

MACX MCR-UI-UI-UP-SP-NC - Signal conditioner



2811569

<https://www.phoenixcontact.com/us/products/2811569>

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Isolating amplifier with safe electrical isolation and wide-range power supply (24 V ... 230 V AC/DC). 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

- 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
- Analog signal conditioner for isolating, filtering, amplifying, and converting standard analog signals
- Plug-in screw or spring-cage connection technology (Push-in technology)
- Active or passive output
- Configurable input and output signals, including bipolar current and voltage signals
- Status indicator for supply voltage
- Wide-range power supply of 19.2 ... 253 V AC/DC
- 3-way electrical isolation

Commercial data

Item number	2811569
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C402
Product key	CK1111
Catalog page	Page 118 (C-5-2019)
GTIN	4046356466998
Weight per piece (including packing)	183 g
Weight per piece (excluding packing)	150 g
Customs tariff number	85437090
Country of origin	DE

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Technical data

Product properties

Product type	Signal conditioner
Product family	MACX Analog
No. of channels	1
Type	Signal conditioners with SIL functional safety
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)
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	275 V

Supply

Nominal supply voltage range	24 V AC/DC ... 230 V AC/DC -20 % ... +10 % (50/60 Hz)
Supply voltage range	19.2 V AC/DC ... 253 V AC/DC (50/60 Hz)
Power dissipation	< 0.8 W (at 24 V DC / 20 mA)
	< 0.9 W (At 230 V AC / 20 mA)

Input data

Signal: Voltage/current

Number of inputs	1
Voltage input signal	0 mV ... 50 mV
	0 mV ... 60 mV

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	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

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	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
Max. voltage output signal	15 V
	0 V ... 2.5 V

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Output signal voltage inverse	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
Max. current output signal	35 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

Dimensional drawing	
Width	12.5 mm

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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

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
Safety-related maximum voltage U_m	275 V

Altitude range (≤ 3000 m)

Height range	> 2000 m ... 3000 m
Ambient temperature (operation)	-20 °C ... 60 °C
Safety-related maximum voltage U_m	190 V

Altitude range (≤ 4000 m)

Height range	> 3000 m ... 4000 m
Ambient temperature (operation)	-20 °C ... 55 °C
Safety-related maximum voltage U_m	60 V

Altitude range (≤ 5000 m)

Height range	> 4000 m ... 5000 m
Ambient temperature (operation)	-20 °C ... 45 °C
Safety-related maximum voltage U_m	60 V

Approvals

CE

Certificate	CE-compliant
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ATEX

Identification	Ⓜ II 3 G Ex nA IIC T4 Gc
Certificate	BVS 09 ATEX E 028 X

UKCA Ex (UKEX)

Identification	Ⓜ II 3 G Ex nA IIC T4 Gc
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Certificate	PxCIF21UKEX2811459X
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IECEX

Identification	Ex ec IIC T4 Gc
Certificate	IECEX BVS 09.0013X

CCC / China-Ex

Identification	Ex ec IIC T4 Gc
Certificate	2021122304114078

UL, USA/Canada

Identification	UL 61010 Listed
	Class I, Div. 2, Groups A, B, C, D T4
	Class I, Zone 2, Group IIC

Shipbuilding approval

Certificate	DNV GL TAA00000AG
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Safety Integrity Level (SIL, IEC 61508)

Identification	2
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INMETRO

Identification	Ex ec IIC T4 Gc
Certificate	DNV 21.0125 X

EAC Ex

Identification	Ex ec IIC T4 Gc
Certificate	BY/112 02.01 TP012 103.01 00078

DNV GL data

Temperature	B
Humidity	B
Vibration	A
EMC	B
Enclosure	Required protection according to the Rules shall be provided upon installation on board

EMC data

Noise immunity	EN 61000-6-2
Note	When being exposed to interference, there may be minimal deviations.
Electromagnetic compatibility	Conformance with EMC directive
Noise emission	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	1.9 %

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Fast transients (burst)

Designation	Fast transients (burst)
Standards/regulations	EN 61000-4-4
Typical deviation from the measuring range final value	2 %

Conducted interference

Designation	Conducted interferences
Standards/regulations	EN 61000-4-6
Typical deviation from the measuring range final value	4.6 %

