

# MKDSP 50/ 1-17,5-FL - PCB terminal block



1856168

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Printed circuit board terminal, nominal current: 192 A, rated voltage (III/2): 1000 V, nominal cross section: 70 mm<sup>2</sup>, number of potentials: 1, number of rows: 1, number of positions per row: 1, product range: MKDSP 50/..-FL, pitch: 17.5 mm, connection method: Screw connection with tension sleeve, screw head form: T30 Torx®, mounting: Wave soldering, conductor/PCB connection direction: 0 °, color: green, Pin layout: Linear pinning, Solder pin [P]: 4 mm, number of solder pins per potential: 4, type of packaging: packed in cardboard

## Your advantages

- Well-known connection principle allows worldwide use
- Low temperature rise, thanks to maximum contact force
- Allows connection of two conductors
- Quick and convenient testing using integrated test option
- Mounting flanges reduce the mechanical strain on the soldering spots
- Integrated protective guide prevents incorrect insertion of the conductor underneath the tension sleeve

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 1856168       |
| Packing unit                         | 10 pc         |
| Minimum order quantity               | 10 pc         |
| Sales key                            | AA16          |
| Product key                          | AAPIAC        |
| GTIN                                 | 4055626029016 |
| Weight per piece (including packing) | 45.42 g       |
| Weight per piece (excluding packing) | 41.8 g        |
| Customs tariff number                | 85369010      |
| Country of origin                    | CN            |

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## Technical data

### Product properties

|                           |                                |
|---------------------------|--------------------------------|
| Product type              | Printed circuit board terminal |
| Product family            | MKDSP 50/...-FL                |
| Product line              | COMBICON Terminals XXL         |
| Type                      | Standard                       |
| Number of positions       | 1                              |
| Pitch                     | 17.5 mm                        |
| Number of connections     | 1                              |
| Number of rows            | 1                              |
| Number of potentials      | 1                              |
| Pin layout                | Linear pinning                 |
| Solder pins per potential | 4                              |

### Electrical properties

#### Properties

|                             |        |
|-----------------------------|--------|
| Nominal current $I_N$       | 192 A  |
| Nominal voltage $U_N$       | 1000 V |
| Rated voltage (III/3)       | 1000 V |
| Rated surge voltage (III/3) | 8 kV   |
| Rated voltage (III/2)       | 1000 V |
| Rated surge voltage (III/2) | 8 kV   |
| Rated voltage (II/2)        | 1000 V |
| Rated surge voltage (II/2)  | 6 kV   |

### Connection data

#### Connection technology

|                       |                    |
|-----------------------|--------------------|
| Type                  | Standard           |
| Nominal cross section | 70 mm <sup>2</sup> |

#### Conductor connection

|                                                                       |                                            |
|-----------------------------------------------------------------------|--------------------------------------------|
| Connection method                                                     | Screw connection with tension sleeve       |
| Conductor cross-section rigid                                         | 1.5 mm <sup>2</sup> ... 70 mm <sup>2</sup> |
| Single-conductor/terminal point multi-stranded                        | 1.5 mm <sup>2</sup> ... 70 mm <sup>2</sup> |
| Conductor cross-section flexible                                      | 1.5 mm <sup>2</sup> ... 70 mm <sup>2</sup> |
| Conductor cross-section AWG                                           | 16 ... 2/0                                 |
| Conductor cross-section flexible, with ferrule without plastic sleeve | 1.5 mm <sup>2</sup> ... 50 mm <sup>2</sup> |
| Conductor cross-section, flexible, with ferrule, with plastic sleeve  | 1.5 mm <sup>2</sup> ... 50 mm <sup>2</sup> |
| 2 conductors with same cross section, solid                           | 1.5 mm <sup>2</sup> ... 16 mm <sup>2</sup> |
| 2 conductors with the same cross section, stranded                    | 1.5 mm <sup>2</sup> ... 25 mm <sup>2</sup> |
| 2 conductors with same cross section, flexible                        | 1.5 mm <sup>2</sup> ... 25 mm <sup>2</sup> |

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|                                                                                           |                                            |
|-------------------------------------------------------------------------------------------|--------------------------------------------|
| 2 conductors with the same cross section, flexible, with TWIN ferrule with plastic sleeve | 1.5 mm <sup>2</sup> ... 16 mm <sup>2</sup> |
| Stripping length                                                                          | 20 mm                                      |
| Drive form screw head                                                                     | Torx® (T30)                                |
| Tightening torque                                                                         | 5.5 Nm                                     |

