

**Data sheet | Item number: 231-648**

1-conductor male connector; CAGE CLAMP®; 2.5 mm<sup>2</sup>; Pin spacing 5.08 mm; 18-pole

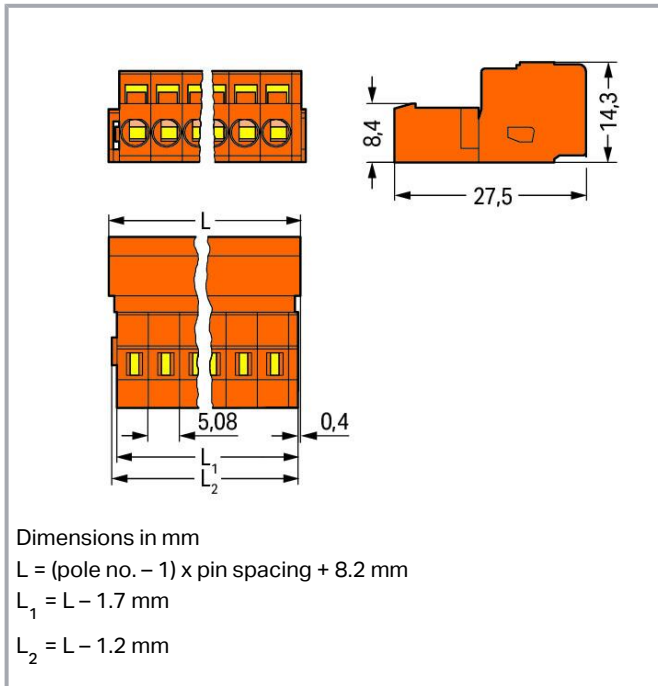
[www.wago.com/231-648](http://www.wago.com/231-648)



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

WAGO GmbH & Co. KG  
Hansastr. 27  
32423 Minden  
Phone: +49571 887-0 | Fax: +49571 887-169  
Email: [info.de@wago.com](mailto:info.de@wago.com) | Web: [www.wago.com](http://www.wago.com)

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## Item description

- 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

## 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  
 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!

## 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

Approvals per	UL 1059
Rated voltage UL (Use Group B)	300 V
Rated current UL (Use Group B)	15 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	15 A

### Ratings per CSA

Approvals per	CSA
Rated voltage CSA (Use Group B)	300 V
Rated current CSA (Use Group B)	15 A
Rated voltage CSA (Use Group D)	300 V
Rated current CSA (Use Group D)	10 A

### Connection data

Connection points	18
Total number of potentials	18
Number of connection types	1
Number of levels	1

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



## 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	18
Conductor entry direction to mating direction	0°

## Physical data

Pin spacing	5.08 mm / 0.2 inches
Width	94.64 mm / 3.726 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
Plugging without loss of pin spacing	No
Locking of plug-in connection	none

## Material data

Note (material data)	Information on material specifications can be found here
Color	orange

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



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	0.45 MJ
Weight	27.3 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
ECCN	NO DATA
PU (SPU)	10 pcs
Packaging type	box
Country of origin	DE
GTIN	4044918261104
Customs tariff number	85366930000

### Environmental Product Compliance

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

#### General approvals

Logo	Approval	Additional Approval Text	Certificate name
	<b>CB</b> DEKRA Certification B.V.	IEC 61984	NL-39756/A1
	<b>CCC</b> CQC	GB/T 13140.1	CQC03003003013

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CSA  
DEKRA Certification B.V.

C22.2

1466354



KEMA/KEUR  
DEKRA Certification B.V.

EN 61984

71-121453



UL  
UL International Germany GmbH

UL 1977

E45171




UR  
Underwriters Laboratories Inc.




