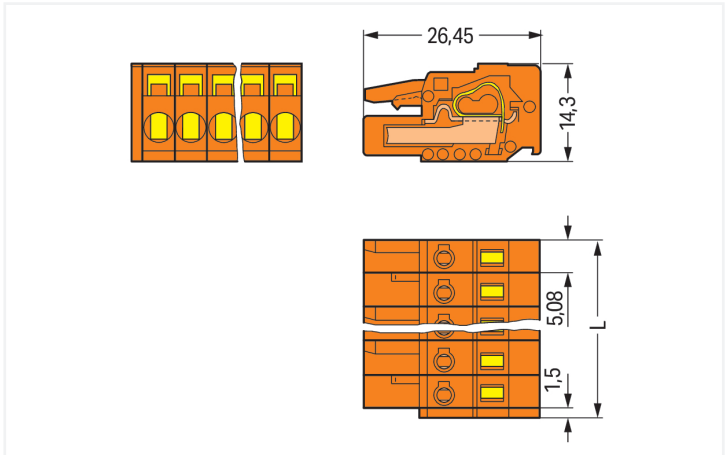
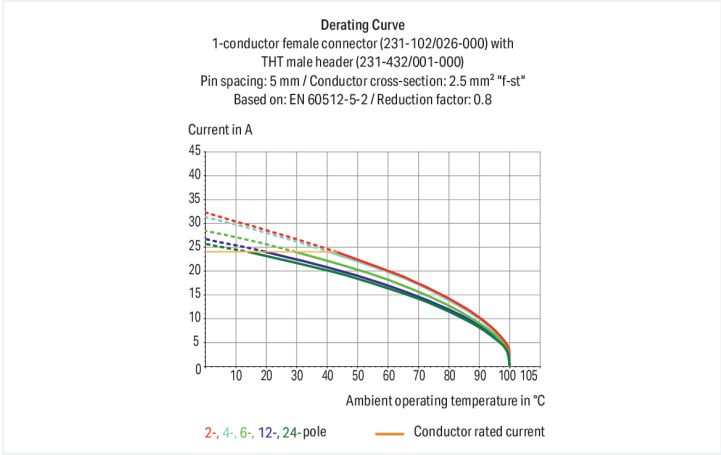




Color: ■ orange



Dimensions in mm  
L = (pole no. x pin spacing) + 1.5 mm  
2- to 3-pole female connectors – one latch only



**Federleiste/Buchse Serie 231 mit CAGE CLAMP®**

Die Federleiste/Buchse hat die Artikelnummer 231-302/026-000 und bietet eine fehlerfreie Elektroinstallation. Unsere Leiterplatten-Steckverbinder geben Ihnen die größtmögliche Flexibilität bei verschiedenen Montagearten. Bei dieser Federleiste/Buchse ist für den Leiteranschluss eine Abisolierlänge im Bereich von 8 bis 9 mm erforderlich. Dieses Produkt verwendet die CAGE CLAMP®-Technologie. Der zuverlässige und wartungsfreie CAGE CLAMP® Universalanschluss ermöglicht den Anschluss aller Leiterarten mit einer Käfigzugfeder. Eine Vorbehandlung der Leiter, z.B. durch das Aufcrimpen von Aderendhülsen, ist nicht erforderlich. Die Maße sind in Breite x Höhe x Tiefe (11,66 x 14,3 x 26,45) mm. Diese Federleiste/Buchse ist in Abhängigkeit von der Leiterart für Leiterquerschnitte von 0,08 mm² bis 2,5 mm² geeignet. Die Kontaktoberfläche ist aus Zinn. Für diese Federleiste/Buchse erfolgt die Betätigung per Betätigungswerkzeug. Das MCS – "Multi Connection System" von WAGO ist ein vielfältiges Steckverbindersystem für Ihre durchgängige Systemverdrahtung. Es ermöglicht Ihnen eine vereinfachte Verdrahtung in der Kabelvorkonfektionierung und auf Geräten durch zwei Betätigungsrichtungen für die CAGE CLAMP®-Varianten.

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



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 surge voltage  | 4 kV           | 4 kV  | 4 kV  |
| Rated current        | 16 A           | 16 A  | 16 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             | 2 |
| Total number of potentials | 2 |
| 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                                       | 2                                          |
| Conductor entry direction to mating direction     | 0°                                         |

Physical data

|             |                         |
|-------------|-------------------------|
| Pin spacing | 5.08 mm / 0.2 inches    |
| Width       | 11.66 mm / 0.459 inches |
| Height      | 14.3 mm / 0.563 inches  |
| Depth       | 26.45 mm / 1.041 inches |

