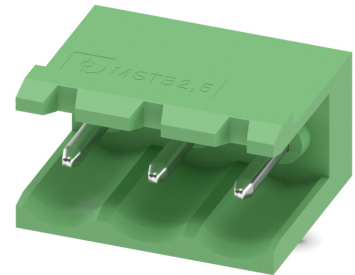


Item No.: 1754452

Type: MSTB 2,5/ 3-G

PCB headers



## 1 Main features



- |                         |                     |                        |                     |
|-------------------------|---------------------|------------------------|---------------------|
| • No. of pos.           | 3                   | • Nominal current      | 12 A                |
| • Nominal cross section | 2.5 mm <sup>2</sup> | • Nominal voltage      | 320 V               |
| • Color                 | green (RAL 6021)    | • Connection direction | 0 °                 |
| • Pitch                 | 5 mm                | • Type of packaging    | packed in cardboard |
| • Mounting type         | Wave soldering      |                        |                     |

## 2 Your advantages

- ✓ Maximum flexibility when it comes to device design – one header for connectors with different connection technologies
- ✓ Easy PCB replacement thanks to plug-in modules
- ✓ Well-known mounting principle allows worldwide use
- ✓ Items that can be aligned in various pitches support flexible and space-saving PCB assembly

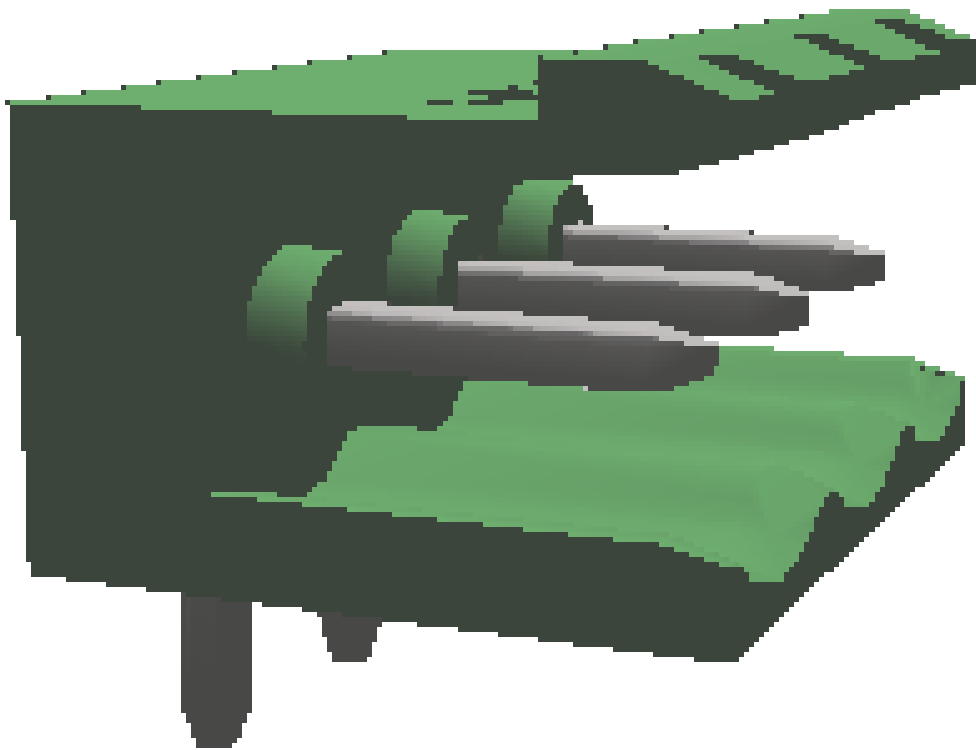


Make sure you always use the latest documentation.  
It can be downloaded at: [phoenixcontact.com/product/1754452](https://phoenixcontact.com/product/1754452)

**1754452 MSTB 2,5/ 3-G****3 Table of contents**

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



**1754452 MSTB 2,5/ 3-G****5 General Technical Data****5.1 item properties**

Item no.	1754452
Type	MSTB 2,5/ 3-G
Product line	COMBICON Connectors M
Connector system	COMBICON MSTB 2,5
Product type	PCB headers
Contact connection type	Pin
Range of articles	MSTB 2,5/..-G
Pitch	5 mm
Number of positions	3
Number of rows	1
Number of connections	3
Number of potentials	3
Connection direction of the connector to the PCB	0 °
Pin layout	Linear pinning
Solder pins per potential	1
Type	Standard

