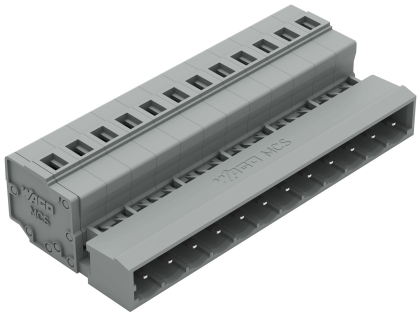
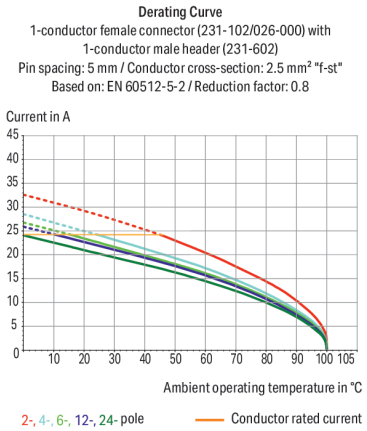
# Data Sheet | Item Number: 231-612

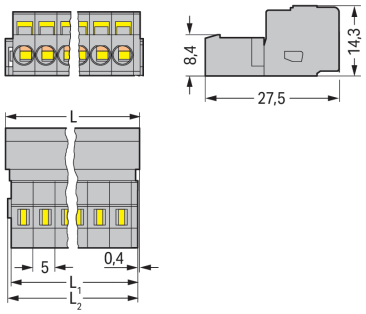
1-conductor male connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; gray

https://www.wago.com/231-612






Color: gray




Dimensions in mm
L = (pole no. – 1) x pin spacing + 8.2 mmL1 = L – 1.7 mmL2 = L – 1.2 mm

Male connector, 231 Series, CAGE CLAMP®

Error-free electrical installations are guaranteed with this male connector (item number 231-612). Conductors should only be connected to this male connector if their strip length is between 8 and 9 mm . Featuring one conductor terminal along with CAGE CLAMP®, this connector is highly versatile. Our CAGE CLAMP® connection provides 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. The item's dimensions are (63.2 x 14.3 x 27.5) mm (width x height x depth). Depending on the conductor type, this male connector is suitable for conductor cross sections ranging from 0.08 mm² to 2.5 mm². The contact surface is coated with tin.

| 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<br>Gold-plated or partially gold-plated contact surfaces<br>Other versions (or variants) can be requested from WAGO Sales or configured at https://configurator.wago.com/. |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## Electrical data

| Ratings per | IEC/EN 60664-1 | | |
|---|---|---|---|
| Overvoltage category | III | III | II |
| Pollution degree | 3 | 2 | 2 |
| Nominal voltage | 320 V | 320 V | 630 V |
| Rated impulse withstand voltage | 4 kV | 4 kV | 4 kV |
| Rated current | 12 A | 12 A | 12 A |

| Approvals per | UL 1059 | | |
|---|---|---|---|
| Use group | B | C | D |
| Rated voltage | 300 V | - | 300 V |
| Rated current | 15 A | - | 10 A |

| Approvals per | UL 1977 |
|---|---|
| Rated voltage | 600 V |
| Rated current | 15 A |

| Approvals per | CSA | | |
|---|---|---|---|
| Use group | B | C | D |
| Rated voltage | 300 V | - | 300 V |
| Rated current | 15 A | - | 10 A |

## Connection Data

| | |
|---|---|
| Clamping units | 12 |
| Total number of potentials | 12 |
| Number of connection types | 1 |
| Number of levels | 1 |

| Connection 1 | |
|---|---|
| Connection technology | CAGE CLAMP® |
| Actuation type | Operating tool |
| Actuation direction 1 | Operation parallel to conductor entry |
| Actuation direction 2 | Operation perpendicular to conductor entry |
| Solid conductor | 0.08 … 2.5 mm² / 28 … 12 AWG |
| Fine-stranded conductor | 0.08 … 2.5 mm² / 28 … 12 AWG |
| Fine-stranded conductor; with insulated ferrule | 0.25 … 1.5 mm² |
| Fine-stranded conductor; with uninsulated ferrule | 0.25 … 2.5 mm² |
| Strip length | 8 … 9 mm / 0.31 … 0.35 inches |
| Pole number | 12 |
| Conductor entry direction to mating direction | 0 ° |