UL 1059

E45172

#### 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
	DNV DNV GL SE	-	TAE000016Z
	LR Lloyds Register	IEC 61984	96/20035 (E5)

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## Counterpart

	<b>Item no.2231-318/026-000</b> 1-conductor female connector; push-button; Push-in CAGE CLAMP®; 2.5 mm <sup>2</sup> ; Pin spacing 5.08 mm; 18-pole; 2,50 mm <sup>2</sup> ; orange	<a href="http://www.wago.com/2231-318/026-000">www.wago.com/2231-318/026-000</a>
	<b>Item no.2231-318/008-000</b> 1-conductor female connector; push-button; Push-in CAGE CLAMP®; 2.5 mm <sup>2</sup> ; Pin spacing 5.08 mm; 18-pole; Snap-in mounting feet; 2,50 mm <sup>2</sup> ; orange	<a href="http://www.wago.com/2231-318/008-000">www.wago.com/2231-318/008-000</a>
	<b>Item no.2231-318/031-000</b> 1-conductor female connector; push-button; Push-in CAGE CLAMP®; 2.5 mm <sup>2</sup> ; Pin spacing 5.08 mm; 18-pole; clamping collar; 2,50 mm <sup>2</sup> ; orange	<a href="http://www.wago.com/2231-318/031-000">www.wago.com/2231-318/031-000</a>
	<b>Item no.2231-318/037-000</b> 1-conductor female connector; push-button; Push-in CAGE CLAMP®; 2.5 mm <sup>2</sup> ; Pin spacing 5.08 mm; 18-pole; Lateral locking levers; 2,50 mm <sup>2</sup> ; orange	<a href="http://www.wago.com/2231-318/037-000">www.wago.com/2231-318/037-000</a>
	<b>Item no.2231-318/102-000</b> 1-conductor female connector; push-button; Push-in CAGE CLAMP®; 2.5 mm <sup>2</sup> ; Pin spacing 5.08 mm; 18-pole; with integrated end plate; 2,50 mm <sup>2</sup> ; orange	<a href="http://www.wago.com/2231-318/102-000">www.wago.com/2231-318/102-000</a>
	<b>Item no.231-318/027-000</b> 1-conductor female connector; CAGE CLAMP®; 2.5 mm <sup>2</sup> ; Pin spacing 5.08 mm; 18-pole; clamping collar; 2,50 mm <sup>2</sup> ; orange	<a href="http://www.wago.com/231-318/027-000">www.wago.com/231-318/027-000</a>
	<b>Item no.231-318/008-000</b> 1-conductor female connector; CAGE CLAMP®; 2.5 mm <sup>2</sup> ; Pin spacing 5.08 mm; 18-pole; Snap-in mounting feet; 2,50 mm <sup>2</sup> ; orange	<a href="http://www.wago.com/231-318/008-000">www.wago.com/231-318/008-000</a>
	<b>Item no.231-318/026-000</b> 1-conductor female connector; CAGE CLAMP®; 2.5 mm <sup>2</sup> ; Pin spacing 5.08 mm; 18-pole; 2,50 mm <sup>2</sup> ; orange	<a href="http://www.wago.com/231-318/026-000">www.wago.com/231-318/026-000</a>
	<b>Item no.231-318/031-000</b> 1-conductor female connector; CAGE CLAMP®; 2.5 mm <sup>2</sup> ; Pin spacing 5.08 mm; 18-pole; clamping collar; 2,50 mm <sup>2</sup> ; orange	<a href="http://www.wago.com/231-318/031-000">www.wago.com/231-318/031-000</a>
	<b>Item no.231-318/037-000</b> 1-conductor female connector; CAGE CLAMP®; 2.5 mm <sup>2</sup> ; Pin spacing 5.08 mm; 18-pole; Lateral locking levers; 2,50 mm <sup>2</sup> ; orange	<a href="http://www.wago.com/231-318/037-000">www.wago.com/231-318/037-000</a>
	<b>Item no.232-178</b> THT female header; straight; Pin spacing 5.08 mm; 18-pole; 0.6 x 1.0 mm solder pin; orange	<a href="http://www.wago.com/232-178">www.wago.com/232-178</a>

Item no.231-318/102-000

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



1-conductor female connector; CAGE CLAMP®; 2.5 mm²; Pin spacing 5.08 mm; 18-pole; with integrated end plate; 2,50 mm²; orange

[www.wago.com/231-318/102-000](http://www.wago.com/231-318/102-000)



**Item no.232-178/039-000**

THT female header; straight; Pin spacing 5.08 mm; 18-pole; Locking lever; 0.6 x 1.0 mm solder pin; orange