Mechanical data

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

Plug-in connection

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



| Material data                      |                                                                          |
|------------------------------------|--------------------------------------------------------------------------|
| Note (material data)               | <a href="#">Information on material specifications can be found here</a> |
| Color                              | orange                                                                   |
| Material group                     | I                                                                        |
| Insulation material (main housing) | Polyamide (PA66)                                                         |
| Flammability class per UL94        | V0                                                                       |
| Clamping spring material           | Chrome-nickel spring steel (CrNi)                                        |
| Contact material                   | Copper alloy                                                             |
| Contact Plating                    | Tin                                                                      |
| Fire load                          | 0.059 MJ                                                                 |
| Weight                             | 3.9 g                                                                    |

| Environmental requirements                                                                         |                                                                                                                                             |
|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Limit temperature range                                                                            | -60 ... +100 °C                                                                                                                             |
| Processing temperature                                                                             | -35 ... +60 °C                                                                                                                              |
| Environmental Testing (Environmental Conditions)                                                   |                                                                                                                                             |
| Test specification<br>Railway applications –<br>Rolling stock –<br>Electronic equipment            | DIN EN 50155 (VDE 0115-200):2022-06                                                                                                         |
| Test procedure<br>Railway applications –<br>Rolling stock equipment –<br>Shock and vibration tests | DIN EN 61373 (VDE 0115-0106):2011-04                                                                                                        |
| Spectrum/Installation location                                                                     | Service life test, Category 1, Class A/B                                                                                                    |
| Function test with noise-like vibration                                                            | Test passed according to Section 8 of the standard                                                                                          |
| Frequency                                                                                          | f <sub>1</sub> = 5 Hz to f <sub>2</sub> = 150 Hz<br>f <sub>1</sub> = 5 Hz to f <sub>2</sub> = 150 Hz                                        |
| Acceleration                                                                                       | 0.101g (highest test level used for all axes)<br>0.572g (highest test level used for all axes)<br>5g (highest test level used for all axes) |
| Test duration per axis                                                                             | 10 min.<br>5 h                                                                                                                              |
| Test directions                                                                                    | X, Y and Z axes<br>X, Y and Z axes<br>X, Y and Z axes                                                                                       |
| Monitoring for contact faults/interruptions                                                        | Passed                                                                                                                                      |
| Voltage drop measurement before and after each axis                                                | Passed                                                                                                                                      |
| Simulated service life test through increased levels of noise-like vibration                       | Test passed according to Section 9 of the standard                                                                                          |
| Extended test scope: Monitoring for contact faults/interruptions                                   | Passed<br>Passed                                                                                                                            |
| Extended test scope: Voltage drop measurement before and after each axis                           | Passed<br>Passed                                                                                                                            |
| Shock test                                                                                         | Test passed according to Section 10 of the standard                                                                                         |
| Shock form                                                                                         | Half sine                                                                                                                                   |
| Shock duration                                                                                     | 30 ms                                                                                                                                       |
| Number of shocks per axis                                                                          | 3 pos. und 3 neg.                                                                                                                           |
| Vibration and shock stress for rolling stock equipment                                             | Passed                                                                                                                                      |



| Commercial data       |                        |  |
|-----------------------|------------------------|--|
| Product Group         | 3 (Multi Conn. System) |  |
| PU (SPU)              | 100 pcs                |  |
| Packaging type        | Box                    |  |
| Country of origin     | DE                     |  |
| GTIN                  | 4044918344661          |  |
| Customs tariff number | 85366990990            |  |

| 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 8.0               | EC002638             |  |
| ECCN                   | NO US CLASSIFICATION |  |

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

Approvals / Certificates

| General approvals                                                                  |           |                  | Declarations of conformity and manufacturer's declarations                          |          |                  |
|------------------------------------------------------------------------------------|-----------|------------------|-------------------------------------------------------------------------------------|----------|------------------|
|  |           |                  |  |          |                  |
| Approval                                                                           | Standard  | Certificate Name | Approval                                                                            | Standard | Certificate Name |
| CB<br>DEKRA Certification B.V.                                                     | IEC 61984 | NL-113351        | Railway<br>WAGO GmbH & Co. KG                                                       | -        | Railway Ready    |
| CSA<br>DEKRA Certification B.V.                                                    | C22.2     | 1466354          |                                                                                     |          |                  |
| KEMA/KEUR<br>DEKRA Certification B.V.                                              | EN 61984  | 71-130478 REV.1  |                                                                                     |          |                  |
| UL<br>UL International Germany GmbH                                                | UL 1977   | E45171           |                                                                                     |          |                  |
| UR<br>Underwriters Laboratories Inc.                                               | UL 1059   | E45172           |                                                                                     |          |                  |

Approvals for marine applications

|  |          |                  |
|------------------------------------------------------------------------------------|----------|------------------|
| Approval                                                                           | Standard | Certificate Name |
| ABS<br>American Bureau of Ship-<br>ping                                            | -        | 19-HG1869876-PDA |



