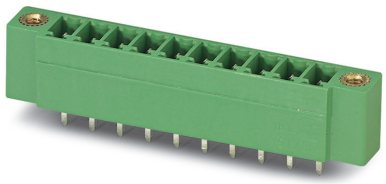
2021-03-04
Product version 04
Document revision 00

Data sheet

Order No.: 1830732

Type: MCV 1,5/16-GF-3,81

PCB header



The figure shows a 10-position version of the product

1 Main features

- No. of pos. 16
- Nominal cross section 1.5 mm²
- Color green (6021)
- Pitch 3.81 mm
- Mounting type Wave soldering
- Nominal current 8 A
- Nominal voltage 160 V
- Connection direction 90 °
- Type of packaging packed in cardboard

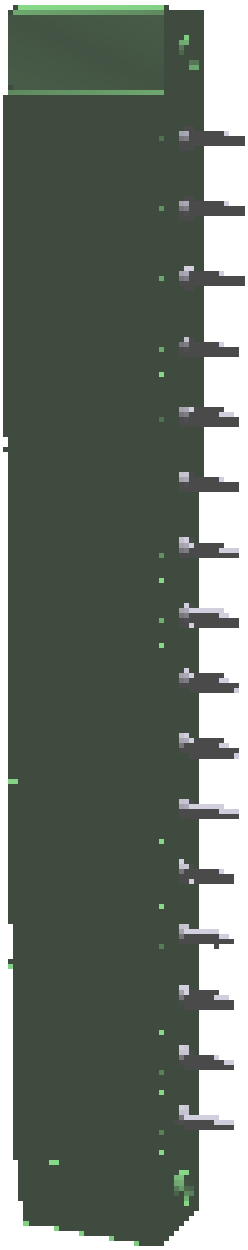
2 Your advantages

- 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/1830732

3 Table of contents

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



5 General Technical Data

5.1 item properties

Order No.	1830732
Type	MCV 1,5/16-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	16
Number of levels	1
Number of connections	16
Number of potentials	16
Mounting type	Wave soldering
Connection direction of the connector to the PCB	90 °
Pin layout	Linear pinning
Solder pins per potential	1
Type	Standard

