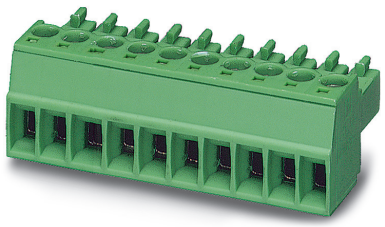
2021-06-17
Product version 06
Document revision 01

Data sheet

Order No.: 1803633

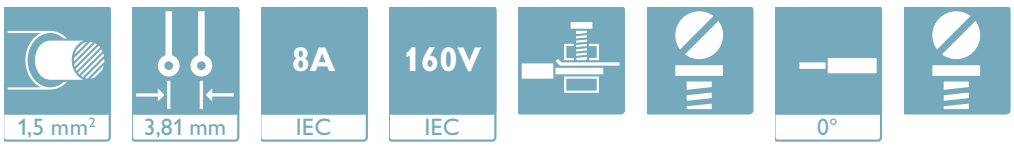
Type: MC 1,5/ 8-ST-3,81

PCB connector, Screw connection with tension sleeve



The figure shows a 10-position version of the product

1 Main features



- No. of pos. 8
- Conductor cross section 1.5 mm²
- Color green (6021)
- Pitch 3.81 mm
- Connection method Screw connection with tension sleeve
- Nominal current 8 A
- Nominal voltage 160 V
- Connection direction 0 °
- Type of packaging packed in cardboard

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/1803633

3 Table of contents

4 General Technical Data

4.1 item properties

Order No.	1803633
Type	MC 1,5/ 8-ST-3,81
Connector system	MINI COMBICON
Product type	PCB connector
Type of contact	Female connector
Range of articles	MC 1,5/..-ST
Pitch	3.81 mm
Number of positions	8
Number of levels	1
Number of connections	8
Number of potentials	8
Connection method	Screw connection with tension sleeve
Screw thread	M2
Drive form screw head	Slotted (L)
Connection direction of the conductor to plug-in direction	0 °
Pin layout	Linear three-way pinning
Solder pins per potential	1
Type	Standard

5 Mounting

5.1 Flange mounting

Type of locking	without
Mounting flange	without

6 Conductor connection

6.1 Connection capacity

Nominal cross section	1.5 mm²
Conductor cross section, rigid	0.14 mm² ... 1.5 mm²
Conductor cross section, flexible	0.14 mm² ... 1.5 mm²
Conductor cross section flexible, with ferrule without plastic sleeve	0.25 mm² ... 1.5 mm²
Conductor cross section flexible, with ferrule with plastic sleeve	0.25 mm² ... 0.75 mm²
2 conductors with same cross section, solid	0.08 mm² ... 0.5 mm²
2 conductors with same cross section, stranded	0.08 mm² ... 0.75 mm²
2 conductors with same cross section, stranded, with ferrule without plastic sleeve	0.25 mm² ... 0.34 mm²
2 conductors with the same cross section flexible with TWIN ferrule and plastic sleeve	0.5 mm² ... 0.5 mm²
Cylindrical gauge a x b / diameter	2.4 mm x 1.5 mm / 1.6 mm
Stripping length	7 mm
Tightening torque	0.22 Nm ... 0.25 Nm

6.2 Connection capacity AWG

Conductor cross section AWG	28 ... 16

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
Terminal point surface	Tin (4 - 8 µm Sn)
Surface contact area	Tin (4 - 8 µm Sn)
Surface characteristics	hot-dip tin-plated

