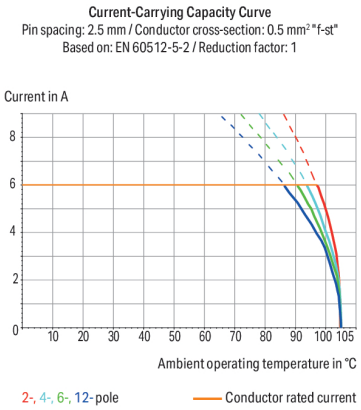
# Data Sheet | Item Number: 233-148

PCB terminal block; 0.5 mm²; Pin spacing 2.5 mm; 48-pole; CAGE CLAMP®; gray

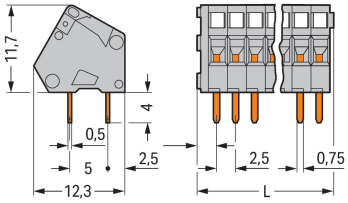
https://www.wago.com/233-148






Color: gray

Similar to illustration




Dimensions in mm
L = (pole no. x pin spacing) + 2.3 mm

PCB terminal block, 233 Series, CAGE CLAMP®

This PCB terminal block (item number 233-148) is designed for quick and easy connections. It is perfect for custom installations with different mounting types. Conductors can only be connected to this PCB terminal block if their strip length is between 5 and 6 mm . This product features one conductor terminal and utilizes CAGE CLAMP®. Our CAGE CLAMP® connection offers a safe and maintenance-free way to connect all types of conductors. You do not need to prepare the conductor in any way, such as crimping ferrules. Dimensions: (122.3 x 15.7 x 12.1) mm (width x height x depth). Depending on the type of conductor, this PCB terminal block is designed for conductor cross sections ranging from 0.08 mm² to 0.5 mm². The contact surface is coated with tin. An operating tool is used to operate this PCB terminal block. The PCB terminal block is designed for THT soldering. Insert the conductor into the board at an angle of 30°..

## Notes

| | |
|---|---|
| Variants: | Other pole numbers<br>Other colors<br>Mixed-color PCB connector strips<br>Direct marking<br>Other versions (or variants) can be requested from WAGO Sales or configured at https://configurator.wago.com/. |

## Electrical data

| Ratings per | IEC/EN 60664-1 | | |
|---|---|---|---|
| Overvoltage category | III | III | II |
| Pollution degree | 3 | 2 | 2 |
| Nominal voltage | 63 V | 160 V | 320 V |
| Rated impulse withstand voltage | 2.5 kV | 2.5 kV | 2.5 kV |
| Rated current | 6 A | 6 A | 6 A |

| Approvals per | UL 1059 | | |
|---|---|---|---|
| Use group | B | C | D |
| Rated voltage | 150 V | - | - |
| Rated current | 4 A | - | - |

| Approvals per | CSA | | |
|---|---|---|---|
| Use group | B | C | D |
| Rated voltage | 150 V | - | - |
| Rated current | 4 A | - | - |

## Connection Data

| | |
|---|---|
| Clamping units | 48 |
| Total number of potentials | 48 |
| Number of connection types | 1 |
| Number of levels | 1 |

### Connection 1

| | |
|---|---|
| Connection technology | CAGE CLAMP® |
| Actuation type | Operating tool |
| Solid conductor | 0.08 … 0.5 mm² / 28 … 20 AWG |
| Fine-stranded conductor | 0.08 … 0.5 mm² / 28 … 20 AWG |
| Fine-stranded conductor; with insulated ferrule | 0.25 mm² |
| Fine-stranded conductor; with uninsulated ferrule | 0.25 mm² |
| Note (conductor cross-section) | Terminating 0.75 mm²/18 AWG conductors is possible; however insulation diameter allows only every other clamping unit to be terminated with this conductor size. |
| Strip length | 5 … 6 mm / 0.2 … 0.24 inches |
| Conductor connection direction to PCB | 30 ° |
| Pole number | 48 |

