

MACX MCR-UI-UI-SP-NC - Input signal conditioner



2811556

<https://www.phoenixcontact.com/us/products/2811556>

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Configurable 3-way isolating amplifier with safe electrical isolation, 24 V, power bridging. DIP switches on the front, over 1600 signal conversions can be set. Standard configuration (IN 0 ... 10 V/OUT 0 ... 20 mA), spring-cage connection, SIL.

Your advantages

- Power supply possible via DIN rail connector
- Over 1600 signal conversions can be set via DIP switches on the front
- Installation in zone 2 permitted
- Up to SIL 2 in accordance with EN 61508
- Active or passive output
- Status indicator for supply voltage
- Plug-in screw or spring-cage connection technology (Push-in technology)
- Analog signal conditioner for isolating, filtering, amplifying, and converting standard analog signals
- Configurable input and output signals, including bipolar current and voltage signals
- 3-way electrical isolation
- 10 kHz limit frequency for time-critical applications

Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 2811556 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | C402 |
| Product key | DK1111 |
| GTIN | 4046356467001 |
| Weight per piece (including packing) | 169.5 g |
| Weight per piece (excluding packing) | 96 g |
| Customs tariff number | 85437090 |
| Country of origin | DE |

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Technical data

Product properties

| | |
|-----------------|--------------------------|
| Product type | Input signal conditioner |
| Product family | MACX Analog |
| No. of channels | 1 |
| Configuration | DIP switches |

System properties

Functionality

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

Electrical properties

| | |
|---|---|
| Alignment span | $\pm 4 \%$ |
| Alignment zero | $\pm 4 \%$ |
| Electrical isolation between input and output | yes |
| Limit frequency (3 dB) | 10 kHz (Can be switched to 30 Hz) |
| Protective circuit | Transient protection |
| Step response (10-90%) | 35 μ s (10 kHz) 11 ms (30 Hz) |
| Maximum temperature coefficient | 0.0075 %/K |
| Maximum transmission error | $\leq 0.1 \%$ (Compared to the final value) |

Electrical isolation

| | |
|----------------------|-------------------------|
| Test voltage | 2.5 kV AC (50 Hz, 60 s) |
| Overvoltage category | II |
| Pollution degree | 2 |

Electrical isolation Input/output/power supply IEC/EN 61010-1

| | |
|--------------------------|----------------------|
| Standards/regulations | IEC/EN 61010-1 |
| Rated insulation voltage | 300 V _{rms} |
| Insulation | Safe isolation |

Electrical isolation Input/output/power supply IEC/EN 60079-7

| | |
|--------------------------|----------------|
| Standards/regulations | IEC/EN 60079-7 |
| Rated insulation voltage | 250 V AC/DC |

Supply

| | |
|------------------------------|-------------------------------------|
| Nominal supply voltage range | 12 V DC ... 24 V DC -20 % ... +25 % |
| Supply voltage range | 9.6 V DC ... 30 V DC |
| Power dissipation | 500 mW (at 24 V DC / 20 mA) |
| Power consumption | ≤ 700 mW |

Input data

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Signal: Voltage/current

| | |
|----------------------|--|
| Number of inputs | 1 |
| Voltage input signal | 0 mV ... 50 mV |
| | 0 mV ... 60 mV |
| | 0 mV ... 75 mV |
| | 0 mV ... 100 mV |
| | 0 mV ... 120 mV |
| | 0 mV ... 150 mV |
| | 0 mV ... 200 mV |
| | 0 mV ... 300 mV |
| | 0 mV ... 500 mV |
| | 0 V ... 1 V |
| | 0 V ... 1.5 V |
| | 0 V ... 2 V |
| | 0 V ... 3 V |
| | 0 V ... 5 V |
| | 0 V ... 10 V (Configurable via DIP switches) |
| | 0 V ... 15 V |
| | 0 V ... 20 V |
| | 0 V ... 30 V |
| | 0 V ... 50 V |
| | 0 V ... 100 V |
| | -50 mV ... 50 mV |
| | -60 mV ... 60 mV |
| | -75 mV ... 75 mV |
| | -100 mV ... 100 mV |
| | -120 mV ... 120 mV |
| | -150 mV ... 150 mV |
| | -200 mV ... 200 mV |
| | -300 mV ... 300 mV |
| | -500 mV ... 500 mV |
| | -1 V ... 1 V |
| | -1.5 V ... 1.5 V |
| | -2 V ... 2 V |
| | -3 V ... 3 V |
| | -5 V ... 5 V |
| | -10 V ... 10 V |
| | -15 V ... 15 V |
| | -20 V ... 20 V |
| | -30 V ... 30 V |
| | -50 V ... 50 V |
| | -100 V ... 100 V |
| 1 V ... 5 V | |

