

# MINI MCR-SL-NAM-2RNO - Switching amplifier



2864105

<https://www.phoenixcontact.com/us/products/2864105>

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Configurable NAMUR switching amplifier for proximity sensors, floating switching contacts and switching contacts with resistance circuit. On the output side 2 N/O contact, with screw connection

## Product description

The 6.2 mm wide MINI MCR-SL-NAM-2RNO.... is a configurable 4-way isolation amplifier. It is suited for the operation of proximity sensors in acc. with EN 60947-5-6 and switches and also has two relay outputs. The second output can either be used to duplicate signals or for signaling faults for the sensor line.

The DIP switches are accessible on the housing side and allow the following parameters to be configured:

- Switchover from open circuit to closed circuit current behavior
- Activation of line fault detection of the sensor line as well as
- Selection of signal duplication/fault signaling

Power (19.2 V DC to 30 V DC) can be supplied through connection terminal blocks on the modules or in conjunction with the DIN rail connector.

## 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
- Operating current/closed circuit current switch-over (inverted switching behavior)

## Commercial data

|                                      |                     |
|--------------------------------------|---------------------|
| Item number                          | 2864105             |
| Packing unit                         | 1 pc                |
| Minimum order quantity               | 1 pc                |
| Sales key                            | C403                |
| Product key                          | DK1133              |
| Catalog page                         | Page 112 (C-7-2015) |
| GTIN                                 | 4046356046459       |
| Weight per piece (including packing) | 99.9 g              |
| Weight per piece (excluding packing) | 71.2 g              |
| Customs tariff number                | 85365019            |
| Country of origin                    | DE                  |

## Technical data

### Notes

#### Utilization restriction

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

### Product properties

|                 |                            |
|-----------------|----------------------------|
| Product type    | Isolating switch amplifier |
| Product family  | MINI Analog                |
| No. of channels | 1                          |
| Configuration   | DIP switches               |

#### Insulation characteristics

|                      |    |
|----------------------|----|
| Overvoltage category | II |
| Pollution degree     | 2  |

### System properties

#### Functionality

|               |              |
|---------------|--------------|
| Configuration | DIP switches |
|---------------|--------------|

### Electrical properties

|                                               |                                                                  |
|-----------------------------------------------|------------------------------------------------------------------|
| Rated insulation voltage                      | 150 V AC (Input/relay outputs (reinforced insulation))           |
|                                               | 150 V AC (Supply/relay outputs (reinforced insulation))          |
|                                               | 150 V AC (Relay output 1/relay output 2 (reinforced insulation)) |
|                                               | 30 V AC (Input/supply)                                           |
|                                               | 50 V DC (Input/supply)                                           |
| Electrical isolation                          | Reinforced insulation in accordance with EN 61010-1              |
| Electrical isolation between input and output | yes                                                              |
| Test voltage, input/output/supply             | 1.5 kV AC (50 Hz, 60 s)                                          |

#### Supply

|                          |                                                                                                                                                                                                                 |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Designation              | Supply                                                                                                                                                                                                          |
| Nominal supply voltage   | 24 V DC                                                                                                                                                                                                         |
| Supply voltage range     | 19.2 V DC ... 30 V DC (The DIN rail connector (ME 6,2 TBUS-2 1,5/5-ST-3,81 GN, item no. 2869728) can be used to bridge the supply voltage. It can be snapped onto a 35 mm DIN rail in accordance with EN 60715) |
| Max. current consumption | < 25 mA                                                                                                                                                                                                         |
| Power consumption        | < 600 mW                                                                                                                                                                                                        |

### Input data

#### Signal: NAMUR

|                  |   |
|------------------|---|
| Number of inputs | 1 |
|------------------|---|

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|                                         |                                            |
|-----------------------------------------|--------------------------------------------|
| Available input sources                 | NAMUR proximity sensors (IEC/EN 60947-5-6) |
|                                         | floating switch contacts                   |
|                                         | Switch contacts with resistance circuit    |
| Switching threshold "0" signal current  | < 1.2 mA (blocking)                        |
| Switching threshold "1" signal, current | > 2.1 mA (conductive)                      |
| Line fault detection                    | > 6 mA (Short circuit)                     |
|                                         | < 0.35 mA (Line break)                     |
|                                         | Activated /deactivated via DIP switch      |
| Non-load voltage                        | 8.2 V DC $\pm$ 10 %                        |