7.2 Material of plastic parts

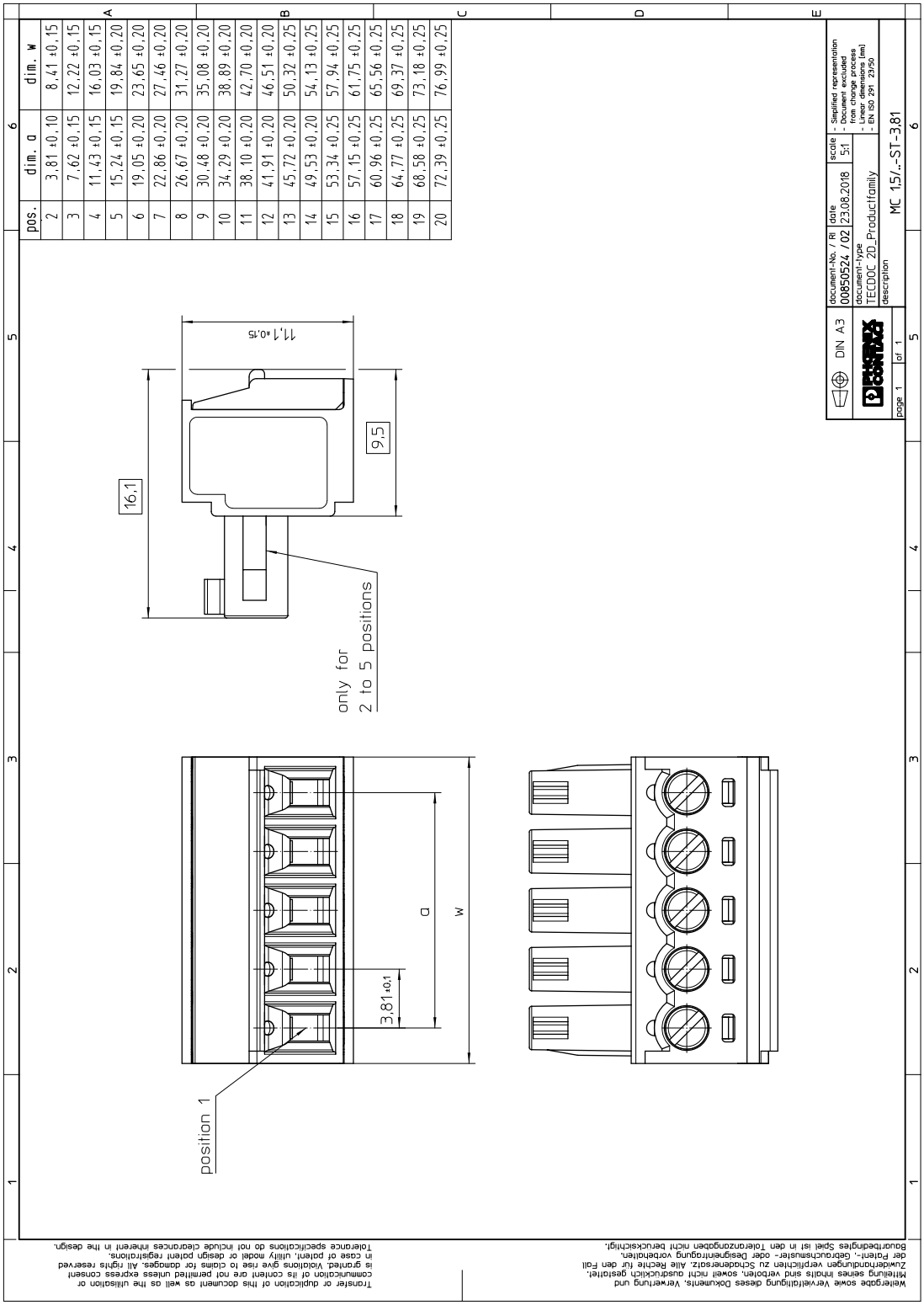
	Housing
Color	green (6021)
Insulating material	PA
Insulating material group	I
CTI according to IEC 60112	600
Flammability rating according to UL 94	V0
Glow wire flammability index GWFI according to EN 60695-2-12	850
Glow wire ignition temperature GWIT according to EN 60695-2-13	775
Temperature for the ball pressure test according to EN 60695-10-2	125 °C

8 Dimensions

8.1 Dimensions for the product

Length	16.1 mm
Width	31.27 mm
Installed height	11.1 mm
Total height	11.1 mm

9 Series drawing



10 Packaging information

Type of packaging	packed in cardboard
Pieces per package	50

11 Application

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)

12 General tests

12.1 Specification

Specification	IEC 61984
Specification	IEC 60999-1
Brief description	Printed-circuit board connector

