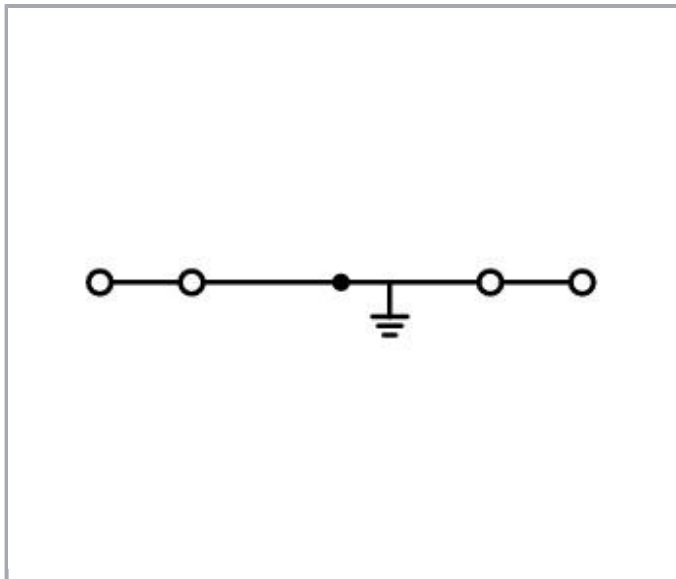
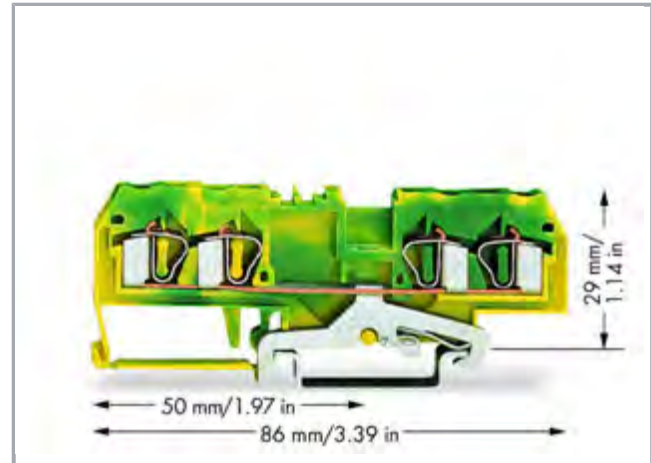


**Data sheet | Item number: 281-657**

4-conductor ground terminal block; 4 mm<sup>2</sup>; center marking; for DIN-rail 35 x 15 and 35 x 7.5; CAGE CLAMP®; 4,00 mm<sup>2</sup>; green-yellow



**Item description**

**Note:**

**Terminating Aluminum Conductors**

WAGO spring clamp terminal blocks are suitable for solid aluminum conductors up to 4 mm<sup>2</sup>/12 AWG if WAGO "Alu-Plus" Contact Paste is used for termination.

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



#### "Alu-Plus" Contact Paste Advantages:

- Automatically destroys the oxide film during clamping.
- Prevents fresh oxidation at the clamping point.
- Prevents electrolytic corrosion between aluminum and copper conductors (in the same terminal block).
- Provides long-term protection against corrosion.

Using terminal blocks with CAGE CLAMP® Spring Pressure Connection Technology, **aluminum conductors must first be cleaned with a blade** and then immediately be inserted into the clamping units filled with "Alu-Plus" Contact Paste.

It is also possible to apply WAGO "Alu-Plus" **additionally** on the whole surface of the aluminum conductor before termination.

