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

1709694

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

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PCB terminal block, nominal current: 76 A, rated voltage (III/2): 1000 V, nominal cross section: 16 mm$^2$, 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 |

# Technical data

## Product properties

| | |
|---|---|
| Product type | PCB terminal block |
| 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 |

### Fitting of components

| | |
|---|---|
| Partial assembly | No |

## 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 mm² |

### Conductor connection

| | |
|---|---|
| Connection method | Screw connection with tension sleeve |
| Conductor cross-section rigid | 0.5 mm² ... 16 mm² |
| Conductor cross-section flexible | 0.5 mm² ... 16 mm² |
| Conductor cross-section AWG | 20 ... 6 |
| Conductor cross-section, flexible, with ferrule, without plastic sleeve | 0.5 mm² ... 16 mm² |
| Conductor cross-section, flexible, with ferrule, with plastic sleeve | 0.5 mm² ... 16 mm² |
| 2 conductors with same cross section, rigid | 0.5 mm² ... 6 mm² |
| 2 conductors with same cross section, flexible | 0.5 mm² ... 6 mm² |

| | |
|---|---|
| 2 conductors with same cross section, flexible, with ferrule without plastic sleeve | 0.5 mm² ... 4 mm² |
| 2 conductors with the same cross section, flexible, with TWIN ferrule with plastic sleeve | 0.5 mm² ... 6 mm² |
| 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) |

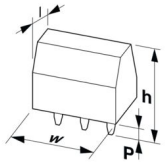
Material data - housing

| | |
|---|---|
| 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 |
| 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 mm² / solid / > 20 N |
| | 0.5 mm² / flexible / > 20 N |
| | 16 mm² / solid / > 100 N |
| | 16 mm² / 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 |
| 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

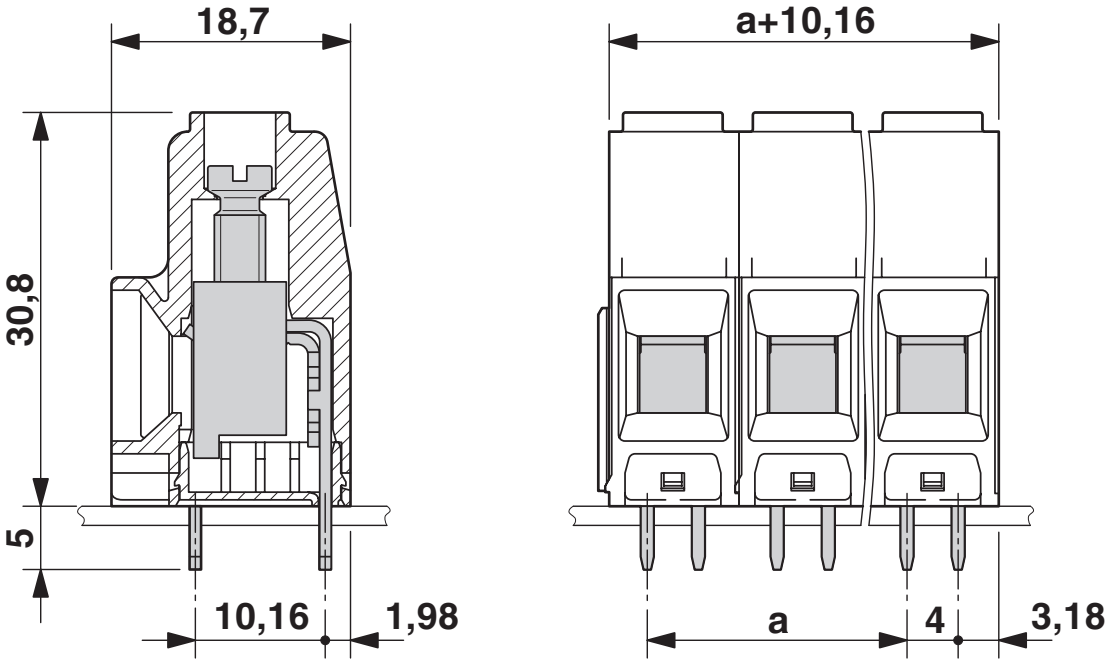
| | |
|---|---|
| Ambient temperature (storage/transport) | -40 °C ... 70 °C |
| Relative humidity (storage/transport) | 30 % ... 70 % |
| Ambient temperature (assembly) | -5 °C ... 100 °C |
| Ambient temperature (operation) | -40 °C ... 105 °C (Depending on the current carrying capacity/derating curve)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

