

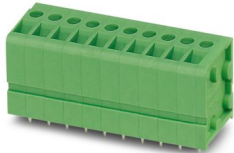
# FRONT 2,5-V/SA10/13 BK - PCB terminal block



1702967

<https://www.phoenixcontact.com/us/products/1702967>

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Printed circuit board terminal, nominal current: 24 A, rated voltage (III/2): 400 V, nominal cross section: 2.5 mm<sup>2</sup>, number of potentials: 13, number of rows: 1, number of positions per row: 13, product range: FRONT 2,5-V/SA10, pitch: 5 mm, connection method: Front screw connection, mounting: Wave soldering, conductor/PCB connection direction: 90 °, color: black, Pin layout: Linear pinning, Solder pin [P]: 5 mm, number of solder pins per potential: 2

## Your advantages

- Well-known connection principle allows worldwide use
- Low temperature rise, thanks to maximum contact force
- 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                          | 1702967                        |
| Packing unit                         | 10 pc                          |
| Minimum order quantity               | 50 pc                          |
| Note                                 | Made to order (non-returnable) |
| Sales key                            | AA13                           |
| Product key                          | AAMFDG                         |
| GTIN                                 | 4046356734424                  |
| Weight per piece (including packing) | 47.91 g                        |
| Weight per piece (excluding packing) | 44.44 g                        |
| Customs tariff number                | 85369010                       |
| Country of origin                    | PL                             |

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## Technical data

### Product properties

|                           |                                  |
|---------------------------|----------------------------------|
| Product type              | Printed circuit board terminal   |
| Product family            | FRONT 2,5-V/SA10                 |
| Product line              | COMBICON Terminals M             |
| Type                      | PC terminal block can be aligned |
| Number of positions       | 13                               |
| Pitch                     | 5 mm                             |
| Number of connections     | 13                               |
| Number of rows            | 1                                |
| Number of potentials      | 13                               |
| Pin layout                | Linear pinning                   |
| Solder pins per potential | 2                                |

### Electrical properties

#### Properties

|                             |       |
|-----------------------------|-------|
| Nominal current $I_N$       | 24 A  |
| Nominal voltage $U_N$       | 400 V |
| Rated voltage (III/3)       | 250 V |
| Rated surge voltage (III/3) | 4 kV  |
| Rated voltage (III/2)       | 400 V |
| Rated surge voltage (III/2) | 4 kV  |
| Rated voltage (II/2)        | 630 V |
| Rated surge voltage (II/2)  | 4 kV  |

### 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                                     |
| Conductor cross-section flexible, with ferrule without plastic sleeve               | 0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>  |
| Conductor cross-section, flexible, with ferrule, with plastic sleeve                | 0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>  |
| 2 conductors with same cross section, solid                                         | 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>  |
| 2 conductors with same cross section, flexible, with ferrule without plastic sleeve | 0.25 mm <sup>2</sup> ... 0.34 mm <sup>2</sup> |

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|                   |                   |
|-------------------|-------------------|
| Stripping length  | 9 mm              |
| Tightening torque | 0.4 Nm ... 0.5 Nm |

## Mounting

|               |                |
|---------------|----------------|
| Mounting type | Wave soldering |
| Pin layout    | Linear pinning |

## Material specifications

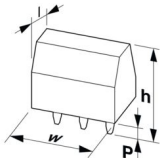
### Material data - contact

|                                          |                                                                                  |
|------------------------------------------|----------------------------------------------------------------------------------|
| 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 - 8 µm Sn)                                                                |
| Metal surface soldering area (top layer) | Tin (4 - 8 µm Sn)                                                                |

### Material data - housing

|                                                                   |              |
|-------------------------------------------------------------------|--------------|
| Color (Housing)                                                   | black (9005) |
| 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]             | 67.5 mm                                                                              |
| Height [h]            | 24.5 mm                                                                              |
| Length [l]            | 18.5 mm                                                                              |
| Installed height      | 19.5 mm                                                                              |
| Solder pin length [P] | 5 mm                                                                                 |
| Pin dimensions        | 0.8 x 0.8 mm                                                                         |

### PCB design

|               |        |
|---------------|--------|
| Pin spacing   | 10 mm  |
| Hole diameter | 1.2 mm |

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## Mechanical tests

### 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> / solid / > 50 N    |
|                                                                             | 2.5 mm <sup>2</sup> / flexible / > 50 N |

## Electrical tests

### Temperature-rise test

|                                   |                                                                                                                                |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Specification                     | IEC 60947-7-4:2019-01                                                                                                          |
| 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 60947-7-4:2019-01 |
|---------------|-----------------------|