Please note that the nominal currents must be adapted to the reduced conductivity of the aluminum conductors::

2.5 mm<sup>2</sup> = 16 A

4 mm<sup>2</sup> = 22 A

## Data

### Electrical data

#### Ratings per IEC/EN 60664-1

|             |                  |
|-------------|------------------|
| Ratings per | IEC/EN 60947-7-2 |
|-------------|------------------|

### Connection data

|                                   |                                            |
|-----------------------------------|--------------------------------------------|
| Connection technology             | CAGE CLAMP®                                |
| Actuation type                    | Operating tool                             |
| Connectable conductor materials   | Copper<br>Aluminum                         |
| Solid conductor                   | 0.08 ... 4 mm <sup>2</sup> / 28 ... 12 AWG |
| Fine-stranded conductor           | 0.08 ... 4 mm <sup>2</sup> / 28 ... 12 AWG |
| Strip length                      | 9 ... 10 mm / 0.35 ... 0.39 inch           |
| Total number of connection points | 4                                          |
| Total number of potentials        | 1                                          |
| Number of levels                  | 1                                          |
| Wiring type                       | Front-entry wiring                         |

### Geometrical Data

|       |                   |
|-------|-------------------|
| Width | 6 mm / 0.236 inch |
|-------|-------------------|

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



|                                    |                    |
|------------------------------------|--------------------|
| Height from upper-edge of DIN-rail | 29 mm / 1.142 inch |
| Depth                              | 86 mm / 3.386 inch |

## Mechanical data

|               |                 |
|---------------|-----------------|
| Design        | horizontal type |
| Mounting type | DIN-35 rail     |
| Marking level | Center marking  |

## Material Data

|                     |                     |
|---------------------|---------------------|
| Color               | green-yellow        |
| Insulation material | Polyamide 66 (PA66) |
| Fire load           | 0.193 MJ            |
| Weight              | 17.6 g              |

## Commercial data

|                       |                                  |
|-----------------------|----------------------------------|
| Product Group         | 1 (Rail Mounted Terminal Blocks) |
| Packaging type        | BOX                              |
| Country of origin     | DE                               |
| GTIN                  | 4044918512008                    |
| Customs tariff number | 85369010000                      |

## Approvals / Certificates

### Country specific Approvals

| Logo                                                                               | Approval                              | Additional Approval Text | Certificate name |
|------------------------------------------------------------------------------------|---------------------------------------|--------------------------|------------------|
|  | CCA<br>DEKRA Certification B.V.       | EN 60947, IEC 60947      | NTR NL-7454/A1   |
|  | CSA<br>DEKRA Certification B.V.       | C22.2 No. 158            | 1505034          |
|  | KEMA/KEUR<br>DEKRA Certification B.V. | EN 60947                 | 71-107288        |

### Ship Approvals

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

| Logo                                                                              | Approval                                                | Additional Approval Text | Certificate name |
|-----------------------------------------------------------------------------------|---------------------------------------------------------|--------------------------|------------------|
|   | <b>ABS</b><br>American Bureau of Shipping               | -                        | 20-HG1941090-PDA |
|  | <b>BV</b><br>Bureau Veritas S.A.                        | EN 60947                 | 07436/E0 BV      |
|   | <b>DNV GL</b><br>Det Norske Veritas, Germanischer Lloyd | -                        | TAE00001V2       |
|  | <b>LR</b><br>Lloyds Register                            | EN 60947                 | 91/20112 (E9)    |

## UL-Approvals

| Logo                                                                               | Approval                                   | Additional Approval Text | Certificate name |
|------------------------------------------------------------------------------------|--------------------------------------------|--------------------------|------------------|
|  | <b>UL</b><br>UL International Germany GmbH | UL 1059                  | 20190731-E45172  |

## Compatible products

## assembling



**Item no.: 209-106**  
Mounting carrier; for isolated mounting on DIN 35 rails; gray

**Item no.: 249-116**

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



Screwless end stop; 6 mm wide; for DIN-rail 35 x 15 and 35 x 7.5; gray



**Item no.: 709-153**

Cover; Type 1; suitable for cover carrier, type 1; 1 m long; transparent

#### check



**Item no.: 209-170**

Test plug adapter; 8.3 mm wide; for 4 mm Ø test plugs; suitable for 1.5 mm<sup>2</sup> - 10 mm<sup>2</sup> tbs; gray



