

# FRONT 2,5-H/SA 5-EX - PCB terminal block

1701159

<https://www.phoenixcontact.com/us/products/1701159>

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PCB terminal block, nominal current: 21 A, nominal cross section: 2.5 mm<sup>2</sup>, number of potentials: 1, number of rows: 1, number of positions per row: 1, product range: FRONT 2,5-H-EX, pitch: 5 mm, connection method: Front screw connection, screw head form: L Slotted, mounting: Wave soldering, conductor/PCB connection direction: 0 °, color: green, Pin layout: Linear pinning, Solder pin [P]: 3.5 mm, number of solder pins per potential: 2, type of packaging: packed in cardboard. The article can be aligned to create different nos. of positions!

## Your advantages

- Well-known connection principle allows worldwide use
- Low temperature rise, thanks to maximum contact force
- Satisfies the more stringent safety requirements of "Ex e" protection according to IEC 60079-7 for potentially explosive areas
- Operation and conductor connection from one direction enable integration into front of device
- Two solder pins reduce the mechanical strain on the soldering spots
- The latching on the side enables various numbers of positions to be combined
- Allows connection of two conductors

## Commercial data

Item number	1701159
Packing unit	50 pc
Minimum order quantity	50 pc
Sales key	AA13
Product key	AAMFDA
GTIN	4017918022990
Weight per piece (including packing)	3.56 g
Weight per piece (excluding packing)	3.32 g
Customs tariff number	85369010
Country of origin	PL

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## Technical data

### Product properties

Product type	PCB terminal block
Product family	FRONT 2,5-H-EX
Product line	COMBICON Terminals M
Type	PC terminal block can be aligned
Number of positions	1
Pitch	5 mm
Number of connections	1
Number of rows	1
Number of potentials	1
Pin layout	Linear pinning
Solder pins per potential	2

### Electrical properties

#### Properties

Nominal current $I_N$	21 A
Nominal voltage $U_N$	176 V
Rated current / conductor cross-section	21 A/2.5 mm <sup>2</sup>

### Ex data

#### Ex approval

Identification	0344 <sup>Ⓢ</sup> II 2GD / Ex eb IIC Gb
EU-type examination certificate	KEMA 00ATEX2053 U
IECEx certificate	IECEx KEM 07.0023 U

### Connection data

#### Connection technology

Type	PC terminal block can be aligned
Nominal cross section	2.5 mm <sup>2</sup>

#### Conductor connection

Connection method	Front screw connection
Conductor cross-section rigid	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross-section flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross-section AWG	24 ... 14
2 conductors with same cross section, rigid	0.2 mm <sup>2</sup> ... 0.75 mm <sup>2</sup>
2 conductors with same cross section, flexible	0.2 mm <sup>2</sup> ... 0.75 mm <sup>2</sup>
Stripping length	9 mm
Drive form screw head	Slotted (L)
Tightening torque	0.4 Nm ... 0.5 Nm

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## Mounting

Mounting type	Wave soldering
Pin layout	Linear pinning

## Material specifications

### Material data - contact

Note	WEEE/RoHS-compliant, free of whiskers according to IEC 60068-2-82/JEDEC JESD 201
Contact material	Cu alloy
Surface characteristics	hot-dip tin-plated
Metal surface terminal point (top layer)	Tin (4 $\mu\text{m}$ - 8 $\mu\text{m}$ Sn)
Metal surface soldering area (top layer)	Tin (4 $\mu\text{m}$ - 8 $\mu\text{m}$ Sn)

### Material data - housing

Color (Housing)	green (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

## Dimensions

Dimensional drawing	
Pitch	5 mm
Width [w]	6.8 mm
Height [h]	21.8 mm
Length [l]	19.5 mm
Installed height	18.3 mm
Solder pin length [P]	3.5 mm
Pin dimensions	0.8 x 0.8 mm

### PCB design

Pin spacing	5 mm
Hole diameter	1.2 mm

## Mechanical tests

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## Test for conductor damage and slackening

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

## Pull-out test

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

## Electrical tests

### Temperature-rise test

Specification	IEC 60947-7-4:2013-08
Requirement temperature-rise test	The sum of ambient temperature and temperature rise of the PCB terminal block shall not exceed the upper limiting temperature.

### Short-time withstand current

Specification	IEC 60947-7-4:2013-08
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### Insulation resistance

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

### Air clearances and creepage distances |

Insulating material group	I
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## Environmental and real-life conditions

### Vibration test

Specification	IEC 60068-2-6:2007-12
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

### Glow-wire test

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

### Aging

Specification	IEC 60947-7-4:2013-08
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## Ambient conditions

Ambient temperature (storage/transport)	-40 °C ... 70 °C
Relative humidity (storage/transport)	30 % ... 70 %
Ambient temperature (assembly)	-5 °C ... 100 °C
Ambient temperature (operation)	-50 °C ... 110 °C

## Packaging specifications

Type of packaging	packed in cardboard
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## Drawings

Dimensional drawing



Diagram



Type: FRONT 2,5-H/SA 5/...

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Drilling plan/solder pad geometry



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1701159>

 <b>cULus Recognized</b> Approval ID: E192998-20200414				
	Nominal voltage $U_N$	Nominal current $I_N$	Cross section AWG	Cross section $\text{mm}^2$
keine				
with pitch spacer	275 V	20 A	30 - 12	-
Standard	176 V	10 A	30 - 12	-

 <b>ATEX</b> Approval ID: KEMA 00ATEX2053 U				
	Nominal voltage $U_N$	Nominal current $I_N$	Cross section AWG	Cross section $\text{mm}^2$
keine				
	176 V	21 A	-	- 2.5
with pitch spacer	275 V	21 A	-	- 2.5
with 2 pitch spacers	440 V	21 A	-	- 2.5

 <b>IECEX</b> Approval ID: IECEX KEM 07.0023U				
	Nominal voltage $U_N$	Nominal current $I_N$	Cross section AWG	Cross section $\text{mm}^2$
keine				
	176 V	21 A	-	- 2.5
with pitch spacer	275 V	21 A	-	- 2.5
with 2 pitch spacers	440 V	21 A	-	- 2.5

 <b>CCC</b> Approval ID: 2021322313003649				
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## Classifications

### ECLASS

ECLASS-13.0	27460101
ECLASS-15.0	27460101

### ETIM

ETIM 10.0	EC002643
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### UNSPSC

UNSPSC 21.0	39121400
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## Environmental product compliance

### EU RoHS

Fulfills EU RoHS substance requirements	Yes, No exemptions
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### China RoHS

Environment friendly use period (EFUP)	EFUP-E
	No hazardous substances above the limits

### EU REACH SVHC

REACH candidate substance (CAS No.)	No substance above 0.1 wt%
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### EF3.1 Climate Change

CO2e kg	0.034 kg CO2e
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Phoenix Contact USA  
586 Fulling Mill Road  
Middletown, PA 17057, United States  
(+717) 944-1300  
[info@phoenixcon.com](mailto:info@phoenixcon.com)