13 Mechanical tests

13.1 Check for damage to conductor or loosening

Result	Test passed
Specification	IEC 60999-1:1999-11

13.2 Pull-out test

Specification	IEC 60999-1:1999-11
Result	Test passed
Conductor cross section/conductor type/tractive force actual value	0.14 mm^2 / solid / > 7 N
Conductor cross section/conductor type/tractive force actual value	0.14 mm^2 / flexible / > 7 N
Conductor cross section/conductor type/tractive force actual value	1.5 mm^2 / solid / > 40 N
Conductor cross section/conductor type/tractive force actual value	1.5 mm^2 / flexible / > 40 N

13.3 Torque test

Specification	IEC 60999-1:1999-11
Result	Test passed

13.4 Visual examination

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

13.5 Dimensional test

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

13.6 Resistance of marking

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

13.7 Polarization and coding

Polarization when inserted Requirement >20 N	Test passed
Specification	IEC 60512-13-5:2006-02

14 Insertion and withdrawal forces

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

15 Electrical tests

Rated current / conductor cross section	8 A / 1.5 mm²
Rated insulation voltage (III/2)	160 V
Rated surge voltage (III/2)	2.5 kV
Contact resistance	1.3 mΩ
Degree of pollution	2

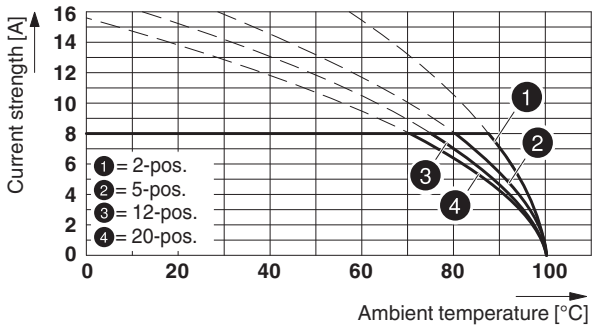
15.1 Air and creepage distances

Component	PCB connector		
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

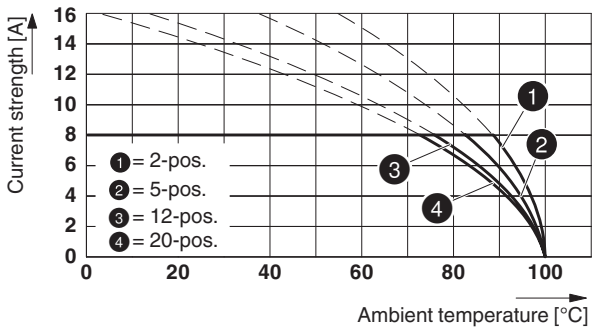
16 Current carrying capacity/derating curves

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 mm²

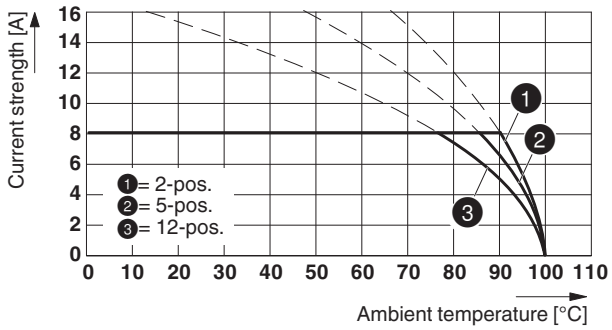
Type: MC 1,5/...-ST-3,81 with MC 1,5/...-G-3,81



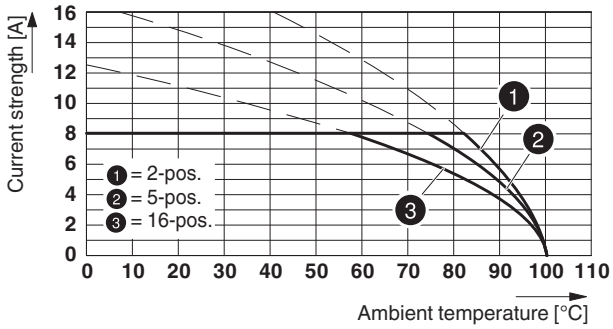
Type: MC 1,5/...-ST-3,81 with MCV 1,5/...-G-3,81



