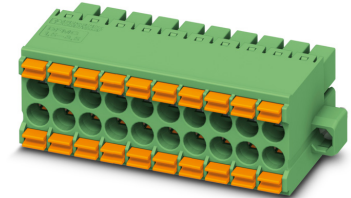


Data sheet

Item No.: 1790438

Type: DFMC 1,5/16-STF-3,5

PCB connector, Push-in spring connection



The figure shows a 10-pos. version with 20 contacts

1 Main features



- | | | | |
|---------------------------|---------------------------|------------------------|---------------------|
| • No. of pos. | 16 | • Nominal current | 8 A |
| • Conductor cross section | 1.5 mm ² | • Nominal voltage | 160 V |
| • Color | green (RAL 6021) | • Connection direction | 0 ° |
| • Pitch | 3.5 mm | • Type of packaging | packed in cardboard |
| • Connection method | Push-in spring connection | | |

2 Your advantages

- ✓ Time saving push-in connection, tools not required
- ✓ Defined contact force ensures that contact remains stable over the long term
- ✓ Intuitive operation due to color-coded actuating push button
- ✓ Optimized for tight installation situations: operation and conductor connection from one direction
- ✓ Screwable flange for superior mechanical stability



Make sure you always use the latest documentation.

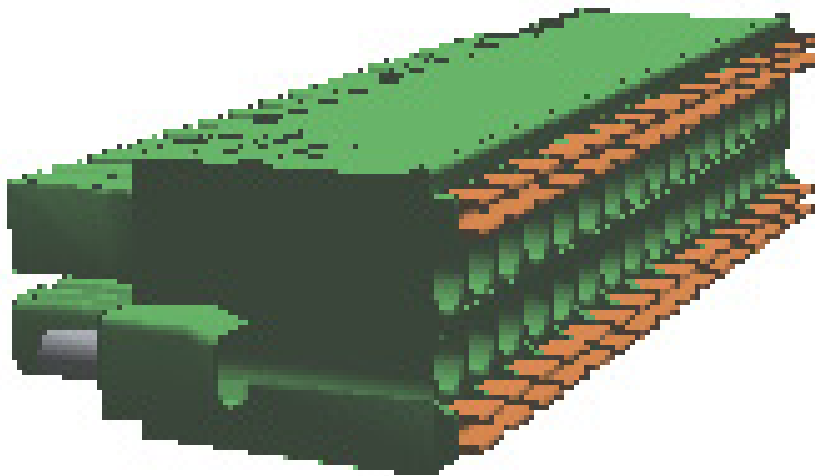
It can be downloaded at: phoenixcontact.com/product/1790438

1790438 DFMC 1,5/16-STF-3,5**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	General Technical Data	4
6	Mounting.....	5
7	Conductor connection	6
8	Material properties.....	7
9	Dimensions.....	8
10	Series drawing.....	9
11	Packaging specifications	10
12	Application.....	10
13	General tests	11
14	Mechanical tests.....	11
15	Insertion and withdrawal forces	13
16	Electrical tests	14
17	Air and creepage distances	15
18	Current carrying capacity/derating curves	16
19	Environmental and durability tests	17
20	Type approval and special tests	18
21	Classification for connectors.....	18
22	Approvals / Certificates.....	19
23	Commercial Data.....	20
24	corresponding headers.....	20
25	Accessories.....	20
26	Combination tests.....	21

1790438 DFMC 1,5/16-STF-3,5

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



1790438 DFMC 1,5/16-STF-3,5**5 General Technical Data****5.1 item properties**

Item no.	1790438
Type	DFMC 1,5/16-STF-3,5
Product line	COMBICON Connectors S
Connector system	COMBICON DFMC 1,5
Product type	PCB connector
Contact connection type	Socket
Range of articles	DFMC 1,5/..-STF
Pitch	3.5 mm
Number of positions	16
Number of rows	2
Number of connections	32
Number of potentials	32
Connection method	Push-in spring connection
Connection direction of the conductor to plug-in direction	0 °
Type	Plug component