Downloads

Environmental Product Compliance

Compliance Search

Environmental Product Compliance  
231-302/026-000

↓

Documentation

Additional Information

Technical Section  
03.04.2019  
pdf  
2027.26 KB

↓

CAD/CAE-Data

CAD data

2D/3D Models  
231-302/026-000

↓

CAE data

EPLAN Data Portal  
231-302/026-000

↓

ZUKEN Portal  
231-302/026-000

↓

1 Compatible Products

1.1 System counterpart

1.1.1 Male connector/plug



**Item No.: 231-632/019-000**  
1-conductor male connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5.08 mm; 2-pole; clamping collar; orange



**Item No.: 231-632/018-000**  
1-conductor male connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5.08 mm; 2-pole; DIN-35 rail/panel mounting; Snap-in mounting feet; orange



**Item No.: 231-632**  
1-conductor male connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5.08 mm; 2-pole; orange



**Item No.: 231-632/114-000**  
1-conductor male connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5.08 mm; 2-pole; Snap-in flange; orange



**Item No.: 232-532/007-000**  
Double pin header; DIN-35 rail mounting; 2-pole; Pin spacing 5.08 mm; orange



**Item No.: 231-532/001-000/105-604/997-405**  
THR male header; 1.0 x 1.0 mm solder pin; angled; in tape-and-reel packaging; Pin spacing 5.08 mm; 2-pole; black



**Item No.: 231-532/001-000/105-604**  
THR male header; 1.0 x 1.0 mm solder pin; angled; Pin spacing 5.08 mm; 2-pole; black



**Item No.: 231-332/001-000/105-604**  
THR male header; 1.0 x 1.0 mm solder pin; straight; Pin spacing 5.08 mm; 2-pole; black



**Item No.: 232-362**  
THT male header for double-deck assembly; 1.0 x 1.0 mm solder pin; angled; Pin spacing 5.08 mm; 2-pole; orange



**Item No.: 231-532/001-000**  
THT male header; 1.0 x 1.0 mm solder pin; angled; Pin spacing 5.08 mm; 2-pole; orange



**Item No.: 231-332/001-000**  
THT male header; 1.0 x 1.0 mm solder pin; straight; Pin spacing 5.08 mm; 2-pole; orange



**Item No.: 231-562/001-000**  
THT male header; 1.2 x 1.2 mm solder pin; angled; Pin spacing 5.08 mm; 2-pole; orange



**Item No.: 231-362/001-000**  
THT male header; 1.2 x 1.2 mm solder pin; straight; Pin spacing 5.08 mm; 2-pole; orange



1.2 Optional Accessories

1.2.1 Cover

1.2.1.1 Cover



**Item No.: 231-669**  
Lockout caps; for covering unused clamping units; orange

1.2.2 Ferrule

1.2.2.1 Ferrule



**Item No.: 216-301**  
Ferrule; Sleeve for 0.25 mm<sup>2</sup> / AWG 24; insulated; electro-tin plated; yellow



**Item No.: 216-302**  
Ferrule; Sleeve for 0.34 mm<sup>2</sup> / 22 AWG; insulated; electro-tin plated; light turquoise



**Item No.: 216-201**  
Ferrule; Sleeve for 0.5 mm<sup>2</sup> / 20 AWG; insulated; electro-tin plated; electrolytic copper; acc. to DIN 46228, Part 4/09.90; white



**Item No.: 216-241**  
Ferrule; Sleeve for 0.5 mm<sup>2</sup> / 20 AWG; insulated; electro-tin plated; electrolytic copper; gastight crimped; acc. to DIN 46228, Part 4/09.90; white



**Item No.: 216-141**  
Ferrule; Sleeve for 0.5 mm<sup>2</sup> / 20 AWG; un-insulated; electro-tin plated; electrolytic copper; gastight crimped; acc. to DIN 46228, Part 1/08.92



**Item No.: 216-101**  
Ferrule; Sleeve for 0.5 mm<sup>2</sup> / AWG 22; un-insulated; electro-tin plated; silver-colored



**Item No.: 216-242**  
Ferrule; Sleeve for 0.75 mm<sup>2</sup> / 18 AWG; insulated; electro-tin plated; electrolytic copper; gastight crimped; acc. to DIN 46228, Part 4/09.90; gray



**Item No.: 216-262**  
Ferrule; Sleeve for 0.75 mm<sup>2</sup> / 18 AWG; insulated; electro-tin plated; electrolytic copper; gastight crimped; acc. to DIN 46228, Part 4/09.90; gray



**Item No.: 216-202**  
Ferrule; Sleeve for 0.75 mm<sup>2</sup> / 18 AWG; insulated; electro-tin plated; gray



**Item No.: 216-142**  
Ferrule; Sleeve for 0.75 mm<sup>2</sup> / 18 AWG; un-insulated; electro-tin plated; electrolytic copper; gastight crimped; acc. to DIN 46228, Part 1/08.92