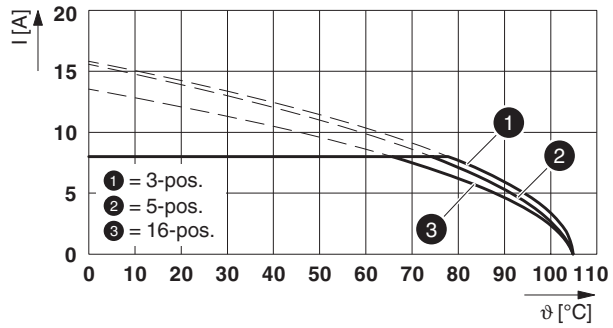
Type: MC 1,5/...-ST-3,81 with MCV 1,5/...-G-3,81 P26 THR



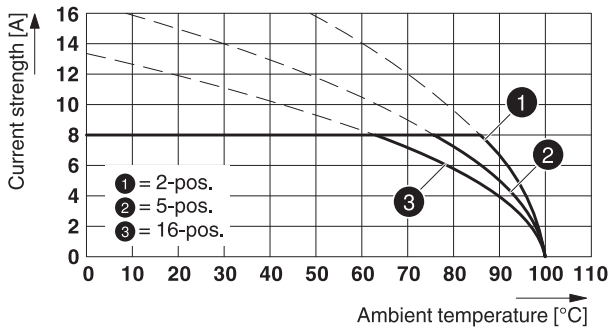
Type: MC 1,5/...-ST-3,81 with MCD 1,5/...-G1-3,81



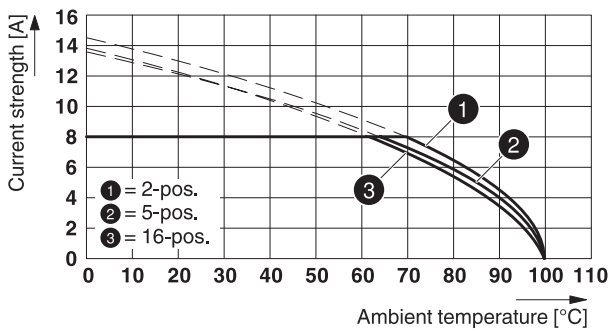
Type: MC 1,5/...-ST-3,81 with MCVK 1,5/...-G-3,81



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

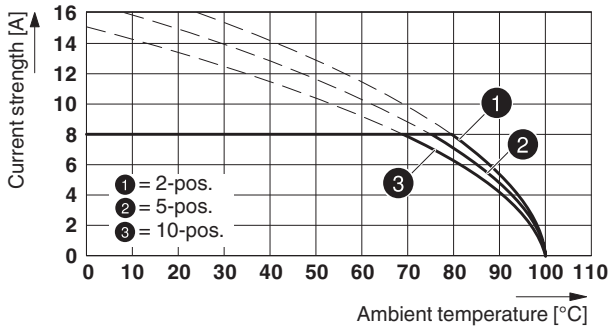


Type: MC 1,5/...-ST-3,81 with MCVU 1,5/...-GFD-3,81

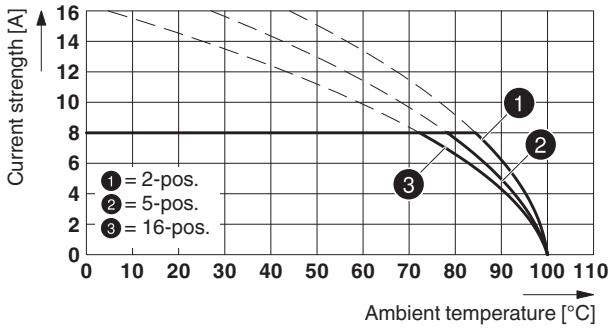


1803633 MC 1,5/ 8-ST-3,81

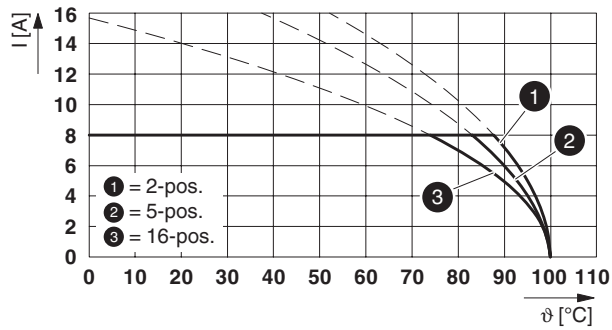
Type: MC 1,5/...-ST-3,81 with MCO 1,5/...-GR-3,81