## Output data

### Switching: Relay

|                           |                                                                                                             |
|---------------------------|-------------------------------------------------------------------------------------------------------------|
| Output description        | Output 1: Signal output; Output 2: Fault signaling output or signal duplicator, can be set via DIP switches |
| Contact switching type    | 2 N/O contacts                                                                                              |
| Contact material          | Hard gold plated AgNi                                                                                       |
| Maximum switching voltage | 250 V AC                                                                                                    |
|                           | 125 V DC                                                                                                    |
|                           | 150 V AC (UL)                                                                                               |
|                           | 125 V DC (UL)                                                                                               |
| Maximum inrush current    | 2 A                                                                                                         |
| Min. switching current    | 1 mA (5 V DC)                                                                                               |
| Typical response time     | 15 ms                                                                                                       |
| Typical turn-off time     | 20 ms                                                                                                       |
| Switching frequency       | 0.5 Hz (240 V AC / 30 V DC / 2 A)                                                                           |
|                           | 10 Hz (without load)                                                                                        |

### Signal

|                   |   |
|-------------------|---|
| Number of outputs | 2 |
|-------------------|---|

## Connection data

|                                  |                                             |
|----------------------------------|---------------------------------------------|
| Connection method                | Screw connection                            |
| Stripping length                 | 12 mm                                       |
| Screw thread                     | M3                                          |
| Conductor cross section rigid    | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| Conductor cross section flexible | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| Conductor cross section AWG      | 26 ... 12                                   |

## Signaling

|                |                                    |
|----------------|------------------------------------|
| Status display | Red LED (error messages)           |
|                | Yellow LED (relay status messages) |

## Dimensions

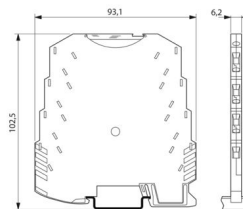
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Dimensional drawing



|        |          |
|--------|----------|
| Width  | 6.2 mm   |
| Height | 93.1 mm  |
| Depth  | 101.2 mm |

## Material specifications

|                                                        |                  |
|--------------------------------------------------------|------------------|
| Color                                                  | green (RAL 6021) |
| Housing material                                       | PBT              |
| 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      |

## Environmental and real-life conditions

### Ambient conditions

|                                         |                               |
|-----------------------------------------|-------------------------------|
| Degree of protection                    | IP20                          |
| Ambient temperature (operation)         | -20 °C ... 65 °C              |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C              |
| Altitude                                | ≤ 2000 m                      |
| Permissible humidity (operation)        | 5 % ... 95 % (non-condensing) |

## Approvals

### CE

|             |              |
|-------------|--------------|
| Certificate | CE-compliant |
|-------------|--------------|

### UKCA

|             |                |
|-------------|----------------|
| Certificate | UKCA-compliant |
|-------------|----------------|

### UL, USA/Canada

|                |                                       |
|----------------|---------------------------------------|
| Identification | UL 508 Recognized                     |
|                | Class I, Div. 2, Groups A, B, C, D T4 |

### Shipbuilding approval

|             |                   |
|-------------|-------------------|
| Certificate | DNV GL TAA000020N |
|-------------|-------------------|

### Shipbuilding data

|             |   |
|-------------|---|
| Temperature | B |
| Humidity    | B |
| Vibration   | B |
| EMC         | A |

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|           |                                                                                         |
|-----------|-----------------------------------------------------------------------------------------|
| Enclosure | Required protection according to the Rules shall be provided upon installation on board |
|-----------|-----------------------------------------------------------------------------------------|

## EMC data

|                               |                                                                      |
|-------------------------------|----------------------------------------------------------------------|
| Electromagnetic compatibility | Conformance with EMC directive                                       |
| Noise immunity                | EN 61000-6-2                                                         |
| Note                          | When being exposed to interference, there may be minimal deviations. |

## Noise emission

|                       |              |
|-----------------------|--------------|
| Standards/regulations | EN 61000-6-4 |
|-----------------------|--------------|

## Electromagnetic HF field

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

## Fast transients (burst)

|                       |                         |
|-----------------------|-------------------------|
| Designation           | Fast transients (burst) |
| Standards/regulations | EN 61000-4-4            |
| Evaluation criterion  | A                       |

## Conducted interference

|                       |                         |
|-----------------------|-------------------------|
| Designation           | Conducted interferences |
| Standards/regulations | EN 61000-4-6            |
| Evaluation criterion  | A                       |

