

# MACX MCR-VDC - Voltage measuring transducers



2906242

<https://www.phoenixcontact.com/us/products/2906242>

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MACX MCR voltage transducers for DC voltages of 0... (+/-) 20 V DC to 0... (+/-) 660 V DC, output signal (+/-) 10 V/ (+/-)20 mA

## Product description

MACX MCR voltage measuring transducers capture DC or AC voltages and convert them into standard analog signals. The MACX MCR-VDC voltage measuring transducer measures DC voltages within the range of 0 V DC to  $\pm 660$  V DC. Eight finely graded voltage measuring ranges provide optimum measuring accuracy. The 3-way electrical isolation ensures high operational safety.

## Your advantages

- Adjustable voltage ranges
- Bidirectional output signals
- 3-way isolation
- ZERO/SPAN adjustment  $\pm 20$  %
- Tool-free parameterization of measured values
- Teach-in configuration of the measured value range

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 2906242       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | C445          |
| Product key                          | CMMB21        |
| GTIN                                 | 4055626050928 |
| Weight per piece (including packing) | 158 g         |
| Weight per piece (excluding packing) | 211.7 g       |
| Customs tariff number                | 85437090      |
| Country of origin                    | DE            |

## Technical data

### Product properties

|              |                    |
|--------------|--------------------|
| Product type | Voltage transducer |
|--------------|--------------------|

### Electrical properties

|                                                 |                                         |
|-------------------------------------------------|-----------------------------------------|
| Alignment span                                  | ± 20 %                                  |
| Alignment zero                                  | ± 20 %                                  |
| Maximum power dissipation for nominal condition | 1.2 W                                   |
| Protective circuit                              | Surge protection; 33 V suppressor diode |
| Step response (10-90%)                          | < 16 ms                                 |
| Maximum temperature coefficient                 | < 0.015 %/K                             |
| Maximum transmission error                      | < 1 % (of measuring range end value)    |

### Electrical isolation

|                  |   |
|------------------|---|
| Pollution degree | 2 |
|------------------|---|

### Electrical isolation Measuring circuit to supply circuit and output IEC 61010-2-030

|                       |                         |
|-----------------------|-------------------------|
| Standards/regulations | IEC 61010-2-030         |
| Test voltage          | 5.3 kV AC (50 Hz, 60 s) |
| Measuring category    | II (1000 V)             |
|                       | III (600 V)             |
|                       | IV (300 V)              |
| Insulation            | Reinforced insulation   |

### Electrical isolation Supply circuit to output circuit IEC 61010-1

|                       |                         |
|-----------------------|-------------------------|
| Standards/regulations | IEC 61010-1             |
| Test voltage          | 2.2 kV AC (50 Hz, 60 s) |
| Overvoltage category  | III (300 V)             |
|                       | IV (150 V)              |
| Insulation            | Basic insulation        |

### Supply

|                          |                           |
|--------------------------|---------------------------|
| Nominal supply voltage   | 24 V DC (-20 % ... +25 %) |
| Supply voltage range     | 19.2 V DC ... 30 V DC     |
| Max. current consumption | < 60 mA                   |

## Input data

### Measurement

|                                   |                        |
|-----------------------------------|------------------------|
| Configurable/programmable         | Yes                    |
| Input voltage range               | -550 V DC ... 550 V DC |
| Maximum input voltage             | ± 660 V DC             |
| Input resistance of voltage input | 5500 kΩ                |
| Impulse form                      | DC voltage             |

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## Measurement

|                                   |                        |
|-----------------------------------|------------------------|
| Input voltage range               | -370 V DC ... 370 V DC |
| Input resistance of voltage input | 3700 k $\Omega$        |

## Measurement

|                                   |                        |
|-----------------------------------|------------------------|
| Input voltage range               | -250 V DC ... 250 V DC |
| Input resistance of voltage input | 2500 k $\Omega$        |

## Measurement

|                                   |                        |
|-----------------------------------|------------------------|
| Input voltage range               | -170 V DC ... 170 V DC |
| Input resistance of voltage input | 1700 k $\Omega$        |

## Measurement

|                                   |                        |
|-----------------------------------|------------------------|
| Input voltage range               | -120 V DC ... 120 V DC |
| Input resistance of voltage input | 1200 k $\Omega$        |

## Measurement

|                                   |                      |
|-----------------------------------|----------------------|
| Input voltage range               | -80 V DC ... 80 V DC |
| Input resistance of voltage input | 800 k $\Omega$       |

## Measurement

|                                   |                      |
|-----------------------------------|----------------------|
| Input voltage range               | -54 V DC ... 54 V DC |
| Input resistance of voltage input | 800 k $\Omega$       |

## Measurement

|                                   |                      |
|-----------------------------------|----------------------|
| Input voltage range               | -36 V DC ... 36 V DC |
| Input resistance of voltage input | 800 k $\Omega$       |

## Measurement

|                                   |                      |
|-----------------------------------|----------------------|
| Input voltage range               | -24 V DC ... 24 V DC |
| Input resistance of voltage input | 240 k $\Omega$       |

## Output data

### Signal: Voltage

|                                 |                                |
|---------------------------------|--------------------------------|
| Voltage output signal           | -10 V ... 10 V<br>2 V ... 10 V |
| Max. voltage output signal      | $\leq 11$ V                    |
| Load/output load voltage output | $> 10$ k $\Omega$              |
| Ripple                          | 50 mV                          |