## Physical data

| | |
|---|---|
| Pin spacing | 2.5 mm / 0.098 inches |
| Width | 122.3 mm / 4.815 inches |
| Height | 15.7 mm / 0.618 inches |
| Height from the surface | 11.7 mm / 0.461 inches |
| Depth | 12.1 mm / 0.476 inches |
| Solder pin length | 4 mm |
| Solder pin dimensions | 0.5 x 0.75 mm |
| Drilled hole diameter | 1.1 $^{(+0.1)}$ mm |


Continued on next page

## PCB contact

| | |
|---|---|
| PCB contact | THT |
| Solder pin arrangement | over the entire terminal strip (in-line) |
| Number of solder pins per potential | 2 |

## Material data

| | |
|---|---|
| Note (material data) | Information on material specifications can be found here |
| Color | gray |
| Material group | I |
| Insulation material (main housing) | Polyamide (PA66) |
| Flammability class per UL94 | V0 |
| Clamping spring material | Chrome-nickel spring steel (CrNi) |
| Contact material | Electrolytic copper ($E_{Cu}$) |
| Contact Plating | Tin |
| Fire load | 0.195 MJ |
| Weight | 16.1 g |

## Environmental requirements

| | |
|---|---|
| Limit temperature range | -60 … +105 °C |

## Commercial data

| | |
|---|---|
| Product Group | 4 (Printed Circuit Connectors) |
| PU (SPU) | 40 (10) pcs |
| Packaging type | Box |
| Country of origin | CH |
| GTIN | 4045454050818 |
| Customs tariff number | 85369010000 |

## Product Classification

| | |
|---|---|
| UNSPSC | 39121409 |
| eCl@ss 10.0 | 27-44-04-01 |
| eCl@ss 9.0 | 27-44-04-01 |
| ETIM 9.0 | EC002643 |
| ETIM 10.0 | EC002643 |
| ECCN | NO US CLASSIFICATION |

## Environmental Product Compliance

| | |
|---|---|
| RoHS Compliance Status | Compliant,No Exemption |

## Approvals / Certificates

### General approvals

| Approval | Standard | Certificate Name |
|---|---|---|
| CCA<br>DEKRA Certification B.V. | EN 60998 | NTR NL 6946 |
| CCA<br>DEKRA Certification B.V. | EN 60998 | 2153951.01 |
| CCA<br>DEKRA Certification B.V. | EN 60947-7-4 | NTR NL 7786 |

### General approvals

| | | |
|---|---|---|
| CSA<br>DEKRA Certification B.V. | C22.2 | 1465035 |
| KEMA/KEUR<br>DEKRA Certification B.V. | EN 60947-7-4 | 71-111040 |
| UL<br>UL International Germany GmbH | UL 1059 | E45172 |


Continued on next page

## Declarations of conformity and manufacturer's declarations

| Approval | Standard | Certificate Name |
|---|---|---|
| EU-Declaration of Conformity<br>WAGO GmbH & Co. KG | - | - |
| UK-Declaration of Conformity<br>WAGO GmbH & Co. KG | - | - |

## Approvals for marine applications

| Approval | Standard | Certificate Name |
|---|---|---|
| ABS<br>American Bureau of Shipping | - | 24-0095975-PDA |
| DNV<br>DNV GL SE | - | TAE000016Z |
| PRS<br>Polski Rejestr Statków | - | TE/1095/880590/23 |

# Downloads

## Environmental Product Compliance

### Compliance Search

Environmental Product Compliance 233-148

## Documentation

### Additional Information

| | | |
|---|---|---|
| Technical Section | 03.04.2019 | pdf<br>2027.26 KB |

## CAD/CAE-Data

### CAD data

2D/3D Models 233-148

### CAE data

EPLAN Data Portal 233-148

ZUKEN Portal 233-148

### PCB Design

Symbol and Footprint via SamacSys 233-148

Symbol and Footprint via Ultra Librarian 233-148


Continued on next page

# 1 Compatible Products

## 1.1 Optional Accessories

### 1.1.1 Ferrule

#### 1.1.1.1 Ferrule



Item No.: 216-321
Ferrule; Sleeve for 0.25 mm² / AWG 24; insulated; electro-tin plated; yellow