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

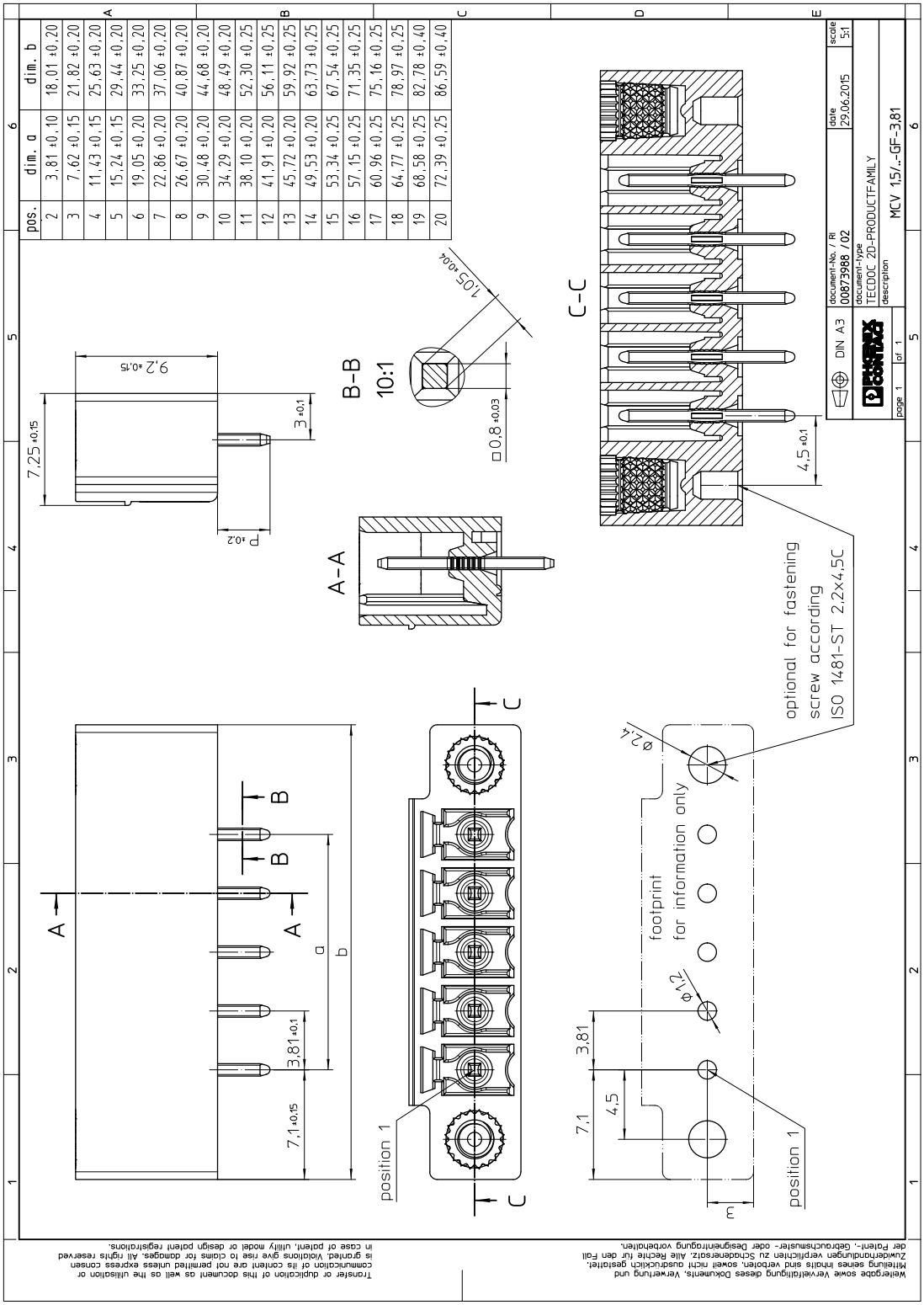
Insulating material data	Housing
Color	green (6021)
Insulating material	PBT
Insulating material group	IIIa
CTI according to IEC 60112	225
Flammability rating according to UL 94	V0

