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The figure shows a version with push-in connection

Universally configurable frequency transducer

for electrical isolation and conversion of frequency and PWM signals to standard analog signals with transistor switching output.

Configurable via DIP switch or software, screw connection technology



## **Key Commercial Data**

| Packing unit                         | 1 STK           |
|--------------------------------------|-----------------|
| GTIN                                 | 4 046356 649872 |
| GTIN                                 | 4046356649872   |
| Weight per Piece (excluding packing) | 120.000 g       |
| Custom tariff number                 | 85437090        |
| Country of origin                    | Germany         |

## Technical data

#### Note

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

#### **Dimensions**

| Width  | 6.2 mm   |
|--------|----------|
| Height | 110.5 mm |
| Depth  | 120.5 mm |

#### Ambient conditions

| Ambient temperature (operation) | -40 °C 70 °C |
|---------------------------------|--------------|



## Technical data

### Ambient conditions

| Ambient temperature (storage/transport) | -40 °C 85 °C |
|---|--------------|
|   |              |

## Input data

| Frequency input           | Frequency input                  |
|---------------------------|----------------------------------|
| Frequency measuring range | 0.002 Hz 200 kHz                 |
| Available input sources   | NAMUR initiators                 |
|                           | NPN/PNP transistor outputs       |
|                           | Floating contact (dry contact)   |
|                           | Frequency generator              |
|                           | Incremental encoder (speed only) |
|                           | HTL encoders                     |

## Output data

| Number of outputs               | 1                                    |
|---------------------------------|--------------------------------------|
| Voltage output 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)             |
|                                 | 0 V 10.5 V (can be set via software) |
| Current output 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)          |
|                                 | 0 mA 21 mA (can be set via software) |
| Max. output voltage             | approx. 12.3 V                       |
| Max. output current             | 24.6 mA                              |
| Load/output load voltage output | ≥ 10 kΩ                              |
| Load/output load current output | ≤ 600 Ω (at 20 mA)                   |
| Ripple                          | < 20 mV <sub>PP</sub> (at 600 Ω)     |
|                                 | < 20 mV <sub>PP</sub> (at 600 Ω)     |

## Switching output

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



## Technical data

## Output data

| Step response (0–99%) | < 35 ms (f > 500 Hz) |
|-----------------------|----------------------|

## Power supply

| Nominal supply voltage      | 24 V DC  |
|-----------------------------|--|
| Supply voltage range        | 9.6 V DC 30 V DC (The DIN rail bus connector (ME 6,2 TBUS-2 1,5/5-ST-3,81 GN, Order No. 2869728) can be used to bridge the supply voltage. It can be snapped onto a 35 mm DIN rail according to EN 60715)) |
| Typical current consumption | 32 mA (24 V DC)  |
|                             | 63 mA (12 V DC)  |
| Power consumption           | $\leq$ 1 W (at I <sub>OUT</sub> = 20 mA, 9.6 V DC, 600 $\Omega$ load)  |

### Connection data

| Connection method   | Screw connection |
|---|------------------|
| Single conductor/terminal point, solid, with ferrule, min.    | 0.2 mm²          |
| Single conductor/terminal point, solid, with ferrule, max.    | 1.5 mm²          |
| Single conductor/terminal point, solid, without ferrule, min. | 0.2 mm²          |
| Single conductor/terminal point, solid, without ferrule, max. | 2.5 mm²          |
| Conductor cross section flexible min.                         | 0.2 mm²          |
| Conductor cross section flexible max.                         | 1.5 mm²          |
| Min. AWG conductor cross section, flexible                    | 24               |
| Max. AWG conductor cross section, flexible                    | 12               |
| Stripping length  | 10 mm            |

### General

| No. of channels                   | 1  |
|-----------------------------------|--|
| Maximum transmission error        | 0.1 % (Frequency)                                    |
|                                   | 1 % (PWM signal)                                     |
| Maximum temperature coefficient   | 0.01 %/K   |
| Temperature coefficient, typical  | 0.01 %/K   |
| Status display                    | Yellow LED (switching output)                        |
| Electrical isolation              | Reinforced insulation in accordance with IEC 61010-1 |
| Overvoltage category              | П  |
| Degree of pollution               | 2  |
| Rated insulation voltage          | 300 V (effective)                                    |
| Test voltage, input/output/supply | 3 kV (50 Hz, 1 min.)                                 |
| Electromagnetic compatibility     | Conformance with EMC directive                       |
| Noise emission                    | EN 61000-6-4   |
| Color                             | gray   |
| Housing material                  | PBT  |