1790438 DFMC 1,5/16-STF-3,5**6 Mounting****6.1 Flange mounting**

Type of locking	Screw locking mechanism
Mounting flange	Screw flange
Tightening torque	0.2 Nm

1790438 DFMC 1,5/16-STF-3,5**7 Conductor connection****7.1 Connection capacity**

Nominal cross section	1.5 mm ²
Conductor cross section, rigid	0.2 mm ² ... 1.5 mm ²
Conductor cross section, flexible	0.2 mm ² ... 1.5 mm ²
Conductor cross section flexible, with ferrule without plastic sleeve	0.25 mm ² ... 1.5 mm ²
Conductor cross section flexible, with ferrule with plastic sleeve	0.25 mm ² ... 0.75 mm ²
Cylindrical gauge a x b / diameter	2.4 mm x 1.5 mm / 1.6 mm
Stripping length	10 mm

7.2 Connection capacity AWG

Conductor cross section AWG	24 ... 16
-----------------------------	-----------

1790438 DFMC 1,5/16-STF-3,5**8 Material properties****8.1 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

8.2 Material of plastic parts

	Housing	Actuation element
Color	green (RAL 6021)	orange (RAL 2003)
Insulating material	PA	PBT
Insulating material group	I	I
CTI according to IEC 60112	600	600
Flammability rating according to UL 94	V0	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	