**1754452 MSTB 2,5/ 3-G****6 Mounting****6.1 Flange mounting**

Type of locking	without
Mounting flange	without

**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 - 3 µm Ni) , Tin (3 - 5 µm Sn)
Soldering area surface	Nickel (1.3 - 3 µm Ni) , Tin (3 - 5 µm Sn)
Surface characteristics	Tin-plated
<b>Insulating material data</b>	<b>Housing</b>
Color	green (RAL 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

**1754452 MSTB 2,5/ 3-G****8 Dimensions****8.1 Dimensions for the product**

Length	12 mm
Width	15 mm
Height (without solder pin)	8.57 mm
Total height	11.8 mm
Solder pin [P]	3.23 mm



**1754452 MSTB 2,5/ 3-G****10 Product notes****10.1 General information**

Notes on operation

In accordance with IEC 61984, COMBICON connectors have no switching power (COC). During designated use, they must not be plugged in or disconnected when carrying voltage or under load.

**11 Application****12 Packaging specifications**

Type of packaging	packed in cardboard
-------------------	---------------------

Packing unit	250
--------------	-----

**12.1 Temperature limit values**

Ambient temperature (storage/transport)	-40 °C ... 70 °C
---	------------------

Relative humidity (storage/transport)	30 % ... 70 %
---------------------------------------	---------------

Ambient temperature (assembly)	-5 °C ... 100 °C
--------------------------------	------------------

Ambient temperature (operation)	-40 °C ... 100 °C (dependent on the derating curve)
---------------------------------	---

**1754452 MSTB 2,5/ 3-G****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

**1754452 MSTB 2,5/ 3-G****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.	8 N
Withdraw strength per pos. approx.	6 N

**1754452 MSTB 2,5/ 3-G****15 Electrical tests**

Rated current / conductor cross section	12 A / 2.5 mm <sup>2</sup>
Rated insulation voltage (III/2)	320 V
Rated surge voltage (III/2)	4 kV
Contact resistance	1.7 mΩ
Degree of pollution	2

**1754452 MSTB 2,5/ 3-G****16 Air and creepage distances**

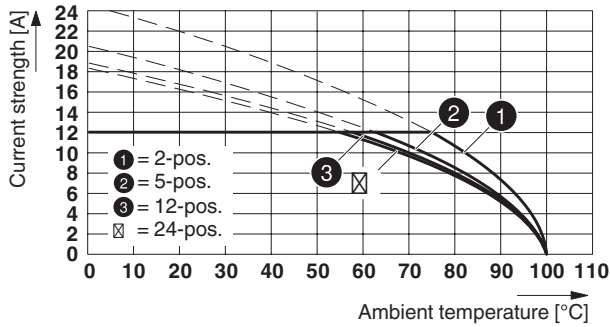
Component	PCB headers		
Specification	IEC 60664-1:2007-04		
Mains type	unearthed mains		
Insulating material group	I		
Comparative tracking index (IEC 60112)	CTI 600		
Rated insulation voltage	320 V	320 V	630 V
Rated surge voltage	4 kV	4 kV	4 kV
Degree of pollution	3	2	2
Overvoltage category	III	III	II
Minimum clearance case A (inhomogeneous field)	3 mm	3 mm	3 mm
Minimum value of the creepage path requirement in acc. with table	4 mm	3 mm	3.2 mm

1754452 MSTB 2,5/ 3-G

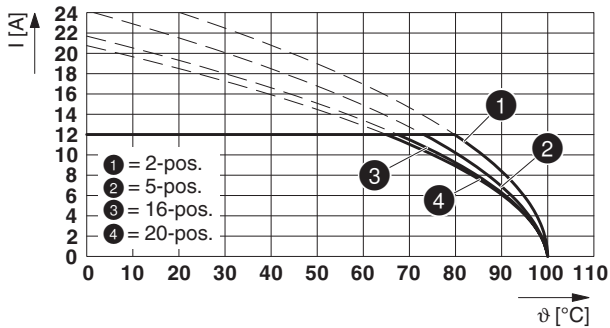
17 Current carrying capacity/derating curves

