

MINI MCR-2-UI-FRO-PT - Frequency measuring transducer



2902032

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Analog frequency transducer with limit value functionality and plug-in connection technology for converting standard signals into frequency or PWM signals. Configurable via DIP switch or software. Push-in connection technology, standard configuration.

Product description

Configurable, freely adjustable analog frequency transducer with additional switching output, limit value functionality, and plug-in connection technology for converting standard analog signals to frequency signals or to pulse width modulated signals (PWM signals). Current signals between 0 mA ... 24 mA and voltage signals between 0 V ... 12 V can be processed on the input side. Frequency signals between 0 ... 11 kHz and PWM signals between 0% ... 100% are possible on the output side. In addition, the output can also be operated as a switching output, which means that two switching thresholds can be set independently of one another. The minimum measuring span is 1 mA and 0.5 V. Full accuracy is maintained with a measuring span greater than 10 mA and 5 V. You can configure the device using one of the free software solutions. Default settings can also be made directly on the device by simply using the DIP switches (see configuration table). The measuring transducer supports fault monitoring and NFC communication.

Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 2902032 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | C404 |
| Product key | DK1126 |
| GTIN | 4046356652049 |
| Weight per piece (including packing) | 119.6 g |
| Weight per piece (excluding packing) | 118.5 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 | Frequency value transformer |
| Product family | MINI Analog Pro |
| No. of channels | 1 |
| Configuration | DIP switches |
| | Software |
| | App |

Insulation characteristics: GB Standard

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

System properties

Functionality

| | |
|---------------|--------------|
| Configuration | DIP switches |
| | Software |
| | App |

Electrical properties

| | |
|---|--|
| Electrical isolation between input and output | yes |
| Step response (0–99%) | 120 ms (15 Hz sample rate) |
| | 35 ms (60 Hz sample rate) |
| | 15 ms (240 Hz sample rate, can only be set via software) |
| | 130 ms (15 Hz sample rate) |
| | 40 ms (60 Hz sample rate) |
| | 20 ms (240 Hz sample rate, can only be set via software) |
| Maximum temperature coefficient | < 0.01 %/K |
| Temperature coefficient, typical | 0.01 %/K |

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

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| | |
|-----------------------------|--|
| 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 | 27 mA (12 V DC) |
| | 13.5 mA (24 V DC) |
| Power consumption | ≤ 350 mW (9.6 V DC) |

Input data

Signal: Voltage/current

| | |
|-----------------------------------|--|
| Number of inputs | 1 |
| Configurable/programmable | Yes |
| Voltage input signal | 0 V ... 10 V (via DIP switch) |
| | 2 V ... 10 V (via DIP switch) |
| | 0 V ... 5 V (via DIP switch) |
| | 1 V ... 5 V (via DIP switch) |
| | 10 V ... 0 V (via DIP switch) |
| | 10 V ... 2 V (via DIP switch) |
| | 5 V ... 0 V (via DIP switch) |
| | 5 V ... 1 V (via DIP switch) |
| | 0 V ... 12 V (can be set via software) |
| Max. voltage input signal | 12 V |
| Current input signal | 0 mA ... 20 mA (via DIP switch) |
| | 4 mA ... 20 mA (via DIP switch) |
| | 0 mA ... 10 mA (via DIP switch) |
| | 2 mA ... 10 mA (via DIP switch) |
| | 20 mA ... 0 mA (via DIP switch) |
| | 20 mA ... 4 mA (via DIP switch) |
| | 10 mA ... 0 mA (via DIP switch) |
| | 10 mA ... 2 mA (via DIP switch) |
| | 0 mA ... 24 mA (can be set via software) |
| Max. current input signal | 24 mA |
| Input resistance of voltage input | > 120 kΩ |
| Input resistance current input | approx. 50 Ω (+0.7 V for test diode) |

