

MINI MCR-2-UI-UI-PT-C - Input signal conditioner



2902039

<https://www.phoenixcontact.com/gb/products/2902039>

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3-way signal conditioner with plug-in connection technology and calibrated measuring range changeover for the electrical isolation of unipolar and bipolar analog signals. Input/output configurable via DIP switch. push-in connection technology, order configuration.

Product description

The 3-way signal conditioner with plug-in connection technology and calibrated measuring range changeover can be configured using DIP switches and is used for the electrical isolation, conversion, amplification, and filtering of unipolar and bipolar standard and normalized signals. On the input side, the standard analog signals 0 ... 20 mA, 4 ... 20 mA, 0 ... 10 V, 0 ... 5 V, 1 ... 5 V or -10 ... 10 V, and signals 2 ... 10 V, 0 ... 20 V, 4 ... 20 V, 0 ... 24 V, 0 ... 30 V, -5 ... 5 V, -20 ... 20 V, -24 ... 24 V, -30 ... 30 V and -20 ... 20 mA are available. On the output side, 0 ... 20 mA, 4 ... 20 mA, 0 ... 10 V, 0 ... 5 V, 1 ... 5 V, -10 ... 10 V and -5 ... 5 V are possible. There is no need for adjustment following a measuring range changeover. The measuring transducer supports fault monitoring and NFC communication.

Commercial data

| | |
|--------------------------------------|--------------------------------|
| Item number | 2902039 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Note | Made to order (non-returnable) |
| Sales key | DK1121 |
| Product key | DK1121 |
| Weight per piece (including packing) | 118.7 g |
| Weight per piece (excluding packing) | 110 g |
| Customs tariff number | 85437090 |
| 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 | Input signal conditioner |
| Product family | MINI Analog Pro |
| No. of channels | 1 |
| Configuration | DIP switches |

Insulation characteristics: GB Standard

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

System properties

Functionality

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

Electrical properties

| | |
|---|--|
| Electrical isolation | 3-way isolation |
| Electrical isolation between input and output | yes |
| Limit frequency (3 dB) | 30 Hz (via DIP switch) |
| | 5 kHz (via DIP switch) |
| Protective circuit | Transient protection |
| Step response (10-90%) | < 12 ms (with 30 Hz filter) |
| Maximum temperature coefficient | 0.01 %/K |
| Temperature coefficient, typical | 0.01 %/K |
| Maximum transmission error | ≤ 0.1 % (of the maximum value of the configured output range) |
| | ≤ 0.15 % (of final value, at IN: 4 mA ... 20 mA / OUT: -10 V ... 10 V) |

Electrical isolation Input/output/power supply

| | |
|--------------------------|---|
| Rated insulation voltage | 300 V _{rms} |
| 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) |

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| | |
|------------------------------|---|
| Typical current consumption | 25 mA (Current output, at 24 V DC incl. load) |
| | 54 mA (Current output, at 12 V DC incl. load) |
| Power consumption (I output) | ≤ 800 mW (at $I_{OUT} = 20$ mA, 9.6 V DC, 600 Ω load) |

Input data

Signal: Voltage/current

| | |
|-----------------------------------|--------------------------------------|
| Number of inputs | 1 |
| Configurable/programmable | Yes |
| Voltage input signal | 0 V ... 5 V (via DIP switch) |
| | 1 V ... 5 V (via DIP switch) |
| | -5 V ... 5 V (via DIP switch) |
| | 0 V ... 10 V (via DIP switch) |
| | 2 V ... 10 V (via DIP switch) |
| | -10 V ... 10 V (via DIP switch) |
| | 0 V ... 20 V (via DIP switch) |
| | 4 V ... 20 V (via DIP switch) |
| | -20 V ... 20 V (via DIP switch) |
| | 0 V ... 24 V (via DIP switch) |
| | 4.8 V ... 24 V (via DIP switch) |
| | -24 V ... 24 V (via DIP switch) |
| | 0 V ... 30 V (via DIP switch) |
| 6 V ... 30 V (via DIP switch) | |
| -30 V ... 30 V (via DIP switch) | |
| Max. voltage input signal | 33 V |
| Current input signal | 0 mA ... 20 mA (via DIP switch) |
| | 4 mA ... 20 mA (via DIP switch) |
| | -20 mA ... 20 mA (via DIP switch) |
| Max. current input signal | 24 mA |
| Input resistance of voltage input | > 1000 kΩ |
| Input resistance current input | approx. 63 Ω (+0.7 V for test diode) |

