

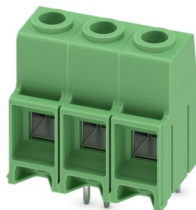
# MKDS 10 HV/ 3-ZB-10,16 - PCB terminal block



1709694

<https://www.phoenixcontact.com/us/products/1709694>

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Printed circuit board terminal, nominal current: 76 A, rated voltage (III/2): 1000 V, nominal cross section: 16 mm<sup>2</sup>, number of potentials: 3, number of rows: 1, number of positions per row: 3, product range: MKDS 10 HV, pitch: 10.16 mm, connection method: Screw connection with tension sleeve, screw head form: L Slotted, mounting: Wave soldering, conductor/PCB connection direction: 0 °, color: green, Pin layout: Zigzag pinning W, Solder pin [P]: 5 mm, number of solder pins per potential: 2, 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
- Unrestricted 600-V-UL approval thanks to compact zig-zag pinning
- Integrated protective guide prevents incorrect insertion of the conductor underneath the tension sleeve

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 1709694       |
| Packing unit                         | 50 pc         |
| Minimum order quantity               | 50 pc         |
| Sales key                            | AA14          |
| Product key                          | AANFFA        |
| GTIN                                 | 4046356074179 |
| Weight per piece (including packing) | 24.974 g      |
| Weight per piece (excluding packing) | 24.56 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            | MKDS 10 HV                       |
| Product line              | COMBICON Terminals L             |
| Type                      | PC terminal block can be aligned |
| Number of positions       | 3                                |
| Pitch                     | 10.16 mm                         |
| Number of connections     | 3                                |
| Number of rows            | 1                                |
| Number of potentials      | 3                                |
| Pin layout                | Zigzag pinning W                 |
| Solder pins per potential | 2                                |

### Electrical properties

#### Properties

|                             |        |
|-----------------------------|--------|
| Nominal current $I_N$       | 76 A   |
| Nominal voltage $U_N$       | 1000 V |
| Rated voltage (III/3)       | 800 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)  | 8 kV   |

### Connection data

#### Connection technology

|                       |                                  |
|-----------------------|----------------------------------|
| Type                  | PC terminal block can be aligned |
| Nominal cross section | 16 mm <sup>2</sup>               |

#### Conductor connection

|   |  |
|---|--|
| Connection method   | Screw connection with tension sleeve       |
| Conductor cross-section rigid   | 0.5 mm <sup>2</sup> ... 16 mm <sup>2</sup> |
| Conductor cross-section flexible  | 0.5 mm <sup>2</sup> ... 16 mm <sup>2</sup> |
| Conductor cross-section AWG   | 20 ... 6                                   |
| Conductor cross-section, flexible, with ferrule, without plastic sleeve             | 0.5 mm <sup>2</sup> ... 16 mm <sup>2</sup> |
| Conductor cross-section, flexible, with ferrule, with plastic sleeve                | 0.5 mm <sup>2</sup> ... 16 mm <sup>2</sup> |
| 2 conductors with same cross section, rigid   | 0.5 mm <sup>2</sup> ... 6 mm <sup>2</sup>  |
| 2 conductors with same cross section, flexible                                      | 0.5 mm <sup>2</sup> ... 6 mm <sup>2</sup>  |
| 2 conductors with same cross section, flexible, with ferrule without plastic sleeve | 0.5 mm <sup>2</sup> ... 4 mm <sup>2</sup>  |

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|   |   |
|---|---|
| 2 conductors with the same cross section, flexible, with TWIN ferrule with plastic sleeve | 0.5 mm <sup>2</sup> ... 6 mm <sup>2</sup> |
| Stripping length  | 10 mm                                     |
| Drive form screw head   | Slotted (L)                               |
| Tightening torque   | 1.2 Nm ... 1.5 Nm                         |

## Mounting

|               |                  |
|---------------|------------------|
| Mounting type | Wave soldering   |
| Pin layout    | Zigzag pinning W |

## 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 (5 µm - 7 µm Sn)   |
| Metal surface terminal point (middle layer) | Nickel (2 µm - 3 µm Ni)  |
| Metal surface soldering area (top layer)    | Tin (5 µm - 7 µm Sn)   |
| Metal surface soldering area (middle layer) | Nickel (2 µm - 3 µm Ni)  |

### 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       |

## Notes

|                     |   |
|---------------------|---|
| Note on application | For reliable conductor connection, always adhere to a defined tightening torque.<br>During conductor connection (mounting), the terminal blocks must be supported (held with one hand, support on the housing). |
|---------------------|---|