Item No.: 216-151
Ferrule; Sleeve for 0.25 mm² / AWG 24; uninsulated; electro-tin plated; silver-colored

### 1.1.2 Marking

#### 1.1.2.1 Marking strip



Item No.: 210-331/250-202
Marking strips; as a DIN A4 sheet; MARKED; 1-16 (400x); Height of marker strip: 2.3 mm/0.091 in; Strip length 182 mm; Horizontal marking; Self-adhesive; white



Item No.: 210-331/254-202
Marking strips; as a DIN A4 sheet; MARKED; 1-16 (400x); Height of marker strip: 2.3 mm/0.091 in; Strip length 182 mm; Horizontal marking; Self-adhesive; white



Item No.: 210-331/250-207
Marking strips; as a DIN A4 sheet; MARKED; 1-48 (100x); Height of marker strip: 2.3 mm/0.091 in; Strip length 182 mm; Horizontal marking; Self-adhesive; white



Item No.: 210-331/254-207
Marking strips; as a DIN A4 sheet; MARKED; 1-48 (100x); Height of marker strip: 2.3 mm/0.091 in; Strip length 182 mm; Horizontal marking; Self-adhesive; white



Item No.: 210-331/250-204
Marking strips; as a DIN A4 sheet; MARKED; 17-32 (400x); Height of marker strip: 2.3 mm/0.091 in; Strip length 182 mm; Horizontal marking; Self-adhesive; white



Item No.: 210-331/254-204
Marking strips; as a DIN A4 sheet; MARKED; 17-32 (400x); Height of marker strip: 2.3 mm/0.091 in; Strip length 182 mm; Horizontal marking; Self-adhesive; white



Item No.: 210-331/250-206
Marking strips; as a DIN A4 sheet; MARKED; 33-48 (400x); Height of marker strip: 2.3 mm/0.091 in; Strip length 182 mm; Horizontal marking; Self-adhesive; white



Item No.: 210-331/254-206
Marking strips; as a DIN A4 sheet; MARKED; 33-48 (400x); Height of marker strip: 2.3 mm/0.091 in; Strip length 182 mm; Horizontal marking; Self-adhesive; white

### 1.1.3 Tool

#### 1.1.3.1 Operating tool



Item No.: 210-719
Operating tool; Blade: 2.5 x 0.4 mm; with a partially insulated shaft



Item No.: 210-648
Operating tool; Blade: 2.5 x 0.4 mm; with a partially insulated shaft; angled; short



Item No.: 210-647
Operating tool; Blade: 2.5 x 0.4 mm; with a partially insulated shaft; multicoloured



Item No.: 233-335
Operating tool; green



Item No.: 233-331
Operating tool; insulated; yellow



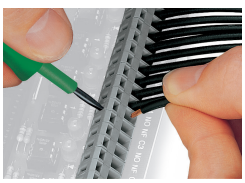
Item No.: 233-332
Operating tool; made of insulating material; white

## Installation Notes

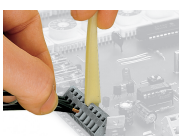
### Conductor termination



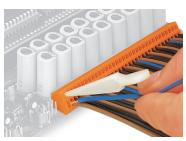
Inserting a conductor via 3.5 mm screwdriver.
Screwdriver actuation parallel to conductor entry



Inserting a conductor via 3.5 mm screwdriver.
Screwdriver actuation perpendicular to conductor entry



Inserting a conductor via operating tool.



Compared to standard screwdrivers, these operating tools are far more convenient for wiring PCB terminal strips at factory.

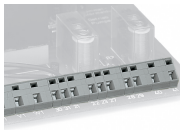

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## Installation



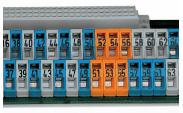
PCB Terminal Strips placed behind each other save space – staggering them by half the pin spacing simplifies subsequent wiring of the first row.

## Installation



Combining PCB terminal blocks with different pin spacing.

## Marking



Optional: Labeling via factory direct marking.



Optional: Labeling with self-adhesive marking strips possible