

# MINI MCR-2-U-I4 - Signal conditioner



2902029

<https://www.phoenixcontact.com/be/products/2902029>

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3-way signal conditioner with plug-in connection technology for the electrical isolation of analog signals. Input signal: 0 V ... 10 V, output signal: 4 mA ... 20 mA, screw connection technology

## Product description

Standard signal 3-way signal conditioner with plug-in connection technology for the electrical isolation, conversion, amplification, and filtering of standard signals. The measuring transducer supports fault monitoring and NFC communication.

## Commercial data

|                                      |                    |
|--------------------------------------|--------------------|
| Item number                          | 2902029            |
| Packing unit                         | 1 pc               |
| Minimum order quantity               | 1 pc               |
| Sales key                            | CK1411             |
| Product key                          | CK1411             |
| Catalog page                         | Page 76 (C-5-2019) |
| GTIN                                 | 4046356649704      |
| Weight per piece (including packing) | 115 g              |
| Weight per piece (excluding packing) | 97 g               |
| Customs tariff number                | 85437090           |
| Country of origin                    | DE                 |

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## Technical data

### Notes

#### Utilization restriction

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

### Product properties

|                 |                    |
|-----------------|--------------------|
| Product type    | Signal conditioner |
| Product family  | MINI Analog Pro    |
| No. of channels | 1                  |
| Type            | Signal conditioner |

#### Insulation characteristics: GB Standard

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

### Electrical properties

|                                               |                                          |
|-----------------------------------------------|------------------------------------------|
| Electrical isolation                          | 3-way isolation                          |
| Electrical isolation between input and output | yes                                      |
| Limit frequency (3 dB)                        | $\approx \text{ } \downarrow \text{ Hz}$ |
| Protective circuit                            | Transient protection                     |
| Step response (10-90%)                        | $\approx \text{ } \downarrow \text{ ms}$ |
| Maximum temperature coefficient               | 0.01 %/K                                 |
| Temperature coefficient, typical              | 0.01 %/K                                 |
| Maximum transmission error                    | 0.05 % (of final value)                  |

#### Electrical isolation Input/output/power supply

|                          |                                                   |
|--------------------------|---------------------------------------------------|
| Rated insulation voltage | 300 V <sub>rms</sub>                              |
| Test voltage             | 3 kV AC (50 Hz, 60 s)                             |
| Insulation               | Reinforced insulation according to IEC/EN 61010-1 |

#### Supply

|                             |                                                                                                                                                                                                                |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nominal supply voltage      | 24 V DC                                                                                                                                                                                                        |
| Supply voltage range        | 9.6 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) |
| Typical current consumption | 25 mA (24 V DC)                                                                                                                                                                                                |
|                             | 54 mA (12 V DC)                                                                                                                                                                                                |
| Power consumption           | $\leq 800 \text{ mW}$ (9.6 V DC)                                                                                                                                                                               |

### Input data

#### Signal: Voltage

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

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|                                   |                                                    |
|-----------------------------------|----------------------------------------------------|
| Configurable/programmable         | no                                                 |
| Voltage input signal              | 0 V ... 10 V                                       |
| Input resistance of voltage input | $\approx \text{ } \sqcup \text{ } \text{ M}\Omega$ |

## Output data

Signal: Current

|                                 |                                       |
|---------------------------------|---------------------------------------|
| Number of outputs               | 1                                     |
| Configurable/programmable       | no                                    |
| Non-load voltage                | < 17 V                                |
| Current output signal           | 4 mA ... 20 mA                        |
| Max. current output signal      | 22 mA                                 |
| Load/output load current output | $\leq 600 \Omega$ (20 mA)             |
| Ripple                          | < 20 mV <sub>PP</sub> (600 $\Omega$ ) |

## Connection data

|                                  |                                                                                                                              |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Connection method                | Screw connection                                                                                                             |
| Stripping length                 | 10 mm                                                                                                                        |
| Screw thread                     | M3                                                                                                                           |
| Conductor cross section rigid    | 0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (with ferrule)<br>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)                                                                                                         |
| Tightening torque                | 0.5 Nm ... 0.6 Nm                                                                                                            |