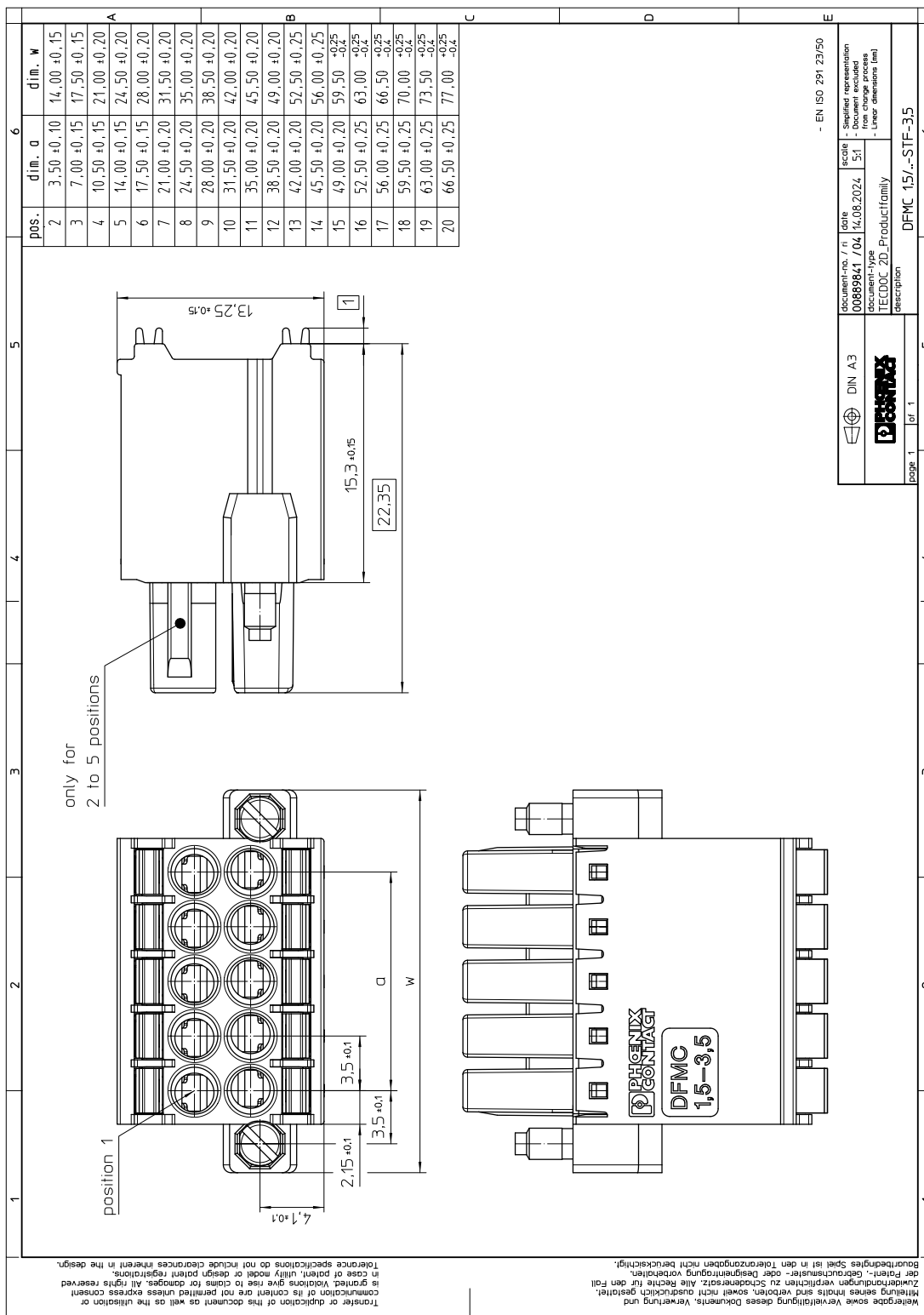
1790438 DFMC 1,5/16-STF-3,5

9 Dimensions**9.1 Dimensions for the product**

Length	23.35 mm
Width	63 mm
Total height	13.25 mm

1790438 DFMC 1,5/16-STF-3,5

10 Series drawing



1790438 DFMC 1,5/16-STF-3,5**11 Packaging specifications**

Type of packaging	packed in cardboard
Packing unit	50

12 Application**12.1 Specifications for ferrules**

Note on application The 0.75 mm² ferrule is to be inserted parallel to the groove of the spring opener.

Ferrules without insulating collar, according to DIN 46228-1

Recommended crimping pliers	1212034 CRIMPFOX 6
Ferrules without insulating collar, according to DIN 46228-1	Cross section: 0.25 mm ² ; Length: 7 mm Cross section: 0.34 mm ² ; Length: 7 mm Cross section: 0.5 mm ² ; Length: 8 mm ... 10 mm Cross section: 0.75 mm ² ; Length: 8 mm ... 10 mm Cross section: 1 mm ² ; Length: 8 mm ... 10 mm Cross section: 1.5 mm ² ; Length: 10 mm

Ferrules with insulating collar, according to DIN 46228-4

Recommended crimping pliers	1212034 CRIMPFOX 6
Ferrules with insulating collar, according to DIN 46228-4	Cross section: 0.14 mm ² ; Length: 8 mm Cross section: 0.25 mm ² ; Length: 8 mm ... 10 mm Cross section: 0.34 mm ² ; Length: 8 mm ... 10 mm Cross section: 0.5 mm ² ; Length: 8 mm ... 10 mm Cross section: 0.75 mm ² ; Length: 10 mm

12.2 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)

1790438 DFMC 1,5/16-STF-3,5**13 General tests****13.1 Specification**

Specification	IEC 61984
Specification	IEC 60999-1
Brief description	PCB connector

14 Mechanical tests**14.1 Check for damage to conductor or loosening**

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

14.2 Pull-out test

Specification	IEC 60999-1:1999-11
Result	Test passed
Conductor cross section/conductor type/tractive force actual value	0.2 mm ² / solid / > 10 N
Conductor cross section/conductor type/tractive force actual value	0.2 mm ² / flexible / > 10 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

14.3 Repeated connection and disconnection

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

14.4 Conductor connection

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

14.5 Visual examination

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

14.6 Dimensional test

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

14.7 Resistance of marking

1790438 DFMC 1,5/16-STF-3,5

Resistance of marking

Test passed

Specification

IEC 60068-2-70:1995-12

14.8 Polarization and coding

Polarization when inserted
Requirement >20 N

Test passed

Specification

IEC 60512-13-5:2006-02

1790438 DFMC 1,5/16-STF-3,5**15 Insertion and withdrawal forces**

Insertion and withdrawal force	
Specification	Test passed
No. of cycles	25
Insertion strength per pos. approx.	3 N
Withdraw strength per pos. approx.	2 N