[www.wago.com/232-178/039-000](http://www.wago.com/232-178/039-000)



**Item no.232-178/031-000**

THT female header; straight; Pin spacing 5.08 mm; 18-pole; clamping collar; 0.6 x 1.0 mm solder pin; orange

[www.wago.com/232-178/031-000](http://www.wago.com/232-178/031-000)



**Item no.232-178/047-000**

THT female header; straight; Pin spacing 5.08 mm; 18-pole; Spacer flange; 0.6 x 1.0 mm solder pin; orange

[www.wago.com/232-178/047-000](http://www.wago.com/232-178/047-000)



**Item no.232-278**

THT female header; angled; Pin spacing 5.08 mm; 18-pole; 0.6 x 1.0 mm solder pin; orange

[www.wago.com/232-278](http://www.wago.com/232-278)



**Item no.232-278/031-000**

THT female header; angled; Pin spacing 5.08 mm; 18-pole; clamping collar; 0.6 x 1.0 mm solder pin; orange

[www.wago.com/232-278/031-000](http://www.wago.com/232-278/031-000)



**Item no.232-278/047-000**

THT female header; angled; Pin spacing 5.08 mm; 18-pole; Spacer flange; 0.6 x 1.0 mm solder pin; orange

[www.wago.com/232-278/047-000](http://www.wago.com/232-278/047-000)



**Item no.232-418/026-000**

1-conductor female connector, angled; CAGE CLAMP®; 2.5 mm²; Pin spacing 5.08 mm; 18-pole; 2,50 mm²; orange

[www.wago.com/232-418/026-000](http://www.wago.com/232-418/026-000)



**Item no.232-278/039-000**

THT female header; angled; Pin spacing 5.08 mm; 18-pole; Locking lever; 0.6 x 1.0 mm solder pin; orange

[www.wago.com/232-278/039-000](http://www.wago.com/232-278/039-000)

## Optional accessories

### Coding

Coding



**Item no.: 231-129**

Coding key; snap-on type; light gray

[www.wago.com/231-129](http://www.wago.com/231-129)

### Marking accessories

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WAGO GmbH & Co. KG

Hansastr. 27

32423 Minden

Phone: +49571 887-0 | Fax: +49571 887-169

Email: [info.de@wago.com](mailto:info.de@wago.com) | Web: [www.wago.com](http://www.wago.com)

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## Marking strip

	<b>Item no.: 210-331/508-103</b> 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	<a href="http://www.wago.com/210-331/508-103">www.wago.com/210-331/508-103</a>
	<b>Item no.: 210-331/508-104</b> 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	<a href="http://www.wago.com/210-331/508-104">www.wago.com/210-331/508-104</a>
	<b>Item no.: 210-332/508-202</b> 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	<a href="http://www.wago.com/210-332/508-202">www.wago.com/210-332/508-202</a>
	<b>Item no.: 210-332/508-204</b> 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	<a href="http://www.wago.com/210-332/508-204">www.wago.com/210-332/508-204</a>
	<b>Item no.: 210-332/508-206</b> 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	<a href="http://www.wago.com/210-332/508-206">www.wago.com/210-332/508-206</a>
	<b>Item no.: 210-332/508-205</b> 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	<a href="http://www.wago.com/210-332/508-205">www.wago.com/210-332/508-205</a>


## Jumpers

## Jumper

	<b>Item no.: 231-905</b> Jumper; for conductor entry; 5-way; insulated; gray	<a href="http://www.wago.com/231-905">www.wago.com/231-905</a>
	<b>Item no.: 231-903</b> Jumper; for conductor entry; 3-way; insulated; gray	<a href="http://www.wago.com/231-903">www.wago.com/231-903</a>
	<b>Item no.: 231-907</b> Jumper; for conductor entry; 7-way; insulated; gray	<a href="http://www.wago.com/231-907">www.wago.com/231-907</a>
	<b>Item no.: 231-910</b> Jumper; for conductor entry; 10-way; insulated; gray	<a href="http://www.wago.com/231-910">www.wago.com/231-910</a>
	<b>Item no.: 231-902</b> Jumper; for conductor entry; 2-way; insulated; gray	<a href="http://www.wago.com/231-902">www.wago.com/231-902</a>