8 Dimensions

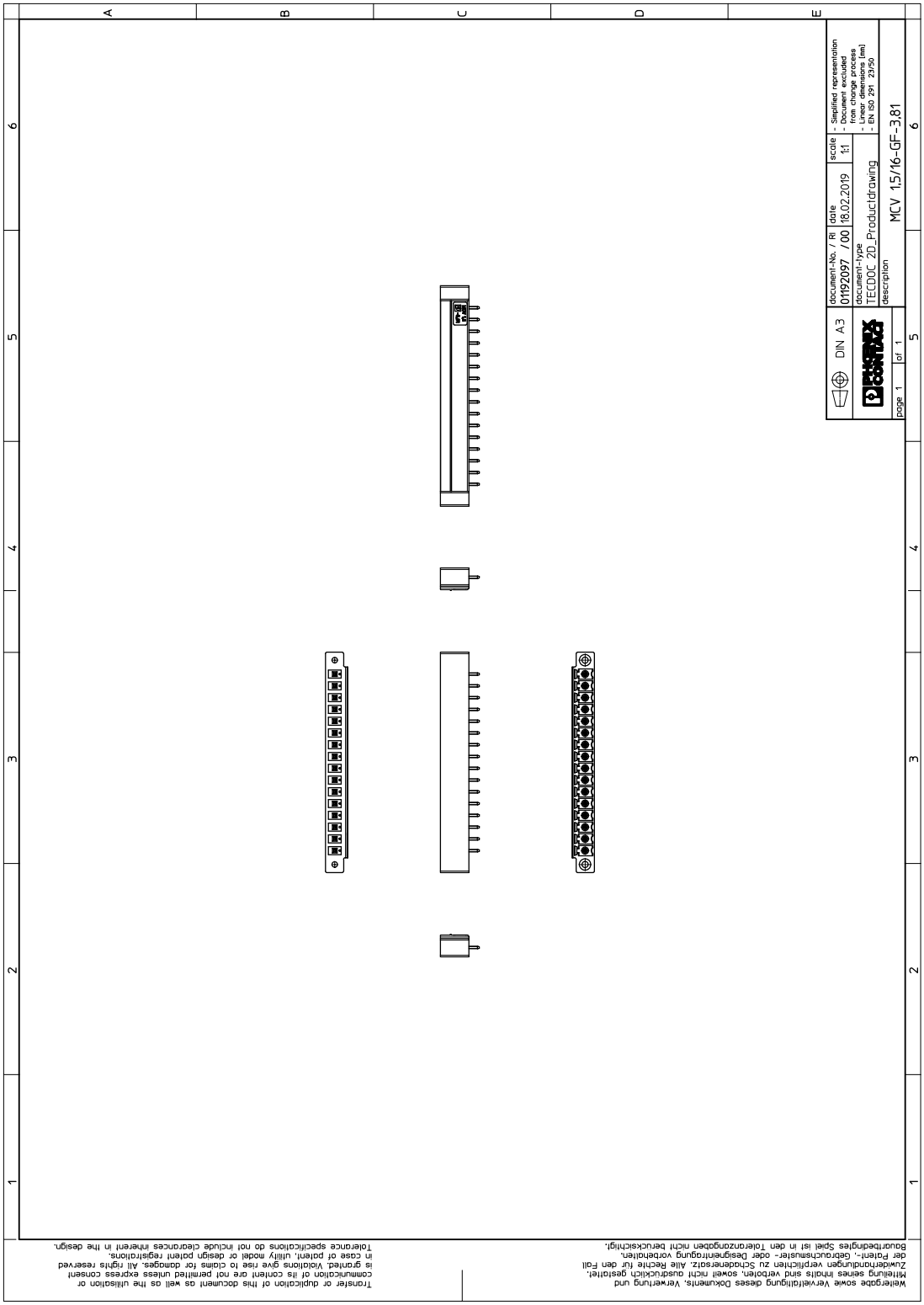
8.1 Dimensions for the product

Length	7.25 mm
Width	71.35 mm
Height (without solder pin)	9.2 mm
Total height	12.6 mm
Solder pin [P]	3.4 mm

9 Series drawing



10 Product drawing



11 Application

12 Packaging information

Type of packaging	packed in cardboard
Pieces per package	50

12.1 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)

13 Mechanical tests

13.1 Visual examination

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

13.2 Dimensional test

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

13.3 Resistance of marking

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

13.4 Polarization and coding

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

13.5 Contact retention in insert

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

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.	7 N
Withdraw strength per pos. approx.	5 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	1.6 mΩ
Degree of pollution	2

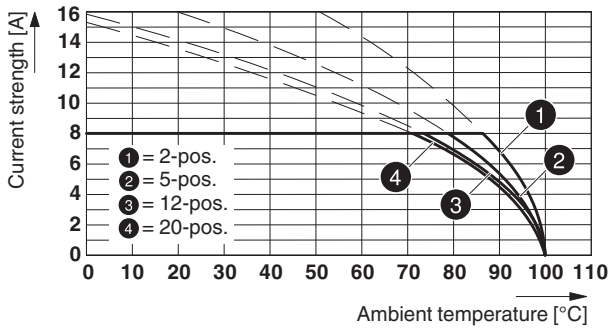
15.1 Air and creepage distances

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

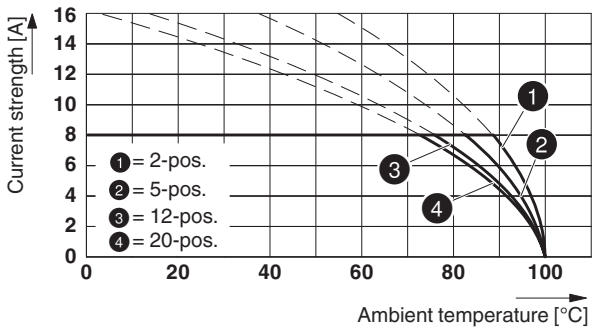
16 Current carrying capacity/derating curves