## Physical data

| | |
|---|---|
| Pin spacing | 5 mm / 0.197 inches |
| Width | 63.2 mm / 2.488 inches |
| Height | 14.3 mm / 0.563 inches |
| Depth | 27.5 mm / 1.083 inches |

## Mechanical data

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

## Plug-in connection

| | |
|---|---|
| Contact type (pluggable connector) | Male connector/plug |
| Connector (connection type) | for conductor |
| Mismating protection | No |


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## 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 | 0.273 MJ |
| Weight | 18 g |

## Environmental requirements

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

### Environmental Testing

| | |
|---|---|
| Test specification: Railway applications – Rolling stock – Electronic equipment | DIN EN 50155 (VDE 0115-200):2022-06 |
| Test procedure: Railway applications – Rolling stock equipment – Vibration and shock tests | DIN EN 61373 (VDE 0115-0106):2011-04 |
| Spectrum/Mounting location | Service life test, Category 1, Class A/B |
| Functional test with noise-like oscillations | Test passed according to Section 8 of the standard |
| Frequency | $f_1$ = 5 Hz to $f_2$ = 150 Hz |
| Acceleration | 0.101g (highest test level used for all axes) |
| Test duration per axis | 10 min. |
| Test directions | X, Y and Z axes |
| Monitoring of contact faults and interruptions | Passed |
| Voltage drop measurement before and after each axis | Passed |
| Simulated service life test through increased levels of noise-like oscillations | Test passed according to Section 9 of the standard |
| Frequency | $f_1$ = 5 Hz to $f_2$ = 150 Hz |
| Acceleration | 0.572g (highest test level used for all axes) |
| Test duration per axis | 5 h |
| Test directions | X, Y and Z axes |
| Extended testing: Monitoring of contact faults and interruptions | Passed |
| Extended testing: Voltage drop measurement before and after each axis | Passed |
| Shock test | Test passed according to Section 10 of the standard |
| Shock pulse form | Half sine |
| Acceleration | 5g (highest test level used for all axes) |
| Shock duration | 30 ms |
| Number of shocks (per axis) | 3 pos. und 3 neg. |
| Test directions | X, Y and Z axes |
| Extended testing: Monitoring of contact faults and interruptions | Passed |
| Extended testing: Voltage drop measurement before and after each axis | Passed |
| Vibration and shock stress for rolling stock equipment | Passed |


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## Commercial data

| | |
|---|---|
| Product Group | 3 (Multi Conn. System) |
| PU (SPU) | 25 pcs |
| Packaging type | Box |
| Country of origin | DE |
| GTIN | 4044918258302 |
| Customs tariff number | 85366930000 |

## Product Classification

| | |
|---|---|
| UNSPSC | 39121409 |
| eCl@ss 10.0 | 27-44-03-09 |
| eCl@ss 9.0 | 27-44-03-09 |
| ETIM 9.0 | EC002638 |
| ETIM 10.0 | EC002638 |
| ECCN | NO US CLASSIFICATION |

## Environmental Product Compliance

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

## Approvals / Certificates

### General approvals

| Approval | Standard | Certificate Name |
|---|---|---|
| CB<br>DEKRA Certification B.V. | IEC 61984 | NL-113351 |
| CSA<br>DEKRA Certification B.V. | C22.2 | 1466354 |
| KEMA/KEUR<br>DEKRA Certification B.V. | EN 61984 | 71-130478 REV.1 |
| UL<br>Underwriters Laboratories Inc. | UL 1059 | E45172 |
| UR<br>Underwriters Laboratories Inc. | UL 1977 | E45171 |

### Declarations of conformity and manufacturer's declarations

| Approval | Standard | Certificate Name |
|---|---|---|
| Railway<br>WAGO GmbH & Co. KG | - | Railway Ready |

### Approvals for marine applications

| Approval | Standard | Certificate Name |
|---|---|---|
| ABS<br>American Bureau of Shipping | - | 24-0095975-PDA |
| DNV<br>DNV GL SE | - | TAE000016Z |
| LR<br>Lloyds Register | IEC 61984 | 96/20035 (E5) |
| PRS<br>Polski Rejestr Statków | - | TE/1095/880590/23 |


