

## Isolation amplifier - MINI MCR-2-NAM-2RO - 2902004

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Configurable NAMUR signal conditioner with plug-in connection technology for proximity sensors, floating switch contacts, and switch contacts with resistance circuit. 2 transistor outputs, configurable via DIP switch. Screw connection technology.

### Product Description

Configurable NAMUR 4-way signal conditioner with plug-in connection technology for operating proximity sensors according to EN 60947-5-6, floating switch contacts, and switch contacts with resistance circuit. Two transistor outputs are available on the output side. The second output can be used either for duplicating signals or for signaling faults on the sensor line. You can configure the signal conditioner via DIP switches. The device supports fault monitoring and NFC communication.

### Your advantages

- ✓ Floating contacts and contacts with resistance circuit can be connected
- ✓ Power supply possible via the foot element (TBUS)
- ✓ Highly compact isolation amplifier for electrical isolation, amplification, and duplication of proximity sensor signals
- ✓ For proximity sensors according to IEC 60947-5-6 and EN 50227
- ✓ Second output can be used as a duplicator or error signaling output
- ✓ Error indication via diagnostic LED and analog signal
- ✓ N/O contacts at output
- ✓ Input and output signals can be configured via DIP switches
- ✓ 3-way isolation



### Key Commercial Data

|              |                                                                                                         |
|--------------|---------------------------------------------------------------------------------------------------------|
| Packing unit | 1 pc                                                                                                    |
| GTIN         | <br>4 046356 651851 |
| GTIN         | 4046356651851                                                                                           |

### Technical data

#### Note

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

#### Dimensions

# Isolation amplifier - MINI MCR-2-NAM-2RO - 2902004

## Technical data

### Dimensions

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

### 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

|                                 |                                        |
|---------------------------------|----------------------------------------|
| Non-load voltage                | 8.2 V DC ±10 %                         |
| Switching points (attenuated)   | < 1.2 mA (blocking)                    |
| Switching points (unattenuated) | > 2.1 mA (conductive)                  |
| Signal input                    | Signal input                           |
| Available input sources         | NAMUR proximity sensors (EN 60947-5-6) |

### Output data

|                           |                            |
|---------------------------|----------------------------|
| Switching output          | Transistor output, passive |
| Contact type              | N/O contact behavior 2x    |
| Maximum switching voltage | 30 V DC                    |
| Min. contact current      | 5 mA DC                    |

### 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 | 18 mA (24 V DC)                                                                                                                                                                                                |
| Power consumption           | 450 mW (9.6 V DC)                                                                                                                                                                                              |

### Connection data

|                                  |                                        |
|----------------------------------|----------------------------------------|
| Connection method                | Screw connection                       |
| Stripping length                 | 10 mm                                  |
| Screw thread                     | M3                                     |
| Conductor cross section solid    | 0.2 mm² ... 1.5 mm² (with ferrule)     |
|                                  | 0.14 mm² ... 2.5 mm² (without ferrule) |
| Conductor cross section flexible | 0.14 mm² ... 2.5 mm²                   |
| Conductor cross section AWG      | 24 ... 12 (flexible)                   |
| Torque                           | 0.5 Nm ... 0.6 Nm                      |

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## Technical data

### General

|                               |                                |
|-------------------------------|--------------------------------|
| No. of channels               | 1                              |
| Status display                | Yellow LED (switching output)  |
|                               | Yellow LED (switching output)  |
| Degree of pollution           | 2                              |
| Overvoltage category          | II                             |
| Electromagnetic compatibility | Conformance with EMC directive |
| Interference emission         | EN 61000-6-4                   |
| Housing material              | PBT                            |
| Color                         | gray                           |

### EMC data

|                       |                          |
|-----------------------|--------------------------|
| Designation           | Electromagnetic RF field |
| Standards/regulations | EN 61000-4-3             |
| 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                   | CE-compliant                                                                            |
| ATEX                          | # II 3 G Ex nA IIC T4 Gc X                                                              |
| UL, USA/Canada                | UL 508 Listed                                                                           |
|                               | Class I, Div. 2, Groups A, B, C, D T6                                                   |
|                               | Class I, Zone 2, Group IIC T6                                                           |
| DNV GL-Temperature            | B                                                                                       |
| DNV GL-Humidity               | B                                                                                       |
| DNV GL-Vibration              | A                                                                                       |
| DNV GL-EMC                    | A                                                                                       |
| DNV GL-Enclosure              | Required protection according to the Rules shall be provided upon installation on board |

