

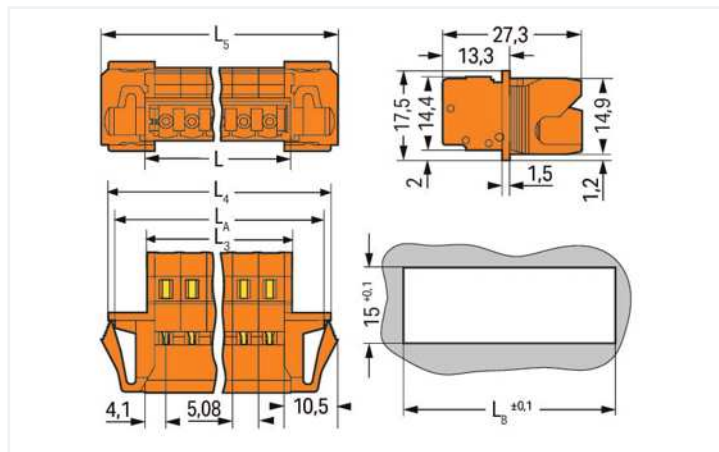
## Data Sheet | Item Number: 231-650/114-000

1-conductor male connector; CAGE CLAMP®; 2.5 mm<sup>2</sup>; Pin spacing 5.08 mm; 20-pole; Snap-in flange; 2,50 mm<sup>2</sup>; orange

<https://www.wago.com/231-650/114-000>



Color: ■ orange



Dimensions in mm

$L = (\text{pole no.} \times \text{pin spacing}) + 3.2 \text{ mm}$

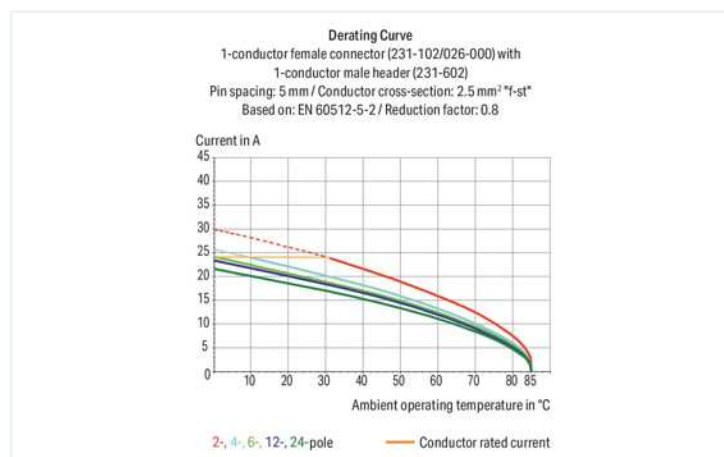
$L3 = L - 0.2 \text{ mm}$

$L4 = L3 + 15.2 \text{ mm}$

$L5 = L3 + 18 \text{ mm}$

$LA = L3 + 12.6 \text{ mm}$

$LB = L3 + 13.2 \text{ mm}$



- Universal connection for all conductor types
- Easy cable pre-assembly and on-unit wiring via vertical and horizontal CAGE CLAMP® actuation
- For wire-to-wire and board-to-wire connections
- Versions available with snap-in mounting feet or flanges for panel or through-panel mounting
- With coding fingers

### 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

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/>.

### 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	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

Connection points	20
Total number of potentials	20
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 mm <sup>2</sup> / 28 ... 12 AWG
Fine-stranded conductor	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Fine-stranded conductor; with insulated ferrule	0.25 ... 1.5 mm <sup>2</sup>
Fine-stranded conductor; with uninsulated ferrule	0.25 ... 2.5 mm <sup>2</sup>
Strip length	8 ... 9 mm / 0.31 ... 0.35 inches
Pole number	20
Conductor entry direction to mating direction	0°

## Physical data

Pin spacing	5.08 mm / 0.2 inches
Width	122.6 mm / 4.827 inches
Height	17.5 mm / 0.689 inches
Depth	27.5 mm / 1.083 inches

## Mechanical data

Variable coding	Yes
Housing sheet thickness	0.5 ... 3 mm / 0.02 ... 0.118 inches
Mounting type	Snap-in flange Feed-through mounting
Anti-rotation protection	Yes