## Information on the aluminum conductor

|                                            |                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cross section / torque / form of conductor | Cable cross section:50 mm <sup>2</sup> ; Torque:5.5 Nm; Form of cable:sector-shaped, single-strand, class 1, $\alpha = 90^\circ$ (se)                                                                                                                                                                                                  |
| Specification                              | DIN VDE 0276-603 (VDE 0276-603):2010-03                                                                                                                                                                                                                                                                                                |
| Note on conductor pretreatment             | The following measures are required for durable and reliable contacting of the aluminum conductor: the stripped end of the aluminum conductor must be separated from the oxide layer using a blade, and immediately dipped in non-acid and non-alkali Vaseline. The pretreatment must be repeated when connecting the conductors anew. |

## 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                  | Tin-plated                                                                       |
| Metal surface terminal point (top layer) | Tin (4 - 8 $\mu$ m Sn)                                                           |
| Metal surface soldering area (top layer) | Tin (4 - 8 $\mu$ 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

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|                       |  |                                                                                    |
|-----------------------|--|------------------------------------------------------------------------------------|
| Dimensional drawing   |  |  |
| Pitch                 |  | 17.5 mm                                                                            |
| Width [w]             |  | 32.6 mm                                                                            |
| Height [h]            |  | 59 mm                                                                              |
| Length [l]            |  | 32 mm                                                                              |
| Installed height      |  | 55 mm                                                                              |
| Solder pin length [P] |  | 4 mm                                                                               |
| Pin dimensions        |  | 1.4 x 1.4 mm                                                                       |

## PCB design

|               |        |
|---------------|--------|
| Hole diameter | 2.4 mm |
|---------------|--------|

## 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 | 1.5 mm <sup>2</sup> / solid / > 40 N                 |
|                                                                             | 1.5 mm <sup>2</sup> / flexible / > 40 N              |
|                                                                             | 70 mm <sup>2</sup> / stranded / > 285 N              |
|                                                                             | 70 mm <sup>2</sup> / flexible / > 285 N              |
|                                                                             | 50 mm <sup>2</sup> / flexible with ferrule / > 236 N |
|                                                                             | 1.5 mm <sup>2</sup> / flexible with ferrule / > 40 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 |
|---------------|-----------------------|

### Insulation resistance

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

### Air clearances and creepage distances |

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|                                                        |                                  |
|--------------------------------------------------------|----------------------------------|
| Specification                                          | IEC 60947-1:2007-06 + A1:2010-12 |
| Insulating material group                              | I                                |
| Comparative tracking index (IEC 60112)                 | CTI 600                          |
| Rated insulation voltage (III/3)                       | 1000 V                           |
| Rated surge voltage (III/3)                            | 8 kV                             |
| minimum clearance value - non-homogenous field (III/3) | 8 mm                             |
| minimum creepage distance (III/3)                      | 12.5 mm                          |
| Rated insulation voltage (III/2)                       | 1000 V                           |
| Rated surge voltage (III/2)                            | 8 kV                             |
| minimum clearance value - non-homogenous field (III/2) | 8 mm                             |
| minimum creepage distance (III/2)                      | 8 mm                             |
| Rated insulation voltage (II/2)                        | 1000 V                           |
| Rated surge voltage (II/2)                             | 6 kV                             |
| minimum clearance value - non-homogenous field (II/2)  | 5.5 mm                           |
| minimum creepage distance (II/2)                       | 5.5 mm                           |

## 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 60695-2-10:2000-10 |
| Temperature      | 850 °C                 |
| Time of exposure | 5 s                    |

### Aging

|               |                       |
|---------------|-----------------------|
| Specification | IEC 60947-7-4:2013-08 |
|---------------|-----------------------|

### Ambient conditions

|                                         |                                                                               |
|-----------------------------------------|-------------------------------------------------------------------------------|
| Ambient temperature (operation)         | -40 °C ... 100 °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                                                              |

## Packaging specifications

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

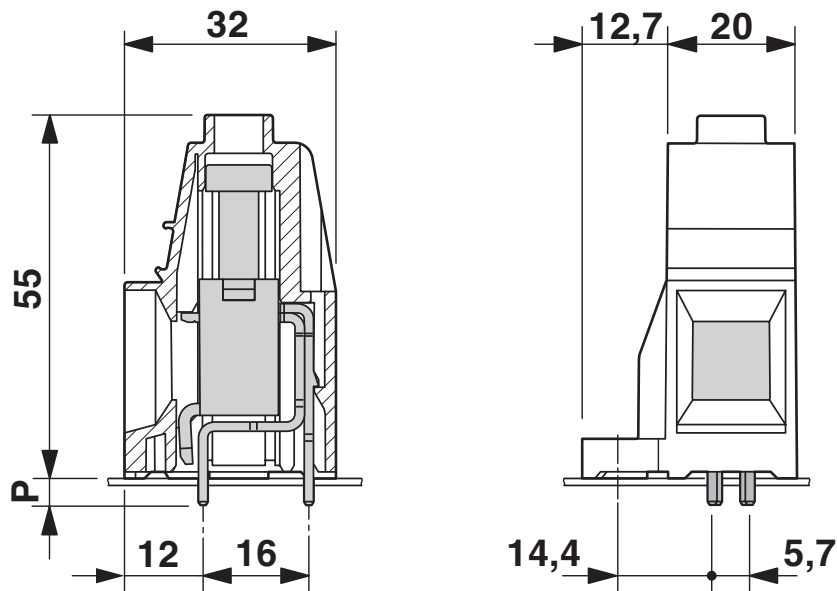
# MKDSP 50/ 1-17,5-FL - PCB terminal block

