

Data sheet

2024-06-13
Product version 03
Document revision 04

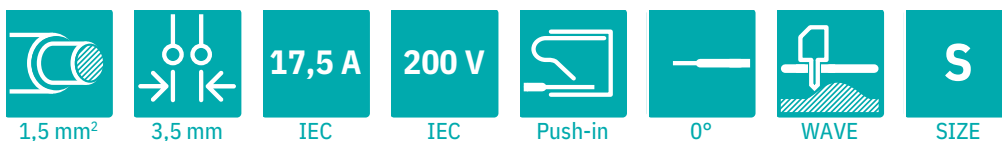
Item No.: 1990737

Type: SPT 1,5/ 2-H-3,5

PCB terminal block, Push-in spring connection



1 Main features



- | | | | |
|---------------------------|---------------------------|------------------------|---------------------|
| • No. of pos. | 2 | • Nominal current | 17.5 A |
| • Conductor cross section | 1.5 mm ² | • Nominal voltage | 200 V |
| • Color | green (RAL 6021) | • Connection direction | 0 ° |
| • Pitch | 3.5 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.

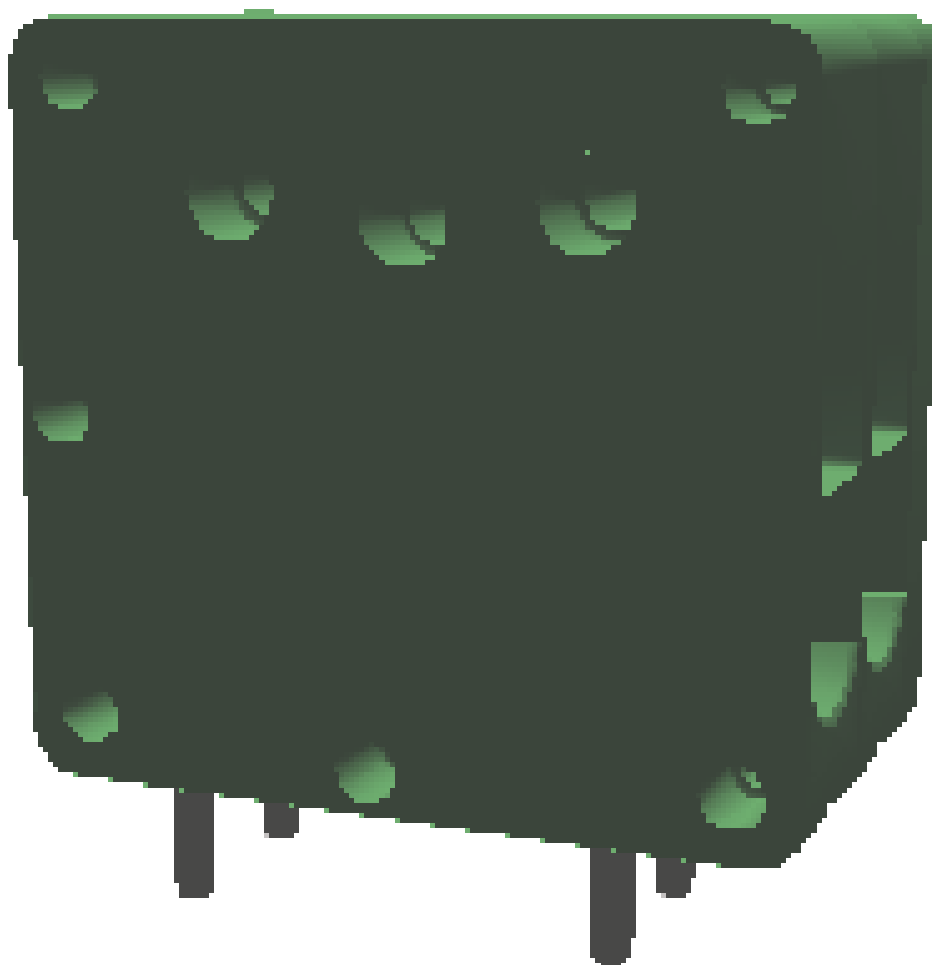
It can be downloaded at: phoenixcontact.com/product/1990737