### Conformance/approvals

|             |    |
|-------------|----|
| Designation | CE |
|-------------|----|

## Isolation amplifier - MINI MCR-2-NAM-2RO - 2902004

### Technical data

#### Conformance/approvals

|                |                                                                                         |
|----------------|-----------------------------------------------------------------------------------------|
| Identification | CE-compliant                                                                            |
| Designation    | ATEX                                                                                    |
| Identification | # II 3 G Ex ec IIC T4 Gc                                                                |
| Certificate    | BVS 20 ATEX E 014X                                                                      |
| Designation    | IECEX                                                                                   |
| Identification | Ex ec IIC T4 Gc                                                                         |
| Certificate    | IECEX BVS 20.0010X                                                                      |
| Designation    | UL, USA/Canada                                                                          |
| Identification | UL 508 Listed                                                                           |
|                | Class I, Div. 2, Groups A, B, C, D T6                                                   |
|                | Class I, Zone 2, Group IIC T6                                                           |
| Designation    | Shipbuilding approval                                                                   |
| Certificate    | DNV GL TAA000021E                                                                       |
| Temperature    | B                                                                                       |
| Humidity       | B                                                                                       |
| Vibration      | A                                                                                       |
| EMC            | A                                                                                       |
| Enclosure      | Required protection according to the Rules shall be provided upon installation on board |

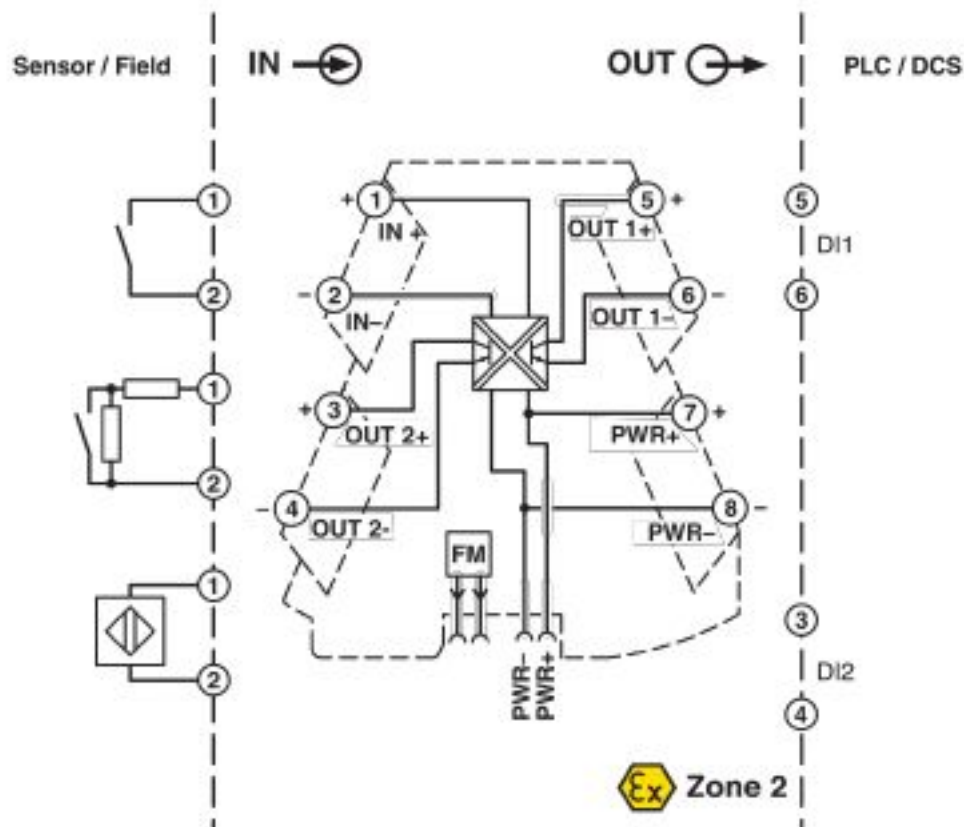
#### Environmental Product Compliance

|            |                                                                                                     |
|------------|-----------------------------------------------------------------------------------------------------|
| 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" |

