

Signal conditioner - MACX MCR-UI-UI-UP-NC - 2811297

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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), screw connection, SIL.

Why buy this product

- ✓ 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
- ✓ Analog signal conditioner for isolating, filtering, amplifying, and converting standard analog signals
- ✓ 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
- ✓ Plug-in screw or spring-cage connection technology (Push-in technology)
- ✓ 3-way electrical isolation
- ✓ Active or passive output



Key Commercial Data

Packing unit	1 STK
GTIN	 4 046356 288910
GTIN	4046356288910

Technical data

Note

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

Width	12.5 mm
Height	99 mm

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Dimensions

Depth	114.5 mm
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Ambient conditions

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

Input data

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

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Input data

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

Output data

Number of outputs	1
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Output data

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	$\geq 1 \text{ k}\Omega$ (10 V)
Load/output load current output	$\leq 600 \Omega$ (20 mA; active)
	passive: $\leq (U_B - 2 \text{ V}) / I_{\text{outmax}}$
Ripple	$< 10 \text{ mV}_{\text{rms}}$

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
Stripping length	8 mm
Screw thread	M3
Connection technology	COMBICON

General

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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 T6 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
Probability of a hazardous failure on demand (PFD _{AVG})	2.7×10^{-4} (1 year)
Diagnostic coverage (DC)	0 %
Integrity requirement	IEC 61508 - Low demand
Designation	Output isolator (live zero signals)

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Technical data

Safety characteristic data

Architecture	Single-channel, 1oo1
Equipment type	Type A
Safety Integrity Level (SIL)	2
Safe Failure Fraction (SFF)	82.7 %
MTBF	233 Years
λ_{SU}	3.5×10^{-7} (350 FIT)
λ_{SD}	0
λ_{DU}	7.3×10^{-8} (73 FIT)
λ_{DD}	0
Probability of a hazardous failure on demand (PFD _{AVG})	3.2×10^{-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}	3.7×10^{-7} (370 FIT)
λ_{SD}	0
λ_{DU}	5.97×10^{-8} (59.7 FIT)
λ_{DD}	0
Probability of a hazardous failure per hour (PFH _D)	6.0×10^{-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}	3.5×10^{-7} (350 FIT)
λ_{SD}	0
λ_{DU}	7.3×10^{-8} (73 FIT)
λ_{DD}	0
Probability of a hazardous failure per hour (PFH _D)	7.3×10^{-8}
Diagnostic coverage (DC)	0 %

Standards and Regulations

Electromagnetic compatibility	Conformance with EMC directive
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Technical data

Standards and Regulations

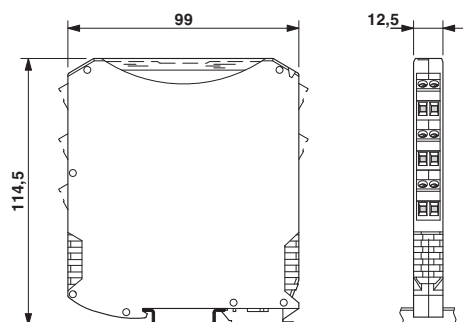
Conformance	CE-compliant
ATEX	# II 3 G Ex nA IIC T4 Gc
IECEX	Ex nA IIC T4 Gc
UL, USA/Canada	UL 61010 Listed
	Class I, Div. 2, Groups A, B, C, D T6
	Class I, Zone 2, Group IIC

Environmental Product Compliance

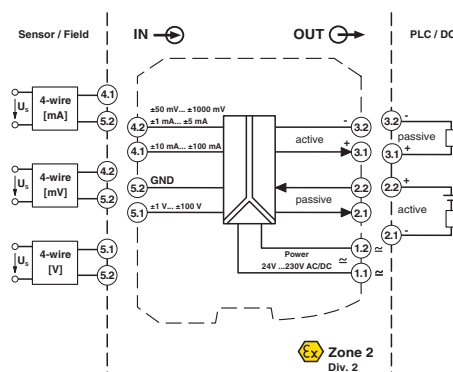
REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

Drawings

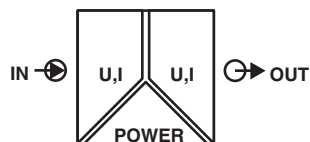
Dimensional drawing



Block diagram

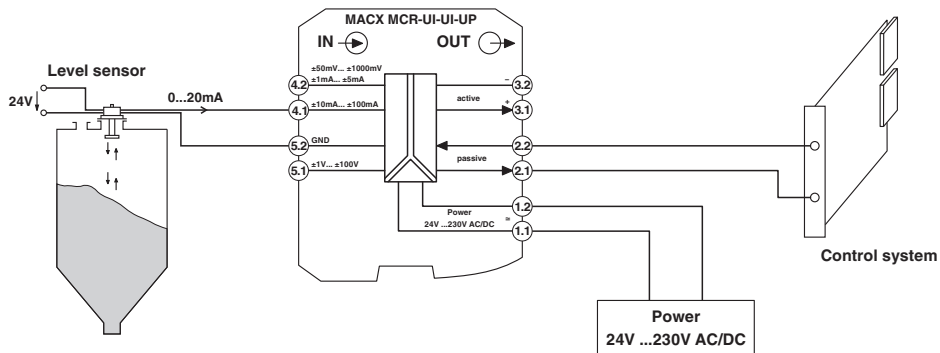


Pictogram



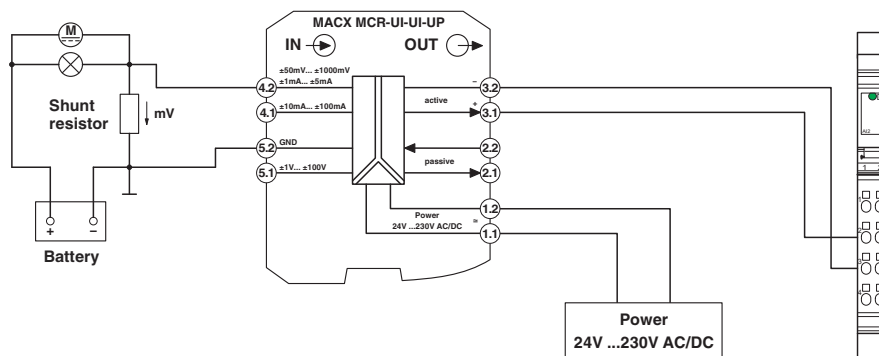
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Application drawing



Level measurement with analog input terminals (active input card)

Application drawing



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

Approvals

Approvals

Approvals

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

Ex Approvals

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

Approval details

UL Listed




<http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm>

FILE E 330267


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Approvals

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