## Dimensions

|                     |          |
|---------------------|----------|
| Dimensional drawing |          |
| Pitch               | 10.16 mm |

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|                       |            |
|-----------------------|------------|
| Width [w]             | 30.48 mm   |
| Height [h]            | 35.8 mm    |
| Length [l]            | 18.7 mm    |
| Installed height      | 30.8 mm    |
| Solder pin length [P] | 5 mm       |
| Pin dimensions        | 1 x 0.9 mm |

## PCB design

|               |        |
|---------------|--------|
| Hole diameter | 1.5 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 | 0.5 mm <sup>2</sup> / solid / > 20 N    |
|   | 0.5 mm <sup>2</sup> / flexible / > 20 N |
|   | 16 mm <sup>2</sup> / solid / > 100 N    |
|   | 16 mm <sup>2</sup> / flexible / > 100 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 60947-7-4:2019-01 |
| Insulating material group                              | I                     |
| Comparative tracking index (IEC 60112)                 | CTI 600               |
| Rated insulation voltage (III/3)                       | 800 V                 |
| Rated surge voltage (III/3)                            | 8 kV                  |
| minimum clearance value - non-homogenous field (III/3) | 8 mm                  |
| minimum creepage distance (III/3)                      | 10 mm                 |
| Rated insulation voltage (III/2)                       | 1000 V                |
| Rated surge voltage (III/2)                            | 8 kV                  |

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|  |        |
|--|--------|
| 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)                             | 8 kV   |
| minimum clearance value - non-homogenous field (II/2)  | 8 mm   |
| minimum creepage distance (II/2)                       | 10 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 60695-2-10:2013-04 |
| Temperature      | 850 °C                 |
| Time of exposure | 5 s                    |

### Aging

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

### 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)         | -40 °C ... 105 °C (Depending on the current carrying capacity/derating curve) |

### Ambient conditions

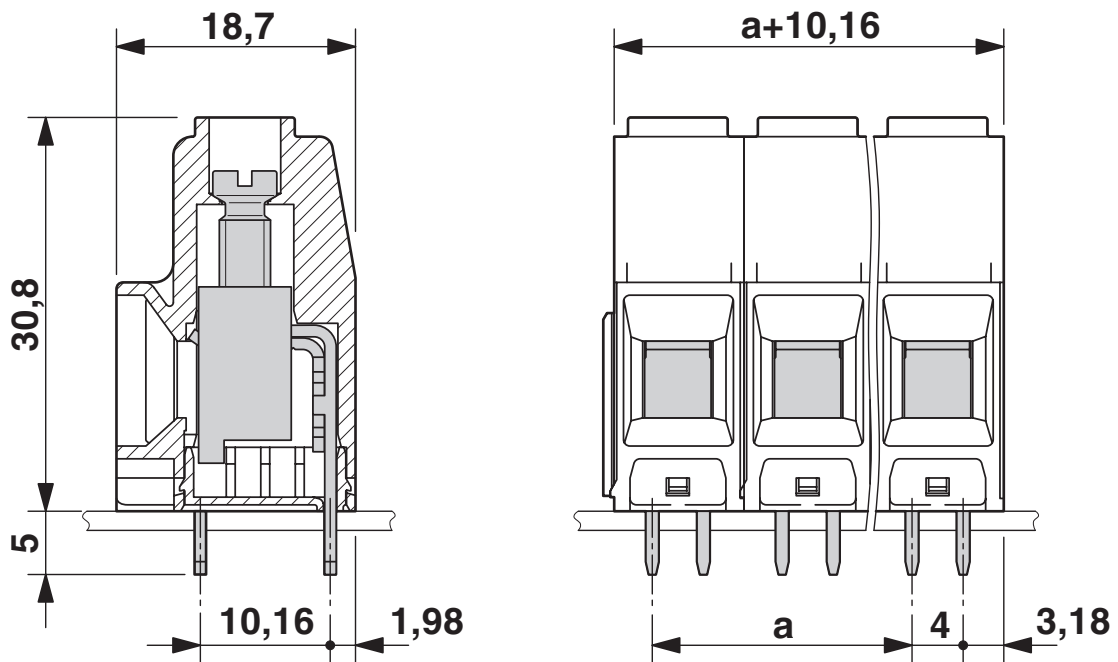
|   |   |
|---|---|
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| Ambient temperature (storage/transport) | -40 °C ... 70 °C  |
| Relative humidity (storage/transport)   | 30 % ... 70 %   |
| Ambient temperature (assembly)          | -5 °C ... 100 °C  |