**Item No.: 216-102**  
Ferrule; Sleeve for 0.75 mm<sup>2</sup> / AWG 20; un-insulated; electro-tin plated; silver-colored



**Item No.: 216-243**  
Ferrule; Sleeve for 1 mm<sup>2</sup> / AWG 18; insulated; electro-tin plated; electrolytic copper; gastight crimped; acc. to DIN 46228, Part 4/09.90; red



**Item No.: 216-263**  
Ferrule; Sleeve for 1 mm<sup>2</sup> / AWG 18; insulated; electro-tin plated; electrolytic copper; gastight crimped; acc. to DIN 46228, Part 4/09.90; red



**Item No.: 216-203**  
Ferrule; Sleeve for 1 mm<sup>2</sup> / AWG 18; insulated; electro-tin plated; red



**Item No.: 216-103**  
Ferrule; Sleeve for 1 mm<sup>2</sup> / AWG 18; un-insulated; electro-tin plated



**Item No.: 216-143**  
Ferrule; Sleeve for 1 mm<sup>2</sup> / AWG 18; un-insulated; electro-tin plated; electrolytic copper; gastight crimped; acc. to DIN 46228, Part 1/08.92



**Item No.: 216-204**  
Ferrule; Sleeve for 1.5 mm<sup>2</sup> / AWG 16; insulated; electro-tin plated; black



**Item No.: 216-244**  
Ferrule; Sleeve for 1.5 mm<sup>2</sup> / AWG 16; insulated; electro-tin plated; electrolytic copper; gastight crimped; acc. to DIN 46228, Part 4/09.90; black



**Item No.: 216-264**  
Ferrule; Sleeve for 1.5 mm<sup>2</sup> / AWG 16; insulated; electro-tin plated; electrolytic copper; gastight crimped; acc. to DIN 46228, Part 4/09.90; black



**Item No.: 216-284**  
Ferrule; Sleeve for 1.5 mm<sup>2</sup> / AWG 16; insulated; electro-tin plated; electrolytic copper; gastight crimped; acc. to DIN 46228, Part 4/09.90; black



**Item No.: 216-144**  
Ferrule; Sleeve for 1.5 mm<sup>2</sup> / AWG 16; un-insulated; electro-tin plated; electrolytic copper; gastight crimped; acc. to DIN 46228, Part 1/08.92; silver-colored



**Item No.: 216-104**  
Ferrule; Sleeve for 1.5 mm<sup>2</sup> / AWG 16; un-insulated; electro-tin plated; silver-colored



**Item No.: 216-106**  
Ferrule; Sleeve for 2.5 mm<sup>2</sup> / AWG 14; un-insulated; electro-tin plated; silver-colored



1.2.3 Insulation stop

1.2.3.1 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

1.2.4 Jumper

1.2.4.1 Jumper



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

1.2.5 Marking

1.2.5.1 Marking strip



**Item No.: 210-331/508-103**  
Marking strips; as a DIN A4 sheet; MARKED; 1-12 (200x); Height of marker strip: 2.3 mm/0.091 in; Strip length 182 mm; Horizontal marking; Self-adhesive; white



**Item No.: 210-332/508-202**  
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.: 210-332/508-205**  
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.: 210-331/508-104**  
Marking strips; as a DIN A4 sheet; MARKED; 13-24 (200x); Height of marker strip: 2.3 mm/0.091 in; Strip length 182 mm; Horizontal marking; Self-adhesive; white



**Item No.: 210-332/508-204**  
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.: 210-332/508-206**  
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

1.2.6 Strain relief

1.2.6.1 Strain relief housing



**Item No.: 232-632**  
Strain relief housing; for female and male connectors; 2 parts; Pin spacing 5.08 mm; 2-pole; orange



1.2.7 Test and measurement

1.2.7.1 Testing accessories



**Item No.: 210-136**  
Test plug; 2 mm Ø; with 500 mm cable; red



**Item No.: 231-661**  
Test plugs for female connectors; for 5 mm and 5.08 mm pin spacing; 2,50 mm²; light gray

1.2.8 Tool

1.2.8.1 Operating tool



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



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



**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



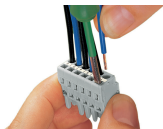
**Item No.: 280-432**  
Operating tool; made of insulating material; 2-way; white



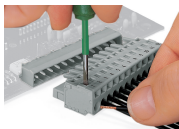
**Item No.: 231-159**  
Operating tool; natural

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.

Coding



Coding a female connector by removing coding finger(s).

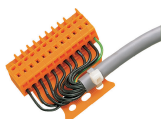
## Testing



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.