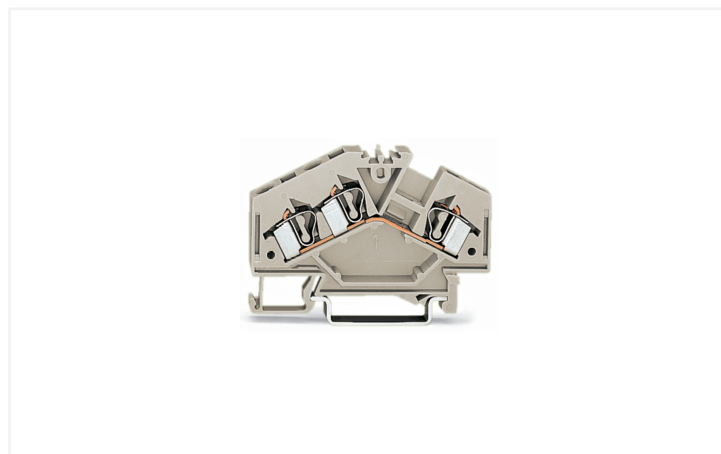
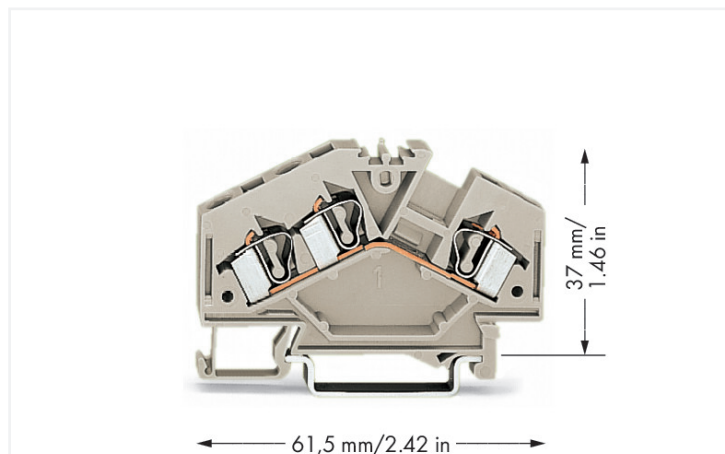


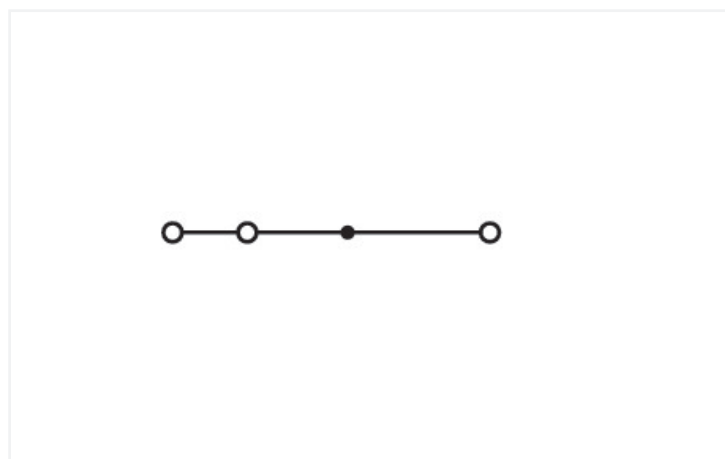
## Data Sheet | Item Number: 281-998

3-conductor through terminal block; 4 mm<sup>2</sup>; suitable for Ex e II applications; center marking; for DIN-rail 35 x 15 and 35 x 7.5; CAGE CLAMP®; 4,00 mm<sup>2</sup>; light gray

<https://www.wago.com/281-998>



Color: ■ light gray



Similar to illustration

Through terminal block, 281 Series, operating tool

Our through terminal block (item number 281-998) is designed for seamless electrical installations. Ensure that the strip lengths are between 9 and 10 mm when connecting conductors to this through terminal block. Whether for industrial or building applications, you can use our through terminal blocks to connect electrical conductors quickly and safely. We offer variants for both classic through-wiring and potential distribution. This product incorporates conductor terminals and utilizes CAGE CLAMP®. Our proven universal connection known as CAGE CLAMP® is the industry standard when it comes to connection technology and electrical interconnections. Depending on the type of conductor, this through terminal block is designed for conductor cross sections ranging from 0.08 mm<sup>2</sup> to 4 mm<sup>2</sup>.