## Packaging specifications

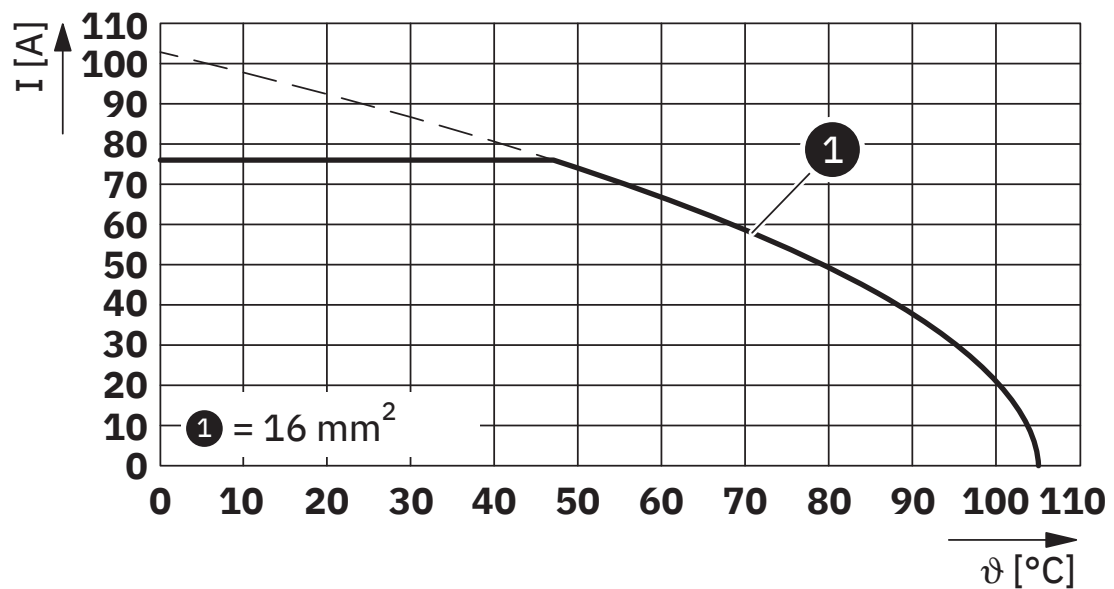
|                   |                     |
|-------------------|---------------------|
| Type of packaging | packed in cardboard |
|-------------------|---------------------|

## Drawings

Dimensional drawing



Diagram



Type: MKDS 10 HV/...-ZB-10,16

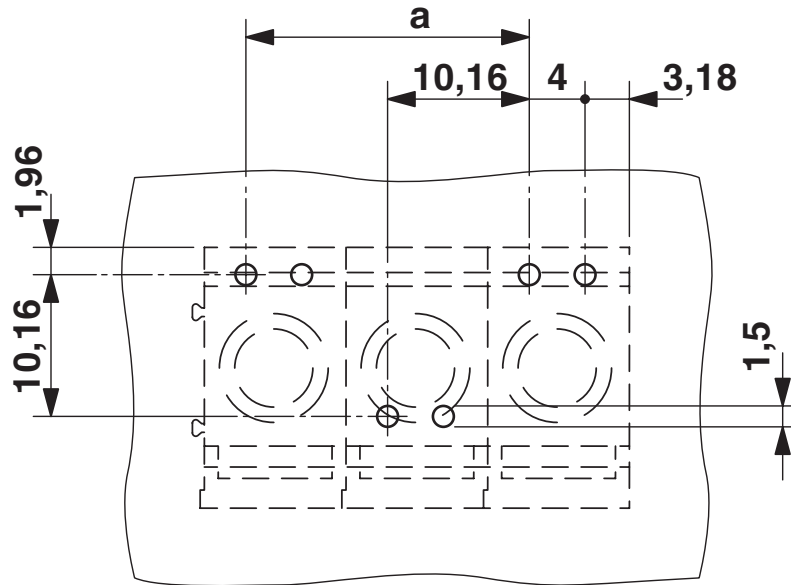
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Drilling plan/solder pad geometry



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1709694>

|  <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                 | 60 A                  | 20 - 6            | -                           |
| C   | 600 V                 | 60 A                  | 20 - 6            | -                           |

|  <b>VDE approval of drawings</b><br>Approval ID: 40055535 |                       |                       |                   |                             |
|--|-----------------------|-----------------------|-------------------|-----------------------------|
|  | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
| keine  | 1000 V                | 76 A                  | -                 | 0.2 - 16                    |

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## Classifications

### ECLASS

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

### ETIM

|           |          |
|-----------|----------|
| ETIM 10.0 | 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% |
|-------------------------------------|----------------------------|

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