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	2.5 mm <sup>2</sup>

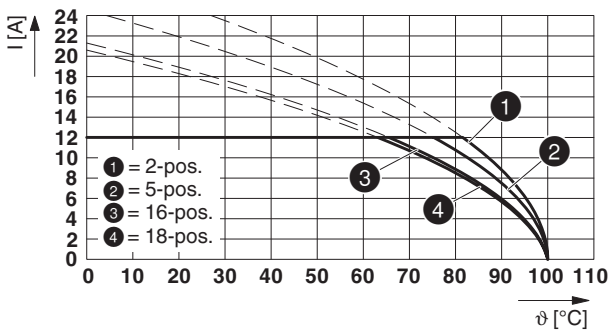
Type: FRONT-MSTB 2,5/..-ST with MSTB 2,5/...-G



Type: FKCT 2,5/...-ST with MSTB 2,5/...-G

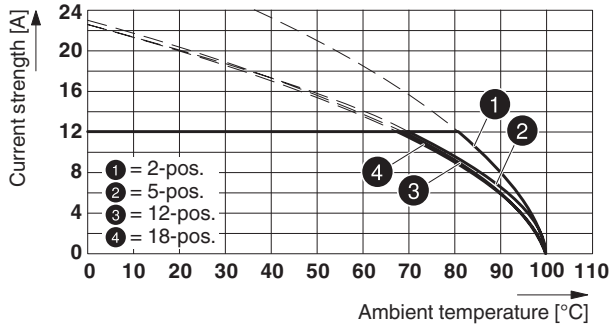


Type: FKCV(W/R) 2,5/...-ST with MSTB 2,5/...-G

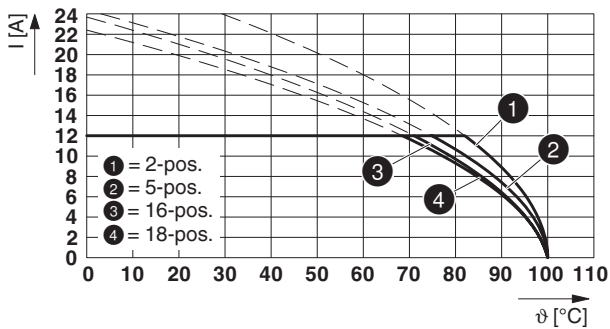


1754452 MSTB 2,5/ 3-G

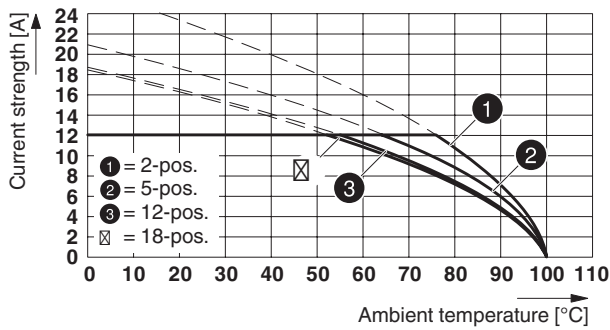
Type: MSTBTP 2,5/...-ST with MSTB 2,5/...-G



Type: FKCN 2,5/...-ST with MSTB 2,5/...-G

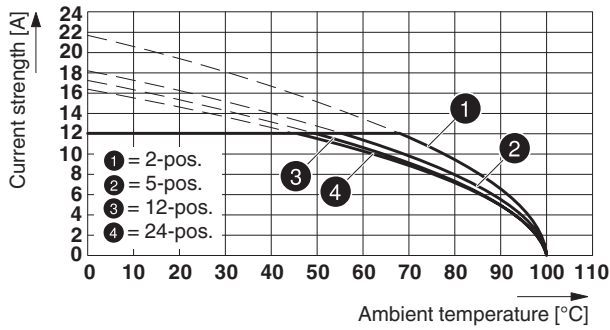


Type: FKCS 2,5/...-ST with MSTB 2,5/...-G

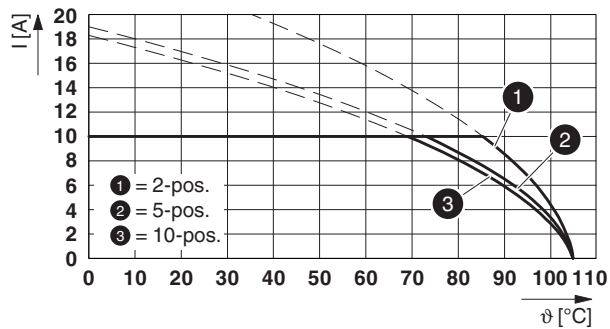


1754452 MSTB 2,5/ 3-G

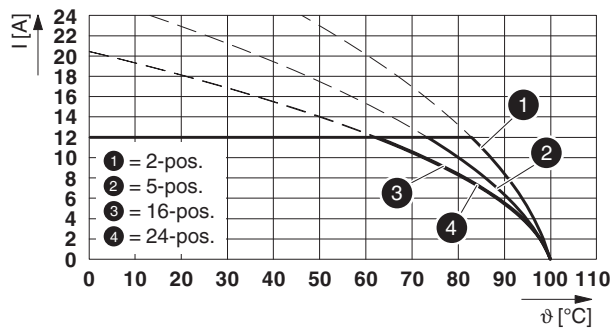
Type: SMSTB 2,5/...-ST with MSTB 2,5/...-G