## Insulation stop

## Insulation stop

	<b>Item no.: 231-672</b> Insulation stop; 0.75 - 1 mm <sup>2</sup> ; dark gray	<a href="http://www.wago.com/231-672">www.wago.com/231-672</a>
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Hansastr. 27

32423 Minden

Phone: +49571 887-0 | Fax: +49571 887-169

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

[www.wago.com/231-670](http://www.wago.com/231-670)



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

[www.wago.com/231-671](http://www.wago.com/231-671)

**Cover**

Cover















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

[www.wago.com/231-669](http://www.wago.com/231-669)








**Ferrule**

Ferrule

	<b>Item no.: 216-101</b> Ferrule; Sleeve for 0.5 mm <sup>2</sup> / AWG 22; uninsulated; electro-tin plated; silver-colored	<a href="http://www.wago.com/216-101">www.wago.com/216-101</a>
	<b>Item no.: 216-104</b> Ferrule; Sleeve for 1.5 mm <sup>2</sup> / AWG 16; uninsulated; electro-tin plated; silver-colored	<a href="http://www.wago.com/216-104">www.wago.com/216-104</a>
	<b>Item no.: 216-106</b> Ferrule; Sleeve for 2.5 mm <sup>2</sup> / AWG 14; uninsulated; electro-tin plated; silver-colored	<a href="http://www.wago.com/216-106">www.wago.com/216-106</a>
	<b>Item no.: 216-102</b> Ferrule; Sleeve for 0.75 mm <sup>2</sup> / AWG 20; uninsulated; electro-tin plated; silver-colored	<a href="http://www.wago.com/216-102">www.wago.com/216-102</a>
	<b>Item no.: 216-103</b> Ferrule; Sleeve for 1 mm <sup>2</sup> / AWG 18; uninsulated; electro-tin plated	<a href="http://www.wago.com/216-103">www.wago.com/216-103</a>
	<b>Item no.: 216-123</b> Ferrule; Sleeve for 1 mm <sup>2</sup> / AWG 18; uninsulated; electro-tin plated; silver-colored	<a href="http://www.wago.com/216-123">www.wago.com/216-123</a>
	<b>Item no.: 216-122</b> Ferrule; Sleeve for 0.75 mm <sup>2</sup> / AWG 20; uninsulated; electro-tin plated; silver-colored	<a href="http://www.wago.com/216-122">www.wago.com/216-122</a>
	<b>Item no.: 216-124</b> Ferrule; Sleeve for 1.5 mm <sup>2</sup> / AWG 16; uninsulated; electro-tin plated	<a href="http://www.wago.com/216-124">www.wago.com/216-124</a>
	<b>Item no.: 216-142</b> Ferrule; Sleeve for 0.75 mm <sup>2</sup> / 18 AWG; uninsulated; electro-tin plated; electrolytic copper; gastight crimped; acc. to DIN 46228, Part 1/08.92	<a href="http://www.wago.com/216-142">www.wago.com/216-142</a>
	<b>Item no.: 216-132</b> Ferrule; Sleeve for 0.34 mm <sup>2</sup> / AWG 24; uninsulated; electro-tin plated	<a href="http://www.wago.com/216-132">www.wago.com/216-132</a>
	<b>Item no.: 216-121</b> Ferrule; Sleeve for 0.5 mm <sup>2</sup> / AWG 22; uninsulated; electro-tin plated; silver-colored	<a href="http://www.wago.com/216-121">www.wago.com/216-121</a>
	<b>Item no.: 216-143</b> Ferrule; Sleeve for 1 mm <sup>2</sup> / AWG 18; uninsulated; electro-tin plated; electrolytic copper; gastight crimped; acc. to DIN 46228, Part 1/08.92	<a href="http://www.wago.com/216-143">www.wago.com/216-143</a>