## Ex data

|                       |        |
|-----------------------|--------|
| Ex installation (EPL) | Gc     |
|                       | Div. 2 |

## Signaling

|                |                            |
|----------------|----------------------------|
| Status display | Green LED (supply voltage) |
|----------------|----------------------------|

## Dimensions

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

## Material specifications

|                                                        |                 |
|--------------------------------------------------------|-----------------|
| Color                                                  | gray (RAL 7042) |
| 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     |
| Housing material                                       | PBT             |

## Environmental and real-life conditions

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## Ambient conditions

|                                         |                               |
|-----------------------------------------|-------------------------------|
| Degree of protection                    | IP20 (not assessed by UL)     |
| Ambient temperature (operation)         | -40 °C ... 70 °C              |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C              |
| Altitude                                | ≤ 2000 m                      |
| Permissible humidity (operation)        | 5 % ... 95 % (non-condensing) |

## Approvals

### CE

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

### ATEX

|                |                           |
|----------------|---------------------------|
| Identification | Ex II 3 G Ex ec IIC T4 Gc |
| Certificate    | BVS 19 ATEX E 047 X       |

### UKCA Ex (UKEX)

|                |                           |
|----------------|---------------------------|
| Identification | Ex II 3 G Ex ec IIC T4 Gc |
| Certificate    | PxCIF21UKEX2902000X       |

### IECEX

|                |                    |
|----------------|--------------------|
| Identification | Ex ec IIC T4 Gc    |
| Certificate    | IECEX BVS 19.0041X |

### CCC / China-Ex

|                |                 |
|----------------|-----------------|
| Identification | Ex nA IIC T4 Gc |
|----------------|-----------------|

### UL, USA/Canada

|                |                                       |
|----------------|---------------------------------------|
| Identification | UL 508 Listed                         |
|                | Class I, Div. 2, Groups A, B, C, D T6 |
|                | Class I, Zone 2, Group IIC T6         |

### Shipbuilding approval

|             |                   |
|-------------|-------------------|
| Certificate | DNV GL TAA00002UA |
|-------------|-------------------|

### EAC Ex

|                |                                 |
|----------------|---------------------------------|
| Identification | Ex II 3 G Ex ec IIC T4 Gc       |
| Certificate    | BY/112 02.01 TP012 103.01 00079 |

### DNV GL data

|             |                                                                                         |
|-------------|-----------------------------------------------------------------------------------------|
| Temperature | B                                                                                       |
| Humidity    | B                                                                                       |
| Vibration   | A                                                                                       |
| EMC         | A                                                                                       |
| Enclosure   | Required protection according to the Rules shall be provided upon installation on board |

## EMC data

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|                               |                                                                      |
|-------------------------------|----------------------------------------------------------------------|
| Noise immunity                | EN 61000-6-2                                                         |
| Note                          | When being exposed to interference, there may be minimal deviations. |
| Electromagnetic compatibility | Conformance with EMC directive                                       |
| Noise emission                | EN 61000-6-4                                                         |

## Electrostatic discharge

|                       |              |
|-----------------------|--------------|
| Standards/regulations | EN 61000-4-2 |
|-----------------------|--------------|

## Electrostatic discharge

|          |                                                                   |
|----------|-------------------------------------------------------------------|
| Comments | Safety measures must be taken to prevent electrostatic discharge. |
|----------|-------------------------------------------------------------------|

## Electromagnetic HF field

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

## Fast transients (burst)

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

## Surge current load (surge)

|                       |              |
|-----------------------|--------------|
| Standards/regulations | EN 61000-4-5 |
|-----------------------|--------------|

## Conducted interference

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

## Standards and regulations

|                      |                 |
|----------------------|-----------------|
| Electrical isolation | 3-way isolation |
|----------------------|-----------------|

## GB Standard

|                       |           |
|-----------------------|-----------|
| Standards/regulations | GB 3836.1 |
|                       | GB 3836.8 |

## Mounting

|                       |                                                                                                                       |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------|
| Mounting type         | DIN rail mounting                                                                                                     |
| Assembly instructions | The DIN rail connector can be used for bridging the supply voltage. It can be snapped onto a 35 mm EN 60715 DIN rail. |
| Mounting position     | any                                                                                                                   |