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## Downloads

### Environmental Product Compliance

**Compliance Search**

Environmental Product Compliance 231-612

### Documentation

**Additional Information**

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

### CAD/CAE-Data

**CAD data**

2D/3D Models 231-612

**CAE data**

EPLAN Data Portal 231-612

ZUKEN Portal 231-612

## 1 Compatible Products

### 1.1 System counterpart

#### 1.1.1 Female connector/socket

Item No.: 232-112/026-000
1-conductor female connector, angled; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; 2,50 mm²; gray

Item No.: 232-212/026-000
1-conductor female connector, angled; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; 2,50 mm²; gray

Item No.: 731-512/031-000
1-conductor female connector, angled; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; clamping collar; DIN-35 rail/panel mounting; 2,50 mm²; gray

Item No.: 731-512/008-000
1-conductor female connector, angled; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; Snap-in mounting feet; 2,50 mm²; gray

Item No.: 231-112/027-000
1-conductor female connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; clamping collar; gray

Item No.: 231-112/031-000
1-conductor female connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; clamping collar; gray

Item No.: 231-112/026-000
1-conductor female connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; gray

Item No.: 231-112/037-000
1-conductor female connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; Lateral locking levers; gray

Item No.: 231-112/125-000
1-conductor female connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; Snap-in flange; gray

Item No.: 231-112/008-000
1-conductor female connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; Snap-in mounting feet; gray

Item No.: 231-112/102-000
1-conductor female connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; with integrated end plate; gray

Item No.: 2231-1112/327-000
1-conductor female connector; lever; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; 2,50 mm²; gray

Item No.: 2231-1112/329-000
1-conductor female connector; lever; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; Centered locking levers; gray

Item No.: 2231-1112/329-000/336-000
1-conductor female connector; lever; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; Centered locking levers; Strain relief plate; gray

Item No.: 2231-1112/331-000
1-conductor female connector; lever; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; clamping collar; gray

Item No.: 2231-1112/327-047
1-conductor female connector; lever; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; direct marking; 2,50 mm²; gray

Item No.: 2231-1112/327-9037
1-conductor female connector; lever; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; direct marking; 2,50 mm²; gray

Item No.: 2231-1112/038-000
1-conductor female connector; lever; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; Lateral locking levers; 2,50 mm²; gray

Item No.: 2231-1112/038-000/336-000
1-conductor female connector; lever; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; Lateral locking levers; Strain relief plate; gray

Item No.: 2231-1112/126-000
1-conductor female connector; lever; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; Snap-in flange; gray

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### 1.1.1 Female connector/socket

Item No.: 2231-1112/327-000/336-000
1-conductor female connector; lever; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; Strain relief plate; gray

Item No.: 2231-112/026-000
1-conductor female connector; push-button; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; 2,50 mm²; gray

Item No.: 2231-112/031-000
1-conductor female connector; push-button; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; clamping collar; 2,50 mm²; gray

Item No.: 2231-112/037-000
1-conductor female connector; push-button; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; Lateral locking levers; 2,50 mm²; gray

Item No.: 2231-112/008-000
1-conductor female connector; push-button; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; Snap-in mounting feet; 2,50 mm²; gray

Item No.: 2231-112/102-000
1-conductor female connector; push-button; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; with integrated end plate; 2,50 mm²; gray

Item No.: 231-2112/037-000
2-conductor female connector; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; Lateral locking levers; gray

Item No.: 231-2112/026-000
2-conductor female connector; Push-in CAGE CLAMP®; 2.5 mm²; Pin spacing 5 mm; 12-pole; with integrated end plate; gray

Item No.: 232-242/005-000/039-000
Female connector for rail-mount terminal blocks; 0.6 x 1 mm pins; angled; Locking lever; Pin spacing 5 mm; 12-pole; gray

Item No.: 232-242/005-000
Female connector for rail-mount terminal blocks; 0.6 x 1 mm pins; angled; Pin spacing 5 mm; 12-pole; gray

Item No.: 232-142/005-000/039-000
Female connector for rail-mount terminal blocks; 0.6 x 1 mm pins; straight; Locking lever; Pin spacing 5 mm; 12-pole; gray

Item No.: 232-142/005-000
Female connector for rail-mount terminal blocks; 0.6 x 1 mm pins; straight; Pin spacing 5 mm; 12-pole; gray

Item No.: 232-242
THT female header; angled; Pin spacing 5 mm; 12-pole; 0.6 x 1.0 mm solder pin; gray

