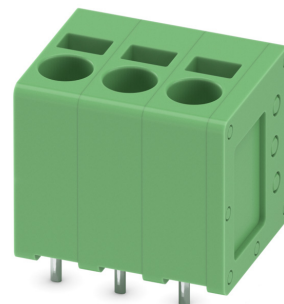


Item No.: 1991105

Type: SPT 2,5/ 3-V-5,0

Printed circuit board terminal, Push-in spring connection



## 1 Main features



- |                           |                           |                        |                     |
|---------------------------|---------------------------|------------------------|---------------------|
| • No. of pos.             | 3                         | • Nominal current      | 24 A                |
| • Conductor cross section | 2.5 mm <sup>2</sup>       | • Nominal voltage      | 400 V               |
| • Color                   | green (RAL 6021)          | • Connection direction | 90 °                |
| • Pitch                   | 5 mm                      | • Type of packaging    | packed in cardboard |
| • Connection method       | Push-in spring connection | • Mounting type        | Wave soldering      |

## 2 Your advantages

- ✓ Time saving push-in connection, tools not required
- ✓ Defined contact force ensures that contact remains stable over the long term
- ✓ Clamping space opened by means of fixed screwdriver enables convenient conductor connection
- ✓ Operation and conductor connection from one direction enable integration into front of device
- ✓ Two solder pins reduce the mechanical strain on the soldering spots



Make sure you always use the latest documentation.  
It can be downloaded at: [phoenixcontact.com/product/1991105](https://phoenixcontact.com/product/1991105)

**1991105 SPT 2,5/ 3-V-5,0****3 Table of contents**

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1991105 SPT 2,5/ 3-V-5,0

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



**1991105 SPT 2,5/ 3-V-5,0****5 General Technical Data****5.1 item properties**

Item no.	1991105
Type	SPT 2,5/ 3-V-5,0
Product line	COMBICON Terminals M
Product type	Printed circuit board terminal
Range of articles	SPT 2,5/..-V
Pitch	5 mm
Number of positions	3
Number of rows	1
Number of connections	3
Number of potentials	3
Connection method	Push-in spring connection
Connection direction of the conductor to the PCB	90 °
Pin layout	Linear pinning
Solder pins per potential	2

**1991105 SPT 2,5/ 3-V-5,0****6 Conductor connection****6.1 Connection capacity**

Conductor cross section, rigid	0.2 mm <sup>2</sup> ... 4 mm <sup>2</sup>
Conductor cross section, flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section flexible, with ferrule without plastic sleeve	0.25 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section flexible, with ferrule with plastic sleeve	0.25 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Stripping length	10 mm

**6.2 Connection capacity AWG**

Conductor cross section AWG	24 ... 12
-----------------------------	-----------

**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)
Soldering area surface	Tin (4 - 8 μm Sn)
Surface characteristics	Tin-plated