Output data

Frequency: Frequency/transistor

| | |
|------------------|-----------------------------------|
| Frequency output | 0 Hz ... 10 kHz (via DIP switch) |
| | 0 Hz ... 5 kHz (via DIP switch) |
| | 0 Hz ... 2.5 kHz (via DIP switch) |
| | 0 Hz ... 1 kHz (via DIP switch) |
| | 0 Hz ... 500 Hz (via DIP switch) |
| | 0 Hz ... 250 Hz (via DIP switch) |
| | 0 Hz ... 100 Hz (via DIP switch) |
| | |

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| | |
|----------------------------|---|
| | 0 Hz ... 50 Hz (via DIP switch) |
| | 0 Hz ... 10.5 kHz (can be set via software) |
| Load min. | $4 \text{ mA} \leq (U_L / R_L) \leq 100 \text{ mA}$ |
| Maximum transmission error | $\leq 0.1 \% (> 7 \text{ kHz} \leq 0.2 \%)$ |
| Output signal PWM | 15.6 kHz (10 bits, via DIP switch) |
| | 1.9 kHz (10 bits, via DIP switch) |
| | 3.9 kHz (12 bits, via DIP switch) |
| | 488 Hz (12 bits, via DIP switch) |
| | 977 Hz (14 bits, via DIP switch) |
| | 122 Hz (14 bits, via DIP switch) |
| | 244 Hz (16 bits, via DIP switch) |
| | 31 Hz (16 bits, via DIP switch) |
| | 31 Hz ... 15.6 kHz (can be set via software) |
| Load min. | $12 \text{ mA} \leq (U_L / R_L) \leq 100 \text{ mA}$ |
| Maximum transmission error | $< 0.2 \% (\text{PWM frequency} \leq \text{Ⓢ} \text{ Hz})$ |
| | $< 0.5 \% (500 \text{ Hz} < \text{PWM frequency} \leq \text{Ⓢ} \text{ Hz})$ |
| | $< 1 \% (2000 \text{ Hz} < \text{PWM frequency} \leq \text{Ⓢ} \text{ Hz})$ |
| | $< 2 \% (4000 \text{ Hz} < \text{PWM frequency} \leq \text{Ⓢ} \text{ Hz})$ |
| | $< 3 \% (8000 \text{ Hz} < \text{PWM frequency} \leq \text{Ⓢ} \text{ Hz})$ |
| Load current maximum | 100 mA |
| Maximum switching voltage | 30 V DC |
| Overrange/underrange | can be set (via software) |

Switching: Transistor

| | |
|---------------------------|-------------------|
| Number of outputs | 1 |
| Contact switching type | 1 N/O contact |
| Minimum switching voltage | 1 V DC |
| Maximum switching voltage | 30 V DC |
| Min. switching current | 100 μA |
| Max. switching current | 100 mA (30 V DC) |

Signal

| | |
|-------------------|---|
| Number of outputs | 1 |
|-------------------|---|

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 |

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Interfaces

Data: IFS interface

| | |
|-------------------|------------------|
| Connection method | Micro USB type B |
|-------------------|------------------|

Signaling

| | |
|------------------|---------|
| Error indication | Red LED |
|------------------|---------|

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 |
| Altitude | ≤ 2000 m |
| Permissible humidity (operation) | 5 % ... 95 % (non-condensing) |

Approvals

CE

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

ATEX

| | |
|----------------|--------------------------|
| Identification | Ⓔ II 3 G Ex ec IIC T4 Gc |
| Certificate | BVS 19 ATEX E 083 X |

IECEX

| | |
|----------------|--------------------|
| Identification | Ex ec IIC T4 Gc |
| Certificate | IECEX BVS 19.0072X |

UL, USA/Canada

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

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Shipbuilding approval

| | |
|-------------|--------------------------|
| Certificate | DNV GL TAA000021E Rev. 1 |
|-------------|--------------------------|

EAC Ex

| | |
|----------------|---------------------------------|
| Identification | Ex ec IIC T4 Gc |
| Certificate | BY/112 02.01 TP012 103.01 00081 |