Item No.: 232-242/031-000
THT female header; angled; Pin spacing 5 mm; 12-pole; clamping collar; 0.6 x 1.0 mm solder pin; gray

Item No.: 232-242/039-000
THT female header; angled; Pin spacing 5 mm; 12-pole; Locking lever; 0.6 x 1.0 mm solder pin; gray

Item No.: 232-242/047-000
THT female header; angled; Pin spacing 5 mm; 12-pole; Spacer flange; 0.6 x 1.0 mm solder pin; gray

Item No.: 232-142
THT female header; straight; Pin spacing 5 mm; 12-pole; 0.6 x 1.0 mm solder pin; gray

Item No.: 232-142/031-000
THT female header; straight; Pin spacing 5 mm; 12-pole; clamping collar; 0.6 x 1.0 mm solder pin; gray

Item No.: 232-142/039-000
THT female header; straight; Pin spacing 5 mm; 12-pole; Locking lever; 0.6 x 1.0 mm solder pin; gray

Item No.: 232-142/047-000
THT female header; straight; Pin spacing 5 mm; 12-pole; Spacer flange; 0.6 x 1.0 mm solder pin; gray

## 1.2 Optional Accessories

### 1.2.1 Coding

#### 1.2.1.1 Coding

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

### 1.2.2 Cover

#### 1.2.2.1 Cover

Item No.: 231-668
Lockout caps; for covering unused clamping units; gray


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## 1.2.3 Ferrule

### 1.2.3.1 Ferrule

Item No.: 216-301
Ferrule; Sleeve for 0.25 mm² / AWG 24; insulated; electro-tin plated; yellow



Item No.: 216-302
Ferrule; Sleeve for 0.34 mm² / 22 AWG; insulated; electro-tin plated; light turquoise



Item No.: 216-201
Ferrule; Sleeve for 0.5 mm² / 20 AWG; insulated; electro-tin plated; electrolytic copper; acc. to DIN 46228, Part 4/09.90; white

Item No.: 216-101
Ferrule; Sleeve for 0.5 mm² / AWG 22; uninsulated; electro-tin plated; silver-colored



Item No.: 216-202
Ferrule; Sleeve for 0.75 mm² / 18 AWG; insulated; electro-tin plated; gray

Item No.: 216-102
Ferrule; Sleeve for 0.75 mm² / 18 AWG; uninsulated; electro-tin plated; silver-colored



Item No.: 216-203
Ferrule; Sleeve for 1 mm² / AWG 18; insulated; electro-tin plated; red

Item No.: 216-103
Ferrule; Sleeve for 1 mm² / AWG 18; uninsulated; electro-tin plated

Item No.: 216-204
Ferrule; Sleeve for 1.5 mm² / AWG 16; insulated; electro-tin plated; black

Item No.: 216-104
Ferrule; Sleeve for 1.5 mm² / AWG 16; uninsulated; electro-tin plated; silver-colored

## 1.2.4 Insulation stop

### 1.2.4.1 Insulation stop

Item No.: 231-670
Insulation stop; 0.08-0.2 mm² / 0.2 mm² "s"; white

Item No.: 231-671
Insulation stop; 0.25 - 0.5 mm²; light gray

Item No.: 231-672
Insulation stop; 0.75 - 1 mm²; dark gray

## 1.2.5 Jumper

### 1.2.5.1 Jumper

Item No.: 231-910
Jumper; for conductor entry; 10-way; insulated; gray

Item No.: 231-902
Jumper; for conductor entry; 2-way; insulated; gray

Item No.: 231-903
Jumper; for conductor entry; 3-way; insulated; gray

Item No.: 231-905
Jumper; for conductor entry; 5-way; insulated; gray

Item No.: 231-907
Jumper; for conductor entry; 7-way; insulated; gray

## 1.2.6 Marking

### 1.2.6.1 Marking strip

Item No.: 210-331/500-103
Marking strips; as a DIN A4 sheet; MARKED; 1-12 (300x); Height of marker strip: 2.3 mm/0.091 in; Strip length 182 mm; Horizontal marking; Self-adhesive; white

Item No.: 210-332/500-202
Marking strips; as a DIN A4 sheet; MARKED; 1-16 (160x); Height of marker strip: 3 mm; Strip length 182 mm; Horizontal marking; Self-adhesive; white