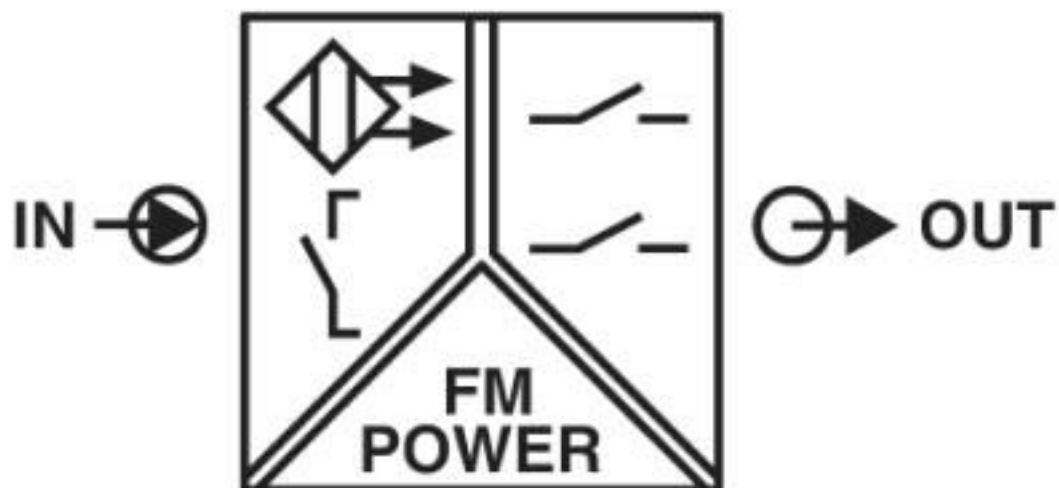
### Drawings

## Isolation amplifier - MINI MCR-2-NAM-2RO - 2902004

Block diagram



Pictogram



### Classifications

eCl@ss

eCl@ss 10.0.1

27210121

## Isolation amplifier - MINI MCR-2-NAM-2RO - 2902004

### 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 | 27210121 |
| eCl@ss 8.0 | 27210121 |
| eCl@ss 9.0 | 27210121 |

#### ETIM

|          |          |
|----------|----------|
| ETIM 2.0 | EC001485 |
| ETIM 3.0 | EC001485 |
| ETIM 4.0 | EC001485 |
| ETIM 5.0 | EC001485 |
| ETIM 6.0 | EC001485 |
| ETIM 7.0 | EC001485 |

#### 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

UL Listed / cUL Listed / EAC / DNV GL / cULus Listed

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##### Ex Approvals

UL Listed / cUL Listed / ATEX / cULus Listed

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#### Approval details

## Isolation amplifier - MINI MCR-2-NAM-2RO - 2902004

### Approvals

|              |                                                                                     |                                                                                                                                                       |                          |
|--------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| 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            |
| EAC          |    |                                                                                                                                                       | RU C-<br>DE.A*30.B.01082 |
| DNV GL       |    | <a href="https://approvalfinder.dnvgl.com/">https://approvalfinder.dnvgl.com/</a>                                                                     | TAA000021E               |
| 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.

## Isolation amplifier - MINI MCR-2-NAM-2RO - 2902004

### 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



## Isolation amplifier - MINI MCR-2-NAM-2RO - 2902004

### 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

## Isolation amplifier - MINI MCR-2-NAM-2RO - 2902004

### 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

## Isolation amplifier - MINI MCR-2-NAM-2RO - 2902004

### Accessories

#### 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

## Isolation amplifier - MINI MCR-2-NAM-2RO - 2902004

### 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

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### System adapter

## Isolation amplifier - MINI MCR-2-NAM-2RO - 2902004

### Accessories

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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