## Technical data

### General

| Mounting position                                      | any  |
|--|--|
| Assembly instructions                                  | The T connector can be used to bridge the supply voltage. It can be snapped onto a 35 mm DIN rail according to EN 60715. |
| Conformance  | CE-compliant   |
| ATEX   | # II 3 G Ex nA IIC T4 Gc X   |
| UL, USA/Canada   | UL 508 Listed  |
|  | Class I, Div. 2, Groups A, B, C, D T6  |
|  | Class I, Zone 2, Group IIC T6  |
| GL   | GL applied for   |
| 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  |

### EMC data

| Designation  | Electromagnetic RF field |
|--|--------------------------|
| Standards/regulations                                  | EN 61000-4-3             |
| Typical deviation from the measuring range final value | 0.2 %                    |
| Designation  | Fast transients (burst)  |
| Standards/regulations                                  | EN 61000-4-4             |
| Typical deviation from the measuring range final value | 0.1 %                    |
| Designation  | Conducted interferences  |
| Standards/regulations                                  | EN 61000-4-6             |
| Typical deviation from the measuring range final value | 2.8 %                    |

## Standards and Regulations

| Electromagnetic compatibility | Conformance with EMC directive                       |
|-------------------------------|--|
| Noise emission                | EN 61000-6-4   |
| Standards/regulations         | EN 61000-4-2   |
| Designation                   | Electromagnetic RF field                             |
| Standards/regulations         | EN 61000-4-3   |
|                               | EN 61000-4-4   |
|                               | EN 61000-4-5   |
| Designation                   | Conducted interferences                              |
| Standards/regulations         | EN 61000-4-6   |
| Electrical isolation          | Reinforced insulation in accordance with IEC 61010-1 |
| Conformance                   | CE-compliant CE-compliant                            |
| ATEX                          | # II 3 G Ex nA IIC T4 Gc X                           |
| UL, USA/Canada                | UL 508 Listed  |
|                               | Class I, Div. 2, Groups A, B, C, D T6                |



## Technical data

## Standards and Regulations

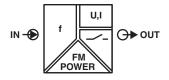
|  | Class I, Zone 2, Group IIC T6       |
|--|-------------------------------------|
| GL   | GL applied for                      |
| Fire protection for rail vehicles (DIN EN 45545-2) R22 | HL 1 - HL 2 HL 1 - HL 2 HL 1 - HL 2 |
| Fire protection for rail vehicles (DIN EN 45545-2) R23 | HL 1 - HL 2 HL 1 - HL 2 HL 1 - HL 2 |
| Fire protection for rail vehicles (DIN EN 45545-2) R24 | HL 1 - HL 2 HL 1 - HL 2 HL 1 - HL 2 |
| Fire protection for rail vehicles (DIN EN 45545-2) R26 | HL 1 - HL 2 HL 1 - HL 2 HL 1 - HL 2 |

## **Environmental Product Compliance**

| China RoHS | Environmentally Friendly Use Period = 50  |
|------------|---|
|            | For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration" |

## Drawings

### Pictogram



## Classifications

## eCl@ss

| eCl@ss 4.0 | 27210120 |
|------------|----------|
| eCl@ss 4.1 | 27210120 |
| eCl@ss 5.0 | 27210120 |
| eCl@ss 5.1 | 27210120 |
| eCl@ss 6.0 | 27210120 |
| eCl@ss 7.0 | 27210120 |
| eCl@ss 8.0 | 27210120 |
| eCl@ss 9.0 | 27210120 |



## Classifications

#### **ETIM**

| ETIM 4.0 | EC002653 |
|----------|----------|
| ETIM 5.0 | EC002653 |
| ETIM 6.0 | EC002653 |

### **UNSPSC**

| UNSPSC 6.01   | 30211506 |
|---------------|----------|
| UNSPSC 7.0901 | 39121008 |
| UNSPSC 11     | 39121008 |
| UNSPSC 12.01  | 39121008 |
| UNSPSC 13.2   | 39121008 |

## Approvals

Approvals

Approvals

ATEX

Ex Approvals

Approval details

ATEX



PxCIF16ATEX2902056X

### Accessories

Accessories

Communication module

Communication module - MINI MCR-2-V8-MOD-RTU - 2905634



Eight MINI Analog Pro signal conditioners and measuring transducers can be quickly and easily integrated into a Modbus/RTU network via a communication adapter.