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1990737 SPT 1,5/ 2-H-3,5

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



1990737 SPT 1,5/ 2-H-3,5**5 General Technical Data****5.1 item properties**

Item no.	1990737
Type	SPT 1,5/ 2-H-3,5
Product line	COMBICON Terminals S
Product type	PCB terminal block
Range of articles	SPT 1,5/..-H
Pitch	3.5 mm
Number of positions	2
Number of rows	1
Number of connections	2
Number of potentials	2
Connection method	Push-in spring connection
Connection direction of the conductor to the PCB	0 °
Pin layout	Linear pinning
Solder pins per potential	2

1990737 SPT 1,5/ 2-H-3,5**6 Conductor connection****6.1 Connection capacity**

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
Stripping length	10 mm

6.2 Connection capacity AWG

Conductor cross section AWG	24 ... 16
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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

1990737 SPT 1,5/ 2-H-3,5**8 Dimensions****8.1 Dimensions for the product**

Length	14.4 mm
Width	8.4 mm
Height (without solder pin)	13.5 mm
Total height	16 mm
Solder pin [P]	2.5 mm

9 Series drawing

Technical drawing of a mechanical part, showing multiple views and dimensions.

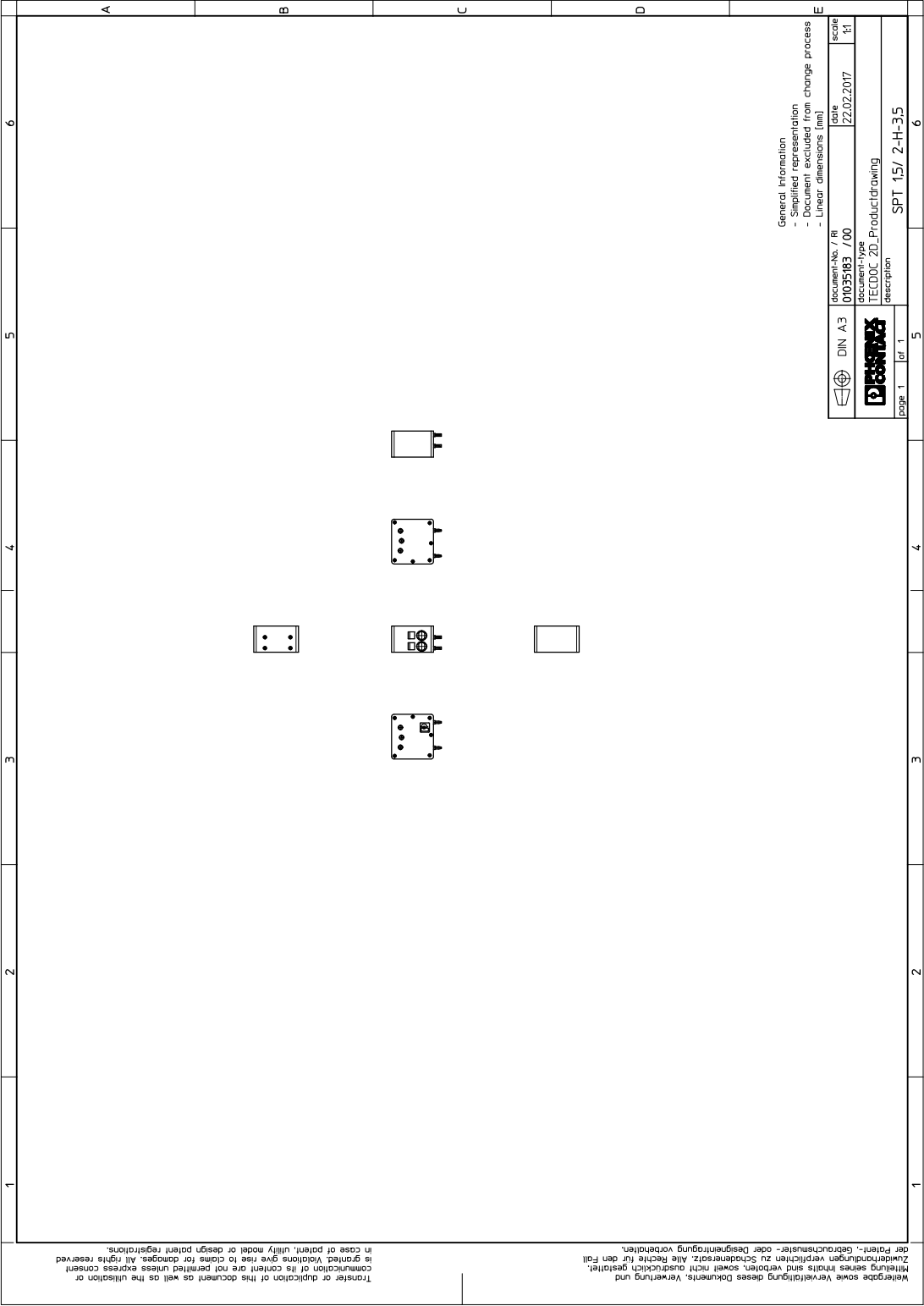
Views:

