PHŒNIX CONTACT

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.

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
- ☑ 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

package_quantity	1
GTIN	4046356288910

Technical data

Note

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

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

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Technical data

Ambient conditions

Degree of protection	IP20

Input data

Number of inputs	1
Voltage input signal	0 mV ... 50 mV
Voltage input signal	0 mV ... 60 mV
Voltage input signal	0 mV ... 75 mV
Voltage input signal	0 mV ... 100 mV
Voltage input signal	0 mV ... 120 mV
Voltage input signal	0 mV ... 150 mV
Voltage input signal	0 mV ... 200 mV
Voltage input signal	0 mV ... 300 mV
Voltage input signal	0 mV ... 500 mV
Voltage input signal	0 V ... 1 V
Voltage input signal	0 V ... 1.5 V
Voltage input signal	0 V ... 2 V
Voltage input signal	0 V ... 3 V
Voltage input signal	0 V ... 5 V
Voltage input signal	0 V ... 10 V (Configurable via DIP switches)
Voltage input signal	0 V ... 15 V
Voltage input signal	0 V ... 20 V
Voltage input signal	0 V ... 30 V
Voltage input signal	0 V ... 50 V
Voltage input signal	0 V ... 100 V
Voltage input signal	-50 mV ... 50 mV
Voltage input signal	-60 mV ... 60 mV
Voltage input signal	-75 mV ... 75 mV
Voltage input signal	-100 mV ... 100 mV
Voltage input signal	-120 mV ... 120 mV
Voltage input signal	-150 mV ... 150 mV
Voltage input signal	-200 mV ... 200 mV
Voltage input signal	-300 mV ... 300 mV
Voltage input signal	-500 mV ... 500 mV
Voltage input signal	-1 V ... 1 V
Voltage input signal	-1.5 V ... 1.5 V
Voltage input signal	-2 V ... 2 V
Voltage input signal	-3 V ... 3 V
Voltage input signal	-5 V ... 5 V
Voltage input signal	-10 V ... 10 V
Voltage input signal	-15 V ... 15 V
Voltage input signal	-20 V ... 20 V
Voltage input signal	-30 V ... 30 V

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Input data

Voltage input signal	-50 V ... 50 V
Voltage input signal	-100 V ... 100 V
Voltage input signal	1 V ... 5 V
Voltage input signal	2 V ... 10 V
Current input signal	0 mA ... 1 mA (Configurable via DIP switches)
Current input signal	0 mA ... 1.5 mA
Current input signal	0 mA ... 2 mA
Current input signal	0 mA ... 3 mA
Current input signal	0 mA ... 5 mA
Current input signal	0 mA ... 10 mA
Current input signal	0 mA ... 15 mA
Current input signal	0 mA ... 20 mA
Current input signal	0 mA ... 30 mA
Current input signal	0 mA ... 50 mA
Current input signal	0 mA ... 100 mA
Current input signal	-1 mA ... 1 mA
Current input signal	-1.5 mA ... 1.5 mA
Current input signal	-2 mA ... 2 mA
Current input signal	-3 mA ... 3 mA
Current input signal	-5 mA ... 5 mA
Current input signal	-10 mA ... 10 mA
Current input signal	-15 mA ... 15 mA
Current input signal	-20 mA ... 20 mA
Current input signal	-30 mA ... 30 mA
Current input signal	-50 mA ... 50 mA
Current input signal	-100 mA ... 100 mA
Current input signal	1 mA ... 5 mA
Current input signal	2 mA ... 10 mA
Current input signal	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
Configurable/programmable	Yes, can be switched
Voltage output signal	0 V ... 10 V (Configurable via DIP switches)
Voltage output signal	0 V ... 5 V
Voltage output signal	2 V ... 10 V
Voltage output signal	1 V ... 5 V
Voltage output signal	-10 V ... 10 V

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Output data

Voltage output signal	-5 V ... 5 V
Voltage output signal	0 V ... 2.5 V
Voltage output signal	0.5 V ... 2.5 V
Voltage output signal	-2.5 V ... 2.5 V
Current output signal	0 mA ... 5 mA
Current output signal	0 mA ... 10 mA
Current output signal	0 mA ... 20 mA (Configurable via DIP switches)
Current output signal	1 mA ... 5 mA
Current output signal	2 mA ... 10 mA
Current output signal	4 mA ... 20 mA
Current output signal	-5 mA ... 5 mA
Current output signal	-10 mA ... 10 mA
Current output signal	-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)
Load/output load current output	passive: ≤ (UB-2 V) / I_{outmax}