1790438 DFMC 1,5/16-STF-3,5**16 Electrical tests**

Rated current / conductor cross section	8 A / 1.5 mm ²
Rated insulation voltage (III/2)	160 V
Rated surge voltage (III/2)	2.5 kV
Contact resistance	2.1 mΩ
Degree of pollution	2

16.1 Electrical function

Specification	IEC 60999-1:1999-11
Result	Test passed
Voltage drop	Voltage drop (U) after the load ≤ 15 mV
Test current (minimum cross section)	4 A AC
Test current (maximum cross section)	8 A AC
Conductor cross section, flexible	0.2 mm ² ... 1.5 mm ²
Conductor cross section, rigid	0.2 mm ² ... 1.5 mm ²

16.2 Temperature cycles

Specification	IEC 60999-1:1999-11
Result	Test passed
Voltage drop	Voltage drop (U) after the load ≤ 22.5 mV or 1.5 x U _{after 24 h} The small value is to be used.
Test current (minimum cross section)	4 A DC
Test current (maximum cross section)	8 A DC
Temperature cycles	192
Conductor cross section, flexible	0.2 mm ² ... 1.5 mm ²
Conductor cross section, rigid	0.2 mm ² ... 1.5 mm ²

1790438 DFMC 1,5/16-STF-3,5**17 Air and creepage distances**

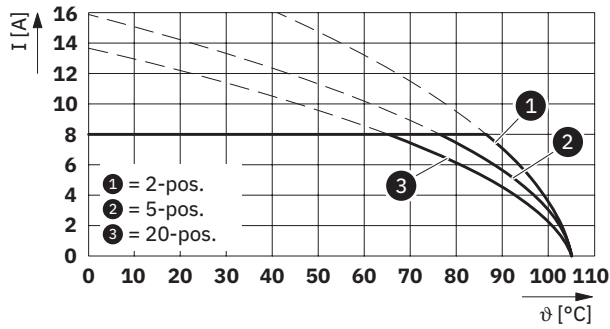
Component	PCB connector		
Specification	IEC 60664-1:2007-04		
Mains type	unearthed mains		
Insulating material group	I		
Comparative tracking index (IEC 60112)	CTI 600		
Rated insulation voltage	160 V	160 V	320 V
Rated surge voltage	2.5 kV	2.5 kV	2.5 kV
Degree of pollution	3	2	2
Overvoltage category	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

1790438 DFMC 1,5/16-STF-3,5

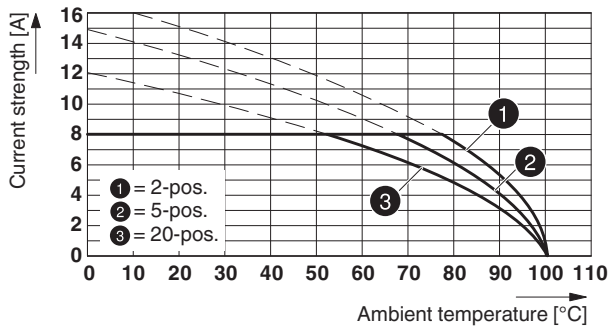
18 Current carrying capacity/derating curves

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 mm ²

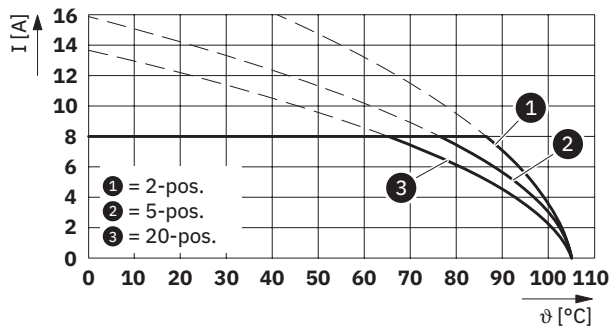
Type: DFMC 1,5/...-STF-3,5 with DMC 1,5/...-G1F-3,5-LR P...THR



Type: DFMC 1,5/...-STF-3,5 with DMCV 1,5/...-G1F-3,5-LR P...THR



Type: DFMC 1,5/...-STF-3,5 with DMC 1,5/...-G2F-3,5-LR P...THR



1790438 DFMC 1,5/16-STF-3,5**19 Environmental and durability tests****19.1 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.