## Packaging specifications

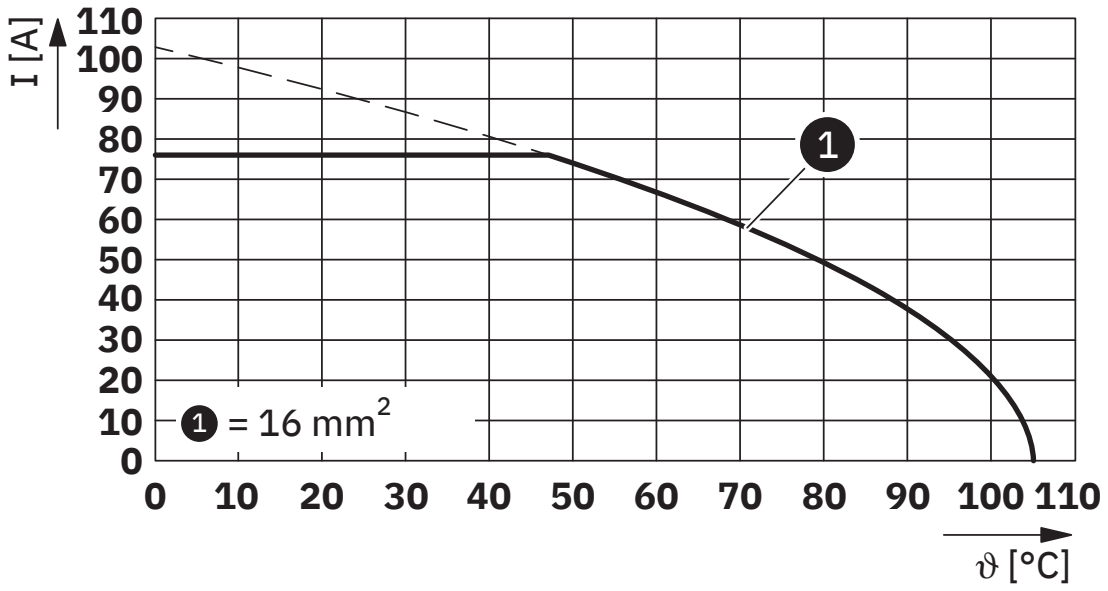
| | |
|---|---|
| Type of packaging | packed in cardboard |

## Drawings

Dimensional drawing

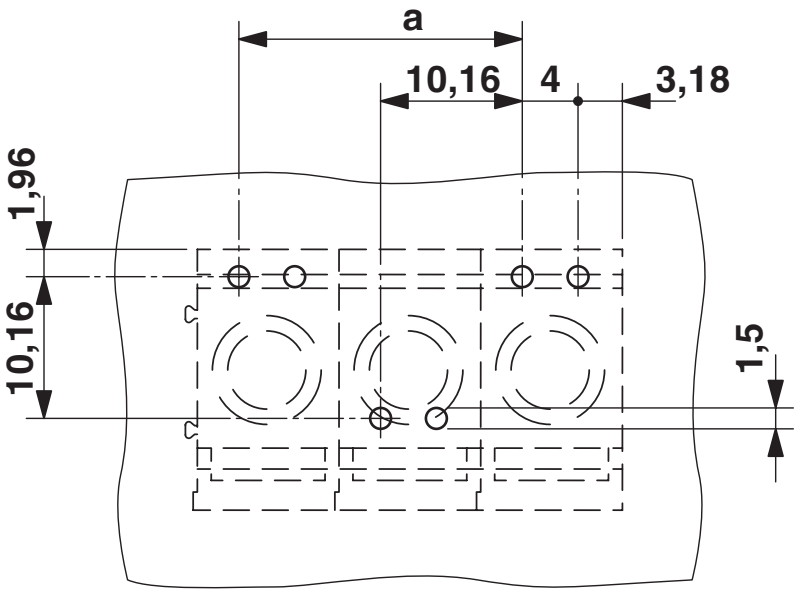



Diagram




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

Drilling plan/solder pad geometry



## Approvals

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

**cULus Recognized**
Approval ID: E60425-19770427

| | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $mm^2$ |
|---|---|---|---|---|
| B | | | | |
| | 600 V | 60 A | 20 - 6 | - |
| C | | | | |
| | 600 V | 60 A | 20 - 6 | - |

**VDE approval of drawings**
Approval ID: 40055535

| | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $mm^2$ |
|---|---|---|---|---|
| keine | | | | |
| | 1000 V | 76 A | - | 0.2 - 16 |

## Classifications

### ECLASS

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

### ETIM

| | |
|---|---|
| ETIM 10.0 | EC002643 |

### UNSPSC

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

## 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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