact resistance R <sub>2</sub>	3.4 mΩ	2.7 mΩ	2 mΩ
Rated impulse voltage at sea level Voltage waveform ≥ (1.2/50 μs)	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
Insulation resistance Requirements > 5 MΩ	> 50 GΩ	> 0.1 TΩ	> 0.2 TΩ
<b>Thermal tests (C)</b>			
Tested number of positions	16	10	16
Tested conductor cross section	1.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>
Test current	8 A		
Upper limiting temperature Requirements < 100°C	Test passed	Test passed	Test passed
<b>Climatic tests (D)</b>			
Test sequence 1: low temperature storage	-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
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	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 ≥ (1.2/50 μs)	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
<b>Environmental and endurance tests (E)</b>			
Specification	IEC 61984:2008-10	IEC 61984:2008-10	IEC 61984:2008-10
Degree of protection	Finger safety with IP20 test finger	Finger safety with IP20 test finger	Finger safety with IP20 test finger



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