This through rail-mount terminal block is operated with an operating tool.



Electrical data

| Ratings per                     |  | IEC/EN 60947-7-1 |     |    | Ex information               |                                                                                                                                                       |
|---------------------------------|--|------------------|-----|----|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Overvoltage category            |  | III              | III | II | Reference to hazardous areas | See application instructions in section "Knowledge and Downloads – Documentation – Additional Information: Technical Section; Technical Explications" |
| Pollution degree                |  | 3                | 2   | 2  |                              |                                                                                                                                                       |
| Nominal voltage                 |  | -                | -   | -  |                              |                                                                                                                                                       |
| Rated impulse withstand voltage |  | -                | -   | -  |                              |                                                                                                                                                       |
| Rated current                   |  | -                | -   | -  | Rated voltage EN (Ex e II)   | 550 V                                                                                                                                                 |
|                                 |  |                  |     |    | Rated voltage note (Ex e II) | Using staggered jumpers reduces the maximum rated voltage to 275 V.                                                                                   |
|                                 |  |                  |     |    | Rated current (Ex e II)      | 30 A                                                                                                                                                  |

| Power Loss                                                   |         |
|--------------------------------------------------------------|---------|
| Power loss, per pole (potential)                             | 0.9 W   |
| Rated current I <sub>N</sub> for power loss specification    | 30 A    |
| Resistance value for specified, current-dependent power loss | 0.001 Ω |

| General information |                            |
|---------------------|----------------------------|
| Wiring direction    | Front-entry wiring, angled |

Connection Data

| Clamping units             | 3 | Connection 1                    |                                    |
|----------------------------|---|---------------------------------|------------------------------------|
| Total number of potentials | 1 | Connection technology           | CAGE CLAMP®                        |
| Number of levels           | 1 | Actuation type                  | Operating tool                     |
|                            |   | Connectable conductor materials | Copper                             |
|                            |   | Solid conductor                 | 0.08 ... 4 mm² / 28 ... 12 AWG     |
|                            |   | Fine-stranded conductor         | 0.08 ... 4 mm² / 28 ... 12 AWG     |
|                            |   | Strip length                    | 9 ... 10 mm / 0.35 ... 0.39 inches |
|                            |   | Wiring direction                | Front-entry wiring, angled         |

Physical data

|                                   |                        |
|-----------------------------------|------------------------|
| Width                             | 6 mm / 0.236 inches    |
| Height                            | 61.5 mm / 2.421 inches |
| Depth from upper-edge of DIN-rail | 37 mm / 1.457 inches   |

Mechanical data

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

Material data

|                                    |                                                                          |
|------------------------------------|--------------------------------------------------------------------------|
| Note (material data)               | <a href="#">Information on material specifications can be found here</a> |
| Color                              | light gray                                                               |
| Material group                     | I                                                                        |
| Insulation material (main housing) | Polyamide (PA66)                                                         |
| Flammability class per UL94        | V0                                                                       |
| Fire load                          | 0.166 MJ                                                                 |
| Weight                             | 10.2 g                                                                   |



| Environmental requirements       |                 |
|----------------------------------|-----------------|
| Processing temperature           | -35 ... +85 °C  |
| Continuous operating temperature | -60 ... +105 °C |

| Commercial data       |                                  |
|-----------------------|----------------------------------|
| Product Group         | 1 (Rail Mounted Terminal Blocks) |
| PU (SPU)              | 100 pcs                          |
| Packaging type        | Box                              |
| Country of origin     | DE                               |
| GTIN                  | 4044918325400                    |
| Customs tariff number | 85369010000                      |

| Product Classification |                      |
|------------------------|----------------------|
| UNSPSC                 | 39121410             |
| eCl@ss 10.0            | 27-14-11-20          |
| eCl@ss 9.0             | 27-14-11-20          |
| ETIM 9.0               | EC000897             |
| ETIM 10.0              | EC000897             |
| ECCN                   | NO US CLASSIFICATION |