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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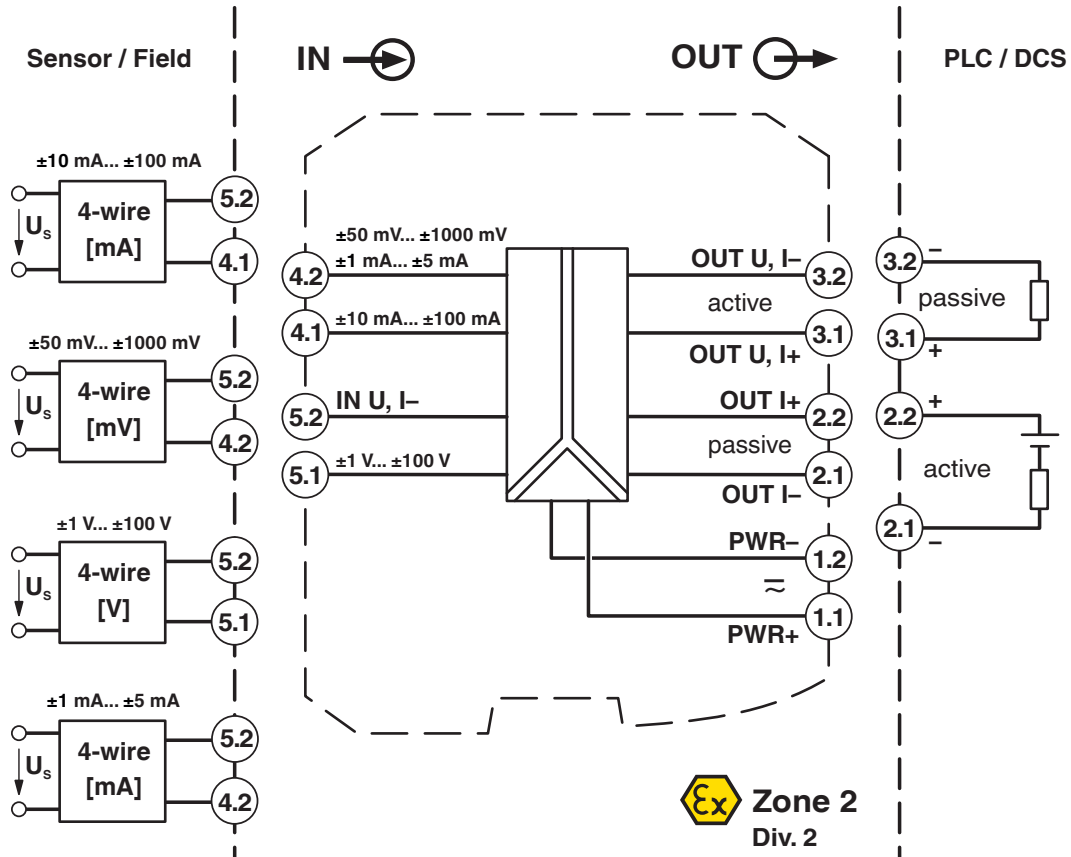


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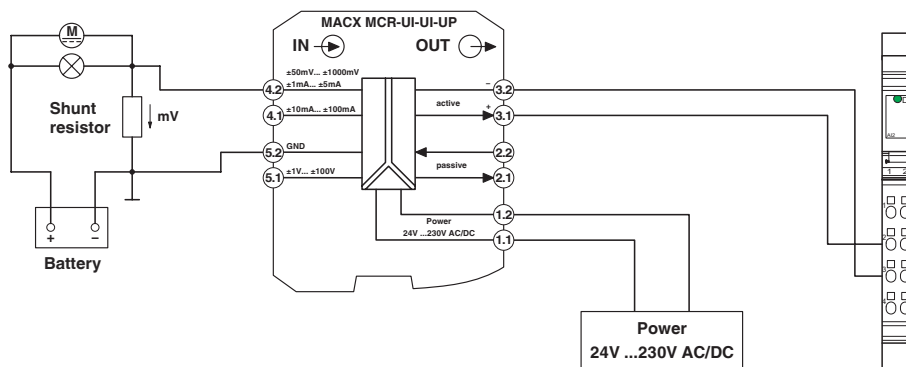
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Drawings

Block diagram



Application drawing



Shunt measurement and Inline terminal with analog input channels within an Inline station (passive input card)