- Top View (Front View):** Shows a rectangular part with a central slot. Dimensions: 14.4 ± 0.15 (width), 13.5 ± 0.15 (slot width), 3.67 ± 0.1 (slot depth), 8.2 ± 0.15 (total depth). Four holes are located at the corners. Position 1 is indicated.
- Side View (Left View):** Shows the profile of the part. Dimensions: 1.4 ± 0.1 (height), 3.5 ± 0.1 (slot width), 1.3 ± 0.1 (height of the base), 3.67 (slot depth), 8.2 (total depth). Section line AA is shown.
- End View (Right View):** Shows the top surface of the part. Dimensions: 3.5 (width), 1.3 (height of the base), 3.67 (slot depth), 8.2 (total depth). Four holes are located at the corners. Position 1 is indicated.
- Detail View A-A:** Shows a cross-section of a hole. Dimensions: 0.71 ± 0.03 (hole diameter), 0.8 ± 0.03 (hole depth).

Table of Dimensions and Tolerances:

pos.	dim. a	dim. w
1	-	4.90 ± 0.10
2	3.50 ± 0.10	8.40 ± 0.15
3	7.00 ± 0.15	11.90 ± 0.15
4	10.50 ± 0.15	15.40 ± 0.15
5	14.00 ± 0.15	18.90 ± 0.20
6	17.50 ± 0.15	22.40 ± 0.20
7	21.00 ± 0.20	25.90 ± 0.20
8	24.50 ± 0.20	29.40 ± 0.20
9	28.00 ± 0.20	32.90 ± 0.20
10	31.50 ± 0.20	36.40 ± 0.20
11	35.00 ± 0.20	39.90 ± 0.20
12	38.50 ± 0.20	43.40 ± 0.20
13	42.00 ± 0.20	46.90 ± 0.20
14	45.50 ± 0.20	50.40 ± 0.25
15	49.00 ± 0.20	53.90 ± 0.25
16	52.50 ± 0.25	57.40 ± 0.25
17	56.00 ± 0.25	60.90 ± 0.25
18	59.50 ± 0.25	64.40 ± 0.25
19	63.00 ± 0.25	67.90 ± 0.25
20	66.50 ± 0.25	71.40 ± 0.25
21	70.00 ± 0.25	74.90 ± 0.25
22	73.50 ± 0.25	78.40 ± 0.25
23	77.00 ± 0.25	81.90 ± 0.40
24	80.50 ± 0.40	85.40 ± 0.40

