

# MKDS 1/ 2-3,81 HT BK - PCB terminal block



1985823

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PCB terminal block, nominal current: 13.5 A, rated voltage (III/2): 200 V, nominal cross section: 1.5 mm<sup>2</sup>, number of potentials: 2, number of rows: 1, number of positions per row: 2, product range: MKDS 1/...-HT, pitch: 3.81 mm, connection method: Screw connection with tension sleeve, screw head form: L Slotted, mounting: THR soldering, conductor/PCB connection direction: 0 °, color: black, Pin layout: Linear pinning, Solder pin [P]: 3.5 mm, number of solder pins per potential: 1, type of packaging: packed in cardboard. This article can be soldered in the reflow furnace together with SMD components.

## Your advantages

- Well-known connection principle allows worldwide use
- Low temperature rise, thanks to maximum contact force
- Allows connection of two conductors
- Extremely small design for the respective conductor cross section
- Designed for integration into the SMT soldering process

## Commercial data

Item number	1985823
Packing unit	360 pc
Minimum order quantity	360 pc
Sales key	AA12
Product key	AALGAA
Catalog page	Page 75 (C-1-2013)
GTIN	4017918929220
Weight per piece (including packing)	2.251 g
Weight per piece (excluding packing)	1.8 g
Customs tariff number	85369010
Country of origin	DE

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## Technical data

### Product properties

Type	PC termination block
Product line	COMBICON Terminals S
Product type	Printed circuit board terminal
Product family	MKDS 1/..-HT
Number of positions	2
Pitch	3.81 mm
Number of connections	2
Number of rows	1
Number of potentials	2
Pin layout	Linear pinning
Solder pins per potential	1

### Electrical properties

Nominal current $I_N$	13.5 A
Nominal voltage $U_N$	200 V
Degree of pollution	3
Rated voltage (III/3)	63 V
Rated surge voltage (III/3)	2.5 kV
Rated voltage (III/2)	200 V
Rated surge voltage (III/2)	2.5 kV
Rated voltage (II/2)	200 V
Rated surge voltage (II/2)	2.5 kV

### Connection data

#### Connection technology

Type	PC termination block
Nominal cross section	1.5 mm <sup>2</sup>

#### Conductor connection

Connection method	Screw connection with tension sleeve
Conductor cross section rigid	0.14 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross section flexible	0.14 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross section AWG	26 ... 16
Conductor cross section flexible, with ferrule without plastic sleeve	0.25 mm <sup>2</sup> ... 0.5 mm <sup>2</sup>
Conductor cross section, flexible, with ferrule, with plastic sleeve	0.25 mm <sup>2</sup> ... 0.5 mm <sup>2</sup>
2 conductors with same cross section, solid	0.14 mm <sup>2</sup> ... 0.5 mm <sup>2</sup>
2 conductors with same cross section, flexible	0.14 mm <sup>2</sup> ... 0.34 mm <sup>2</sup>
Stripping length	5 mm
Tightening torque	0.22 Nm ... 0.25 Nm

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## Mounting

Mounting type	THR soldering
Pin layout	Linear pinning
Drive form screw head	Slotted (L)
Connection method	Screw connection with tension sleeve
Drive form screw head	Slotted (L)

## Processing notes

Process	Reflow/wave soldering
Moisture Sensitive Level	MSL 3
Classification temperature $T_c$	260 °C
Solder cycles in the reflow	3

## 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 - 7 $\mu\text{m}$ Sn)
Metal surface terminal point (middle layer)	Nickel (2 - 3 $\mu\text{m}$ Ni)
Metal surface soldering area (top layer)	Tin (5 - 7 $\mu\text{m}$ Sn)
Metal surface soldering area (middle layer)	Nickel (2 - 3 $\mu\text{m}$ Ni)

### Material data - housing

Color (Housing)	black (9005)
Insulating material	PA
Insulating material group	IIIa
CTI according to IEC 60112	250 - 399
Flammability rating according to UL 94	V0

## Notes

Note on application	For safe conductor connection, always adhere to a defined tightening torque. Particularly in the case of PCB terminal blocks with two or three positions, the individual solder pin for each contact point cannot compensate for this. That is why the terminal blocks must be supported during conductor connection (held with one hand, support on the housing).
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## Dimensions

Dimensional drawing	
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Pitch	3.81 mm
Width [w]	7.5 mm
Height [h]	12 mm
Length [l]	7.3 mm
Installed height	8.5 mm
Solder pin length [P]	3.5 mm
Pin dimensions	0.5 x 0.9 mm

## PCB design

Hole diameter	1.1 mm
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## Mechanical tests

### Test for conductor damage and slackening

Specification	IEC 60998-2-1:1990-04
Result	Test passed

### Pull-out test

Specification	IEC 60998-2-1:1990-04
Conductor cross section/conductor type/tractive force setpoint/actual value	0.14 mm <sup>2</sup> / solid / > 10 N
	0.14 mm <sup>2</sup> / flexible / > 10 N
	1.5 mm <sup>2</sup> / solid / > 40 N
	1 mm <sup>2</sup> / flexible / > 35 N