## Plug-in connection

Contact type (pluggable connector)	Male connector/plug
Connector (connection type)	for conductor
Mismatching protection	No

### Material data

Note (material data)	<a href="https://www.wago.com/us/material-specifications" href="_blank">Information on material specifications can be found here</a>
Color	orange
Material group	I
Insulation material	Polyamide (PA66)
Flammability class per UL94	V0
Clamping spring material	Chrome-nickel spring steel (CrNi)
Contact material	Electrolytic copper (E <sub>Cu</sub> )
Contact plating	Tin
Fire load	0.493 MJ
Weight	32.9 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	27-44-03-09
eCl@ss 9.0	27-44-03-09
ETIM 8.0	EC002638
ETIM 7.0	EC002638
PU (SPU)	10 pcs
Packaging type	Box
Country of origin	DE
GTIN	4050821279921
Customs tariff number	85366930000

### Environmental Product Compliance

RoHS Compliance Status	Compliant, No Exemption
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### Approvals / Certificates

#### General approvals



Approval	Standard	Certificate Name
CB DEKRA Certification B.V.	IEC 61984	NL-39756/A1
CSA DEKRA Certification B.V.	C22.2	1466354
cURus Underwriters Laboratories Inc.	UL 1059	E45172
KEMA/KEUR DEKRA Certification B.V.	EN 61984	71-121453
UR Underwriters Laboratories Inc.	UL 1977	E45171

#### Approvals for marine applications



Approval	Standard	Certificate Name
BV Bureau Veritas S.A.	IEC 60998	11915/D0 BV

### Downloads

## Environmental Product Compliance

### Compliance Search

Environmental Product  
Compliance  
231-650/114-000



## Documentation

### Additional Information

Technical Section

03.04.2019

pdf

2010.85 KB



## CAD/CAE-Data

### CAD data

2D/3D Models  
231-650/114-000



### CAE data

ZUKEN Portal  
231-650/114-000



## 1 Compatible Products

### 1.1 System counterpart

#### 1.1.1 Female connector/socket



#### Item No.: [231-320/026-000](#)

1-conductor female connector; CAGE  
CLAMP®; 2.5 mm<sup>2</sup>; Pin spacing 5.08 mm;  
20-pole; 2,50 mm<sup>2</sup>; orange

### 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.: 231-669**  
 Lockout caps; for covering unused clamping units; orange