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

Standards and regulations

GB Standard

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

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 |

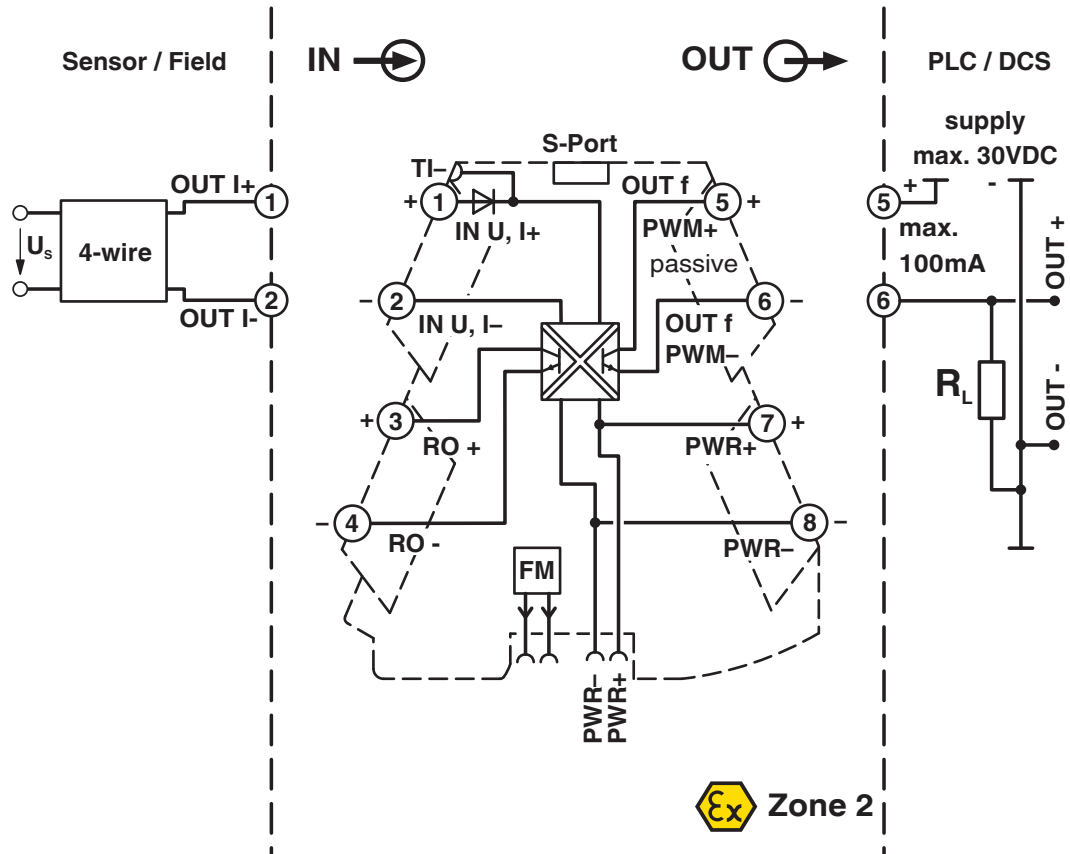
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Drawings

Block diagram



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Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2902032>



EAC

Approval ID: RU*DE.*08.B.01536/19



UL Listed

Approval ID: E238705



cUL Listed

Approval ID: E238705

DNV

Approval ID: TAA000021E



IECEx

Approval ID: IECEx BVS 19.0072X



cUL Listed

Approval ID: E196811



UL Listed

Approval ID: E196811



ATEX

Approval ID: BVS 19 ATEX E 083 X



EAC Ex

Approval ID: TR TS_S_103.01.00081

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Classifications

ECLASS

| | |
|-------------|----------|
| ECLASS-13.0 | 27210128 |
| ECLASS-15.0 | 27210128 |

ETIM

| | |
|----------|----------|
| ETIM 9.0 | EC002918 |
|----------|----------|

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) |
| | 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol(CAS: 79-94-7) |
| SCIP | 5e96ac0d-c5a2-448b-a6f0-3929cc30925d |

EF3.0 Climate Change

| | |
|---------|---------------|
| CO2e kg | 2.263 kg CO2e |
|---------|---------------|

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