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



	<b>Item no.: 216-131</b> Ferrule; Sleeve for 0.25 mm <sup>2</sup> / AWG 24; uninsulated; electro-tin plated; silver-colored	<a href="http://www.wago.com/216-131">www.wago.com/216-131</a>
	<b>Item no.: 216-141</b> Ferrule; Sleeve for 0.5 mm <sup>2</sup> / 20 AWG; uninsulated; electro-tin plated; electrolytic copper; gastight crimped; acc. to DIN 46228, Part 1/08.92	<a href="http://www.wago.com/216-141">www.wago.com/216-141</a>
	<b>Item no.: 216-152</b> Ferrule; Sleeve for 0.34 mm <sup>2</sup> / AWG 24; uninsulated; electro-tin plated	<a href="http://www.wago.com/216-152">www.wago.com/216-152</a>
	<b>Item no.: 216-203</b> Ferrule; Sleeve for 1 mm <sup>2</sup> / AWG 18; insulated; electro-tin plated; red	<a href="http://www.wago.com/216-203">www.wago.com/216-203</a>
	<b>Item no.: 216-202</b> Ferrule; Sleeve for 0.75 mm <sup>2</sup> / 18 AWG; insulated; electro-tin plated; gray	<a href="http://www.wago.com/216-202">www.wago.com/216-202</a>
	<b>Item no.: 216-151</b> Ferrule; Sleeve for 0.25 mm <sup>2</sup> / AWG 24; uninsulated; electro-tin plated	<a href="http://www.wago.com/216-151">www.wago.com/216-151</a>
	<b>Item no.: 216-204</b> Ferrule; Sleeve for 1.5 mm <sup>2</sup> / AWG 16; insulated; electro-tin plated; black	<a href="http://www.wago.com/216-204">www.wago.com/216-204</a>
	<b>Item no.: 216-144</b> Ferrule; Sleeve for 1.5 mm <sup>2</sup> / AWG 16; uninsulated; electro-tin plated; electrolytic copper; gastight crimped; acc. to DIN 46228, Part 1/08.92; silver-colored	<a href="http://www.wago.com/216-144">www.wago.com/216-144</a>
	<b>Item no.: 216-201</b> Ferrule; Sleeve for 0.5 mm <sup>2</sup> / 20 AWG; insulated; electro-tin plated; white	<a href="http://www.wago.com/216-201">www.wago.com/216-201</a>
	<b>Item no.: 216-223</b> Ferrule; Sleeve for 1 mm <sup>2</sup> / AWG 18; insulated; electro-tin plated; red	<a href="http://www.wago.com/216-223">www.wago.com/216-223</a>
	<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	<a href="http://www.wago.com/216-241">www.wago.com/216-241</a>
	<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	<a href="http://www.wago.com/216-242">www.wago.com/216-242</a>
	<b>Item no.: 216-222</b> Ferrule; Sleeve for 0.75 mm <sup>2</sup> / 18 AWG; insulated; electro-tin plated; gray	<a href="http://www.wago.com/216-222">www.wago.com/216-222</a>
	<b>Item no.: 216-221</b> Ferrule; Sleeve for 0.5 mm <sup>2</sup> / 20 AWG; insulated; electro-tin plated; white	<a href="http://www.wago.com/216-221">www.wago.com/216-221</a>
	<b>Item no.: 216-224</b> Ferrule; Sleeve for 1.5 mm <sup>2</sup> / AWG 16; insulated; electro-tin plated; black	<a href="http://www.wago.com/216-224">www.wago.com/216-224</a>
	<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	<a href="http://www.wago.com/216-243">www.wago.com/216-243</a>
	<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	<a href="http://www.wago.com/216-244">www.wago.com/216-244</a>
	<b>Item no.: 216-263</b>	

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

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 [www.wago.com/216-263](http://www.wago.com/216-263)

**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

[www.wago.com/216-264](http://www.wago.com/216-264)**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

[www.wago.com/216-262](http://www.wago.com/216-262)**Item no.: 216-301**

Ferrule; Sleeve for 0.25 mm<sup>2</sup> / AWG 24; insulated; electro-tin plated; yellow

[www.wago.com/216-301](http://www.wago.com/216-301)**Item no.: 216-321**

Ferrule; Sleeve for 0.25 mm<sup>2</sup> / AWG 24; insulated; electro-tin plated; yellow

