

# Repeater power supply - MINI MCR-2-RPSS-I-I - 2902014

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3-way repeater power supply with plug-in connection technology. HART-transparent, input signal 0(4)...20 mA, output signal 0(4)...20 mA. The device can be used in both isolator and repeater power supply operation. Screw connection technology


## Product Description

The repeater power supply with plug-in connection technology supplies the transmitter in the field and electrically isolates the input signal from the output signal. HART data protocols can be transmitted bidirectionally. The device can be used in both isolator and repeater power supply operation. Electrically isolated 0 ... 20 mA or 4 ... 20 mA standard analog signals are available on the input and output sides with a maximum output load of 600 Ω. The measuring transducer supports fault monitoring and NFC communication.

RoHS



## Key Commercial Data

|                                      |   |
|--------------------------------------|---|
| Packing unit                         | 1 pc  |
| GTIN                                 | <br>4 046356 651981 |
| GTIN                                 | 4046356651981   |
| Weight per Piece (excluding packing) | 80.000 g  |
| Custom tariff number                 | 85437090  |
| Country of origin                    | Germany   |

## Technical data

### Note

|                         |   |
|-------------------------|---|
| Utilization restriction | EMC: class A product, see manufacturer's declaration in the download area |
|-------------------------|---|

### Dimensions

|        |           |
|--------|-----------|
| Width  | 6.2 mm    |
| Height | 109.81 mm |
| Depth  | 119.2 mm  |

### Ambient conditions

## Repeater power supply - MINI MCR-2-RPSS-I-I - 2902014

### Technical data

#### Ambient conditions

|   |   |
|---|---|
| Ambient temperature (operation)         | -40 °C ... 70 °C  |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C  |
| Maximum altitude                        | ≤ 2000 m  |
| Permissible humidity (operation)        | 5 % ... 95 % (non-condensing)   |
| Degree of protection                    | IP20 (not assessed by UL)   |
| Noise immunity                          | EN 61000-6-2 When being exposed to interference, there may be minimal deviations. |

#### Input data

|                                |   |
|--------------------------------|---|
| Description of the input       | Current input (sensor circuit)                                |
| Number of inputs               | 1   |
| Current input signal           | 4 mA ... 20 mA (repeater power supply and isolator operation) |
|                                | 0 mA ... 20 mA (isolator operation)                           |
| Input resistance current input | approx. 68 Ω (+ 0.7 V for test diode)                         |
| Transmitter supply voltage     | > 19.5 V  |

#### Output data

|                                 |   |
|---------------------------------|---|
| Output name                     | Current output  |
| Number of outputs               | 1   |
| Current output signal           | 4 mA ... 20 mA (repeater power supply and isolator operation) |
|                                 | 0 mA ... 20 mA (isolator operation)                           |
| Max. output current             | 24 mA   |
| Load/output load current output | ≤ 600 Ω (at 20 mA)  |
| Ripple                          | < 20 mV <sub>PP</sub> (at 600 Ω)                              |
| Transmission Behavior           | 1:1 to input signal   |

#### Power supply

|                             |  |
|-----------------------------|--|
| Nominal supply voltage      | 24 V DC  |
| Supply voltage range        | 9.6 V DC ... 30 V DC (The DIN rail bus connector (ME 6,2 TBUS-2 1,5/5-ST-3,81 GN, Order No. 2869728) can be used to bridge the supply voltage. It can be snapped onto a 35 mm DIN rail according to EN 60715)) |
| Typical current consumption | 25 mA (at 24 V DC and in isolator operation)   |
|                             | 50 mA (at 24 V DC and in repeater power supply operation)  |
|                             | 55 mA (at 12 V DC and in isolator operation)   |
|                             | 110 mA (at 12 V DC and in repeater power supply operation)   |
| Power consumption           | ≤ 1400 mW (at I <sub>OUT</sub> = 20 mA, 9.6 V DC, 600 Ω load)  |

#### Connection data

|                   |                  |
|-------------------|------------------|
| Connection method | Screw connection |
| Stripping length  | 10 mm            |

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## Technical data

### Connection data

|                                  |  |
|----------------------------------|--|
| Screw thread                     | M3   |
| Conductor cross section solid    | 0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (with ferrule)     |
|                                  | 0.14 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> (without ferrule) |
| Conductor cross section flexible | 0.14 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>                   |
| Conductor cross section AWG      | 24 ... 12 (flexible)   |
| Torque                           | 0.5 Nm ... 0.6 Nm  |