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

Approvals / Certificates

| General approvals                     |          |                  |
|---------------------------------------|----------|------------------|
|                                       |          |                  |
| Approval                              | Standard | Certificate Name |
| CCA<br>DEKRA Certification B.V.       | EN 60947 | NTR NL-7727      |
| CSA<br>CSA Group                      | C22.2    | 1505034          |
| KEMA/KEUR<br>DEKRA Certification B.V. | EN 60947 | 71-107288        |
| UL<br>Underwriters Laboratories Inc.  | UL 1059  | E45172           |

| Declarations of conformity and manufacturer's declarations |          |                  |
|------------------------------------------------------------|----------|------------------|
| Approval                                                   | Standard | Certificate Name |
| ATEX-Attestation of Conformity<br>WAGO GmbH & Co. KG       | -        | -                |
| EU-Declaration of Conformity<br>WAGO GmbH & Co. KG         | -        | -                |

| Approvals for marine applications                |          |                   |
|--------------------------------------------------|----------|-------------------|
|                                                  |          |                   |
| Approval                                         | Standard | Certificate Name  |
| ABS<br>American Bureau of Shipping               | -        | 24-0152298-PDA    |
| BV<br>Bureau Veritas S.A.                        | EN 60947 | 07436/G0 BV       |
| DNV GL<br>Det Norske Veritas, Germanischer Lloyd | -        | TAE00001V2        |
| PRS<br>Polski Rejestr Statków                    | -        | TE/1094/880590/23 |

| Approvals for hazardous areas                                                  |             |                                                                |
|--------------------------------------------------------------------------------|-------------|----------------------------------------------------------------|
|                                                                                |             |                                                                |
| Approval                                                                       | Standard    | Certificate Name                                               |
| AEx<br>UL International Germany GmbH c/o Physikalisch Technische Bundesanstalt | UL 60079    | E185892 (AEx e II resp. Ex e II)                               |
| ATEX<br>Physikalisch Technische Bundesanstalt (PTB)                            | -           | PTB 00 ATEX 3110 U (II 2 G Ex eb IIC Gb bzw. I M 2 Ex eb I Mb) |
| CCC<br>CNEC                                                                    | GB/T 3836.3 | 2020312313000232 (Ex eb IIC Gb, Ex eb I Mb)                    |



| Approvals for hazardous areas                     |             |                                                    |
|---------------------------------------------------|-------------|----------------------------------------------------|
| IECEX<br>Physikalisch Technische<br>Bundesanstalt | IEC 60079-0 | IECEX PTB 03.0004U (Ex eb<br>IIC Gb or Ex eb I Mb) |

Downloads

Environmental Product Compliance

| Compliance Search                           |  |
|---------------------------------------------|--|
| Environmental Product<br>Compliance 281-998 |  |

Documentation

| Bid Text |            |                 |  |
|----------|------------|-----------------|--|
| 281-998  | 19.02.2019 | xml<br>3.18 KB  |  |
| 281-998  | 28.02.2017 | doc<br>24.00 KB |  |

CAD/CAE-Data

| CAD data             |  |
|----------------------|--|
| 2D/3D Models 281-998 |  |

| CAE data                     |  |
|------------------------------|--|
| EPLAN Data Portal<br>281-998 |  |
| WSCAD Universe<br>281-998    |  |
| ZUKEN Portal 281-998         |  |

1 Compatible Products

1.1 Required Accessories

1.1.1 End plate

1.1.1.1 End plate

|                                                                                     |                                                                                                      |                                                                                                        |                                                                                   |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                                                                     |                                                                                                      |                                                                                                        |                                                                                   |
| <b>Item No.: 281-357</b><br>End and intermediate plate; 2.5 mm thick;<br>light gray | <b>Item No.: 209-191</b><br>Separator for Ex e/Ex i applications; 3 mm<br>thick; 120 mm wide; orange | <b>Item No.: 209-192</b><br>Separator for Ex e/Ex i applications; 3 mm<br>thick; 125.5 mm wide; orange | <b>Item No.: 281-358</b><br>Separator plate; 2 mm thick; oversized; light<br>gray |



1.2 Optional Accessories

1.2.1 DIN-rail

1.2.1.1 Mounting accessories



**Item No.: 210-196**  
Aluminum carrier rail; 35 x 8.2 mm; 1.6 mm thick; 2 m long; unslopped; similar to EN 60715; silver-colored



**Item No.: 210-198**  
Copper carrier rail; 35 x 15 mm; 2.3 mm thick; 2 m long; unslopped; according to EN 60715; copper-colored



**Item No.: 210-508**  
Steel carrier rail; 35 x 15 mm; 1.5 mm thick; 2 m long; slopped; galvanized; similar to EN 60715; silver-colored