[www.wago.com/216-321](http://www.wago.com/216-321)**Item no.: 216-322**

Ferrule; Sleeve for 0.34 mm<sup>2</sup> / 22 AWG; insulated; electro-tin plated; light turquoise

[www.wago.com/216-322](http://www.wago.com/216-322)**Item no.: 216-302**

Ferrule; Sleeve for 0.34 mm<sup>2</sup> / 22 AWG; insulated; electro-tin plated; light turquoise

[www.wago.com/216-302](http://www.wago.com/216-302)**Tool**

## Operating tool

**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

[www.wago.com/209-130](http://www.wago.com/209-130)**Item no.: 209-132**

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

[www.wago.com/209-132](http://www.wago.com/209-132)**Item no.: 210-657**

Operating tool; Blade: 3.5 x 0.5 mm; with a partially insulated shaft; short; multicoloured

[www.wago.com/210-657](http://www.wago.com/210-657)**Item no.: 210-720**

Operating tool; Blade: 3.5 x 0.5 mm; with a partially insulated shaft; multicoloured

[www.wago.com/210-720](http://www.wago.com/210-720)**Item no.: 231-131**

Operating tool; made of insulating material; 1-way; loose; white

[www.wago.com/231-131](http://www.wago.com/231-131)**Item no.: 231-291**

Operating tool; made of insulating material; 1-way; loose; red

[www.wago.com/231-291](http://www.wago.com/231-291)**Item no.: 280-432**

Operating tool; made of insulating material; 2-way; white

[www.wago.com/280-432](http://www.wago.com/280-432)**Item no.: 280-434**

Operating tool; made of insulating material; 4-way

[www.wago.com/280-434](http://www.wago.com/280-434)**Item no.: 280-437**

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

WAGO GmbH &amp; Co. KG

Hansastr. 27

32423 Minden

Phone: +49571 887-0 | Fax: +49571 887-169

Email: [info.de@wago.com](mailto:info.de@wago.com) | Web: [www.wago.com](http://www.wago.com)

Do you have any questions about our products?

We are always happy to take your call at +49 (571) 887-44222.

	Operating tool; made of insulating material; 7-way	<a href="http://www.wago.com/280-437">www.wago.com/280-437</a>
	<b>Item no.: 280-440</b> Operating tool; made of insulating material; 10-way	<a href="http://www.wago.com/280-440">www.wago.com/280-440</a>
	<b>Item no.: 280-435</b> Operating tool; made of insulating material; 5-way; gray	<a href="http://www.wago.com/280-435">www.wago.com/280-435</a>
	<b>Item no.: 280-436</b> Operating tool; made of insulating material; 6-way	<a href="http://www.wago.com/280-436">www.wago.com/280-436</a>
	<b>Item no.: 280-438</b> Operating tool; made of insulating material; 8-way	<a href="http://www.wago.com/280-438">www.wago.com/280-438</a>
	<b>Item no.: 280-433</b> Operating tool; made of insulating material; 3-way	<a href="http://www.wago.com/280-433">www.wago.com/280-433</a>

## Downloads

### Documentation

#### Additional Information

Technical Section	2019 Apr 3	pdf	Download
Technical explanations		2.1 MB	

## CAD/CAE-Data

### CAD data

2D/3D Models 231-648	URL	Download
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### CAE data

EPLAN Data Portal 231-648	URL	Download
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ZUKEN Portal 231-648	URL	Download
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### Asset Administration Shell

Asset Administration Shell 231-648	URL	Download
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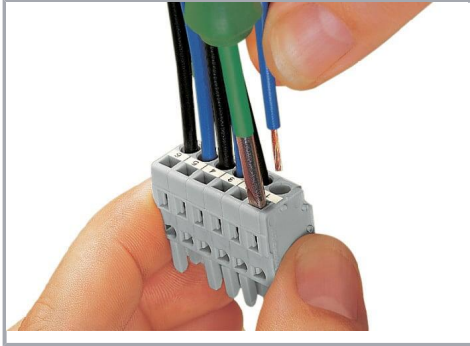
## Environmental Product Compliance

### Compliance Search

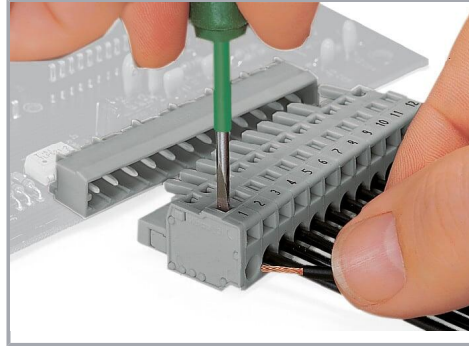
Subject to changes. Please also observe the further product documentation!