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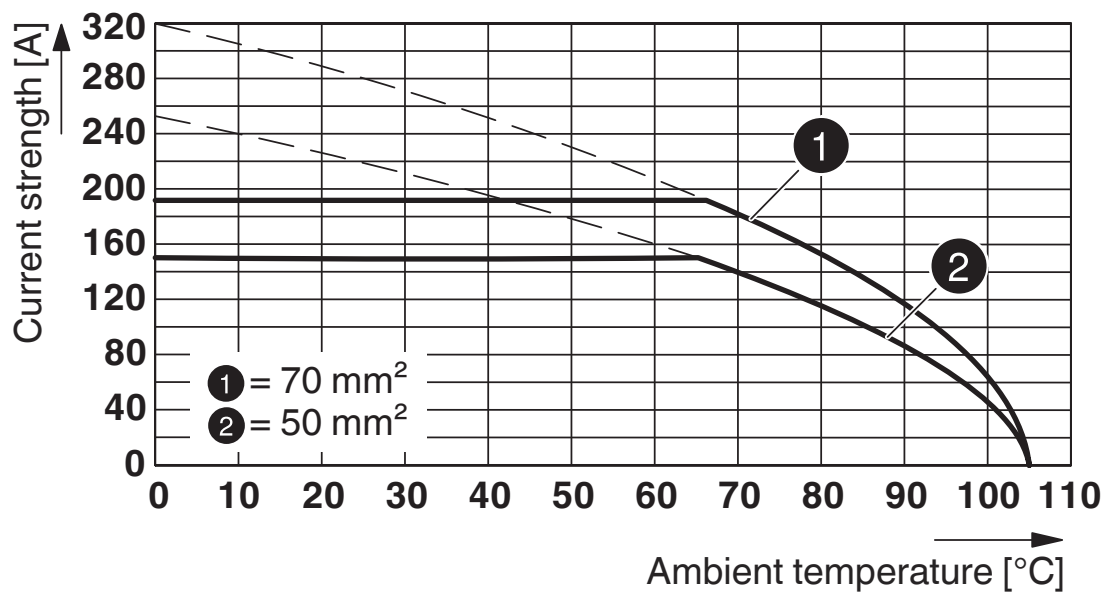
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## Drawings

Dimensional drawing



Diagram



Type: MKDSP 50/...-17,5(-F)(-FL)

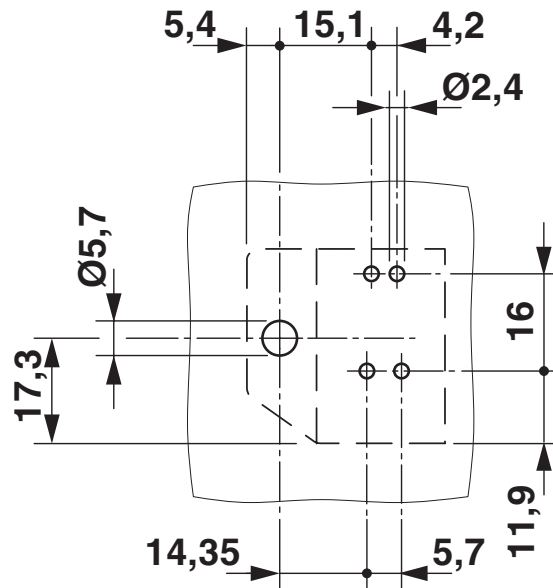
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Drilling plan/solder pad geometry



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1856168>

|  <b>cULus Recognized</b><br>Approval ID: E60425-19770427 |                       |                       |                   |                             |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-------------------|-----------------------------|
|                                                                                                                                           | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
| B                                                                                                                                         |                       |                       |                   |                             |
|                                                                                                                                           | 600 V                 | 160 A                 | 16 - 2/0          | -                           |
| C                                                                                                                                         |                       |                       |                   |                             |
|                                                                                                                                           | 600 V                 | 160 A                 | 16 - 2/0          | -                           |

|  <b>VDE approval of drawings</b><br>Approval ID: 40041859 |                       |                       |                   |                             |
|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-------------------|-----------------------------|
|                                                                                                                                            | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
| keine                                                                                                                                      |                       |                       |                   |                             |
|                                                                                                                                            | 1000 V                | 192 A                 | -                 | 1.5 - 70                    |



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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                                 | 0.53 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)