### General

|  |  |
|--|--|
| No. of channels  | 1  |
| Maximum transmission error                             | 0.05 % (of final value in repeater power supply operation)   |
|  | 0.1 % (of final value in isolator operation)   |
| Maximum temperature coefficient                        | 0.0075 %/K   |
| Temperature coefficient, typical                       | 0.0075 %/K   |
| Limit frequency (3 dB)                                 | > 1.75 kHz (typ.)  |
| Step response (10-90%)                                 | < 200 µs (typ.)  |
| Protective circuit                                     | Transient protection   |
| Electrical isolation                                   | Reinforced insulation in accordance with IEC 61010-1   |
| Overvoltage category                                   | II   |
| Degree of pollution                                    | 2  |
| Rated insulation voltage                               | 300 V (effective)  |
| Test voltage, input/output/supply                      | 3 kV (50 Hz, 1 min.)   |
| Electromagnetic compatibility                          | Conformance with EMC directive   |
| Noise emission   | EN 61000-6-4   |
| Noise immunity   | EN 61000-6-2 When being exposed to interference, there may be minimal deviations.  |
| Color  | gray   |
| Housing material                                       | PBT  |
| Mounting position                                      | any  |
| Assembly instructions                                  | The T connector can be used to bridge the supply voltage. It can be snapped onto a 35 mm DIN rail according to EN 60715. |
| Fire protection for rail vehicles (DIN EN 45545-2) R22 | HL 1 - HL 2  |
| Fire protection for rail vehicles (DIN EN 45545-2) R23 | HL 1 - HL 2  |
| Fire protection for rail vehicles (DIN EN 45545-2) R24 | HL 1 - HL 2  |

### Data communication (bypass)

|                        |                  |
|------------------------|------------------|
| Limit frequency (3 dB) | approx. 1.75 kHz |
|------------------------|------------------|

### EMC data

|                       |                          |
|-----------------------|--------------------------|
| Designation           | Electromagnetic RF field |
| Standards/regulations | EN 61000-4-3             |

## Repeater power supply - MINI MCR-2-RPSS-I-I - 2902014

### Technical data

#### EMC data

|                       |                         |
|-----------------------|-------------------------|
| Designation           | Fast transients (burst) |
| Standards/regulations | EN 61000-4-4            |
| Designation           | Conducted interferences |
| Standards/regulations | EN 61000-4-6            |

#### Standards and Regulations

|                               |  |
|-------------------------------|--|
| Electromagnetic compatibility | Conformance with EMC directive                       |
| Noise emission                | EN 61000-6-4   |
| Standards/regulations         | EN 61000-4-2   |
| Designation                   | Electromagnetic RF field                             |
| Standards/regulations         | EN 61000-4-3   |
|                               | EN 61000-4-4   |
|                               | EN 61000-4-5   |
| Designation                   | Conducted interferences                              |
| Standards/regulations         | EN 61000-4-6   |
| Electrical isolation          | Reinforced insulation in accordance with IEC 61010-1 |

#### Conformance/approvals

|                |                                       |
|----------------|---------------------------------------|
| Designation    | CE                                    |
| Identification | CE-compliant                          |
| Designation    | ATEX                                  |
| Identification | # II 3 G Ex ec IIC T4 Gc              |
| Certificate    | BVS 19 ATEX E 047 X                   |
| Designation    | IECEX                                 |
| Identification | Ex ec IIC T4 Gc                       |
| Certificate    | IECEX BVS 19.0041X                    |
| Designation    | UL, USA/Canada                        |
| Identification | UL 508 Listed                         |
|                | Class I, Div. 2, Groups A, B, C, D T5 |
|                | Class I, Zone 2, Group IIC T5         |
| Designation    | Shipbuilding approval                 |
| Identification | C, EMC2                               |
| Certificate    | DNV GL 14445-15HH                     |