**Item no.: 249-144**

L-type test plug module; modular; with spring-loaded contact pin; Center module; 2,50 mm<sup>2</sup>; gray



**Item no.: 249-145**

L-type end module; modular; with rigid contact pin; End module; 2,50 mm<sup>2</sup>; gray



**Item no.: 249-146**

L-type spacer module; modular; e.g., bridging commoned terminal blocks; gray



**Item no.: 249-147**

B-type test plug module; modular; 2,50 mm<sup>2</sup>; gray



**Item no.: 249-148**

B-type spacer module; modular; e.g., for bridging commoned terminal blocks; gray



**Item no.: 280-404**

Test plug adapter; 5 mm wide; for test plug 210-137 (2.3 mm Ø); suitable for 1.5 mm<sup>2</sup> - 4 mm<sup>2</sup> tbs; gray



**Item no.: 281-407**

Test plug; 6 mm wide; Nominal current 24 A; for 0.08 mm<sup>2</sup> - 2.5 mm<sup>2</sup>; 2,50 mm<sup>2</sup>; gray



**Item no.: 281-418**

Test plug module; modular; suitable for all WAGO 281, 776, 777 and 781 series rail-mounted terminal blocks with jumper slots in the current bar; gray



**Item no.: 281-419**

Spacer module; modular; bridging commoned terminal blocks; gray

#### Push-In type wire jumper



**Item no.: 249-123**

Push-in type wire jumper; 0.75 mm<sup>2</sup>; insulated; 180 mm long; black



**Item no.: 249-125**

Push-in type wire jumper; insulated; 60 mm long; black



**Item no.: 249-126**

Push-in type wire jumper; 0.75 mm<sup>2</sup>; insulated; 110 mm long; black



**Item no.: 249-127**

Push-in type wire jumper; 0.75 mm<sup>2</sup>; insulated; 250 mm long; black

#### Carrier rail

**Item no.: 210-112**

Steel carrier rail; 35 x 7.5 mm; 1 mm thick; 2 m long; slotted; according to EN 60715; "Hole width 25

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



mm

**Item no.: 210-113**

Steel carrier rail; 35 x 7.5 mm; 1 mm thick; 2 m long; unslotted; according to EN 60715

**Item no.: 210-114**

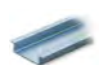
Steel carrier rail; 35 x 15 mm; 1.5 mm thick; 2 m long; unslotted; similar to EN 60715

**Item no.: 210-115**

Steel carrier rail; 35 x 7.5 mm; 1 mm thick; 2 m long; slotted; according to EN 60715; "Hole width 18 mm

**Item no.: 210-118**

Steel carrier rail; 35 x 15 mm; 2.3 mm thick; 2 m long; unslotted; according to EN 60715

**Item no.: 210-196**

Aluminum carrier rail; 35 x 8.2 mm; 1.6 mm thick; 2 m long; unslotted; similar to EN 60715; silver-colored

**Item no.: 210-197**

Steel carrier rail; 35 x 15 mm; 1.5 mm thick; 2 m long; slotted; similar to EN 60715

**Item no.: 210-198**

Copper carrier rail; 35 x 15 mm; 2.3 mm thick; 2 m long; unslotted; according to EN 60715; copper-colored

**Item no.: 210-504**

Steel carrier rail; 35 x 7.5 mm; 1 mm thick; 2 m long; slotted; galvanized; according to EN 60715

**Item no.: 210-505**

Steel carrier rail; 35 x 7.5 mm; 1 mm thick; 2 m long; unslotted; galvanized; according to EN 60715

**Item no.: 210-506**

Steel carrier rail; 35 x 15 mm; 1.5 mm thick; 2 m long; unslotted; galvanized; similar to EN 60715