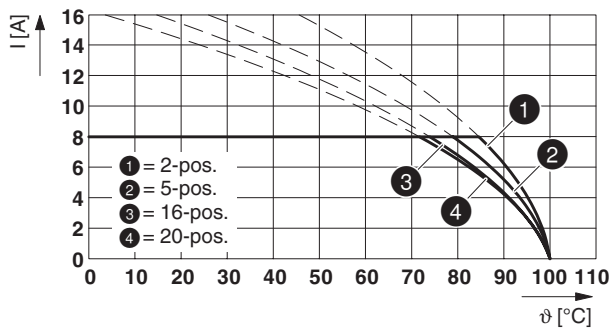
Type: MC 1,5/...-ST-3,81 with IMC 1,5/...-ST-3,81



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



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



17 Environmental and durability tests

17.1 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	5g (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.

17.2 Insulation resistance

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

18 Type approval and special tests

19 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

20 Approvals / Certificates

CSA	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm²]
Usegroup B				
	300 V	8 A	28 - 16	-
Usegroup D				
	300 V	8 A	28 - 16	-

IECEE CB Scheme	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm²]
	160 V	8 A	-	0.2 - 1.5

EAC				

VDE Gutachten mit Fertigungsüberwachung	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm²]
	160 V	8 A	-	0.2 - 1.5

cULus Recognized	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm²]
Usegroup B				
	300 V	8 A	30 - 14	-
Usegroup D				
	300 V	8 A	30 - 14	-

VDE Gutachten mit Fertigungsüberwachung	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm²]
	160 V	8 A	-	0.2 - 1.5

21 Commercial Data

Order No.	1803633
Type	MC 1,5/ 8-ST-3,81
Pieces per package	50
Net weight	6.09 g
GTIN	4017918045944
	Information that applies locally, see link on page 1
	Information that applies locally, see link on page 1

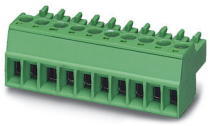
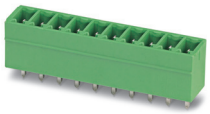
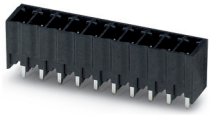
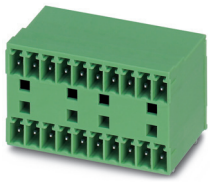
22 corresponding headers

Order No.	Type
1707065	MCV 1,5/ 8-G-3,81 P14 THR
1707489	MCV 1,5/ 8-G-3,81 P26 THR
1712940	MCV 1,5/ 8-G-3,81 P26 THRR56
1782637	MC 1,5/ 8-G-3,81 P20 THRR56
1803332	MC 1,5/ 8-G-3,81
1803484	MCV 1,5/ 8-G-3,81
1827334	SMC 1,5/ 8-G-3,81
1830017	MCD 1,5/ 8-G-3,81
1830460	MCDV 1,5/ 8-G-3,81
1837492	MCVDU 1,5/ 8-G-3,81
1843130	MCD 1,5/ 8-G1-3,81
1847796	MCDV 1,5/ 8-G1-3,81
1860702	EMCV 1,5/ 8-G-3,81
1861701	MCO 1,5/ 8-GR-3,81
1861785	MCO 1,5/ 8-GL-3,81
1897869	EMC 1,5/ 8-G-3,81
1908826	MC 1,5/ 8-G-3,81 THT
1943810	MC 1,5/ 8-G-3,81 THT-R56
1948080	MCD 1,5/ 8-G1-3,81 HT BK

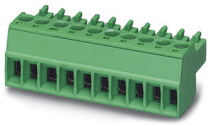
23 Accessories

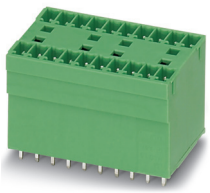
Description	Order No.	Type
Screwdriver, slot-headed, VDE insulated, size: 0.4 x 2.5 x 80 mm, 2-component grip, with non-slip grip	1205037	SZS 0,4X2,5 VDE
	0804109	SK 3,81/2,8:FORTL.ZAHLEN
	1834408	KGG-MC 1,5/ 8
Insertion bridge for plugs featuring a screw connection with a 3.81 mm pitch	1733495	EBPL 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