Output data

Signal: Voltage/current

| | |
|---------------------------|---------------------------------|
| Number of outputs | 1 |
| Configurable/programmable | Yes |
| Voltage output signal | 0 V ... 5 V (via DIP switch) |
| | 1 V ... 5 V (via DIP switch) |
| | -5 V ... 5 V (via DIP switch) |
| | 0 V ... 10 V (via DIP switch) |
| | 2 V ... 10 V (via DIP switch) |
| | -10 V ... 10 V (via DIP switch) |
| Open-circuit voltage | < 17 V |
| Current output signal | 0 mA ... 20 mA (via DIP switch) |

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| | |
|---------------------------------|--|
| | 4 mA ... 20 mA (via DIP switch) |
| Max. current output signal | 22 mA |
| Short-circuit current | < 32 mA |
| Load/output load voltage output | ≥ 10 kΩ |
| Load/output load current output | ≤ 600 Ω (at 20 mA) |
| Ripple | < 20 mV _{PP} (at 600 Ω) < 20 mV _{PP} (at 600 Ω) |

Connection data

| | |
|----------------------------------|--|
| Connection method | Push-in connection |
| Stripping length | 10 mm |
| Conductor cross-section rigid | 0.2 mm ² ... 2.5 mm ² (with ferrule) 0.14 mm ² ... 2.5 mm ² (without ferrule) |
| Conductor cross-section flexible | 0.14 mm ² ... 2.5 mm ² |
| Conductor cross-section AWG | 24 ... 12 (flexible) |

Ex data

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

Signaling

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|----------------|----------------------------|
| 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) |
| 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 (not assessed by UL) |
| Ambient temperature (operation) | -40 °C ... 70 °C |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C |
| Permissible humidity (operation) | 5 % ... 95 % (non-condensing) |

Approvals

CE

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

ATEX

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

IECEX

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

CCC / China-Ex

| | |
|----------------|--------------------|
| Identification | Ex ec ic IIC T4 Gc |
| Certificate | 2022122310115961 |

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 ec ic IIC T4 Gc |
| Certificate | BY/112 02.01 TP012 103.01 00079 |

Shipbuilding 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

| | |
|-------------------------------|--|
| 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 |
|-----------------------|--------------|

Electrostatic discharge

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

Electrostatic discharge

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

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Electromagnetic HF field

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

Fast transients (burst)

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|-----------------------|-------------------------|
| 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/T 3836.1 |
| | GB/T 3836.3 |
| | GB/T 3836.4 |

Mounting

| | |
|-------------------|---|
| Mounting type | DIN rail mounting |
| Assembly note | 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/gb/products/2902039>



UL Listed

Approval ID: FILE E 238705



cUL Listed

Approval ID: FILE E 238705

DNV

Approval ID: TAA00002UA



IECEx

Approval ID: IECEx BVS 19.0041X



cUL Listed

Approval ID: E196811



UL Listed

Approval ID: E196811



ATEX

Approval ID: BVS 19 ATEX E 047 X



EAC Ex

Approval ID: TP012 103.01 00079



CCC

Approval ID: 2022122310115961

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Classifications

ECLASS

| | |
|-------------|----------|
| ECLASS-13.0 | 27210120 |
| ECLASS-15.0 | 27210120 |

ETIM

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

UNSPSC

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|-------------|----------|
| 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) |
| | 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol(CAS: 79-94-7) |

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