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

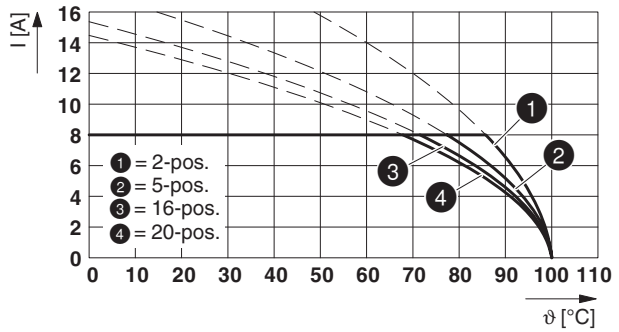
Type: FRONT-MC 1,5/...-STF-3,81 with MCV 1,5/...-GF-3,81



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

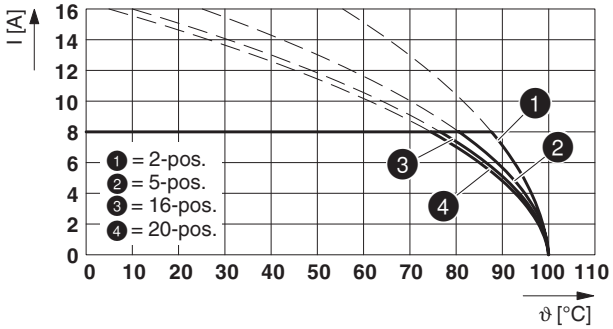


Type: FMC 1,5/...-STF-3,81 with MCV 1,5/...-GF-3,81



1830732 MCV 1,5/16-GF-3,81

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



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	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.

17.2 Insulation resistance

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

18 Approvals / Certificates

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

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

EAC				

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

cULus Recognized	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm²]
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 [mm²]
	160 V	8 A	-	-

19 Commercial Data

Order No.	1830732
Type	MCV 1,5/16-GF-3,81
Pieces per package	50
Net weight	4.838 g
GTIN	4017918051389
	Information that applies locally, see link on page 1
Country of origin	Information that applies locally, see link on page 1

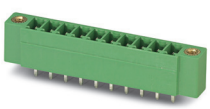
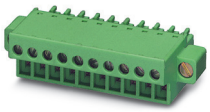
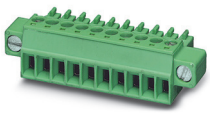
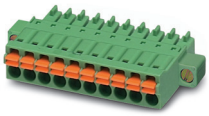
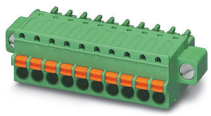
20 corresponding plugs

Order No.	Type
1748493	FMC 1,5/16-STF-3,81
1827842	MC 1,5/16-STF-3,81
1828485	MCVR 1,5/16-STF-3,81
1828634	MCVW 1,5/16-STF-3,81
1850990	FRONT-MC 1,5/16-STF-3,81
1851371	FK-MCP 1,5/16-STF-3,81
1852503	MCC 1/16-STZF-3,81
1897681	QC 0,5/16-STF-3,81

21 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

22 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_1 1st level	1.6 mΩ	1.2 mΩ	1.5 mΩ	1.2 mΩ
Contact resistance R_1 2nd level				
Insertion/withdrawal cycles	25	25	25	25
Contact resistance R_2	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 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