**Item no.: 210-508**

Steel carrier rail; 35 x 15 mm; 1.5 mm thick; 2 m long; slotted; galvanized; similar to EN 60715

**tools****Item no.: 210-657**

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

**Item no.: 210-658**

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

**Item no.: 210-720**

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

**Protective Warning Marker****Item no.: 281-415**

Protective warning marker; with high-voltage symbol, black; for 5 terminal blocks; yellow

**ferrule****Item no.: 216-106**

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



Ferrule; Sleeve for 2.5 mm<sup>2</sup> / AWG 14; uninsulated; electro-tin plated



**Item no.: 216-201**

Ferrule; Sleeve for 0.5 mm<sup>2</sup> / 20 AWG; insulated; electro-tin plated; white



**Item no.: 216-202**

Ferrule; Sleeve for 0.75 mm<sup>2</sup> / 18 AWG; insulated; electro-tin plated; gray



**Item no.: 216-203**

Ferrule; Sleeve for 1 mm<sup>2</sup> / AWG 18; insulated; electro-tin plated; red



**Item no.: 216-204**

Ferrule; Sleeve for 1.5 mm<sup>2</sup> / AWG 16; insulated; electro-tin plated; black



**Item no.: 216-205**

Ferrule; Sleeve for 2.08 mm<sup>2</sup> / AWG 14; insulated; electro-tin plated; yellow



**Item no.: 216-206**

Ferrule; Sleeve for 2.5 mm<sup>2</sup> / AWG 14; insulated; electro-tin plated; blue



**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.: 216-242**

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.: 216-243**

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.: 216-244**

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.: 216-246**

Ferrule; Sleeve for 2.5 mm<sup>2</sup> / AWG 14; insulated; electro-tin plated; electrolytic copper; gastight crimped; acc. to DIN 46228, Part 4/09.90; blue

**Item no.: 216-301**

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



**Item no.: 216-302**

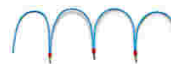
Ferrule; Sleeve for 0.34 mm<sup>2</sup> / 22 AWG; insulated; electro-tin plated; green

## Jumper



**Item no.: 210-103**

Wire commoning chain; insulated; black



**Item no.: 210-123**

Wire commoning chain; insulated; blue



**Item no.: 281-402**

Jumper; insulated; gray

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



**Item no.: 281-409**  
Jumper; insulated; gray



**Item no.: 281-422**  
Jumper; insulated; yellow-green



**Item no.: 281-482**  
Jumper; insulated; gray



**Item no.: 281-483**  
Jumper; 3-way; insulated; gray



**Item no.: 281-485**  
Jumper; 5-way; insulated; gray



**Item no.: 281-490**  
Jumper; 10-way; insulated; gray



**Item no.: 281-492**  
Jumper; 2-way; insulated; gray



**Item no.: 709-110**  
Wire commoning chain; 2.5 mm²; insulated; black



**Item no.: 709-111**  
Wire commoning chain; 2.5 mm²; insulated; black



**Item no.: 709-112**  
Wire commoning chain; 2.5 mm²; insulated; black



**Item no.: 781-452**  
Staggered jumper; from 1 to 2; insulated; gray



**Item no.: 781-453**  
Staggered jumper; from 1 to 3; insulated; gray



**Item no.: 781-454**  
Staggered jumper; from 1 to 4; insulated; gray



**Item no.: 781-455**  
Staggered jumper; from 1 to 5; insulated; gray



**Item no.: 781-456**  
Staggered jumper; from 1 to 6; insulated; gray

#### Marking accessories



**Item no.: 2009-115**  
WMB-Inline; for Smart Printer; 1500 pieces on roll; stretchable 5 - 5.2 mm; plain; snap-on type; white



**Item no.: 2009-115/000-002**  
WMB-Inline; for Smart Printer; 1500 pieces on roll; stretchable 5 - 5.2 mm; plain; snap-on type; yellow