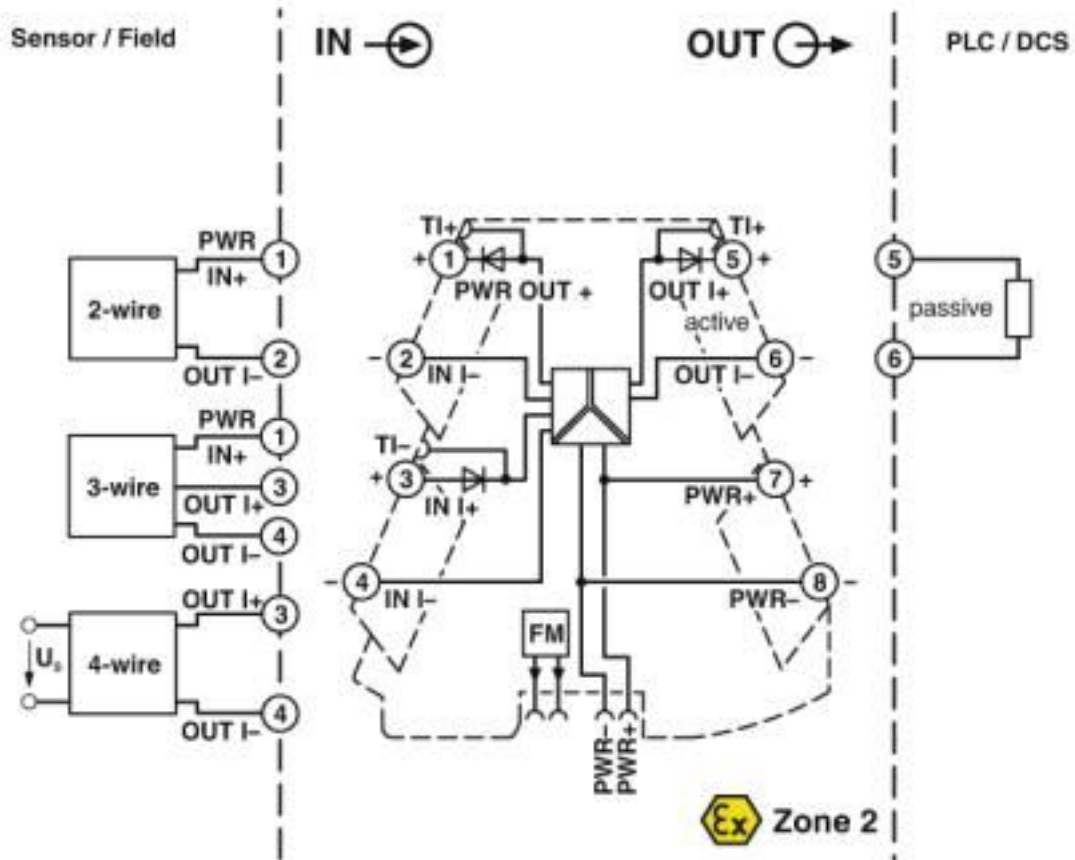
#### Environmental Product Compliance

|            |   |
|------------|---|
| REACH SVHC | Lead 7439-92-1  |
| China RoHS | Environmentally Friendly Use Period = 50 years  |
|            | For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration" |

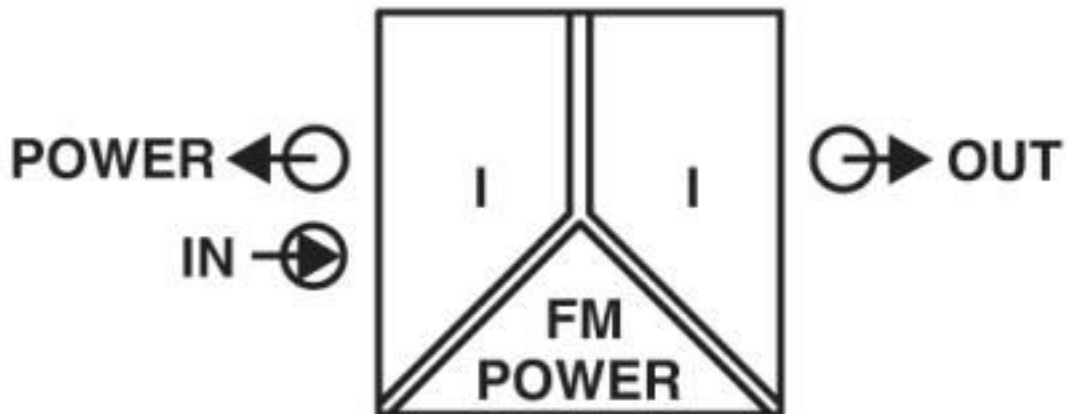
# Repeater power supply - MINI MCR-2-RPSS-I-I - 2902014