24 Combination tests

					
	MC 1,5/..-ST	**MC 1,5/..-G**	**MCV 1,5/..-G**	**MCV 1,5/..-G-THR**	**MCD 1,5/..-G1**
	IEC 61984	IEC 61984	IEC 61984	IEC 61984	IEC 61984
Mechanical tests (A)					
Insertion/withdrawal force per position		approx. 6 N / 4 N	approx. 8 N / 6 N	approx. 8 N / 6 N	approx. 8 N / 5 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_1 1st level		1.3 mΩ	1.2 mΩ	1.1 mΩ	1.2 mΩ
Contact resistance R_1 2nd level					2.2 mΩ
Insertion/withdrawal cycles		25	25	25	25
Contact resistance R_2		1.5 mΩ	1.2 mΩ	1.2 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	12	16
Tested conductor cross section		1.5 mm²	1.5 mm²	1.5 mm²	1.5 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 dm^3 SO_2 on 300 dm^3/ 40 °C/1 cycle	0.2 dm^3 SO_2 on 300 dm^3/ 40 °C/1 cycle	0.2 dm^3 SO_2 on 300 dm^3/ 40 °C/1 cycle	0.2 dm^3 SO_2 on 300 dm^3/ 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	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 finger	Finger safety with IP20 test finger	Finger safety with IP20 test finger	Finger safety with IP20 test finger

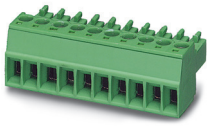
1803633 MC 1,5/ 8-ST-3,81





MC 1,5/..-ST	MCVK 1,5/..-G	MCDV 1,5/..-G1	MCVU 1,5/..-GFD	MCO 1,5/..-GR
IEC 61984	IEC 61984	IEC 61984	IEC 61984	IEC 61984
Mechanical tests (A)				
Insertion/withdrawal force per position	approx. 8 N / 4 N	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	Test passed
Contact holder in insert Requirements >20 N	Test passed	Test passed	Test passed	Test passed
Durability tests (B)				
Contact resistance R_1 1st level	3.3 mΩ	1.7 mΩ	3.4 mΩ	2.6 mΩ
Contact resistance R_1 2nd level		1.7 mΩ		
Insertion/withdrawal cycles	25	25	25	25
Contact resistance R_2	3.3 mΩ	2 mΩ	3.4 mΩ	2.7 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	16	16	16	10
Tested conductor cross section	1.5 mm²	1.5 mm²	1.5 mm²	1.5 mm²
Test current	8 A	8 A	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	105 °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^3 SO_2 on 300 dm^3/ 40 °C/1 cycle	0.2 dm^3 SO_2 on 300 dm^3/ 40 °C/1 cycle	0.2 dm^3 SO_2 on 300 dm^3/ 40 °C/1 cycle	0.2 dm^3 SO_2 on 300 dm^3/ 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	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 finger	Finger safety with IP20 test finger	Finger safety with IP20 test finger	No contact safety (IP00) in acc. with IEC 60529:1989-11 + AMD 1:1999-11 + AMD 2:2013-08

1803633 MC 1,5/ 8-ST-3,81




MC 1,5/..-ST	IMC 1,5/..-ST	SMC 1,5/..-G	MC 1,5/..-G-THR	
IEC 61984	IEC 61984	IEC 61984	IEC 61984	
Mechanical tests (A)				
Insertion/withdrawal force per position	approx. 8 N / 6 N	approx. 7 N / 4 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	
Durability tests (B)				
Contact resistance R_1 1st level	1.9 mΩ	1.3 mΩ	1.3 mΩ	
Contact resistance R_1 2nd level				
Insertion/withdrawal cycles	25	25	25	
Contact resistance R_2	2 mΩ	1.5 mΩ	1.6 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	
Thermal tests (C)				
Tested number of positions	16	16	20	
Tested conductor cross section	1.5 mm²	1.5 mm²	1.5 mm²	
Test current	8 A	8 A	8 A	
Upper limiting temperature Requirements < 100°C	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	
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^3 SO_2 on 300 dm^3/ 40 °C/1 cycle	0.2 dm^3 SO_2 on 300 dm^3/ 40 °C/1 cycle	0.2 dm^3 SO_2 on 300 dm^3/ 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	
Environmental and endurance tests (E)				
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	