## Installation Notes

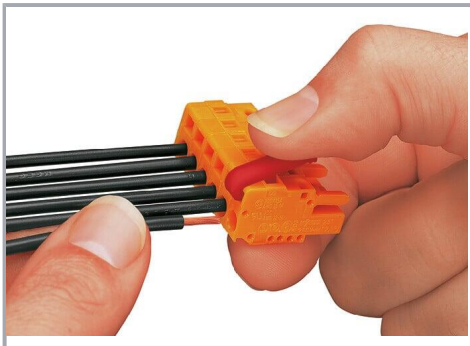
### Conductor termination



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.

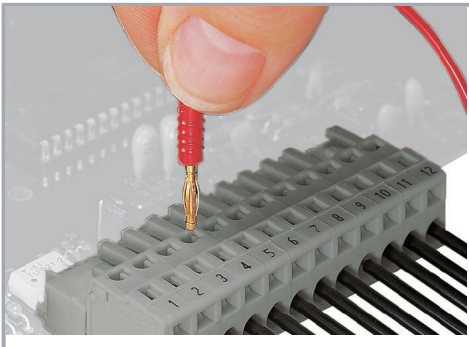
### Coding

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



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

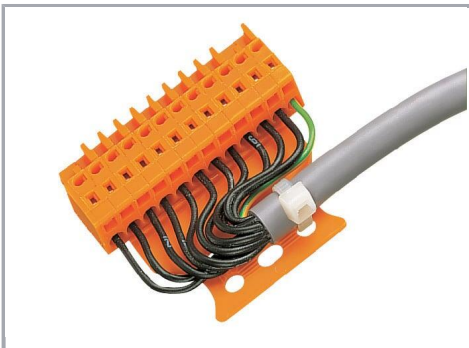
### Testing



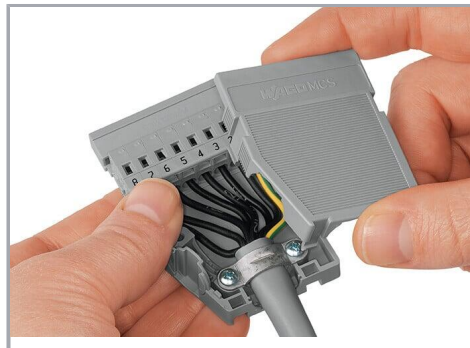
Testing – female connector with CAGE CLAMP®

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



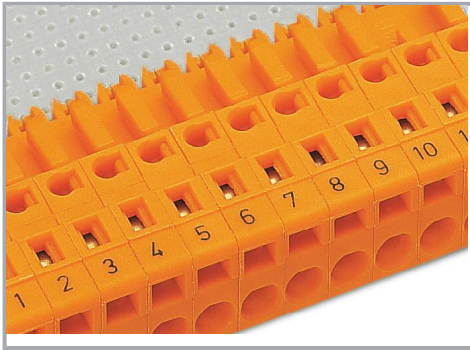
Strain relief housing shown with a male connector equipped with CAGE CLAMP®

### Marking

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

Data sheet | Item number: 231-648

[www.wago.com/231-648](http://www.wago.com/231-648)



Labeling via direct marking or self-adhesive strips.

## Product family

**MCS MIDI Classic**

[Show all products from the family](#)

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

WAGO GmbH & Co. KG  
Hansastr. 27  
32423 Minden  
Phone: +49571 887-0 | Fax: +49571 887-169  
Email: [info.de@wago.com](mailto:info.de@wago.com) | Web: [www.wago.com](http://www.wago.com)

Do you have any questions about our products?  
We are always happy to take your call at +49 (571) 887-44222.