Power supply

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

Connection data

Connection method	Screw connection
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	2.5 mm²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	14
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Stripping length	8 mm
Screw thread	M3
Connection method	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)
Step response (10-90%)	11 ms (At 30 Hz)

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Technical data

General

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 66-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
UL, USA / Canada	Class I, Div. 2, Groups A, B, C, D T6
UL, USA / Canada	Class I, Zone 2, Group IIC
Functional Safety (SIL)	SIL 2

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)	Up to 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)
Architecture	Single-channel, 1oo1
Equipment type	Type A
Safety Integrity Level (SIL)	Up to 2
Safe Failure Fraction (SFF)	82.7 %
MTBF	233 Years
λ_{SU}	3.5×10^{-7} (350 FIT)
λ_{SD}	0

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Safety characteristic data

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

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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

ETIM

ETIM 2.0	EC001485
ETIM 3.0	EC001485
ETIM 4.0	EC002653
ETIM 5.0	EC002653

UNSPSC

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

Approvals

IECEx / ATEX / UL Listed / cUL Listed / cULus Listed / UL Listed / cUL Listed / Functional Safety / EAC / cULus Listed /

Approval details

IECEx s

ATEX s

UL Listed s

cUL Listed s

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Approvals

cULus Listed s ᶜ(UL)us

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Functional Safety s

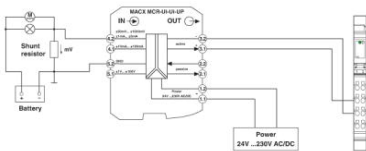**EAC s**

s ᶜ(UL)us
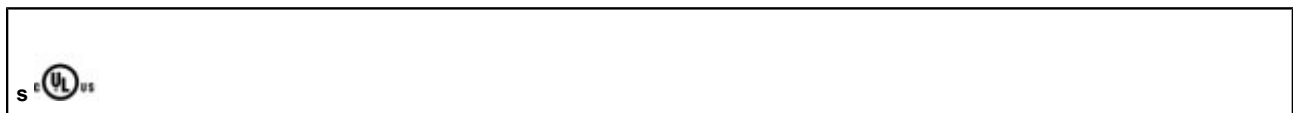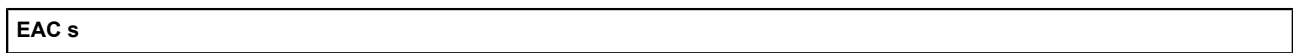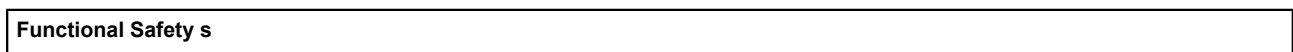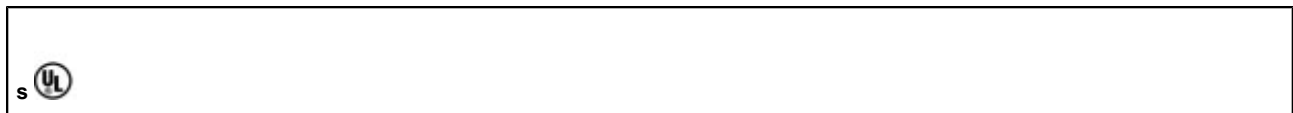
Drawings

Application drawing
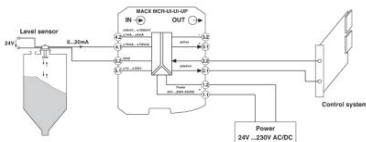
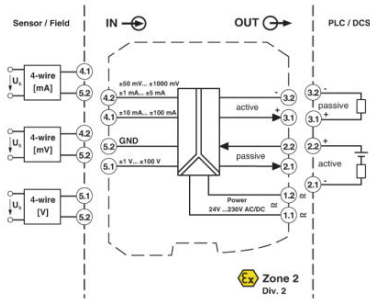Level measurement with analog input terminals (active input card)

Application drawing

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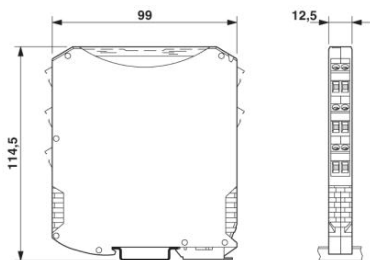within an Inline station (passive input card)

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Block diagram

Dimensional drawing