Type: TVFKC 1,5/...-ST with MSTB 2,5/...-G



Type: MSTB 2,5/...-ST with MSTB 2,5/...-G



**1754452 MSTB 2,5/ 3-G****18 Environmental and durability tests****18.1 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 Hz ... 60.1 Hz)
Acceleration	5g (60.1 Hz ... 150 Hz)
Test duration per axis	2.5 h
Test directions	X-, Y- and Z-axis
Note	The connecting cables must be strain relieved.

**18.2 Insulation resistance**




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

---

## 19 Data transmission

## 1754452 MSTB 2,5/ 3-G

**20 Approvals / Certificates**

CSA 	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm <sup>2</sup> ]
<b>Usegroup B</b>				
	300 V	10 A	-	-
<b>Usegroup D</b>				
	300 V	10 A	-	-
cULus Recognized 	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm <sup>2</sup> ]
<b>Usegroup B</b>				
	300 V	15 A	-	-
<b>Usegroup D</b>				
	300 V	10 A	-	-
VDE Zeichengenehmigung 	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm <sup>2</sup> ]
	250 V	12 A	-	-

**1754452 MSTB 2,5/ 3-G****21 Commercial Data**

Item no.	1754452
Type	MSTB 2,5/ 3-G
Packing unit	250
Net weight	1.05 g
GTIN	4017918028626
	Information that applies locally, see link on page 1

**22 corresponding plugs**

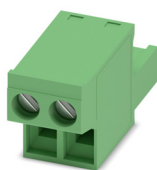
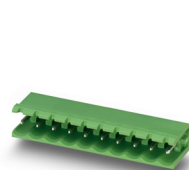
Item no.	Type
1713842	TVFKC 1,5/ 3-ST
1715934	TVFKCL 1,5/ 3-ST
1717974	QC 1,5/ 3-ST
1732755	FKCN 2,5/ 3-ST
1754465	MSTB 2,5/ 3-ST
1765784	MSTBP 2,5/ 3-ST
1768778	SMSTB 2,5/ 3-ST
1779424	FRONT-MSTB 2,5/ 3-ST
1779848	MSTBT 2,5/ 3-ST
1792029	MVSTBR 2,5/ 3-ST
1792537	MVSTBW 2,5/ 3-ST
1909223	FKCT 2,5/ 3-ST
1909728	FKCVR 2,5/ 3-ST
1910047	FKCVW 2,5/ 3-ST
1910364	FKC 2,5/ 3-ST
1921683	QC 1/ 3-ST-BUS
1974740	FKCS 2,5/ 3-ST

**23 Accessories**

Description	Item No.	Type
Keying cap, for forming sections, plugs onto header pin, green insulating material	1755477	MSTB-BL
	0804183	SK 5/3,8:FORTL.ZAHLEN
Mounting flange, for fixing both ends of the header onto the PCB, green insulating material, with M 2 x 14 screws and nuts.	1759981	MSTB-BF
Coding section, inserted into the recess in the header or the inverted plug, red insulating material	1734401	CR-MSTB
Marker pen, for manual labeling of unprinted Zack strips, smear-proof and waterproof, line thickness 0.5 mm	1051993	B-STIFT

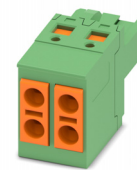
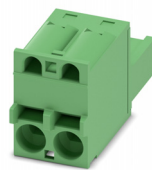
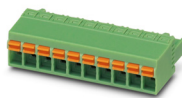
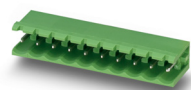
## 1754452 MSTB 2,5/ 3-G