### Insulation resistance

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

### Air clearances and creepage distances |

|                                                        |                                               |
|--------------------------------------------------------|-----------------------------------------------|
| Specification                                          | IEC 60947-1:2007-06 + A1:2010-12 + A2:2014-09 |
| Insulating material group                              | I                                             |
| Comparative tracking index (IEC 60112)                 | CTI 600                                       |
| Rated insulation voltage (III/3)                       | 250 V                                         |
| Rated surge voltage (III/3)                            | 4 kV                                          |
| minimum clearance value - non-homogenous field (III/3) | 3 mm                                          |
| minimum creepage distance (III/3)                      | 3.2 mm                                        |
| Rated insulation voltage (III/2)                       | 400 V                                         |
| Rated surge voltage (III/2)                            | 4 kV                                          |
| minimum clearance value - non-homogenous field (III/2) | 3 mm                                          |
| minimum creepage distance (III/2)                      | 3 mm                                          |
| Rated insulation voltage (II/2)                        | 630 V                                         |
| Rated surge voltage (II/2)                             | 4 kV                                          |
| minimum clearance value - non-homogenous field (II/2)  | 3 mm                                          |
| minimum creepage distance (II/2)                       | 3.2 mm                                        |

## Environmental and real-life conditions

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## 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 60947-7-4:2019-01 |
|---------------|-----------------------|

## Ambient conditions

|                                         |                                                                               |
|-----------------------------------------|-------------------------------------------------------------------------------|
| Ambient temperature (operation)         | -40 °C ... 105 °C (Depending on the current carrying capacity/derating curve) |
| Ambient temperature (storage/transport) | -40 °C ... 70 °C                                                              |
| Relative humidity (storage/transport)   | 30 % ... 70 %                                                                 |
| Ambient temperature (assembly)          | -5 °C ... 100 °C                                                              |

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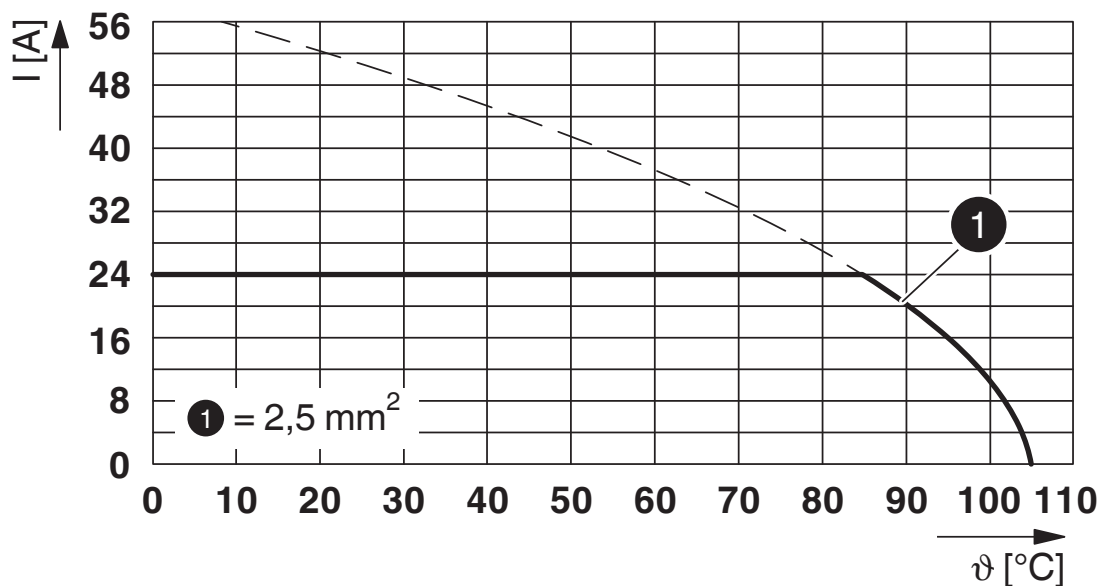


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## Drawings

Diagram



Type: FRONT 2,5-V/SA10/...

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27460101 |
| ECLASS-15.0 | 27460101 |

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC002643 |
|----------|----------|

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 21.0 | 39121400 |
|-------------|----------|

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## Environmental product compliance

### EU RoHS

|                                         |                    |
|-----------------------------------------|--------------------|
| Fulfills EU RoHS substance requirements | Yes, No exemptions |
|-----------------------------------------|--------------------|

### 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% |
|-------------------------------------|----------------------------|

### EF3.0 Climate Change

|         |               |
|---------|---------------|
| CO2e kg | 0.439 kg CO2e |
|---------|---------------|

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