

Signal conditioner - MACX MCR-UI-UI-UP - 2811459

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Configurable 3-way 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. Order configuration, screw connection, SIL.

Your advantages

- ✓ Over 1600 signal conversions can be set via DIP switches on the front
- ✓ Up to SIL 2 according to EN 61508
- ✓ Installation in zone 2 permitted
- ✓ 3-way electrical isolation
- ✓ Wide-range power supply of 19.2 ... 253 V AC/DC
- ✓ Plug-in screw or spring-cage connection technology (Push-in technology)
- ✓ Analog signal conditioner for isolating, filtering, amplifying, and converting standard analog signals
- ✓ Active or passive output
- ✓ Status indicator for supply voltage
- ✓ Configurable input and output signals including bipolar current and voltage signals



Key Commercial Data

Packing unit	1 pc
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Configuration

Input signal	0...10 V [IN03]
Output signal	0...10 V [OUT03]
Limit frequency	10 kHz [10K]
Plant calibration certificate	Certificate with test data [YESPLUS]

Technical data

Note

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

Signal conditioner - MACX MCR-UI-UI-UP - 2811459

Technical data

Dimensions

Width	12.5 mm
Height	99 mm
Depth	114.5 mm

Ambient conditions

Ambient temperature (operation)	-20 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Maximum altitude	≤ 2000 m

Input data

Description of the input	Measuring input
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 (please indicate if different setting when ordering)
	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

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Technical data

Input data

	-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
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
max. input voltage	± 100 V
Max. input current	± 100 mA
Input resistance of voltage input	approx. 1 MΩ (± 1 V DC ... ± 100 V DC)

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Technical data

Input data

Input resistance current input	approx. 10 Ω (± 10 mA DC ... ± 100 mA DC)
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Output data

Output name	Screw fastening
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
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
Max. output voltage	15 V
Max. output current	35 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}

Power supply

Supply voltage range	24 V ... 230 V AC/DC (-20 %/+10 %, 50/60 Hz)
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Connection data

Connection method	Screw connection
Conductor cross section solid min.	0.2 mm ²
Conductor cross section solid max.	2.5 mm ²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	14
Conductor cross section flexible min.	0.2 mm ²
Conductor cross section flexible max.	2.5 mm ²

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Connection data

Stripping length	8 mm
Screw thread	M3
Connection technology	COMBICON

General

No. of channels	1
Maximum transmission error	≤ 0.1 % (Compared to the final value)
Maximum temperature coefficient	0.0075 %/K
Limit frequency (3 dB)	10 kHz (Can be switched to 30 Hz)
Alignment zero	± 4 %
Alignment span	± 4 %
Step response (10-90%)	35 µs (at 10 kHz)
	11 ms (At 30 Hz)
Protective circuit	Transient protection
Overvoltage category	II
Degree of pollution	2
Rated insulation voltage	300 V AC
Electromagnetic compatibility	Conformance with EMC directive
Noise immunity	EN 61000-6-2 When being exposed to interference, there may be minimal deviations.
Color	green
Housing material	PA 6.6-FR
Mounting position	any
Conformance	CE-compliant
ATEX	# II 3 G Ex nA IIC T4 Gc
IECEX	Ex nA IIC T4 Gc
UL, USA/Canada	UL 61010 Listed
	Class I, Div. 2, Groups A, B, C, D T4
	Class I, Zone 2, Group IIC

Safety characteristic data

Integrity requirement	IEC 61508 - Low demand
Designation	Input isolator (live zero signals)
Architecture	Single-channel, 1oo1
Equipment type	Type A
Safety Integrity Level (SIL)	2
Safe Failure Fraction (SFF)	85.9 %
MTBF	231 Years
λ_{SU}	3.7×10^{-7} (370 FIT)
λ_{SD}	0
λ_{DU}	6×10^{-8} (60 FIT)
λ_{DD}	0

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Technical data

Safety characteristic data

Probability of a hazardous failure on demand (PFD _{AVG})	2.7 x 10 ⁻⁴ (1 year)
Diagnostic coverage (DC)	0 %
Integrity requirement	IEC 61508 - Low demand
Designation	Output isolator (live zero signals)
Architecture	Single-channel, 1oo1
Equipment type	Type A
Safety Integrity Level (SIL)	2
Safe Failure Fraction (SFF)	82.7 %
MTBF	233 Years
λ _{SU}	3.5 x 10 ⁻⁷ (350 FIT)
λ _{SD}	0
λ _{DU}	7.3 x 10 ⁻⁸ (73 FIT)
λ _{DD}	0
Probability of a hazardous failure on demand (PFD _{AVG})	3.2 x 10 ⁻⁴ (1 year)
Diagnostic coverage (DC)	0 %
Integrity requirement	IEC 61508 - High demand
Designation	Input isolator (live zero signals)
Architecture	Single-channel, 1oo1
Equipment type	Type A
Safety Integrity Level (SIL)	2
Safe Failure Fraction (SFF)	85.9 %
MTBF	231 Years
λ _{SU}	3.7 x 10 ⁻⁷ (370 FIT)
λ _{SD}	0
λ _{DU}	6 x 10 ⁻⁸ (60 FIT)
λ _{DD}	0
Probability of a hazardous failure per hour (PFH _D)	6.0 x 10 ⁻⁸
Diagnostic coverage (DC)	0 %
Integrity requirement	IEC 61508 - High demand
Designation	Output isolator (live zero signals)
Architecture	Single-channel, 1oo1
Equipment type	Type A
Safety Integrity Level (SIL)	2
Safe Failure Fraction (SFF)	82.7 %
MTBF	233 Years
λ _{SU}	3.5 x 10 ⁻⁷ (350 FIT)
λ _{SD}	0
λ _{DU}	7.3 x 10 ⁻⁸ (73 FIT)
λ _{DD}	0