**7.2 Material of plastic parts**

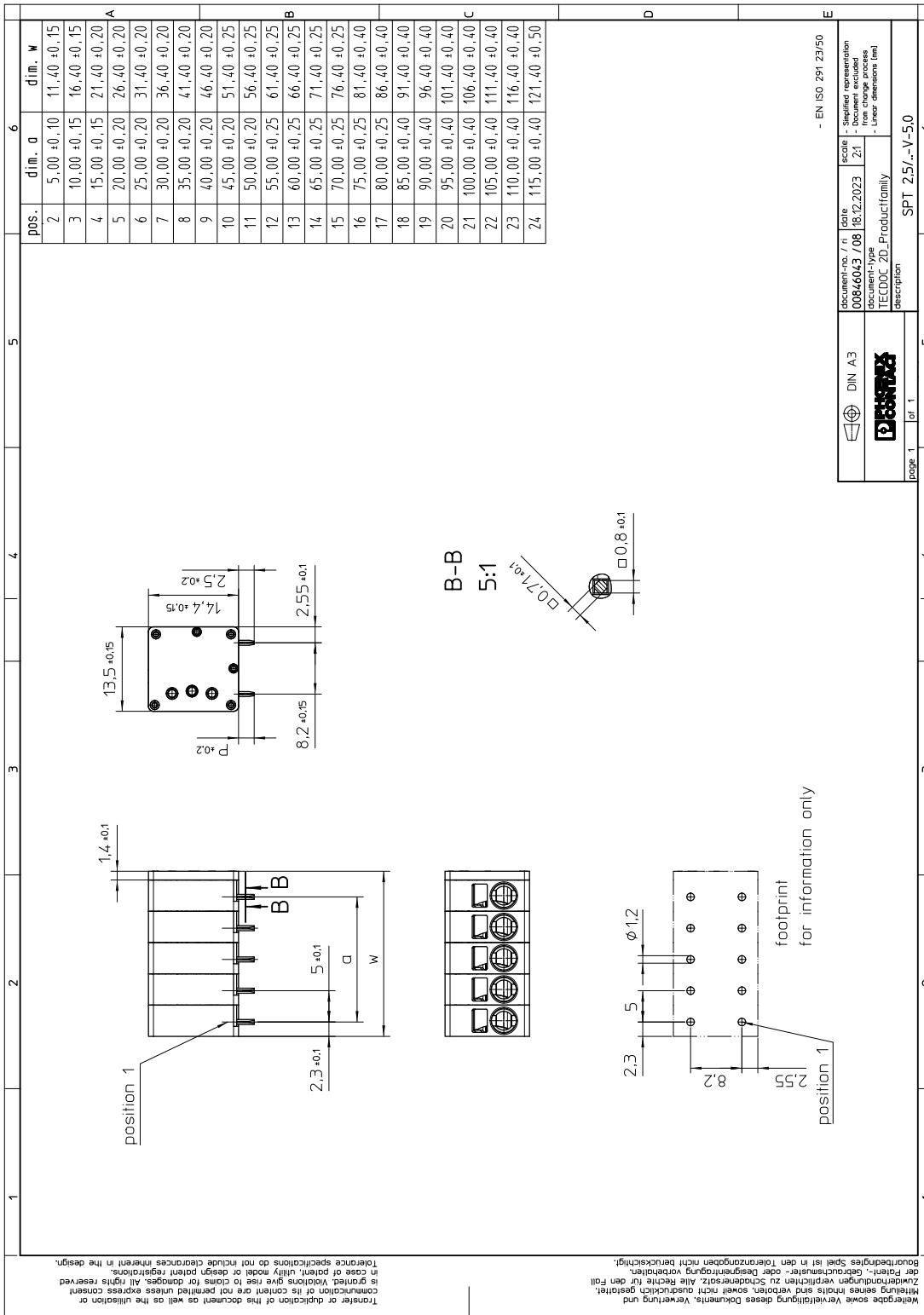
	Housing
Color	green (RAL 6021)
Insulating material	PA
Insulating material group	I
CTI according to IEC 60112	600
Flammability rating according to UL 94	V0
Glow wire flammability index GWFI according to EN 60695-2-12	850
Glow wire ignition temperature GWIT according to EN 60695-2-13	775
Temperature for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

**1991105 SPT 2,5/ 3-V-5,0****8 Dimensions****8.1 Dimensions for the product**

Length	13.5 mm
Width	16.4 mm
Height (without solder pin)	14.4 mm
Total height	16.9 mm
Solder pin [P]	2.5 mm

1991105 SPT 2,5/ 3-V-5,0

9 Series drawing



# 1991105 SPT 2,5/ 3-V-5,0

## 10 Product drawing

1	2	3	4	5	6
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<p>General Information  - Simplified representation  - Document excluded from change process  - Linear dimensions (mm)</p>					
		<p>document-No. / Ri 01055272 / 700</p>		<p>date 22.02.2017</p>	
<p>page 1 of 1</p>		<p>document-type TECDOC 2D_Productdrawing</p>		<p>scale 1:1</p>	
<p>description SPT 2,5/ 3-V-5,0</p>		<p>6</p>			

