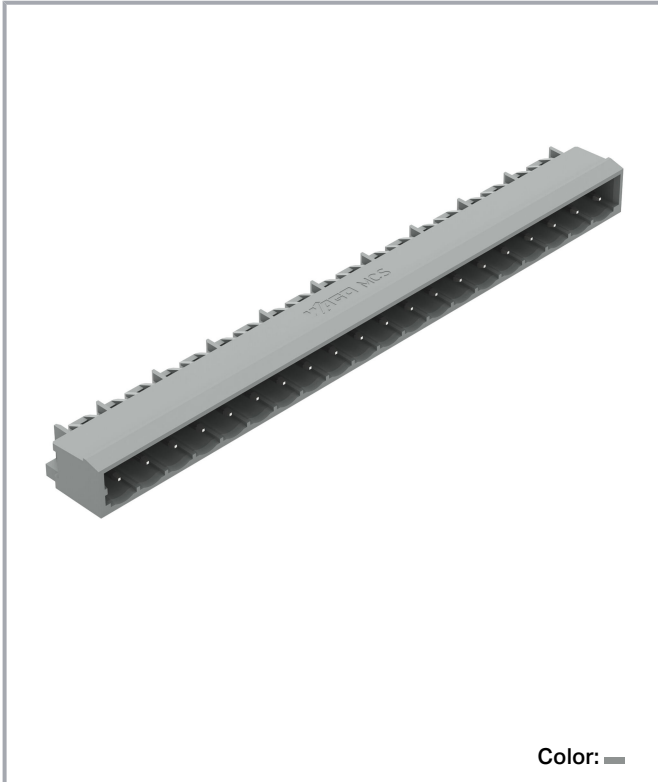


Data sheet | Item number: 231-450/001-000

THT male header; 1.0 x 1.0 mm solder pin; angled; Pin spacing 5 mm; 20-pole; gray



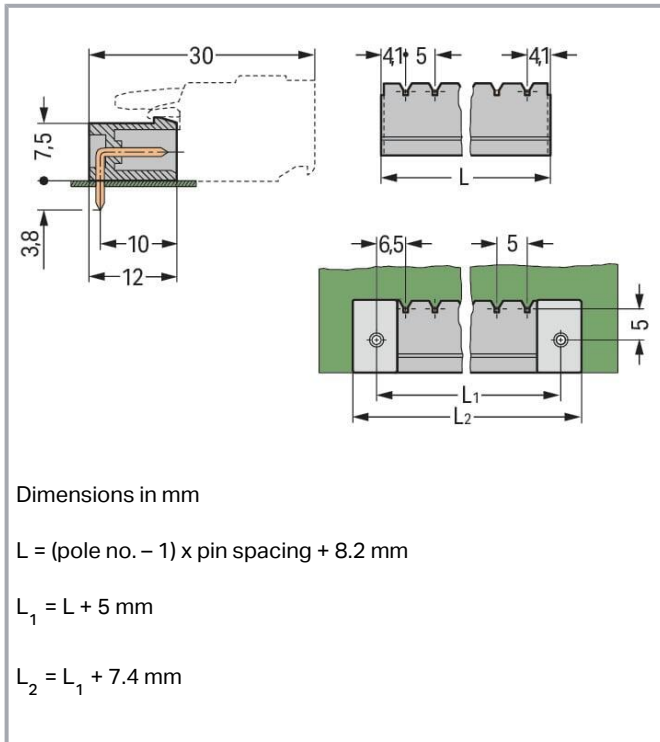
www.wago.com/231-450/001-000



Subject to changes. Please also observe the further product documentation!

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Item description

- Horizontal or vertical PCB mounting via straight or angled solder pins
- Pin cross-section: 1 x 1 mm
- With coding fingers

Data

Notes

Safety information

The *MCS – MULTI CONNECTION SYSTEM* includes connectors without breaking capacity in accordance with DIN EN 61984. When used as intended, these connectors must not be connected /disconnected when live or under load. When used as intended, these connectors must not be connected/disconnected when live or under load. The circuit design should ensure header pins, which can be touched, are not live when unmated.

Variants:

Other pole numbers
 3.8 mm pin projection for male headers with straight solder pins
 Gold-plated or partially gold-plated contact surfaces
 Other versions (or variants) can be requested from WAGO Sales or configured at <https://configurator.wago.com/>.

Subject to changes. Please also observe the further product documentation!