## Drawings

Block diagram



Pictogram



# Repeater power supply - MINI MCR-2-RPSS-I-I - 2902014

## Classifications

### eCl@ss

|            |          |
|------------|----------|
| eCl@ss 4.0 | 27210100 |
| eCl@ss 4.1 | 27210100 |
| eCl@ss 5.0 | 27210100 |
| eCl@ss 5.1 | 27210100 |
| eCl@ss 6.0 | 27210100 |
| eCl@ss 7.0 | 27210120 |
| eCl@ss 8.0 | 27210120 |
| eCl@ss 9.0 | 27210120 |

### ETIM

|          |          |
|----------|----------|
| ETIM 4.0 | EC002653 |
| ETIM 5.0 | EC002653 |
| ETIM 6.0 | EC002653 |
| ETIM 7.0 | EC002653 |

### UNSPSC

|               |          |
|---------------|----------|
| UNSPSC 6.01   | 30211506 |
| UNSPSC 7.0901 | 39121008 |
| UNSPSC 11     | 39121008 |
| UNSPSC 12.01  | 39121008 |
| UNSPSC 13.2   | 39121008 |
| UNSPSC 18.0   | 39121008 |
| UNSPSC 19.0   | 39121008 |
| UNSPSC 20.0   | 39121008 |
| UNSPSC 21.0   | 39121008 |

## Approvals

### Approvals

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Approvals

GL / UL Listed / cUL Listed / cULus Listed

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Ex Approvals

ATEX / UL Listed / cUL Listed / cULus Listed

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### Approval details

## Repeater power supply - MINI MCR-2-RPSS-I-I - 2902014

### Approvals

|    |  |   |             |
|----|--|---|-------------|
| GL |  | <a href="https://approvalfinder.dnvgl.com/">https://approvalfinder.dnvgl.com/</a> | 14445-15 HH |
|----|--|---|-------------|

|           |  |   |               |
|-----------|--|---|---------------|
| UL Listed |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 238705 |
|-----------|--|---|---------------|

|            |  |   |               |
|------------|--|---|---------------|
| cUL Listed |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 238705 |
|------------|--|---|---------------|

|              |  |  |  |
|--------------|--|--|--|
| cULus Listed |  |  |  |
|--------------|--|--|--|

### Accessories

#### Accessories

##### Communication module

##### Communication module - MINI MCR-2-V8-MOD-RTU - 2905634



Eight MINI Analog Pro signal conditioners and measuring transducers can be quickly and easily integrated into a Modbus/RTU network via a communication adapter.

##### Communication module - MINI MCR-2-V8-MOD-TCP - 2905635



Eight MINI Analog Pro signal conditioners and measuring transducers can be quickly and easily integrated into a Modbus/TCP network via a communication adapter.

## Repeater power supply - MINI MCR-2-RPSS-I-I - 2902014

### Accessories

Communication module - MINI MCR-2-V8-PB-DP - 2905636



Eight MINI Analog Pro signal conditioners and measuring transducers can be quickly and easily integrated into a PROFIBUS DP network via a communication adapter.

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### Device marking

Marker for end clamp - UCT-EM (30X5) - 0801505



Marker for end clamp, Sheet, white, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: snapped into marker carrier, lettering field size: 30 x 5 mm, Number of individual labels: 24

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Marker for end clamp - UCT-EM (30X5) YE - 0830340



Marker for end clamp, Sheet, yellow, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: snapped into marker carrier, lettering field size: 30 x 5 mm, Number of individual labels: 24

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Plastic label - UC-EMLP (15X5) - 0819301



Plastic label, Sheet, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 10

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Plastic label - UC-EMLP (15X5) YE - 0822615



Plastic label, Sheet, yellow, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 10



## Repeater power supply - MINI MCR-2-RPSS-I-I - 2902014

### Accessories

#### Plastic label - UC-EMLP (15X5) SR - 0828095



Plastic label, Sheet, silver, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 10

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#### Plastic label - US-EMLP (15X5) - 0828790



Plastic label, Card, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 189

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#### Plastic label - US-EMLP (15X5) YE - 0828873



Plastic label, Card, yellow, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 189

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#### Plastic label - US-EMLP (15X5) SR - 0828874



Plastic label, Card, silver, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 189

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### DIN rail connector

#### DIN rail bus connectors - ME 6,2 TBUS-2 1,5/5-ST-3,81 GY - 2695439



DIN rail connector (TBUS), 5-pos., for bridging the supply voltage, can be snapped onto NS 35/... DIN rails according to EN 60715

## Repeater power supply - MINI MCR-2-RPSS-I-I - 2902014

### Accessories

DIN rail bus connectors - ME 6,2 TBUS-2 1,5/5-ST-3,81 GN - 2869728



DIN rail connector for DIN rail mounting. Universal for TBUS housing. Gold-plated contacts, 5-pos.