**1991105 SPT 2,5/ 3-V-5,0****11 Product note****12 Application****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 <sup>2</sup> ; Length: 7 mm
Cross section: 0.34 mm <sup>2</sup> ; Length: 7 mm
Cross section: 0.5 mm <sup>2</sup> ; Length: 8 mm
Cross section: 0.75 mm <sup>2</sup> ; Length: 8 mm
Cross section: 1 mm <sup>2</sup> ; Length: 8 mm
Cross section: 1.5 mm <sup>2</sup> ; Length: 8 mm
Cross section: 2.5 mm <sup>2</sup> ; Length: 8 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: 0.25 mm <sup>2</sup> ; Length: 8 mm
Cross section: 0.34 mm <sup>2</sup> ; Length: 8 mm
Cross section: 0.5 mm <sup>2</sup> ; Length: 8 mm ... 10 mm
Cross section: 0.75 mm <sup>2</sup> ; Length: 8 mm ... 10 mm
Cross section: 1 mm <sup>2</sup> ; Length: 8 mm ... 10 mm
Cross section: 1.5 mm <sup>2</sup> ; Length: 8 mm ... 10 mm
Cross section: 2.5 mm <sup>2</sup> ; Length: 10 mm

**13 Packaging specifications**

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

Packing unit	160
--------------	-----

**13.1 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 ... 105 °C (Depending on the current carrying capacity/derating curve)
---------------------------------	---

**1991105 SPT 2,5/ 3-V-5,0****14 Mechanical tests****14.1 Pull-out test**

Specification	IEC 60999-1:1999-11
Result	Test passed
Conductor cross section/conductor type/tractive force actual value	0.2 mm <sup>2</sup> / solid / > 10 N
Conductor cross section/conductor type/tractive force actual value	0.2 mm <sup>2</sup> / flexible / > 10 N
Conductor cross section/conductor type/tractive force actual value	4 mm <sup>2</sup> / solid / > 60 N
Conductor cross section/conductor type/tractive force actual value	2.5 mm <sup>2</sup> / flexible / > 50 N

**14.2 Check for damage to conductor or loosening**

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

**1991105 SPT 2,5/ 3-V-5,0****15 Electrical tests**

Rated current / conductor cross section	24 A / 2.5 mm <sup>2</sup>
Rated insulation voltage (III/2)	400 V
Rated surge voltage (III/2)	4 kV
Contact resistance	0.33 mΩ
Degree of pollution	2

**15.1 Short-time withstand current test**

Specification	IEC 60947-7-4:2019-01
Result	Test passed
Conductor cross section/short-time current	4 mm <sup>2</sup> / 153.6 A

**15.2 Aging test (climatic impact and corrosion testing)**

Specification	IEC 60947-7-4:2019-01
Result	Test passed
Contact resistance R <sub>1</sub>	0.33 mΩ / 4 mm <sup>2</sup>
Test sequence 1: low temperature storage	-40 °C / 2 h
Test sequence 2: heat storage	168 h/105 °C
Test sequence 3: noxious gas storage	KFW 0.2 S/1 cycle
Contact resistance R <sub>2</sub>	0.31 mΩ / 4 mm <sup>2</sup>
Rated impulse voltage at sea level Voltage waveform ≥ (1.2/50 μs)	4.8 kV
Power-frequency withstand voltage Voltage waveform ≥ (50/60 Hz)	3.1 kV

**15.3 Insulation resistance**

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

**15.4 Mechanical connection test for the PCB terminal block**

Specification	IEC 60947-7-4:2019-01
Result	Test passed

**15.5 Temperature rise test**

Specification	IEC 60947-7-4:2019-01
Result	Test passed
Requirement temperature-rise test	The sum of ambient temperature and temperature rise of the PCB terminal block shall not exceed the upper limiting temperature.
Conductor cross section/test current/temperature rise	4 mm <sup>2</sup> / 32 A / 42.2 K
Conductor cross section/test current/temperature rise	2.5 mm <sup>2</sup> / 24 A / 36.3 K

**1991105 SPT 2,5/ 3-V-5,0****16 Air and creepage distances****16.1 1. Insulation coordination**

Application	without pitch spacer		
Component	Printed circuit board terminal		
Specification	IEC 60947-7-4:2019-01		
Mains type	unearthed mains		
Insulating material group	I		
Comparative tracking index (IEC 60112)	CTI 600		
Rated insulation voltage	250 V	400 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	3.2 mm	3 mm	3.2 mm