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| | |
|-----------------------------------|---|
| | 2 V ... 10 V |
| Min. voltage input signal | ± 50 mV |
| Max. voltage input signal | ± 100 V |
| Current input signal | 0 mA ... 1 mA (Configurable via DIP switches) |
| | 0 mA ... 1.5 mA |
| | 0 mA ... 2 mA |
| | 0 mA ... 3 mA |
| | 0 mA ... 5 mA |
| | 0 mA ... 10 mA |
| | 0 mA ... 15 mA |
| | 0 mA ... 20 mA |
| | 0 mA ... 30 mA |
| | 0 mA ... 50 mA |
| | 0 mA ... 100 mA |
| | -1 mA ... 1 mA |
| | -1.5 mA ... 1.5 mA |
| | -2 mA ... 2 mA |
| | -3 mA ... 3 mA |
| | -5 mA ... 5 mA |
| | -10 mA ... 10 mA |
| | -15 mA ... 15 mA |
| | -20 mA ... 20 mA |
| | -30 mA ... 30 mA |
| | -50 mA ... 50 mA |
| | -100 mA ... 100 mA |
| | 1 mA ... 5 mA |
| | 2 mA ... 10 mA |
| | 4 mA ... 20 mA |
| Minimum current input signal | ± 1 mA |
| Max. current input signal | ± 100 mA |
| Input resistance of voltage input | approx. 1 MΩ (±1 V DC ... ±100 V DC) |
| Input resistance current input | approx. 10 Ω (±10 mA DC ... ±100 mA DC) |

Output data

Signal: Voltage/current

| | |
|---------------------------|--|
| Number of outputs | 1 |
| Configurable/programmable | Yes, can be switched |
| Voltage output signal | 0 V ... 10 V (Configurable via DIP switches) |
| | 0 V ... 5 V |
| | 2 V ... 10 V |
| | 1 V ... 5 V |
| | -10 V ... 10 V |
| | -5 V ... 5 V |

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| | |
|---------------------------------|---|
| | 0 V ... 2.5 V |
| | 0.5 V ... 2.5 V |
| | -2.5 V ... 2.5 V |
| Output signal voltage inverse | 0 V ... 2.5 V |
| | 0 V ... 5 V |
| | 0 V ... 10 V |
| Current output signal | 0 mA ... 5 mA |
| | 0 mA ... 10 mA |
| | 0 mA ... 20 mA (Configurable via DIP switches) |
| | 1 mA ... 5 mA |
| | 2 mA ... 10 mA |
| | 4 mA ... 20 mA |
| | -5 mA ... 5 mA |
| | -10 mA ... 10 mA |
| | -20 mA ... 20 mA |
| Output signal current inverse | 0 mA ... 5 mA |
| | 0 mA ... 10 mA |
| | 0 mA ... 20 mA |
| Load/output load voltage output | $\geq 1 \text{ k}\Omega$ (10 V) |
| Load/output load current output | $\leq 600 \Omega$ (20 mA; active) |
| | passive: $\leq (U_B - 2 \text{ V}) / I_{\text{outmax}}$ |
| Ripple | $< 10 \text{ mV}_{\text{rms}}$ |

Connection data

| | |
|---|---|
| Connection method | Push-in connection |
| Stripping length | 10 mm |
| Conductor cross-section rigid | 0.2 mm ² ... 2.5 mm ² |
| Conductor cross-section flexible | 0.2 mm ² ... 2.5 mm ² |
| Conductor cross-section flexible (2 conductors with same cross section) | 0.25 mm ² ... 0.34 mm ² (TWIN ferrule without plastic sleeve) |
| | 0.5 mm ² ... 1.5 mm ² (TWIN ferrule with plastic sleeve) |
| Conductor cross-section AWG | 24 ... 14 |
| | 24 ... 22 (TWIN ferrule without plastic sleeve) |
| | 20 ... 16 (TWIN ferrule with plastic sleeve) |

Ex data

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

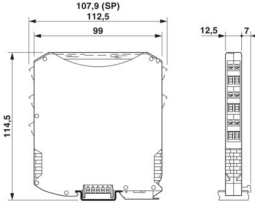
Dimensions

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| | |
|---------------------|--|
| Dimensional drawing |  |
| Width | 12.5 mm |
| Height | 107.9 mm |
| Depth | 113.7 mm |
| Depth NS 35/7,5 | 114.5 mm (Snapped onto DIN rail NS 35/7,5 in accordance with EN 60715) |

Material specifications

| | |
|------------------|-----------------|
| Color | gray (RAL 7042) |
| Housing material | PA 6.6-FR |

Characteristics

Safety data: IEC 61508 - High demand

| | |
|------------------------------|---|
| Safety Integrity Level (SIL) | 2 |
|------------------------------|---|

Safety data: IEC 61508 - High demand

| | |
|------------------------------|---|
| Safety Integrity Level (SIL) | 2 |
|------------------------------|---|

Safety data: IEC 61508 - Low demand

| | |
|------------------------------|---|
| Safety Integrity Level (SIL) | 2 |
|------------------------------|---|