**Item No.: 210-197**  
Steel carrier rail; 35 x 15 mm; 1.5 mm thick; 2 m long; slopped; similar to EN 60715; silver-colored



**Item No.: 210-506**  
Steel carrier rail; 35 x 15 mm; 1.5 mm thick; 2 m long; unslopped; galvanized; similar to EN 60715; silver-colored



**Item No.: 210-114**  
Steel carrier rail; 35 x 15 mm; 1.5 mm thick; 2 m long; unslopped; similar to EN 60715; silver-colored



**Item No.: 210-118**  
Steel carrier rail; 35 x 15 mm; 2.3 mm thick; 2 m long; unslopped; according to EN 60715; silver-colored



**Item No.: 210-115**  
Steel carrier rail; 35 x 7.5 mm; 1 mm thick; 2 m long; slopped; according to EN 60715; "Hole width 18 mm; silver-colored



**Item No.: 210-112**  
Steel carrier rail; 35 x 7.5 mm; 1 mm thick; 2 m long; slopped; according to EN 60715; "Hole width 25 mm; silver-colored



**Item No.: 210-504**  
Steel carrier rail; 35 x 7.5 mm; 1 mm thick; 2 m long; slopped; galvanized; according to EN 60715; silver-colored



**Item No.: 210-113**  
Steel carrier rail; 35 x 7.5 mm; 1 mm thick; 2 m long; unslopped; according to EN 60715; silver-colored



**Item No.: 210-505**  
Steel carrier rail; 35 x 7.5 mm; 1 mm thick; 2 m long; unslopped; galvanized; according to EN 60715; silver-colored

1.2.2 Ferrule

1.2.2.1 Ferrule



**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.: 216-106**  
Ferrule; Sleeve for 2.5 mm<sup>2</sup> / AWG 14; uninsulated; electro-tin plated; silver-colored

1.2.3 Installation

1.2.3.1 Cover



**Item No.: 709-153**  
Cover; Type 1; suitable for cover carrier, type 1; 1 m long; transparent



1.2.3.2 Cover carrier



**Item No.: 709-167**  
Cover carrier; Type 1; incl. fixing/retaining screws and knurled nut; suitable for 279 to 282 and 880 Series rail-mounted terminal blocks; suitable for 264 Series miniature rail-mounted terminal blocks; suitable for 270 Series sensor and actuator terminal blocks; gray

1.2.3.3 Mounting accessories



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



**Item No.: 249-116**  
Screwless end stop; 6 mm wide; for DIN-rail 35 x 15 and 35 x 7.5; gray

1.2.4 Insulation stop

1.2.4.1 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

1.2.5 Jumper

1.2.5.1 Jumper



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



**Item No.: 281-482**  
Jumper; 2-way; insulated; gray



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



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



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



**Item No.: 281-402**  
Jumper; insulated; gray



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



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



**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



1.2.6 Marking

1.2.6.1 Group marker carrier



**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.: 249-105**  
Group marker carrier; gray

1.2.6.2 Marker



**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.: 793-5501/000-023**  
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.: 793-5501/000-017**  
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.: 793-5501/000-012**  
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.: 793-5501/000-005**  
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.: 793-5501/000-024**  
WMB marking card; as card; for terminal block width 5 - 17.5 mm; stretchable 5 - 5.2 mm; 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.: 793-501/000-006**  
WMB marking card; as card; not stretchable; plain; snap-on type; blue



**Item No.: 793-501/000-007**  
WMB marking card; as card; not stretchable; plain; snap-on type; gray



**Item No.: 793-501/000-023**  
WMB marking card; as card; not stretchable; plain; snap-on type; green



**Item No.: 793-501/000-017**  
WMB marking card; as card; not stretchable; plain; snap-on type; light green



**Item No.: 793-501/000-012**  
WMB marking card; as card; not stretchable; plain; snap-on type; orange



**Item No.: 793-501/000-005**  
WMB marking card; as card; not stretchable; plain; snap-on type; red



**Item No.: 793-501/000-024**  
WMB marking card; as card; not stretchable; plain; snap-on type; violet



**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.: 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.: 2009-115/000-023**  
WMB-Inline; for Smart Printer; 1500 pieces on roll; stretchable 5 - 5.2 mm; plain; snap-on type; green



**Item No.: 2009-115/000-017**  
WMB-Inline; for Smart Printer; 1500 pieces on roll; stretchable 5 - 5.2 mm; plain; snap-on type; light green