### Signal: Current

|                                 |                                    |
|---------------------------------|------------------------------------|
| Current output signal           | -20 mA ... 20 mA<br>4 mA ... 20 mA |
| Max. current output signal      | $\leq 22$ mA                       |
| Load/output load current output | $< 500$ $\Omega$                   |
| Max. capacitive load            | $< 1000$ pF                        |
| Max. inductive load             | $< 1$ mH                           |

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## Connection data

|                                  |                     |
|----------------------------------|---------------------|
| Connection method                | Screw connection    |
| Stripping length                 | 8 mm                |
| Screw thread                     | M3                  |
| Conductor cross-section rigid    | 0.2 mm² ... 2.5 mm² |
| Conductor cross-section flexible | 0.2 mm² ... 2.5 mm² |
| Conductor cross-section AWG      | 24 ... 14           |

## Dimensions

|        |         |
|--------|---------|
| Width  | 22.5 mm |
| Height | 113 mm  |
| Depth  | 114 mm  |

## Material specifications

|       |                 |
|-------|-----------------|
| Color | gray (RAL 7042) |
|-------|-----------------|

## Environmental and real-life conditions

### Ambient conditions

|                                         |                                   |
|-----------------------------------------|-----------------------------------|
| Degree of protection                    | IP20                              |
| Ambient temperature (operation)         | -25 °C ... 60 °C                  |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C (non-condensing) |
| Altitude                                | ≤ 2000 m                          |
| Permissible humidity (operation)        | 10 % ... 95 % (non-condensing)    |

## Approvals

### CE

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

### UL, USA/Canada

|                |                 |
|----------------|-----------------|
| Identification | UL 61010 Listed |
|----------------|-----------------|

## EMC data

|                               |                                                                      |
|-------------------------------|----------------------------------------------------------------------|
| Electromagnetic compatibility | Conformance with EMC directive                                       |
| Low Voltage Directive         | Conformance with Low Voltage 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 |
|-----------------------|--------------|

## Mounting

|               |                                     |
|---------------|-------------------------------------|
| Mounting type | DIN rail mounting                   |
| Assembly note | can be aligned with spacing = 10 mm |

# MACX MCR-VDC - Voltage measuring transducers



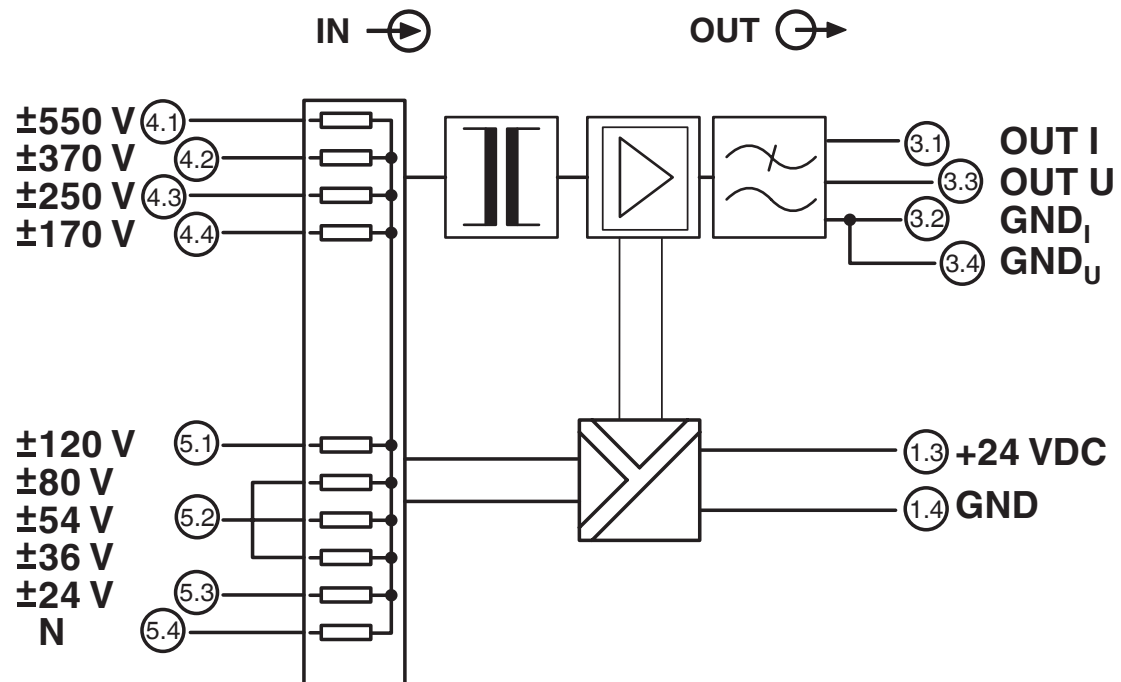
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|                   |     |
|-------------------|-----|
| Mounting position | any |
|-------------------|-----|

## Drawings

Block diagram



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## Approvals

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**UL Listed**

Approval ID: E330267



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Approval ID: FILE E 330267

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27210125 |
| ECLASS-15.0 | 27210125 |

### ETIM

|           |          |
|-----------|----------|
| ETIM 10.0 | EC002477 |
|-----------|----------|

### UNSPSC

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

## 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) |
| SCIP                                | 0c177365-d409-4fea-8a04-246924f8d587                           |