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Technical data

Safety characteristic data

Probability of a hazardous failure per hour (PFH _D)	7.3 x 10 ⁻⁸
Diagnostic coverage (DC)	0 %

EMC data

Designation	Electromagnetic RF field
Standards/regulations	EN 61000-4-3
Typical deviation from the measuring range final value	1.9 %
Designation	Fast transients (burst)
Standards/regulations	EN 61000-4-4
Typical deviation from the measuring range final value	2 %
Designation	Conducted interferences
Standards/regulations	EN 61000-4-6
Typical deviation from the measuring range final value	4.6 %

Standards and Regulations

Electromagnetic compatibility	Conformance with EMC directive
Designation	Electromagnetic RF field
Standards/regulations	EN 61000-4-3
	EN 61000-4-4
Designation	Conducted interferences
Standards/regulations	EN 61000-4-6
Conformance	CE-compliant
ATEX	# II 3 G Ex nA IIC T4 Gc
IECEX	Ex nA IIC T4 Gc
UL, USA/Canada	UL 61010 Listed
	Class I, Div. 2, Groups A, B, C, D T4
	Class I, Zone 2, Group IIC

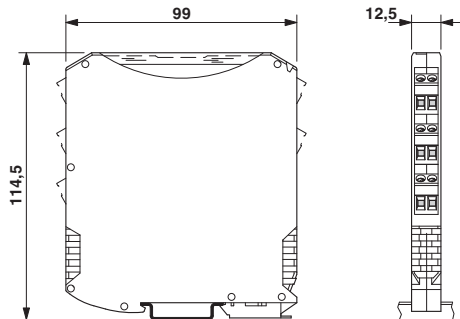
Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

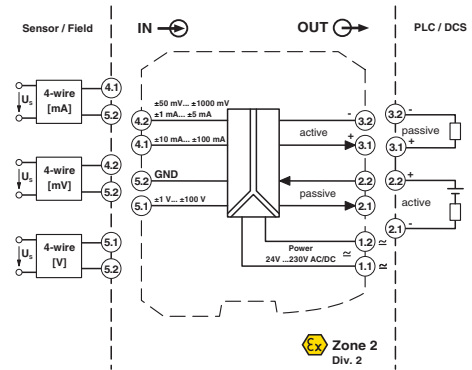
Drawings

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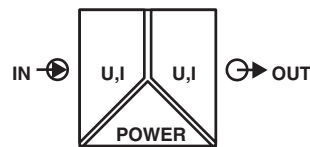
Dimensional drawing



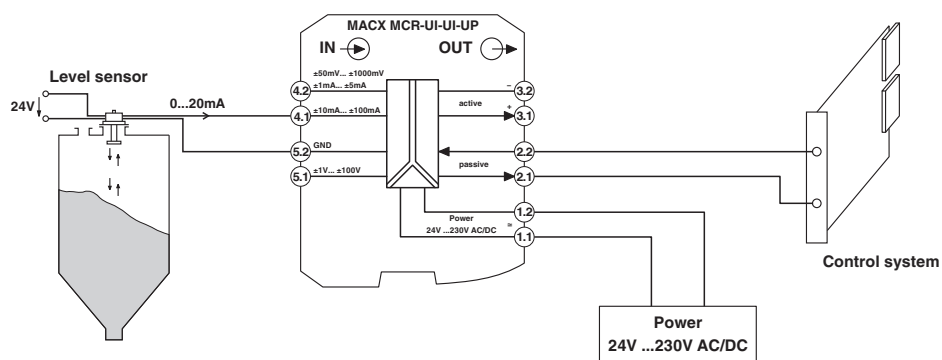
Block diagram



Pictogram



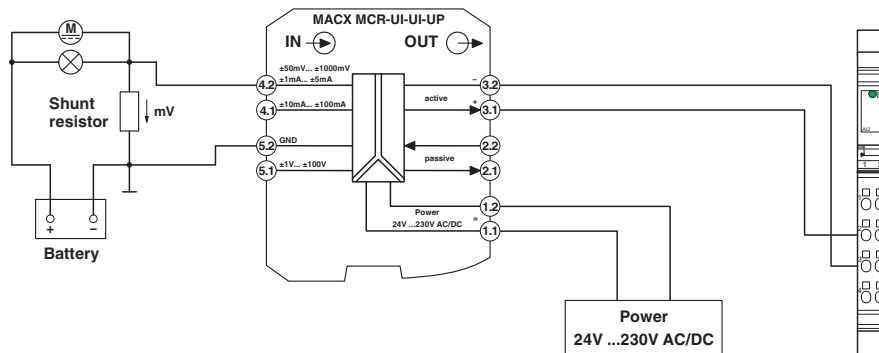
Application drawing



Level measurement with analog input terminals (active input card)

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Application drawing



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

Approvals

Approvals

Approvals

DNV GL / UL Listed / cUL Listed / Functional Safety / cULus Listed

Ex Approvals

IECEX / ATEX / UL Listed / cUL Listed / cULus Listed

Approval details

DNV GL		http://exchange.dnv.com/tari/	TAA00000AG
UL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 330267
cUL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 330267
Functional Safety			BVS Pb 02/09
cULus Listed			

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