### Torque test

Specification	IEC 60998-2-1:1990-04
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## Electrical tests

### Temperature-rise test

Specification	IEC 60998-1:2002-12
Requirement temperature-rise test	Increase in temperature ≤ 45 K

### Insulation resistance

Specification	IEC 60998-2-1:1990-04
Insulation resistance, neighboring positions	10 <sup>9</sup> Ω

### Air clearances and creepage distances |

Specification	IEC 60947-1:2007-06 + A1:2010-12 + A2:2014-09
Insulating material group	IIIa
Comparative tracking index (IEC 60112)	CTI 250 - 399
Rated insulation voltage (III/3)	63 V
Rated surge voltage (III/3)	2.5 kV
minimum clearance value - non-homogenous field (III/3)	1.5 mm
minimum creepage distance (III/3)	2 mm
Rated insulation voltage (III/2)	200 V
Rated surge voltage (III/2)	2.5 kV

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minimum clearance value - non-homogenous field (III/2)	1.5 mm
minimum creepage distance (III/2)	2 mm
Rated insulation voltage (II/2)	200 V
Rated surge voltage (II/2)	2.5 kV
minimum clearance value - non-homogenous field (II/2)	1.5 mm
minimum creepage distance (II/2)	2 mm

## Environmental and real-life conditions

### Vibration test

Specification	IEC 60068-2-6:1995-03
Frequency	10 - 150 - 10 Hz
Sweep speed	1 octave/min
Amplitude	0.35 mm (10 Hz ... 60.1 Hz)
Sweep speed	5g (60.1 Hz ... 150 Hz)
Test duration per axis	2.5 h

### Glow-wire test

Specification	IEC 60998-2-1:1990-04
Temperature	850 °C
Time of exposure	5 s

### Ambient conditions

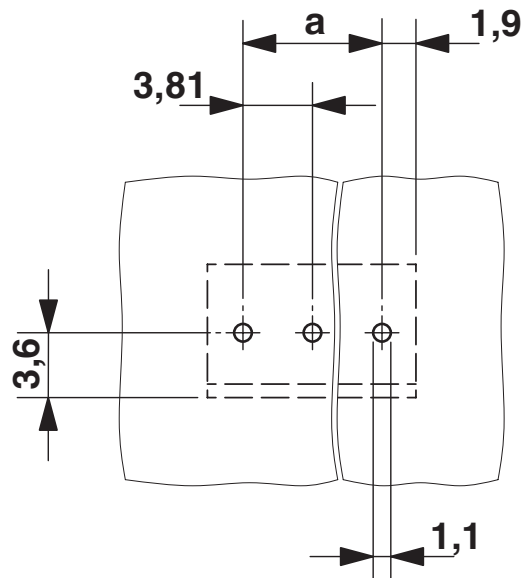
Ambient temperature (operation)	-40 °C ... 100 °C (Depending on the current carrying capacity/derating curve)
Ambient temperature (storage/transport)	-40 °C ... 70 °C
Relative humidity (storage/transport)	30 % ... 70 %
Ambient temperature (assembly)	-5 °C ... 100 °C

## Packaging specifications

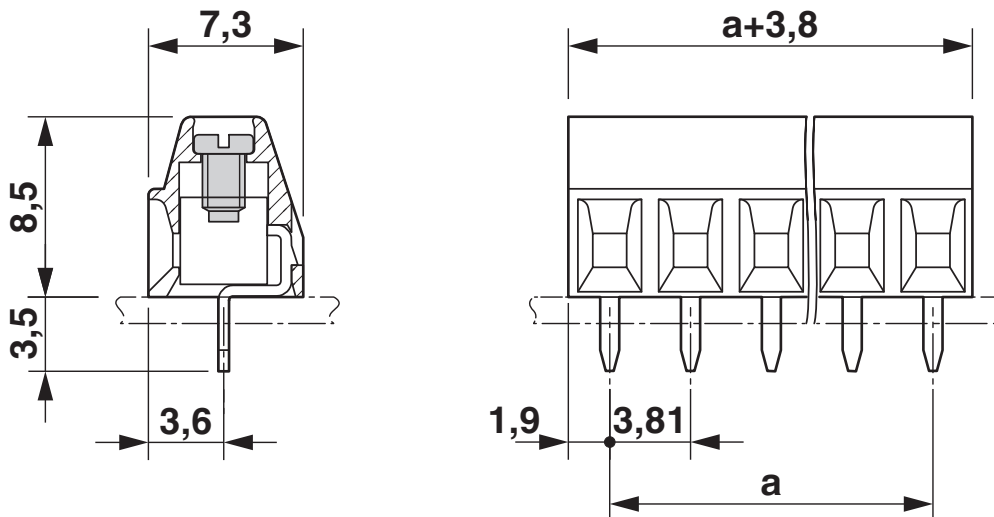
Type of packaging	packed in cardboard
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## Drawings