Item No.: 210-332/500-205
Marking strips; as a DIN A4 sheet; MARKED; 1-32 (80x); Height of marker strip: 3 mm; Strip length 182 mm; Horizontal marking; Self-adhesive; white

Item No.: 210-331/500-104
Marking strips; as a DIN A4 sheet; MARKED; 13-24 (300x); Height of marker strip: 2.3 mm/0.091 in; Strip length 182 mm; Horizontal marking; Self-adhesive; white

Item No.: 210-332/500-204
Marking strips; as a DIN A4 sheet; MARKED; 17-32 (160x); Height of marker strip: 3 mm; Strip length 182 mm; Horizontal marking; Self-adhesive; white

Item No.: 210-332/500-206
Marking strips; as a DIN A4 sheet; MARKED; 33-48 (160x); Height of marker strip: 3 mm; Strip length 182 mm; Horizontal marking; Self-adhesive; white


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## 1.2.7 Strain relief

### 1.2.7.1 Strain relief housing

Item No.: 232-612
Strain relief housing; for female and male connectors; 2 parts; Pin spacing 5 mm; 12-pole; gray

## 1.2.8 Tool

### 1.2.8.1 Operating tool

Item No.: 231-231
Combination operating tool; red

Item No.: 210-720
Operating tool; Blade: 3.5 x 0.5 mm; with a partially insulated shaft; multicoloured

Item No.: 210-657
Operating tool; Blade: 3.5 x 0.5 mm; with a partially insulated shaft; short; multi-coloured

Item No.: 209-132
Operating tool; for connecting comb-style jumper bar; made of insulating material; 2-way; natural

Item No.: 210-250
Operating tool; for MCS MINI and MIDI with CAGE CLAMP® connection; red

Item No.: 280-440
Operating tool; made of insulating material; 10-way; white

Item No.: 209-130
Operating tool; made of insulating material; 1-way; for 264 Series (1-/2-way), 280, 281 Series (up to 3-way); natural

Item No.: 231-291
Operating tool; made of insulating material; 1-way; loose; red

Item No.: 231-131
Operating tool; made of insulating material; 1-way; loose; white

Item No.: 280-432
Operating tool; made of insulating material; 2-way; white

Item No.: 280-433
Operating tool; made of insulating material; 3-way; white

Item No.: 280-434
Operating tool; made of insulating material; 4-way; white



Item No.: 280-435
Operating tool; made of insulating material; 5-way; gray

Item No.: 280-436
Operating tool; made of insulating material; 6-way; white

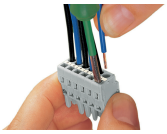
Item No.: 280-437
Operating tool; made of insulating material; 7-way; white

Item No.: 280-438
Operating tool; made of insulating material; 8-way; white

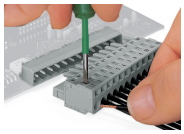
Item No.: 231-159
Operating tool; natural

## Installation Notes

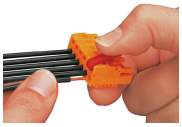
### Conductor termination



Inserting a conductor via 3.5 mm screwdriver – CAGE CLAMP® actuation parallel to conductor entry.



Inserting a conductor via 3.5 mm screwdriver – CAGE CLAMP® actuation perpendicular to conductor entry.



Inserting a conductor into CAGE CLAMP® unit via operating tool (231-291).

Inserting a conductor via operating tool.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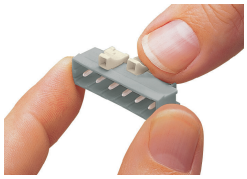
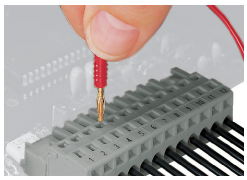
## Coding



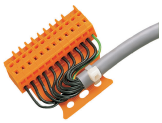
Coding a male header – fitting coding key(s).

## Testing

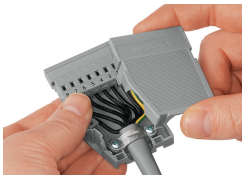


Testing – female connector with CAGE CLAMP®
Integrated test ports for testing perpendicular to conductor entry via 2 or 2.3 mm Ø test plug

## Installation

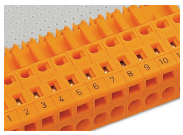


Male connector with strain relief plate



Strain relief housing shown with a male connector equipped with CAGE CLAMP®

## Marking



Labeling via direct marking or self-adhesive strips.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