10 Product drawing



1990737 SPT 1,5/ 2-H-3,5**11 Product note****11.1 Dimensions for PCB design**

Pin dimensions	0.8 x 0.8 mm
Pin spacing	8.2 mm

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 ² ; Length: 7 mm Cross section: 0.34 mm ² ; Length: 7 mm Cross section: 0.5 mm ² ; Length: 8 mm Cross section: 0.75 mm ² ; Length: 8 mm Cross section: 1 mm ² ; Length: 8 mm Cross section: 1.5 mm ² ; 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 ² ; Length: 8 mm Cross section: 0.34 mm ² ; Length: 8 mm Cross section: 0.5 mm ² ; Length: 8 mm ... 10 mm Cross section: 0.75 mm ² ; Length: 8 mm ... 10 mm

13 Packaging specifications

Type of packaging	packed in cardboard
Packing unit	340

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)

1990737 SPT 1,5/ 2-H-3,5**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 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

14.2 Check for damage to conductor or loosening

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

1990737 SPT 1,5/ 2-H-3,5**15 Electrical tests**

Rated current / conductor cross section	17.5 A / 1.5 mm ²
Rated insulation voltage (III/2)	200 V
Rated surge voltage (III/2)	2.5 kV
Contact resistance	0.52 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	1.5 mm ² / 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 ₁	0.52 mΩ / 1.5 mm ²
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 ₂	0.74 mΩ / 1.5 mm ²
Rated impulse voltage at sea level Voltage waveform ≥ (1.2/50 μs)	2.95 kV
Power-frequency withstand voltage Voltage waveform ≥ (50/60 Hz)	2.2 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	1.5 mm ² / 17.5 A / 34.3 K

1990737 SPT 1,5/ 2-H-3,5**16 Air and creepage distances****16.1 1. Insulation coordination**

Application	without pitch spacer		
Component	PCB terminal block		
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	160 V	200 V	400 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	2 mm

16.2 2. Insulation coordination

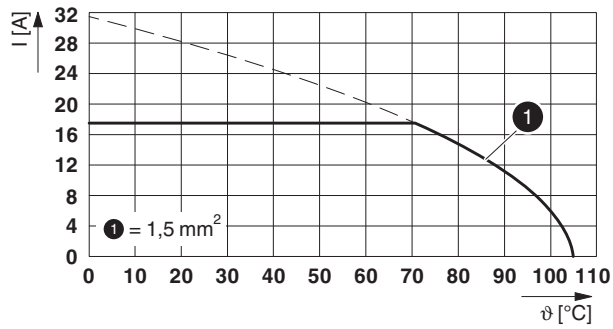
Application	with RZ-SPT 2,5-2,5		
Component	PCB terminal block		
Specification	IEC 60947-7-4:2019-01		
Mains type	unearthed mains		
Insulating material group	I		
Comparative tracking index (IEC 60112)	CTI 600		
Rated insulation voltage	320 V	400 V	630 V
Rated surge voltage	4 kV	4 kV	4 kV
Degree of pollution	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	4 mm	3 mm	3.2 mm

16.3 3. Insulation coordination

Application	with RZ-SPT 2,5-5,0		
Component	PCB terminal block		
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	500 V	630 V	800 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	6.3 mm	5.5 mm	5.5 mm

1990737 SPT 1,5/ 2-H-3,5**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	1.5 mm ²

Type: SPT 1,5/...-H-3,5

1990737 SPT 1,5/ 2-H-3,5**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 ² (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

1990737 SPT 1,5/ 2-H-3,5

19 Approvals / Certificates

cULus Recognized 	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm ²]
Usegroup B				
	300 V	10 A	24 - 16	-
Usegroup D				
	300 V	10 A	24 - 16	-

1990737 SPT 1,5/ 2-H-3,5**20 Commercial Data**

Item no.	1990737
Type	SPT 1,5/ 2-H-3,5
Packing unit	340
Net weight	1.889 g
GTIN	4046356104388
	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: 0.4 x 2.5 x 75 mm, 2-component grip, with non-slip grip	1204504	SZF 0-0,4X2,5
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 ² ... 6.0 mm ² , lateral entry, trapezoidal crimp	1212034	CRIMPFOX 6