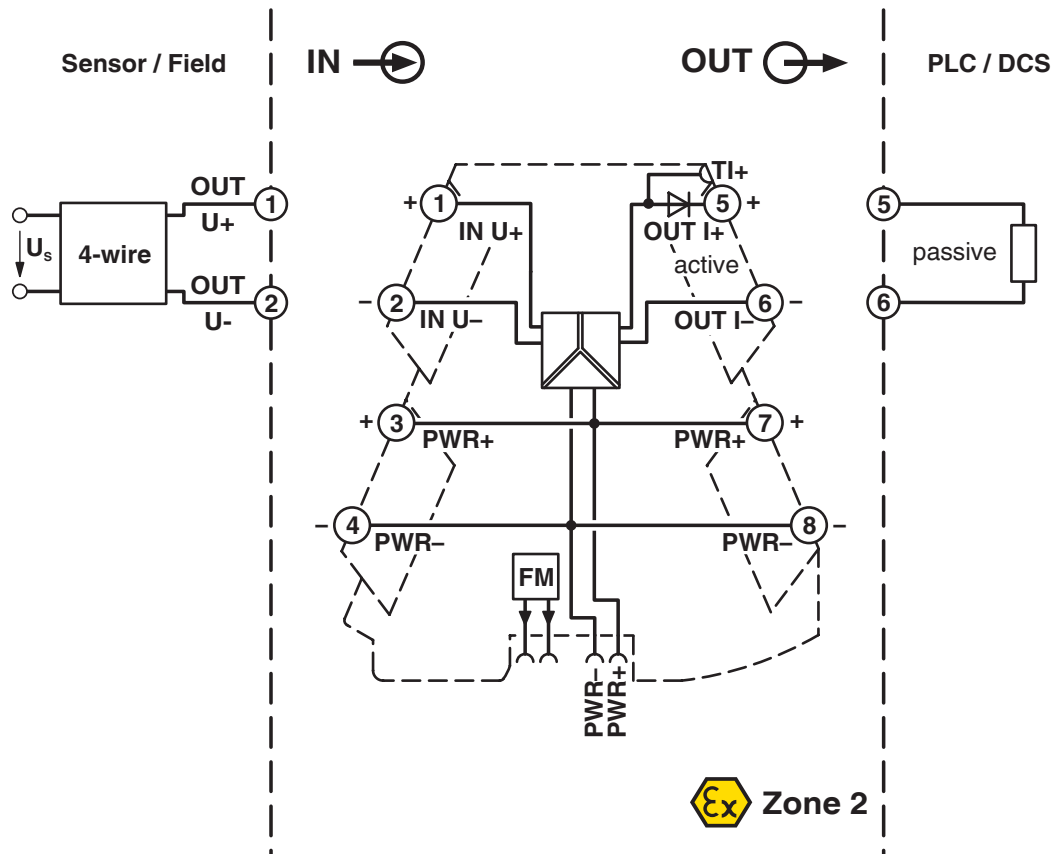
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## Drawings

Block diagram



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/be/products/2902029>



**DNV GL**

Approval ID: TAA00002UA



**UL Listed**

Approval ID: FILE E 238705



**CCC**

Approval ID: 2021322310003859



**cUL Listed**

Approval ID: FILE E 238705



**IECEx**

Approval ID: IECEx BVS 19.0041X



**cUL Listed**

Approval ID: FILE E 196811



**UL Listed**

Approval ID: FILE E 196811



**ATEX**

Approval ID: BVS 19 ATEX E 047 X

**cULus Listed**

**cULus Listed**

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-11.0 | 27210120 |
| ECLASS-12.0 | 27210120 |
| ECLASS-13.0 | 27210120 |

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC002653 |
|----------|----------|

### UNSPSC

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



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## Environmental product compliance

|            |                                                                                                              |
|------------|--------------------------------------------------------------------------------------------------------------|
| REACH SVHC | Lead 7439-92-1                                                                                               |
| China RoHS | Environmentally Friendly Use Period = 50 years                                                               |
|            | For information on hazardous substances, refer to the manufacturer's declaration available under "Downloads" |

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