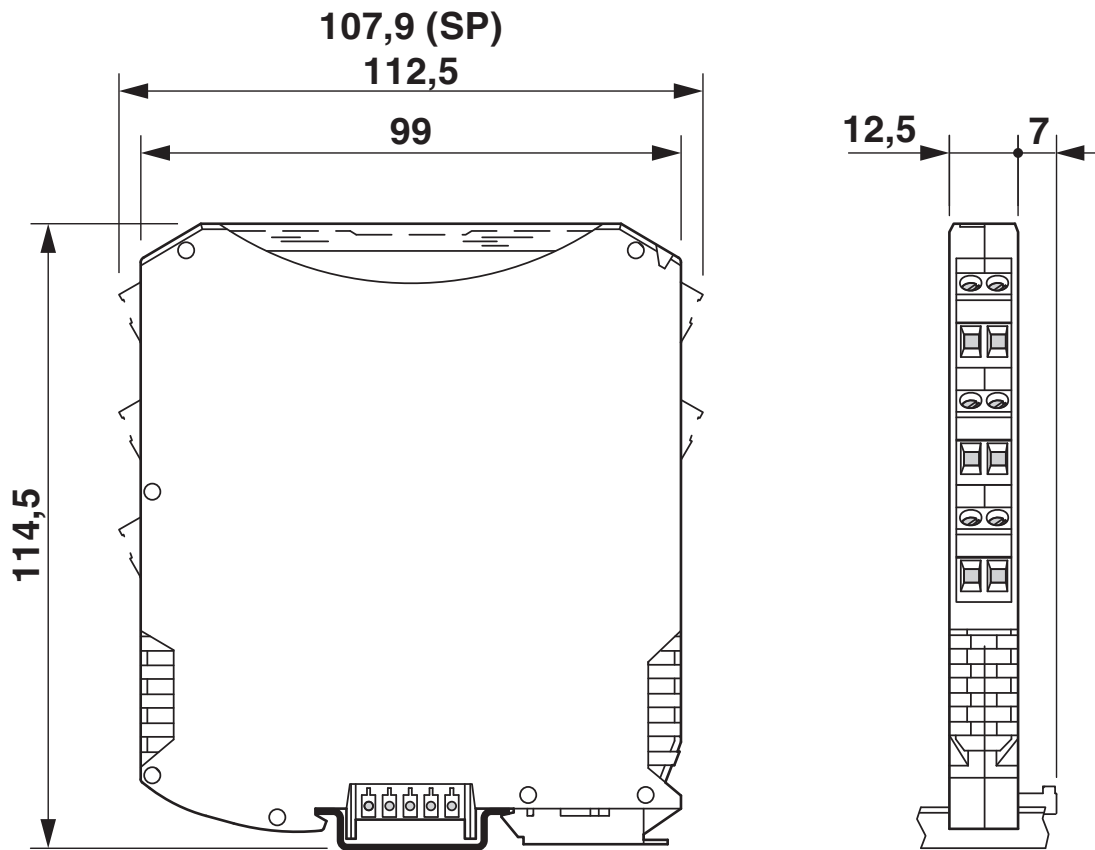
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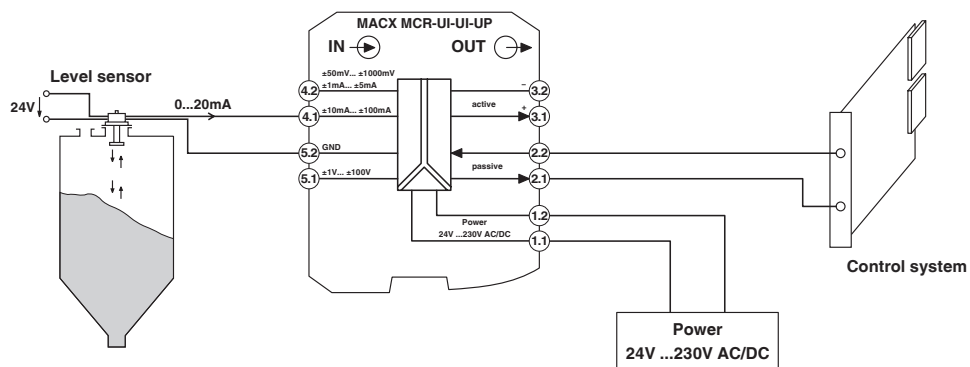
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Dimensional drawing



Application drawing



Level measurement with analog input terminals (active input card)

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Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2811569>



DNV GL

Approval ID: TAA00000AG



UL Listed

Approval ID: FILE E 330267



cUL Listed

Approval ID: FILE E 330267

Functional Safety

Approval ID: BVS Pb 02/09



EAC Ex

Approval ID: TP012 103.01 00078



cUL Listed

Approval ID: FILE E 199827



UL Listed

Approval ID: FILE E 199827



IECEx

Approval ID: IECEx BVS 09.0013X



ATEX

Approval ID: BVS 09 ATEX E 028 X

INMETRO

Approval ID: DNV 21.0125 X



CCC

Approval ID: 2021122304114078

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cULus Listed

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Classifications

ECLASS

ECLASS-11.0	27210120
ECLASS-12.0	27210120
ECLASS-13.0	27210120

ETIM

ETIM 9.0	EC002653
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UNSPSC

UNSPSC 21.0	39121000
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Environmental product compliance

China RoHS	Environmentally Friendly Use Period = 50 years For information on hazardous substances, refer to the manufacturer's declaration available under "Downloads"
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