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

2811446

https://www.phoenixcontact.com/us/products/2811446

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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), screw 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
- 3-way electrical isolation
- Analog signal conditioner for isolating, filtering, amplifying, and converting standard analog signals
- Configurable input and output signals, including bipolar current and voltage signals
- 10 kHz limit frequency for time-critical applications
- Status indicator for supply voltage
- Active or passive output
- Plug-in screw or spring-cage connection technology (Push-in technology)

Commercial data

Item number	2811446
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C402
Product key	DK1111
GTIN	4046356288927
Weight per piece (including packing)	178.05 g
Weight per piece (excluding packing)	150 g
Customs tariff number	85437090
Country of origin	DE

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	± 4 %
Alignment zero	± 4 %
Electrical isolation between input and output	yes
Limit frequency (3 dB)	10 kHz (Can be switched to 30 Hz)
Maximum power dissipation for nominal condition	< 0.7 W (20 mA)
Protective circuit	Transient protection
Step response (10-90%)	35 µs (10 kHz)
	11 ms (30 Hz)
Maximum temperature coefficient	0.0075 %/K
Maximum transmission error	≤ 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

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

	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

	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	≥ 1 kΩ (10 V)
Load/output load current output	≤ 600 Ω (20 mA; active)
	passive: ≤ (UB-2 V) / I_{outmax}
Ripple	< 10 mV_{rms}

Connection data

Connection method	Screw connection
Stripping length	7 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
Tightening torque	0.5 Nm ... 0.6 Nm

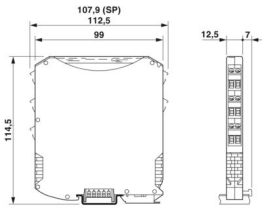
Test socket

Max. diameter	2 mm

Ex data

Ex installation (EPL)	Gc
	Div. 2

Dimensions

Dimensional drawing	
Width	12.5 mm
Height	112.5 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

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	Ⓔx II 3 G Ex ec IIC T4 Gc
Certificate	BVS 10 ATEX E 059 X

UKCA Ex (UKEX)

Identification	Ⓔx 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

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

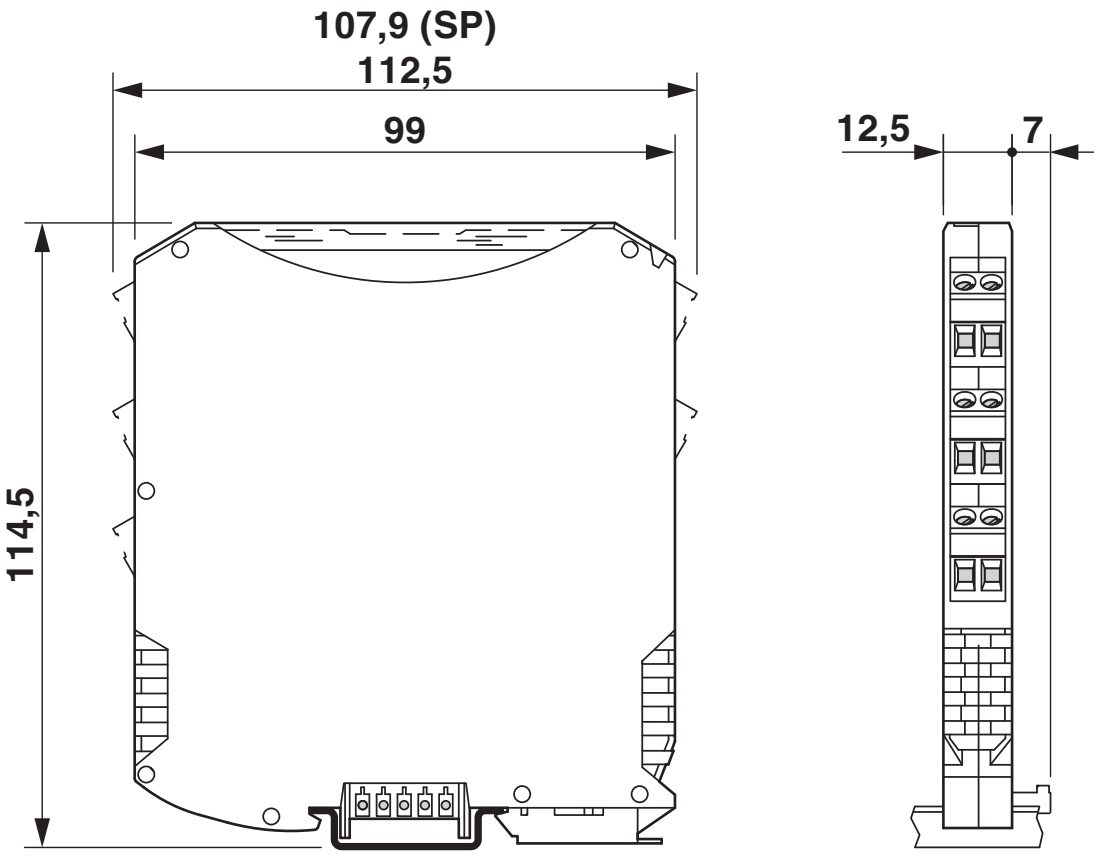
Standards/regulations	GB/T 3836.1
	GB/T 3836.3