Safety data: IEC 61508 - Low demand

| | |
|------------------------------|---|
| Safety Integrity Level (SIL) | 2 |
|------------------------------|---|

Environmental and real-life conditions

Ambient conditions

| | |
|---|---------------------------|
| Degree of protection | IP20 (not assessed by UL) |
| Ambient temperature (operation) | -20 °C ... 70 °C |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C |

Altitude range (≤ 2000 m)

| | |
|---------------------------------|---|
| Altitude | ≤ 2000 m (The technical data refers to altitudes ≤ 2000 m above mean sea level. For altitudes >2000 m above mean sea level, refer to the data sheet.) |
| Ambient temperature (operation) | -20 °C ... 70 °C |

Altitude range (≤ 3000 m)

| | |
|---------------------------------|-------------------------|
| Height range | > 2000 m ... 3000 m |
| Ambient temperature (operation) | -20 °C ... 60 °C |
| Rated insulation voltage | 190 V |

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Altitude range (≤ 4000 m)

| | |
|---------------------------------|---------------------|
| Height range | > 3000 m ... 4000 m |
| Ambient temperature (operation) | -20 °C ... 55 °C |
| Rated insulation voltage | 63 V |

Altitude range (≤ 5000 m)

| | |
|---------------------------------|---------------------|
| Height range | > 4000 m ... 5000 m |
| Ambient temperature (operation) | -20 °C ... 45 °C |
| Rated insulation voltage | 63 V |

Approvals

CE

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

ATEX

| | |
|----------------|--------------------------|
| Identification | Ⓜ II 3 G Ex ec IIC T4 Gc |
| Certificate | BVS 10 ATEX E 059 X |

UKCA Ex (UKEX)

| | |
|----------------|--------------------------|
| Identification | Ⓜ II 3 G Ex nA IIC T4 Gc |
| Certificate | PxCIF21UKEX2811284X |

IECEX

| | |
|----------------|--------------------|
| Identification | Ex ec IIC T4 Gc |
| Certificate | IECEX BVS 10.0044X |

CCC / China-Ex

| | |
|----------------|------------------|
| Identification | Ex ec IIC T4 Gc |
| Certificate | 2021122304114077 |

UL, USA/Canada

| | |
|----------------|---------------------------------------|
| Identification | UL 61010 Listed |
| | Class I, Div. 2, Groups A, B, C, D T6 |
| | Class I, Zone 2, Group IIC |

Shipbuilding approval

| | |
|-------------|-------------------|
| Certificate | DNV GL TAA000020C |
|-------------|-------------------|

Safety Integrity Level (SIL, IEC 61508)

| | |
|----------------|---|
| Identification | 2 |
|----------------|---|

INMETRO

| | |
|----------------|-----------------|
| Identification | Ex ec IIC T4 Gc |
| Certificate | DNV 21.0063 X |

Shipbuilding data

| | |
|-------------|---|
| Temperature | B |
| Humidity | B |

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

Electromagnetic HF field

| | |
|--|--------------------------|
| Designation | Electromagnetic RF field |
| Standards/regulations | EN 61000-4-3 |
| Typical deviation from the measuring range final value | 1 % |

Fast transients (burst)

| | |
|--|-------------------------|
| Designation | Fast transients (burst) |
| Standards/regulations | EN 61000-4-4 |
| Typical deviation from the measuring range final value | 1 % |

Conducted interference

| | |
|--|-------------------------|
| Designation | Conducted interferences |
| Standards/regulations | EN 61000-4-6 |
| Typical deviation from the measuring range final value | 1 % |

Standards and regulations

GB Standard

| | |
|-----------------------|-------------|
| Standards/regulations | GB/T 3836.1 |
| | GB/T 3836.3 |

Mounting

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

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Drawings

Dimensional drawing



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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/2811556>

DNV

Approval ID: TAA000020C



UL Listed

Approval ID: E330267



cUL Listed

Approval ID: E330267

Functional Safety

Approval ID: BVS Pb 01/10



EAC Ex

Approval ID: TP012 103.01 00078



IECEX

Approval ID: IECEX BVS 10.0044X



CCC

Approval ID: 2021122304114077



cUL Listed

Approval ID: E199827



UL Listed

Approval ID: FILE E 199827



ATEX

Approval ID: BVS 10 ATEX E059 X

INMETRO

Approval ID: DNV 21.0063X

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Classifications

ECLASS

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

ETIM

| | |
|-----------|----------|
| ETIM 10.0 | EC002653 |
|-----------|----------|

UNSPSC

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

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Environmental product compliance

EU RoHS

| | |
|---|--------------------|
| Fulfills EU RoHS substance requirements | Yes |
| Exemption | 6(c), 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) |
| SCIP | f1e356a7-b545-4fc6-86cd-e1493676de02 |

EF3.1 Climate Change

| | |
|---------|--------------|
| CO2e kg | 5.78 kg CO2e |
|---------|--------------|

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