**Item No.: 2009-115/000-012**  
WMB-Inline; for Smart Printer; 1500 pieces on roll; stretchable 5 - 5.2 mm; plain; snap-on type; orange



**Item No.: 2009-115/000-024**  
WMB-Inline; for Smart Printer; 1500 pieces on roll; stretchable 5 - 5.2 mm; plain; snap-on type; violet



**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

1.2.7 Protective warning marker

1.2.7.1 Cover



**Item No.: 281-415**  
Protective warning marker; for 5 terminal blocks; with high-voltage symbol, black; yellow

1.2.8 Push-in type wire jumper

1.2.8.1 Jumper



**Item No.: 249-126**  
Push-in type wire jumper; 0.75 mm<sup>2</sup>; insulated; 110 mm long; black



**Item No.: 249-123**  
Push-in type wire jumper; 0.75 mm<sup>2</sup>; insulated; 180 mm long; black



**Item No.: 249-127**  
Push-in type wire jumper; 0.75 mm<sup>2</sup>; insulated; 250 mm long; black



**Item No.: 249-125**  
Push-in type wire jumper; insulated; 60 mm long; black

1.2.9 Tool

1.2.9.1 Operating tool



**Item No.: 210-658**  
Operating tool; Blade: 3.5 x 0.5 mm; with a partially insulated shaft; angled; short; multicoloured



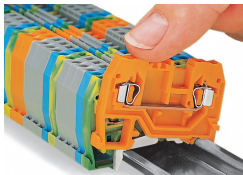
**Item No.: 210-720**  
Operating tool; Blade: 3.5 x 0.5 mm; with a partially insulated shaft; multicoloured



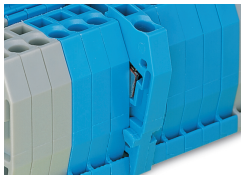
**Item No.: 210-657**  
Operating tool; Blade: 3.5 x 0.5 mm; with a partially insulated shaft; short; multicoloured

Installation Notes

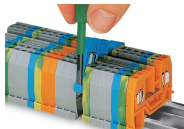
Installation



Snapping a terminal block onto the DIN-rail.



Quick assembly keys prevent reverse mounting.



Removing a terminal block from the assembly.

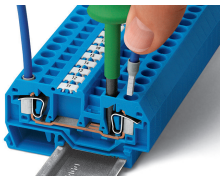


Steel DIN-rails are not suited for PEN (ground and N-conductor) applications per EN 60947-7-2 (VDE 0611, Part 3).

Conductor termination



**CAGE CLAMP® connection**  
Inserting a conductor.



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



**CAGE CLAMP® connection**  
Removing a solid conductor.

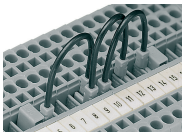
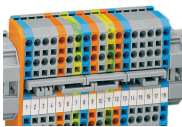


Inserting insulation stops.





Commoning



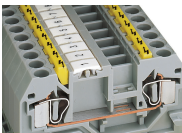
Commoning using an adjacent jumper.  
Push jumper down until fully inserted!

Staggered jumpers are suitable for sophisticated circuit requirements. Push jumpers down until fully inserted!

**Push-In Type 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 (see table on the right).  
  
The 280/775/780 and 281/776/777/781 Series Terminal Blocks accept 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.

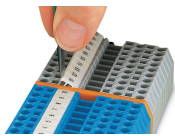
4-conductor through terminal blocks, angled type, formation of groups with 3-way, comb-style jumper bars

Cover

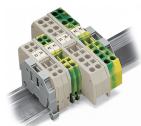
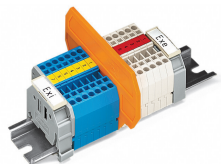


Protective warning markers inserted into the operating slots

Marking



Labeling via WMB Multi Marking System.

**Ex application****Separator plate for Ex e/Ex i applications**

According to EN 50020, a minimum distance of 50 mm must be kept between live parts of Ex e and Ex i circuits. The use of Ex e/Ex i separators is a space-saving solution when Ex e and Ex i terminal blocks are mounted on a common DIN-rail.

For 279 ... 282 Series:

209-190 for 2-conductor terminal blocks

209-191 for 2-, 3-, 4-conductor terminal blocks

**End and intermediate plate**

In order to meet creepage and clearance requirements for Ex e applications, it is necessary to insert an end or intermediate plate between a through and a ground conductor terminal block.