Mounting

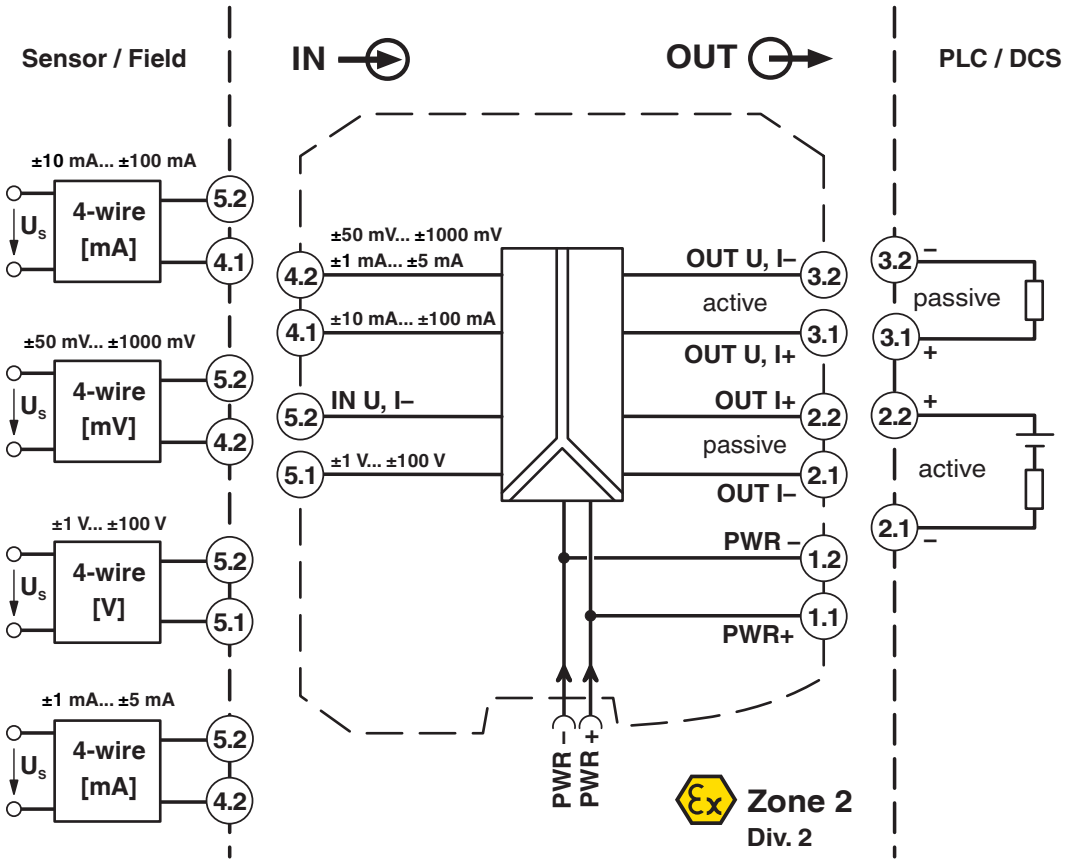
Mounting type	DIN rail mounting
Mounting position	any

Drawings

Dimensional drawing



Block diagram



Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/2811446

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

Classifications

ECLASS

ECLASS-13.0	27210120
ECLASS-15.0	27210120

ETIM

ETIM 10.0	EC002653

UNSPSC

UNSPSC 21.0	39121000

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	ff23c732-d8ee-457c-9118-b5b9a55ba528

Phoenix Contact USA
586 Fulling Mill Road
Middletown, PA 17057, United States
(+717) 944-1300
info@phoenixcon.com