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Electrical data

Ratings per IEC/EN

| Ratings per | IEC/EN 60664-1 |
|-------------------------------|---|
| Nominal voltage (III/3) | 320 V |
| Rated impulse voltage (III/3) | 4 kV |
| Rated voltage (III/2) | 320 V |
| Rated impulse voltage (III/2) | 4 kV |
| Nominal voltage (II/2) | 630 V |
| Rated surge voltage (II/2) | 4 kV |
| Rated current | 12 A |
| Legend (ratings) | (III / 2) $\hat{=}$ Overvoltage category III / Pollution degree 2 |

Ratings per UL 1059

| Approvals per | UL 1059 |
|--------------------------------|---------|
| Rated voltage UL (Use Group B) | 300 V |
| Rated current UL (Use Group B) | 10 A |
| Rated voltage UL (Use Group D) | 300 V |
| Rated current UL (Use Group D) | 10 A |

Ratings per UL 1977

| | |
|-------------------------|-------|
| Rated voltage (UL 1977) | 600 V |
| Rated current UL 1977 | 10 A |

Ratings per CSA

| Approvals per | CSA |
|---------------------------------|-------|
| Rated voltage CSA (Use Group B) | 300 V |
| Rated current CSA (Use Group B) | 10 A |
| Rated voltage CSA (Use Group D) | 300 V |
| Rated current CSA (Use Group D) | 10 A |

Connection data

| | |
|----------------------------|----|
| Total number of potentials | 20 |
| Number of connection types | 1 |
| Number of levels | 1 |

Subject to changes. Please also observe the further product documentation!



Connection 1

| | |
|-------------|----|
| Pole number | 20 |
|-------------|----|

Physical data

| | |
|--------------------------------------|--------------------------|
| Pin spacing | 5 mm / 0.197 inches |
| Width | 103.2 mm / 4.063 inches |
| Height | 12.2 mm / 0.48 inches |
| Height from the surface | 8.4 mm / 0.331 inches |
| Depth | 12 mm / 0.472 inches |
| Solder pin length | 3.8 mm |
| Solder pin dimensions | 1 x 1 mm |
| Drilled hole diameter with tolerance | 1.4 ^(+0.1) mm |

Mechanical Data

| | |
|--------------------------|-----|
| Variable coding | Yes |
| Anti-rotation protection | Yes |

Plug-in connection

| | |
|--------------------------------------|---------------------|
| Contact type (pluggable connector) | Male connector/plug |
| Connector (connection type) | for PCB |
| Mismating protection | No |
| Plugging without loss of pin spacing | No |
| Mating direction to the PCB | 0° |
| Locking of plug-in connection | none |

PCB contact

| | |
|-------------------------------------|--|
| PCB contact | THT |
| Solder pin arrangement | over the entire male connector (in-line) |
| Number of solder pins per potential | 1 |

Material Data

| | |
|----------------------|--|
| Note (material data) | Information on material specifications can be found here |
| Color | gray |
| Material group | I |

Subject to changes. Please also observe the further product documentation!

| | |
|-----------------------------|--|
| Insulation material | Polyamide (PA66) |
| Flammability class per UL94 | V0 |
| Contact material | Electrolytic copper (E _{Cu}) |
| Contact plating | Tin |
| Fire load | 0.21 MJ |
| Weight | 6.2 g |

Environmental requirements

| | |
|-------------------------|-----------------|
| Limit temperature range | -60 ... +100 °C |
| Processing temperature | -35 ... +60 °C |

Commercial data


| | |
|-----------------------|------------------------|
| Product Group | 3 (Multi Conn. System) |
| eCl@ss 10.0 | 27-44-04-02 |
| eCl@ss 9.0 | 27-44-04-02 |
| ETIM 8.0 | EC002637 |
| ETIM 7.0 | EC002637 |
| PU (SPU) | 50 pcs |
| Packaging type | box |
| Country of origin | PL |
| GTIN | 4044918866637 |
| Customs tariff number | 85366990990 |

Environmental Product Compliance

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



Approvals / Certificates

General approvals

| Logo | Approval | Additional Approval Text | Certificate name |
|--|---------------------------------------|--------------------------|------------------|
| | CB DEKRA Certification B.V. | IEC 61984 | NL-39756 /A1 |
|  | CSA DEKRA Certification B.V. | C22.2 | LR 18677- 25 |
| | KEMA/KEUR DEKRA Certification B.V. | EN 61984 | 71- 121453 |

Subject to changes. Please also observe the further product documentation!






| | | | |
|--|--------------------------------------|---------|--------|
|  | UL Underwriters Laboratories Inc. | UL 1059 | E45172 |
|  | UR Underwriters Laboratories Inc. | UL 1977 | E45171 |


Declarations of conformity and manufacturer's declarations

| Logo | Approval | Additional Approval Text | Certificate name |
|--|-------------------------------|--------------------------|------------------|
|  | Railway WAGO GmbH & Co. KG | - | Railway Ready |

Approvals for marine applications

| Logo | Approval | Additional Approval Text | Certificate name |
|--|--|--------------------------|--------------------------|
|  | ABS American Bureau of Shipping | - | 19- HG1869876- PDA |
|  | BV Bureau Veritas S.A. | IEC 60998 | 11915/DO BV |
|  | DNV GL Det Norske Veritas, Germanischer Lloyd | - | TAE000016Z |

Counterpart

| | | |
|--|--|--|
|  | Item no.231-120/026-000 1-conductor female connector; CAGE CLAMP®; 2.5 mm ² ; Pin spacing 5 mm; 20-pole; 2,50 mm ² ; gray | www.wago.com/231-120/026-000 |
| | Item no.2231-120/026-000 | |