## 24 Combination tests



MSTB 2,5/..-G	FRONT-MSTB 2,5/..-ST	FKCT 2,5/..-ST	FKCVW 2,5/..-ST	MSTBTP 2,5/..-ST
IEC 61984	IEC 61984	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	approx. 9 N / 9 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
<b>Durability tests (B)</b>				
Contact resistance R <sub>1</sub> 1st level	1.7 mΩ	1.1 mΩ	1 mΩ	1.2 mΩ
Contact resistance R <sub>1</sub> 2nd level				
Insertion/withdrawal cycles	25	25	25	25
Contact resistance R <sub>2</sub>	1.8 mΩ	1.2 mΩ	1.2 mΩ	1.3 mΩ
Rated impulse voltage at sea level Voltage waveform ≥ (1.2/50 μs)	4.8 kV	4.8 kV	4.8 kV	4.8 kV
Power-frequency withstand voltage Voltage waveform ≥ (50/60 Hz)	2.21 kV	2.21 kV	2.21 kV	2.21 kV
Insulation resistance Requirements > 5 MΩ	> 5 MΩ	> 5 MΩ	> 5 MΩ	> 5 MΩ
<b>Thermal tests (C)</b>				
Tested number of positions	24	20	18	18
Tested conductor cross section	2.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>
Test current	12 A	12 A	12 A	12 A
Upper limiting temperature Requirements < 100°C	Test passed	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	-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	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	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)	4.8 kV	4.8 kV	4.8 kV	4.8 kV
Power-frequency withstand voltage Voltage waveform ≥ (50/60 Hz)	2.21 kV	2.21 kV	2.21 kV	2.21 kV
<b>Environmental and endurance tests (E)</b>				
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

## 1754452 MSTB 2,5/ 3-G

**MSTB 2,5/..-G**

IEC 61984

**FKCN 2,5/..-ST**

IEC 61984

**FKCS 2,5/..-ST**

IEC 61984

**SMSTB 2,5/..-ST**

IEC 61984

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

IEC 61984

**Mechanical tests (A)**

Insertion/withdrawal force per position	approx. 8 N / 6 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 <sub>1</sub> 1st level	1.1 mΩ	1 mΩ	2.3 mΩ	1.3 mΩ
Contact resistance R <sub>1</sub> 2nd level				
Insertion/withdrawal cycles	25	25	25	25
Contact resistance R <sub>2</sub>	1.1 mΩ	1.1 mΩ	2.3 mΩ	1.4 mΩ
Rated impulse voltage at sea level Voltage waveform ≥ (1.2/50 μs)	4.8 kV	4.8 kV	4.8 kV	4.8 kV
Power-frequency withstand voltage Voltage waveform ≥ (50/60 Hz)	2.21 kV	2.21 kV	2.21 kV	2.21 kV
Insulation resistance Requirements > 5 MΩ	> 5 MΩ	> 5 MΩ	> 5 MΩ	> 5 MΩ

**Thermal tests (C)**

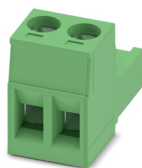
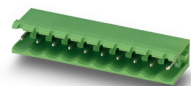
Tested number of positions	18	18	24	10
Tested conductor cross section	2.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>
Test current	12 A	12 A	12 A	10 A
Upper limiting temperature Requirements < 100°C	Test passed	Test passed	Test passed	Test passed

**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	105 °C/168 h
Test sequence 3: noxious gas storage	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	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)	4.8 kV	4.8 kV	4.8 kV	4.8 kV
Power-frequency withstand voltage Voltage waveform ≥ (50/60 Hz)	2.21 kV	2.21 kV	2.21 kV	2.21 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

**1754452 MSTB 2,5/ 3-G****MSTB 2,5/..-G**

IEC 61984

**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<sub>1</sub> 1st levelContact resistance R<sub>1</sub> 2nd level

Insertion/withdrawal cycles

Contact resistance R<sub>2</sub>Rated impulse voltage at sea level  
Voltage waveform ≥ (1.2/50 μs)Power-frequency withstand voltage  
Voltage waveform ≥ (50/60 Hz)Insulation resistance  
Requirements > 5 MΩ**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

Rated impulse voltage at sea level  
Voltage waveform ≥ (1.2/50 μs)Power-frequency withstand voltage  
Voltage waveform ≥ (50/60 Hz)**Environmental and endurance tests (E)**

Specification

Degree of protection

**MSTB 2,5/..-ST**

IEC 61984

approx. 8 N / 6 N

Test passed

Test passed

1.4 mΩ

25

1.5 mΩ

4.8 kV

2.21 kV

&gt; 5 MΩ

24

2.5 mm<sup>2</sup>

12 A

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

4.8 kV

2.21 kV

IEC 61984:2008-10

Finger safety with IP20  
test finger