1.2.3 Ferrule

1.2.3.1 Ferrule

 <b>Item No.: 216-301</b> Ferrule; Sleeve for 0.25 mm <sup>2</sup> / AWG 24; insulated; electro-tin plated; yellow	 <b>Item No.: 216-321</b> Ferrule; Sleeve for 0.25 mm <sup>2</sup> / AWG 24; insulated; electro-tin plated; yellow	 <b>Item No.: 216-151</b> Ferrule; Sleeve for 0.25 mm <sup>2</sup> / AWG 24; uninsulated; electro-tin plated	 <b>Item No.: 216-131</b> Ferrule; Sleeve for 0.25 mm <sup>2</sup> / AWG 24; uninsulated; electro-tin plated; silver-colored
 <b>Item No.: 216-302</b> Ferrule; Sleeve for 0.34 mm <sup>2</sup> / 22 AWG; insulated; electro-tin plated; light turquoise	 <b>Item No.: 216-322</b> Ferrule; Sleeve for 0.34 mm <sup>2</sup> / 22 AWG; insulated; electro-tin plated; light turquoise	 <b>Item No.: 216-132</b> Ferrule; Sleeve for 0.34 mm <sup>2</sup> / AWG 24; uninsulated; electro-tin plated	 <b>Item No.: 216-152</b> Ferrule; Sleeve for 0.34 mm <sup>2</sup> / AWG 24; uninsulated; electro-tin plated
 <b>Item No.: 216-241</b> 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	 <b>Item No.: 216-201</b> Ferrule; Sleeve for 0.5 mm <sup>2</sup> / 20 AWG; insulated; electro-tin plated; white	 <b>Item No.: 216-221</b> Ferrule; Sleeve for 0.5 mm <sup>2</sup> / 20 AWG; insulated; electro-tin plated; white	 <b>Item No.: 216-141</b> Ferrule; Sleeve for 0.5 mm <sup>2</sup> / 20 AWG; insulated; electro-tin plated; electrolytic copper; gastight crimped; acc. to DIN 46228, Part 1/08.92
 <b>Item No.: 216-101</b> Ferrule; Sleeve for 0.5 mm <sup>2</sup> / AWG 22; un-insulated; electro-tin plated; silver-colored	 <b>Item No.: 216-121</b> Ferrule; Sleeve for 0.5 mm <sup>2</sup> / AWG 22; un-insulated; electro-tin plated; silver-colored	 <b>Item No.: 216-242</b> 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	 <b>Item No.: 216-262</b> 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
 <b>Item No.: 216-202</b> Ferrule; Sleeve for 0.75 mm <sup>2</sup> / 18 AWG; insulated; electro-tin plated; gray	 <b>Item No.: 216-222</b> Ferrule; Sleeve for 0.75 mm <sup>2</sup> / 18 AWG; insulated; electro-tin plated; gray	 <b>Item No.: 216-142</b> 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	 <b>Item No.: 216-102</b> Ferrule; Sleeve for 0.75 mm <sup>2</sup> / AWG 20; un-insulated; electro-tin plated; silver-colored
 <b>Item No.: 216-122</b> Ferrule; Sleeve for 0.75 mm <sup>2</sup> / AWG 20; un-insulated; electro-tin plated; silver-colored	 <b>Item No.: 216-243</b> 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	 <b>Item No.: 216-263</b> 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	 <b>Item No.: 216-203</b> Ferrule; Sleeve for 1 mm <sup>2</sup> / AWG 18; insulated; electro-tin plated; red
 <b>Item No.: 216-223</b> Ferrule; Sleeve for 1 mm <sup>2</sup> / AWG 18; insulated; electro-tin plated; red	 <b>Item No.: 216-103</b> Ferrule; Sleeve for 1 mm <sup>2</sup> / AWG 18; un-insulated; electro-tin plated	 <b>Item No.: 216-143</b> 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	 <b>Item No.: 216-123</b> Ferrule; Sleeve for 1 mm <sup>2</sup> / AWG 18; un-insulated; electro-tin plated; silver-colored
 <b>Item No.: 216-204</b> Ferrule; Sleeve for 1.5 mm <sup>2</sup> / AWG 16; insulated; electro-tin plated; black	 <b>Item No.: 216-224</b> Ferrule; Sleeve for 1.5 mm <sup>2</sup> / AWG 16; insulated; electro-tin plated; black	 <b>Item No.: 216-244</b> 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	 <b>Item No.: 216-264</b> 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

1.2.3.1 Ferrule



**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.: 216-124**  
 Ferrule; Sleeve for 1.5 mm<sup>2</sup> / AWG 16; un-insulated; electro-tin plated

**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

1.2.4 Insulation stop

1.2.4.1 Insulation stop



**Item No.: 231-670**  
 Insulation stop; 0.08-0.2 mm<sup>2</sup> / 0.2 mm<sup>2</sup> "s"; white

**Item No.: 231-671**  
 Insulation stop; 0.25 - 0.5 mm<sup>2</sup>; light gray

**Item No.: 231-672**  
 Insulation stop; 0.75 - 1 mm<sup>2</sup>; 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.: 210-331/508-103**  
 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

1.2.7 Tool

1.2.7.1 Operating tool



**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; multicoloured



**Item No.: 209-132**

Operating tool; for connecting comb-style jumper bar; made of insulating material; 2-way; natural



**Item No.: 280-440**

Operating tool; made of insulating material; 10-way



**Item No.: 209-130**

Operating tool; made of insulating material; 1-way; for 264 Series (1-1/2-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



**Item No.: 280-434**

Operating tool; made of insulating material; 4-way



**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



**Item No.: 280-437**

Operating tool; made of insulating material; 7-way



**Item No.: 280-438**

Operating tool; made of insulating material; 8-way

Installation Notes

Application



Male connector, with snap-in flanges, for feedthrough applications, for 0.5 ... 2.5 mm plate thickness

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 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.