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



**Item no.: 2009-115/000-006**

WMB-Inline; for Smart Printer; 1500 pieces on roll; stretchable 5 - 5.2 mm; plain; snap-on type; blue

**Item no.: 2009-115/000-007**

WMB-Inline; for Smart Printer; 1500 pieces on roll; stretchable 5 - 5.2 mm; plain; snap-on type; gray

**Item no.: 2009-115/000-012**

WMB-Inline; for Smart Printer; 1500 pieces on roll; stretchable 5 - 5.2 mm; plain; snap-on type; orange

**Item no.: 2009-115/000-017**

WMB-Inline; for Smart Printer; 1500 pieces on roll; stretchable 5 - 5.2 mm; plain; snap-on type; light green

**Item no.: 2009-115/000-023**

WMB-Inline; for Smart Printer; 1500 pieces on roll; stretchable 5 - 5.2 mm; plain; snap-on type; green

**Item no.: 2009-115/000-024**

WMB-Inline; for Smart Printer; 1500 pieces on roll; stretchable 5 - 5.2 mm; plain; snap-on type; violet

**Item no.: 209-140**

Group marker carrier; gray

**Item no.: 209-141**

Group marker carrier; gray

**Item no.: 209-142**

Group marker carrier; gray

**Item no.: 209-185**

Adaptor; gray

**Item no.: 249-105**

Group marker carrier; gray

**Item no.: 793-501**

WMB marking card; as card; not stretchable; plain; snap-on type; white

**Item no.: 793-501/000-002**

WMB marking card; as card; not stretchable; plain; snap-on type; yellow

**Item no.: 793-501/000-005**

WMB marking card; as card; not stretchable; plain; snap-on type; red

**Item no.: 793-501/000-006**

WMB marking card; as card; not stretchable; plain; snap-on type; blue

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

**Item no.: 793-501/000-007**

WMB marking card; as card; not stretchable; plain; snap-on type; gray

**Item no.: 793-501/000-012**

WMB marking card; as card; not stretchable; plain; snap-on type; orange

**Item no.: 793-501/000-017**

WMB marking card; as card; not stretchable; plain; snap-on type; light green

**Item no.: 793-501/000-023**

WMB marking card; as card; not stretchable; plain; snap-on type; green

**Item no.: 793-501/000-024**

WMB marking card; as card; not stretchable; plain; snap-on type; violet

**Item no.: 793-5501**

WMB marking card; as card; for terminal block width 5 - 17.5 mm; stretchable 5 - 5.2 mm; plain; snap-on type; white

**Item no.: 793-5501/000-002**

WMB marking card; as card; for terminal block width 5 - 17.5 mm; stretchable 5 - 5.2 mm; plain; snap-on type; yellow

**Item no.: 793-5501/000-005**

WMB marking card; as card; for terminal block width 5 - 17.5 mm; stretchable 5 - 5.2 mm; plain; snap-on type; red

**Item no.: 793-5501/000-006**

WMB marking card; as card; for terminal block width 5 - 17.5 mm; stretchable 5 - 5.2 mm; plain; snap-on type; blue

**Item no.: 793-5501/000-007**

WMB marking card; as card; for terminal block width 5 - 17.5 mm; stretchable 5 - 5.2 mm; plain; snap-on type; gray

**Item no.: 793-5501/000-012**

WMB marking card; as card; for terminal block width 5 - 17.5 mm; stretchable 5 - 5.2 mm; plain; snap-on type; orange

**Item no.: 793-5501/000-017**

WMB marking card; as card; for terminal block width 5 - 17.5 mm; stretchable 5 - 5.2 mm; plain; snap-on type; green

**Item no.: 793-5501/000-023**

WMB marking card; as card; for terminal block width 5 - 17.5 mm; stretchable 5 - 5.2 mm; plain; snap-on type; light green