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| | | |
|--|--|--|
|  | 1-conductor female connector; push-button; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 20-pole; 2,50 mm²; gray | www.wago.com/2231-120/026-000 |
|  | Item no.2231-120/037-000 1-conductor female connector; push-button; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 20-pole; Lateral locking levers; 2,50 mm²; gray | www.wago.com/2231-120/037-000 |
|  | Item no.2231-120/031-000 1-conductor female connector; push-button; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 20-pole; clamping collar; 2,50 mm²; gray | www.wago.com/2231-120/031-000 |
|  | Item no.231-120/031-000 1-conductor female connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 20-pole; clamping collar; 2,50 mm²; gray | www.wago.com/231-120/031-000 |
|  | Item no.231-120/027-000 1-conductor female connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 20-pole; clamping collar; 2,50 mm²; gray | www.wago.com/231-120/027-000 |
|  | Item no.2231-120/102-000 1-conductor female connector; push-button; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 20-pole; with integrated end plate; 2,50 mm²; gray | www.wago.com/2231-120/102-000 |
|  | Item no.231-120/037-000 1-conductor female connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 20-pole; Lateral locking levers; 2,50 mm²; gray | www.wago.com/231-120/037-000 |
|  | Item no.232-120/026-000 1-conductor female connector, angled; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 20-pole; 2,50 mm²; gray | www.wago.com/232-120/026-000 |
|  | Item no.232-220/026-000 1-conductor female connector, angled; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 20-pole; 2,50 mm²; gray | www.wago.com/232-220/026-000 |

Optional accessories

Coding

Intermediate plate



Item no.: 231-500
Spacer; for formation of groups; light gray

www.wago.com/231-500

Coding



Item no.: 231-129
Coding key; snap-on type; light gray

www.wago.com/231-129

Mounting

Mounting accessories

Subject to changes. Please also observe the further product documentation!



Item no.: 231-193

Locking device; for male connectors; 1 part; gray

www.wago.com/231-193

Downloads

Documentation

Additional Information

| | | | |
|------------------------|------------|--------|----------|
| Technical Section | 2019 Apr 3 | pdf | Download |
| Technical explanations | | 2.0 MB | |

CAD/CAE-Data

CAE data

| | | |
|-----------------------------------|-----|----------|
| EPLAN Data Portal 231-450/001-000 | URL | Download |
| ZUKEN Portal 231-450/001-000 | URL | Download |
| EPLAN Data Portal 231-450/001-000 | URL | Download |

PCB Design

| | | |
|--------------------------------------|-----|----------|
| Symbol and Footprint 231-450/001-000 | URL | Download |
|--------------------------------------|-----|----------|

CAX data for your PCB design, consisting of "schematic symbols and PCB footprints", allow easy integration of the WAGO component into your development environment.

Supported formats:

- Accel EDA 14 & 15
- Altium 6 to current version
- Cadence Allegro
- DesignSpark
- Eagle Libraries
- KiCad
- Mentor Graphics BoardStation
- Mentor Graphics Design Architect
- Mentor Graphics Design Expedition 99 and 2000
- OrCAD 9.X PCB and Capture
- PADS PowerPCB 3, 3.5, 4.X, and 5.X
- PADS PowerPCB and PowerLogic 3.0
- PCAD 2000, 2001, 2002, 2004, and 2006

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- Pulsonix 8.5 or newer
- STL
- 3D STEP
- TARGET 3001!
- View Logic ViewDraw
- Quadcept
- Zuken CadStar 3 and 4
- Zuken CR-5000 and CR-8000

PCB Component Libraries (EDA), PCB CAD Library Ultra Librarian

CAD data

| | | |
|------------------------------|---------------------|--------------------------|
| 2D/3D Models 231-450/001-000 | URL | Download |
|------------------------------|---------------------|--------------------------|

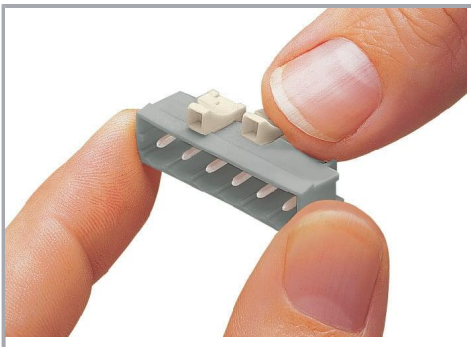
Environmental Product Compliance

Compliance Search

| | | |
|---|---------------------|--------------------------|
| Environmental Product Compliance 231-450/001-000 | URL | Download |
| THT male header; 1.0 x 1.0 mm solder pin; angled; Pin spacing 5 mm; 20-pole; gray | | |

Installation Notes

Coding



Coding a male header – fitting coding key(s).

Product family

MCS MIDI Classic

[Show all products from the family](#)

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