#### Accessories

Communication module - MINI MCR-2-V8-MOD-TCP - 2905635



Eight MINI Analog Pro signal conditioners and measuring transducers can be quickly and easily integrated into a Modbus/TCP network via a communication adapter.

Communication module - MINI MCR-2-V8-PB-DP - 2905636



Eight MINI Analog Pro signal conditioners and measuring transducers can be quickly and easily integrated into a PROFIBUS DP network via a communication adapter.

#### Device marking

Marker for end clamp - UCT-EM (30X5) - 0801505



Marker for end clamp, Sheet, white, unlabeled, can be labeled with: THERMOMARK PRIME, THERMOMARK CARD, BLUEMARK CLED, BLUEMARK LED, TOPMARK LASER, Mounting type: snapped into marker carrier, Lettering field: 30 x 5 mm

Marker for end clamp - UCT-EM (30X5) YE - 0830340



Marker for end clamp, Sheet, yellow, unlabeled, can be labeled with: THERMOMARK PRIME, THERMOMARK CARD, BLUEMARK CLED, BLUEMARK LED, TOPMARK LASER, Mounting type: snapped into marker carrier, Lettering field: 30 x 5 mm

Plastic label - UC-EMLP (15X5) - 0819301



Plastic label, Sheet, white, unlabeled, can be labeled with: BLUEMARK CLED, BLUEMARK LED, CMS-P1-PLOTTER, PLOTMARK, Mounting type: adhesive, Lettering field: 15 x 5 mm



#### Accessories

Plastic label - UC-EMLP (15X5) YE - 0822615



Plastic label, Sheet, yellow, unlabeled, can be labeled with: BLUEMARK CLED, BLUEMARK LED, CMS-P1-PLOTTER, PLOTMARK, Mounting type: adhesive, Lettering field: 15 x 5 mm

Plastic label - UC-EMLP (15X5) SR - 0828095



Plastic label, Sheet, silver, unlabeled, can be labeled with: BLUEMARK CLED, BLUEMARK LED, CMS-P1-PLOTTER, PLOTMARK, Mounting type: adhesive, Lettering field: 15 x 5 mm

Plastic label - US-EMLP (15X5) - 0828790



Plastic label, Card, white, unlabeled, can be labeled with: THERMOMARK PRIME, THERMOMARK CARD, Mounting type: adhesive, Lettering field: 15 x 5 mm

Plastic label - US-EMLP (15X5) YE - 0828873



Plastic label, Card, yellow, unlabeled, can be labeled with: THERMOMARK PRIME, THERMOMARK CARD, Mounting type: adhesive, Lettering field: 15 x 5 mm

Plastic label - US-EMLP (15X5) SR - 0828874



Plastic label, Card, silver, unlabeled, can be labeled with: THERMOMARK PRIME, THERMOMARK CARD, Mounting type: adhesive, Lettering field: 15 x 5 mm

DIN rail connector



#### Accessories

DIN rail bus connectors - ME 6,2 TBUS-2 1,5/5-ST-3,81 GN - 2869728



DIN rail connector for DIN rail mounting. Universal for TBUS housing. Gold-plated contacts, 5-pos.

#### **Evaluation unit**

Monitoring module - MINI MCR-2-FM-RC - 2904504



Fault monitoring module with plug-in connection technology for evaluating and reporting group errors from the FM system and for monitoring the supply voltages. Error message via N/C contact. Screw connection technology, standard configuration

#### Monitoring module - MINI MCR-2-FM-RC-PT - 2904508



Fault monitoring module with plug-in connection technology for evaluating and reporting group errors from the FM system and for monitoring the supply voltages. Error message via N/C contact. Push-in connection technology, standard configuration

#### Labeled device marker

Marker for end clamp - UCT-EM (30X5) CUS - 0801589



Marker for end clamp, can be ordered: by sheet, white, labeled according to customer specifications, Mounting type: snapped into marker carrier, Lettering field: 30 x 5 mm