**Item no.: 793-5501/000-024**

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



WMB marking card; as card; for terminal block width 5 - 17.5 mm; stretchable 5 - 5.2 mm; plain; snap-on type; violet

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#### End plate



Item no.: 281-338

Separator plate; 2 mm thick; oversized; gray



Item no.: 281-339

Separator plate; 2 mm thick; oversized; orange

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#### Insulation stop



Item no.: 281-470

Insulation stop; 0.08 - 0.2 mm<sup>2</sup> "s" (0.14 mm<sup>2</sup> "f-st"); 5 pieces/strip; white



Item no.: 281-471

Insulation stop; 0.25 - 0.5 mm<sup>2</sup>; 5 pieces/strip; light gray



Item no.: 281-472

Insulation stop; 0.75 - 1.5 mm<sup>2</sup>; 5 pieces/strip; dark gray

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#### Downloads

##### Documentation

##### Bid Text

281-657

doc - Datei

281-657

GAEB X81 - Datei

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##### Additional Information

Technical explanations

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#### CAD/CAE-Data

##### CAD data

2D/3D Models 281-657

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##### CAE data

EPLAN Data Portal 281-657

WSCAD Universe 281-657

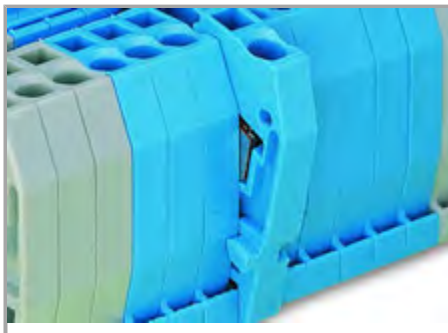
Subject to changes. Please also observe the further product documentation!

## Installation Notes

### Installation



By snapping a ground conductor terminal block onto the carrier rail, a direct electrical connection is automatically made to the rail.



Quick assembly keys prevent reverse mounting.



Removing a terminal block from the assembly.

### Conductor termination



CAGE CLAMP® connection

Inserting a conductor.



CAGE CLAMP® connection

Inserting a conductor.



CAGE CLAMP® connection  
Removing a conductor.

With ferruled conductors, it is necessary to use a terminal block one size larger than the conductor's nominal cross-section.

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



Inserting insulation stops.

### Commoning



Commoning ground conductor terminal blocks with through terminal blocks is possible in one direction only (via rear side of terminal block) using adjacent jumpers. In addition to the required marking of these blocks, use yellow-green adjacent jumpers.



Staggered jumpers for sophisticated circuit requirements – push jumpers down until fully inserted.

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



### Wire jumpers

When installing machines or control systems, it is often necessary to make an additional connection between two terminal blocks that are not next to each other on the rail. In such cases, WAGO's touch-proof, push-in type wire jumpers are the ideal solution.

These jumpers are compatible with the following rail-mount terminal blocks:

279 Series (1.5 mm<sup>2</sup>/16 AWG),

280/775/780 Series (2.5 mm<sup>2</sup>/14 AWG)

281/769/776/777/781 and 880 Series  
(4 mm<sup>2</sup>/12 AWG)

They are available in three conductor lengths (60, 110 and 250 mm), allowing up to 60 terminal blocks to be commoned depending on their width.

Compared with the 279 Series, the 280/775/780 and 281/776/777/781 Series can also accommodate two wire jumpers, allowing the use of commoning chains. Furthermore, the 280/769/775/780/880 and 281/776/777/781 Series allow both wire jumper and adjacent jumper to be simultaneously plugged into a same terminal block.

### Testing



Commoning using comb-style jumper bars. Push comb-style jumper bars down until fully inserted.

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





Testing with a test plug



Testing with a test plug

(picture shows a test plug fitted with CAGE CLAMP®).

(picture shows 209-170 Test Plug Adapter).

#### Marking



Marking via WMB Multi Marking System.

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