Drilling plan/solder pad geometry



Dimensional drawing

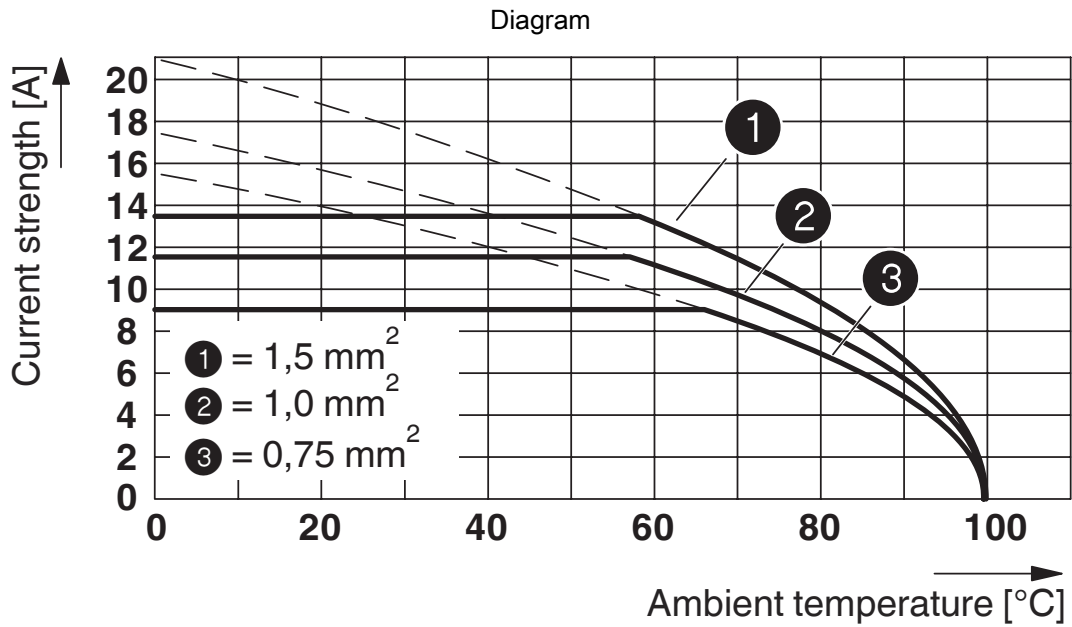


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Type: MKDS 1/...-3,81 HT BK

Test following DIN EN 60512-5-2:2003-01

Reduction factor = 1

No. of pos.: 5

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1985823>

 <b>cULus Recognized</b> Approval ID: E60425-19770427				
	Nominal voltage $U_N$	Nominal current $I_N$	Cross section AWG	Cross section $\text{mm}^2$
<b>Use group B</b>				
Only flexible conductors	300 V	13.5 A	30 - 16	-
Standard	300 V	10 A	30 - 16	-
<b>Use group D</b>				
Only flexible conductors	150 V	13.5 A	30 - 16	-
Standard	300 V	10 A	30 - 16	-

 <b>VDE Zeichengenehmigung</b> Approval ID: 40055394				
	Nominal voltage $U_N$	Nominal current $I_N$	Cross section AWG	Cross section $\text{mm}^2$
	200 V	17.5 A	-	0.2 - 1.5



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## Classifications

### ECLASS

ECLASS-11.0	27460101
ECLASS-12.0	27460101
ECLASS-13.0	27460101

### ETIM

ETIM 9.0	EC002643
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### UNSPSC

UNSPSC 21.0	39121400
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## Environmental product compliance

China RoHS	Environmentally friendly use period: unlimited = EFUP-e
	No hazardous substances above threshold values

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## Accessories

### SZS 0,4X2,5 VDE - Screwdriver

1205037

<https://www.phoenixcontact.com/us/products/1205037>

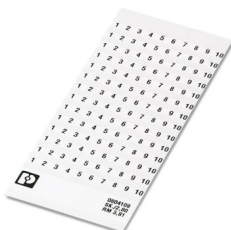


Screwdriver, slot-headed, VDE insulated, size: 0.4 x 2.5 x 80 mm, 2-component grip, with non-slip grip

### SK 3,81/2,8:FORTL.ZAHLEN - Marker card

0804109

<https://www.phoenixcontact.com/us/products/0804109>



Marker card, Sheet, white, labeled, horizontal: consecutive numbers 1 ... 10, 11 .. 20, etc. up to 91 ... (99)100, mounting type: adhesive, for terminal block width: 3.81 mm, lettering field size: 3.81 x 2.8 mm, Number of individual labels: 14

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## B-STIFT - Marker pen

1051993

<https://www.phoenixcontact.com/us/products/1051993>



Marker pen, for manual labeling of unprinted Zack strips, smear-proof and waterproof, line thickness 0.5 mm

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