**16.2 2. Insulation coordination**

Application	with RZ-SPT 2,5-2,5		
Component	Printed circuit board terminal		
Specification	IEC 60947-7-4:2019-01		
Mains type	unearthed mains		
Insulating material group	I		
Comparative tracking index (IEC 60112)	CTI 600		
Rated insulation voltage	400 V	630 V	1000 V
Rated surge voltage	6 kV	6 kV	6 kV
Degree of pollution	3	2	2
Overvoltage category	III	III	II
Minimum clearance case A (inhomogeneous field)	5.5 mm	5.5 mm	5.5 mm
Minimum value of the creepage path requirement in acc. with table	5.5 mm	5.5 mm	5.5 mm

**16.3 3. Insulation coordination**

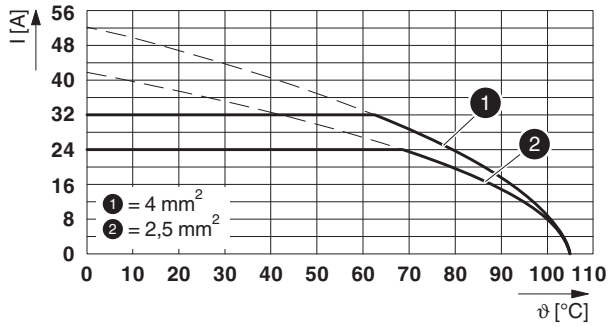
Application	with RZ-SPT 2,5-5,0		
Component	Printed circuit board terminal		
Specification	IEC 60947-7-4:2019-01		
Mains type	unearthed mains		
Insulating material group	I		
Comparative tracking index (IEC 60112)	CTI 600		
Rated insulation voltage	630 V	800 V	1000 V
Rated surge voltage	8 kV	8 kV	8 kV
Degree of pollution	3	2	2
Overvoltage category	III	III	II
Minimum clearance case A (inhomogeneous field)	8 mm	8 mm	8 mm
Minimum value of the creepage path requirement in acc. with table	8 mm	8 mm	8 mm

## 1991105 SPT 2,5/ 3-V-5,0

## 17 Current carrying capacity/derating curves

Specification	IEC 60947-7-4:2019-01
Note	Representation based on IEC 60512-5-2:2002-02
Reduction factor	1
Number of positions	4
Conductor cross section	2.5 mm <sup>2</sup>

Type: SPT 2,5/...-V-5,0



**1991105 SPT 2,5/ 3-V-5,0****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	50 m/s <sup>2</sup> (60.1 Hz ... 150 Hz)
Test duration per axis	2.5 h
Test directions	X-, Y- and Z-axis
Note	



**18.2 Assessment of fire risk (glow wire test)**

Specification	IEC 60695-2-10:2013-04		
Result	Test passed		
Temperature	850 °C		
Time of exposure	5 s		

**18.3 Touch protection**

Specification	IEC 60529:1989-11 + AMD 1:1999-11 + AMD 2:2013-08 (following)
Back of the hand protection (Ball ø 50)	guaranteed
Finger protection (movable test finger)	guaranteed
Note	unenclosed basic insulation - protected against finger contact with IP20 test finger in acc. with IEC 60529 when connected, above the PCB

**1991105 SPT 2,5/ 3-V-5,0****19 Approvals / Certificates**

cULus Recognized 	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm <sup>2</sup> ]
<b>Usegroup B</b>				
	300 V	20 A	24 - 12	-
<b>Usegroup C</b>				
	150 V	20 A	24 - 12	-
<b>Usegroup D</b>				
	150 V	15 A	24 - 12	-
VDE approval of drawings 	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm <sup>2</sup> ]
	400 V	32 A	-	0.2 - 4

**1991105 SPT 2,5/ 3-V-5,0****20 Commercial Data**

Item no.	1991105
Type	SPT 2,5/ 3-V-5,0
Packing unit	160
Net weight	3.755 g
GTIN	4046356104722
	Information that applies locally, see link on page 1

**21 Accessories**

Description	Item No.	Type
Actuation tool, for ST terminal blocks, also suitable for use as a bladed screwdriver, size: 0.6 x 3.5 x 100 mm, 2-component grip, with non-slip grip	1204517	SZF 1-0,6X3,5
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 <sup>2</sup> ... 6.0 mm <sup>2</sup> , lateral entry, trapezoidal crimp	1212034	CRIMPFOX 6
	0804183	SK 5/3,8:FORTL.ZAHLEN