### Marker for end clamp - UCT-EM (30X5) YE CUS - 0830348



Marker for end clamp, can be ordered: by sheet, yellow, labeled according to customer specifications, Mounting type: snapped into marker carrier, Lettering field:  $30 \times 5$  mm



### Accessories

Plastic label - UC-EMLP (15X5) CUS - 0824550



Plastic label, can be ordered: by sheet, white, labeled according to customer specifications, Mounting type: adhesive, Lettering field: 15 x 5 mm

Plastic label - UC-EMLP (15X5) YE CUS - 0824551



Plastic label, can be ordered: by sheet, yellow, labeled according to customer specifications, Mounting type: adhesive, Lettering field: 15 x 5 mm

Plastic label - UC-EMLP (15X5) SR CUS - 0828099



Plastic label, can be ordered: by sheet, silver, labeled according to customer specifications, Mounting type: adhesive, Lettering field: 15 x 5 mm

Plastic label - US-EMLP (15X5) CUS - 0830076



Plastic label, can be ordered: By card, white, labeled according to customer specifications, Mounting type: adhesive, Lettering field: 15 x 5 mm

Plastic label - US-EMLP (15X5) YE CUS - 0830077



Plastic label, can be ordered: By card, yellow, labeled according to customer specifications, Mounting type: adhesive, Lettering field: 15 x 5 mm



### Accessories

Plastic label - US-EMLP (15X5) SR CUS - 0830078



Plastic label, can be ordered: By card, silver, labeled according to customer specifications, Mounting type: adhesive, Lettering field: 15 x 5 mm

#### Power module

Power terminal block - MINI MCR-2-PTB - 2902066



Power terminal with plug-in connection technology for delivering the supply voltage to the DIN rail connector. Monitoring of the supply voltages in combination with the fault monitoring module. Screw connection technology

Power terminal block - MINI MCR-2-PTB-PT - 2902067



Power terminal with plug-in connection technology for delivering the supply voltage to the DIN rail connector. Monitoring of the supply voltages in combination with the fault monitoring module. Push-in connection technology

### Power supply

Power supply unit - MINI-SYS-PS-100-240AC/24DC/1.5 - 2866983



Primary-switched MINI POWER supply for DIN rail mounting, input: 1-phase, output: 24 V DC/1.5 A

Power supply unit - MINI-PS-100-240AC/24DC/1.5/EX - 2866653



Primary-switched power supply MINI POWER for DIN rail mounting, input: 1-phase, output: 24 V DC/1,5 A, for the potentially explosive area



### Accessories

Programming adapter

Adapter - IFS-BT-PROG-ADAPTER - 2905872



Bluetooth adapter with micro USB and S-PORT interface for wireless communication with the MINI Analog, MINI Analog Pro, MACX Analog, INTERFACE system gateways, and PLC logic device series.

Programming adapter - IFS-USB-PROG-ADAPTER - 2811271



Programming adapter with USB interface, for programming with software. The USB driver is included in the software solutions for the products to be programmed, such as measuring transducers or motor managers.

Programming adapter - NFC-USB-PROG-ADAPTER - 2900013

Near Field Communication (NFC) programming adapter with USB interface for the wireless configuration of NFC-capable products from PHOENIX CONTACT with software. No separate USB driver is required.



#### System adapter

System adapter - MINI MCR-2-V8-FLK 16 - 2901993



Eight MINI Analog Pro signal conditioners and measuring transducers can be connected to a controller with minimal cabling effort and without any errors using system adapters and system cabling.

Terminal marking



### Accessories

Marker strip - SK 5,0 WH:REEL - 0805221



Marker strip, Roll, white, unlabeled, can be labeled with: THERMOMARK ROLL, THERMOMARK ROLL X1, THERMOMARK ROLLMASTER 300/600, THERMOMARK X1.2, THERMOMARK S1.1, Mounting type: adhesive, for terminal block width: 5 mm, Lettering field: continuous x 5 mm

DIN rail bus connectors - ME 6,2 TBUS-2 1,5/5-ST-3,81 GY - 2695439



DIN rail connector (TBUS), 5-pos., for bridging the supply voltage, can be snapped onto NS 35/... DIN rails according to EN 60715

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