## Standards and regulations

|                      |                                                     |
|----------------------|-----------------------------------------------------|
| Electrical isolation | Reinforced insulation in accordance with EN 61010-1 |
|----------------------|-----------------------------------------------------|

## Mounting

|                   |                   |
|-------------------|-------------------|
| Mounting type     | DIN rail mounting |
| Mounting position | any               |

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## Drawings



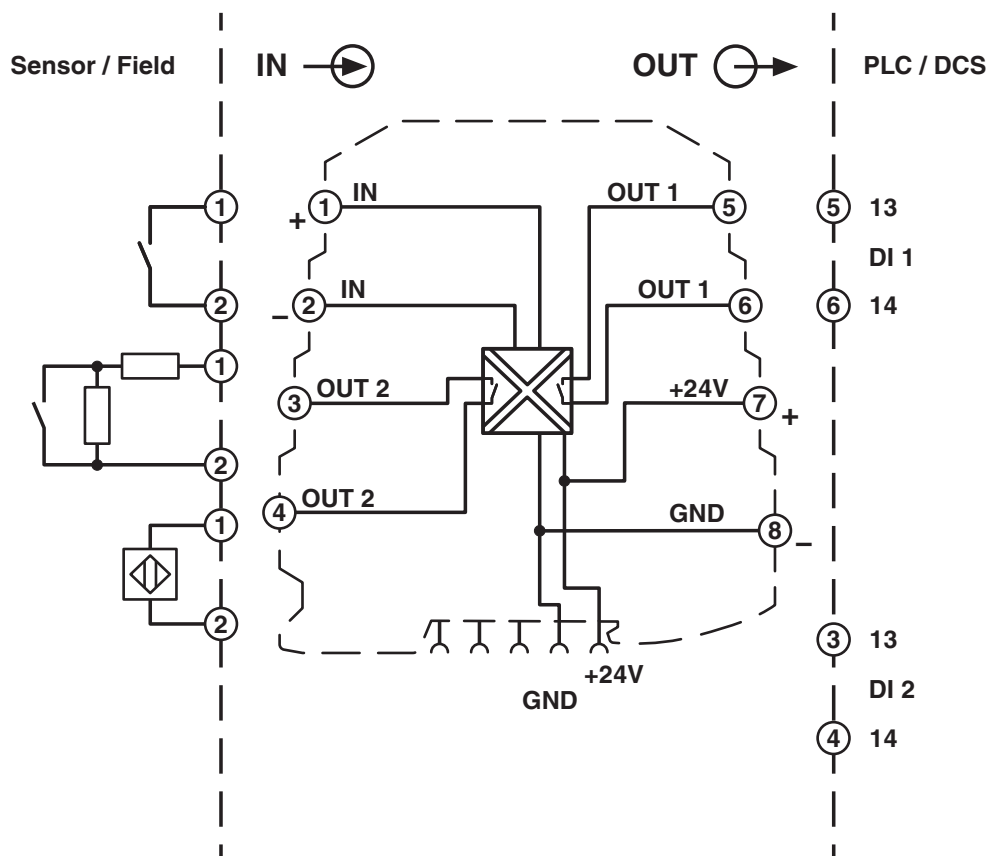
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Block diagram



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2864105>



**cUL Recognized**  
Approval ID: E238705



**UL Recognized**  
Approval ID: E238705

**DNV**  
Approval ID: TAA000020N



**cUL Listed**  
Approval ID: E199827



**UL Listed**  
Approval ID: E199827

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27210121 |
|-------------|----------|

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC001485 |
|----------|----------|

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 21.0 | 39121000 |
|-------------|----------|

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## Environmental product compliance

### EU RoHS

|                                         |              |
|-----------------------------------------|--------------|
| Fulfills EU RoHS substance requirements | Yes          |
| Exemption                               | 7(a), 7(c)-I |

### China RoHS

|                                        |                                                                                                                                                                                                                                   |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Environment friendly use period (EFUP) | EFUP-50                                                                                                                                                                                                                           |
|                                        | An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required. |

### EU REACH SVHC

|                                     |                                      |
|-------------------------------------|--------------------------------------|
| REACH candidate substance (CAS No.) | Lead(CAS: 7439-92-1)                 |
| SCIP                                | 6c6ab73b-1a05-446f-bf21-c6c060b1b5c1 |

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