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### Evaluation unit

Monitoring module - MINI MCR-2-FM-RC - 2904504



Fault monitoring module with plug-in connection technology for evaluating and reporting group errors from the FM system and for monitoring the supply voltages. Error message via N/C contact. Screw connection technology, standard configuration

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Monitoring module - MINI MCR-2-FM-RC-PT - 2904508



Fault monitoring module with plug-in connection technology for evaluating and reporting group errors from the FM system and for monitoring the supply voltages. Error message via N/C contact. Push-in connection technology, standard configuration

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### Labeled device marker

Marker for end clamp - UCT-EM (30X5) CUS - 0801589



Marker for end clamp, can be ordered: by sheet, white, labeled according to customer specifications, mounting type: snapped into marker carrier, lettering field size: 30 x 5 mm, Number of individual labels: 24

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Marker for end clamp - UCT-EM (30X5) YE CUS - 0830348



Marker for end clamp, can be ordered: by sheet, yellow, labeled according to customer specifications, mounting type: snapped into marker carrier, lettering field size: 30 x 5 mm, Number of individual labels: 24

## Repeater power supply - MINI MCR-2-RPSS-I-I - 2902014

### Accessories

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#### Plastic label - UC-EMLP (15X5) CUS - 0824550



Plastic label, can be ordered: by sheet, white, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm

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#### Plastic label - UC-EMLP (15X5) YE CUS - 0824551



Plastic label, can be ordered: by sheet, yellow, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm

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#### Plastic label - UC-EMLP (15X5) SR CUS - 0828099



Plastic label, can be ordered: by sheet, silver, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 10

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#### Plastic label - US-EMLP (15X5) CUS - 0830076



Plastic label, can be ordered: By card, white, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 189

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#### Plastic label - US-EMLP (15X5) YE CUS - 0830077



Plastic label, can be ordered: By card, yellow, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 189

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## Repeater power supply - MINI MCR-2-RPSS-I-I - 2902014

### Accessories

Plastic label - US-EMLP (15X5) SR CUS - 0830078



Plastic label, can be ordered: By card, silver, labeled according to customer specifications, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 189

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### Power module

Power terminal block - MINI MCR-2-PTB - 2902066



Power terminal with plug-in connection technology for delivering the supply voltage to the DIN rail connector. Monitoring of the supply voltages in combination with the fault monitoring module. Screw connection technology

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Power terminal block - MINI MCR-2-PTB-PT - 2902067



Power terminal with plug-in connection technology for delivering the supply voltage to the DIN rail connector. Monitoring of the supply voltages in combination with the fault monitoring module. Push-in connection technology

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### Power supply

Power supply unit - MINI-SYS-PS-100-240AC/24DC/1.5 - 2866983



Primary-switched MINI POWER supply for DIN rail mounting, input: 1-phase, output: 24 V DC/1.5 A

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Power supply unit - MINI-PS-100-240AC/24DC/1.5/EX - 2866653



Primary-switched power supply MINI POWER for DIN rail mounting, input: 1-phase, output: 24 V DC/1,5 A, for the potentially explosive area

## Repeater power supply - MINI MCR-2-RPSS-I-I - 2902014

### Accessories

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#### Programming cable

Cable adapter - GW HART USB MODEM - 1003824



USB HART modem cable for communication between a PC and HART devices, cable length: 1m.

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#### System adapter

System adapter - MINI MCR-2-V8-FLK 16 - 2901993



Eight MINI Analog Pro signal conditioners and measuring transducers can be connected to a controller with minimal cabling effort and without any errors using system adapters and system cabling.

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#### Terminal marking

Marker strip - SK 5,0 WH:REEL - 0805221



Marker strip, Roll, white, unlabeled, can be labeled with: THERMOMARK ROLL 2.0, THERMOMARK ROLL, THERMOMARK ROLL X1, THERMOMARK ROLLMASTER 300/600, THERMOMARK X1.2, mounting type: adhesive, for terminal block width: 5 mm, lettering field size: continuous x 5 mm, Number of individual labels: 90000

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