19.2 Insulation resistance

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

1790438 DFMC 1,5/16-STF-3,5**20 Type approval and special tests****20.1 Shock testing**



Specification	IEC 60068-2-27:2008-02
Result	Test passed
Pulse shape	Semi-sinusoidal
Peak acceleration	30g
Shock duration	18 ms
Number of shocks per direction	3
Test directions	X-, Y- and Z-axis (pos. and neg.)

21 Classification for connectors

Specification	IEC 61984:2008-10
Main features	Connectors without switching capacity (COC)
	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
Locking	no
Connection method	Screwless terminal points

1790438 DFMC 1,5/16-STF-3,5

22 Approvals / Certificates

cULus Recognized 	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm ²]
Usegroup B				
Field wiring	300 V	8 A	24 - 16	-
Usegroup C				
Factory wiring	50 V	8 A	24 - 16	-
Usegroup D				
Field wiring	300 V	8 A	24 - 16	-
VDE Gutachten mit Fertigungsüberwachung 	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm ²]
	160 V	8 A	-	0.2 - 1.5

1790438 DFMC 1,5/16-STF-3,5**23 Commercial Data**

Item no.	1790438
Type	DFMC 1,5/16-STF-3,5
Packing unit	50
Net weight	16.822 g
GTIN	4046356594882
	Information that applies locally, see link on page 1

24 corresponding headers

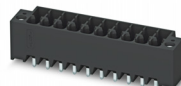
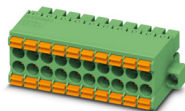
Item no.	Type
1787153	DMC 1,5/16-G1F-3,5-LR P20THR
1787535	DMCV 1,5/16-G1F-3,5-LR P20THR

25 Accessories

Description	Item No.	Type
Coding profile, for insertion between the coding ribs of the connector and the header following the reflow soldering process, insulating material, color: natural	1790647	CP-DMC 1,5 NAT
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
Crimping pliers, for ferrules without insulating collar according to DIN 46228 Part 1 and ferrules with insulating collar according to DIN 46228 Part 4, 0.25 mm ² ... 6.0 mm ² , lateral entry, trapezoidal crimp	1212034	CRIMPFOX 6

1790438 DFMC 1,5/16-STF-3,5

26 Combination tests

**DFMC 1,5/..-STF****DMC 1,5/..-G1F-THR****DMCV 1,5/..-G1F-THR****DMC 1,5/..-G2F-LR-THR**

IEC 61984

IEC 61984

IEC 61984

IEC 61984

Mechanical tests (A)

Insertion/withdrawal force per position

approx. 3 N / 2 N

approx. 3 N / 2 N

approx. 3 N / 2 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 R₁ 1st level

2.1 mΩ

2.1 mΩ

2.2 mΩ

Contact resistance R₁ 2nd level

Insertion/withdrawal cycles

25

25

25

Contact resistance R₂

2.4 mΩ

2.4 mΩ

2.4 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

> 5 MΩ

> 5 MΩ

> 5 MΩ

Thermal tests (C)

Tested number of positions

20

20

20

Tested conductor cross section

1.5 mm²1.5 mm²1.5 mm²

Test current

8 A DC

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

105 °C/168 h

Test sequence 3: noxious gas storage

0.2 dm³ SO₂ on 300 dm³/
40 °C/1 cycle0.2 dm³ SO₂ on 300 dm³/
40 °C/1 cycle0.2 dm³ SO₂ on 300 dm³/
40 °C/1 cycleRated 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 fingerFinger safety with IP20
test fingerBack of hand safety with
IP10 access probe