

# Isolation amplifier - MACX MCR-EX-SL-2NAM-R-UP - 2865984

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2-channel Ex-i NAMUR isolation amplifier with wide-range power supply for proximity sensors and switches. Every channel has a relay with PDT contact as a signal output. Line fault detection (LFD), 3-way isolation, SIL 2.

## Product Features

- Up to SIL 2 according to EN 61508
- Installation in zone 2, protection type "n" (EN 60079-15) permitted
- Line fault detection (LFD), can be activated/deactivated, error indicated by red flashing LED with de-excitation of output relay
- Relay signal output (PDT)
- 3-way electrical isolation
- LED indicators for supply voltage, switching state, and malfunction according to NAMUR NE 44
- Direction of operation can be selected (operating or closed circuit current behavior)
- Wide-range power supply of 19.2 ... 253 V AC/DC
- 2-channel
- Input for NAMUR proximity sensors (EN 60947-5-6), floating contacts or contacts with resistance circuit, [Ex ia] IIC



## Key commercial data

Packing unit	0
Minimum order quantity	1
Catalog page	Page 447 (IF-2011)
GTIN	 4 046356 462532
Custom tariff number	85437090
Country of origin	GERMANY

## Technical data

### Note:

Utilization restriction	EMV: Klasse-A-Produkt, siehe Herstellererklärung im Downloadbereich
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### Input data

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## Technical data

### Input data

Non-load voltage	8 V DC $\pm$ 10 %
Switching points (attenuated)	< 1.2 mA (blocking)
Switching points (unattenuated)	> 2.1 mA (conductive)

### Output data

Switching output	Relay output
Contact type	2 PDT
Contact material	AgSnO <sub>2</sub> , hard gold-plated
Maximum switching voltage	250 V AC (2 A, 60 Hz)
Maximum switching voltage	120 V DC (0.2 A)
Maximum switching voltage	30 V DC (2 A)
Max. switching power	500 VA
Mechanical service life	10 <sup>7</sup> cycles

### Power supply

Supply voltage range	24 V ... 230 V AC/DC (-20% ... +10%, 50 ... 60 Hz)
Max. current consumption	< 80 mA
Power consumption	max. 1.3 W

### Connection data

Conductor cross section solid min.	0.2 mm <sup>2</sup>
Conductor cross section solid max.	2.5 mm <sup>2</sup>
Conductor cross section stranded min.	0.2 mm <sup>2</sup>
Conductor cross section stranded max.	2.5 mm <sup>2</sup>
Conductor cross section AWG/kcmil min.	24
Conductor cross section AWG/kcmil max	14
Stripping length	7 mm
Connection method	Screw connection
Tightening torque, min	0.5 Nm
Tightening torque max	0.6 Nm

### General data

No. of channels	2
Ambient temperature (operation)	-20 °C ... 60 °C
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Maximum altitude	2000 m (Above sea level)
Permissible humidity (operation)	10 % ... 95 % (no condensation)
Step response (10-90%)	Typ. 6 ms (N/O contact: OFF/ON)
Step response (10-90%)	Typ. 6 ms (N/O contact: ON/OFF)
Step response (10-90%)	Typ. 4 ms (N/C contact: ON/OFF)
Step response (10-90%)	Typ. 10 ms (N/C contact: OFF/ON)
Status display	Green LED (supply voltage, PWR)
Status display	LED yellow (switching state)

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## Technical data

### General data

Status display	Red LED (line errors)
Width	17.5 mm
Height	99 mm
Depth	114.5 mm
Inflammability class according to UL 94	V0
Pollution degree	2
Surge voltage category	III
Noise immunity	EN 61000-6-2 When being exposed to interference, there may be minimal deviations.
Housing material	PA 66-FR
Degree of protection	IP20
Color	green
Electrical isolation input / output	375 V (Peak value in accordance with EN 60079-11)
Electrical isolation input / supply	375 V (Peak value in accordance with EN 60079-11)
Electrical isolation input / supply / T connector	375 V (Peak value in accordance with EN 60079-11)
Conformance	CE-compliant, additionally EN 61326
ATEX	# II (1) G [Ex ia Ga] IIC
ATEX	# II (1) D [Ex ia Da] IIIC
ATEX	# II 3(1) G Ex nA nC [ia Ga] IIC T4 Gc X
IECEX	[Ex ia Ga] IIC; [Ex ia Da] IIIC; Ex nA nC [ia Ga] IIC T4 Gc
UL, USA / Canada	UL applied for
Functional safety (SIL)	SIL 2 according to EN 61508

### Safety data

Max. voltage $U_o$	9.6 V
Max. current $I_o$	10.3 mA
Max. power $P_o$	25 mW
Gas group	II C
Max. external inductivity $L_o$	100 mH
Max. external capacity $C_o$	0.5 $\mu$ F
Gas group	II C
Max. external inductivity $L_o$	10 mH
Max. external capacity $C_o$	0.75 $\mu$ F
Gas group	II C
Max. external inductivity $L_o$	1 mH
Max. external capacity $C_o$	1.2 $\mu$ F
Gas group	II B
Max. external inductivity $L_o$	100 mH
Max. external capacity $C_o$	2.7 $\mu$ F
Gas group	II B
Max. external inductivity $L_o$	10 mH
Max. external capacity $C_o$	3.9 $\mu$ F

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### Safety data

Gas group	II B
Max. external inductivity $L_o$	1 mH
Max. external capacity $C_o$	6.3 $\mu$ F
Safety-related maximum voltage $U_m$	253 V AC/DC (Supply terminals)

### EMC data

Name	Electromagnetic RF field
Standards/regulations	EN 61000-4-3
Evaluation criterion	A
Name	Fast transients (burst)
Standards/regulations	EN 61000-4-4
Evaluation criterion	A
Name	Conducted interferences
Standards/regulations	EN 61000-4-6
Evaluation criterion	A

## Classifications

### ETIM

ETIM 2.0	EC001430
ETIM 3.0	EC001599
ETIM 4.0	EC001485
ETIM 5.0	EC001485

### UNSPSC

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

### eCl@ss

eCl@ss 4.0	27210121
eCl@ss 4.1	27210121
eCl@ss 5.0	27210121
eCl@ss 5.1	27210121
eCl@ss 6.0	27210121
eCl@ss 7.0	27210121

## Approvals

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## Approvals

Approvals

Functional Safety

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Ex Approvals

IECEX / ATEX

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Approvals submitted

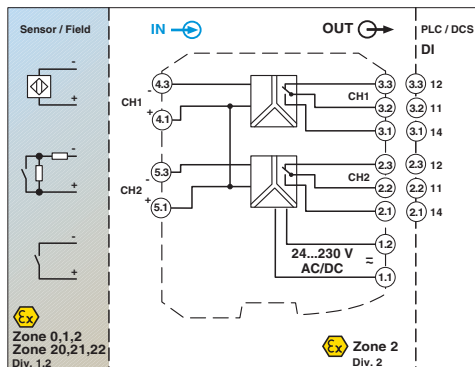
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## Approval details

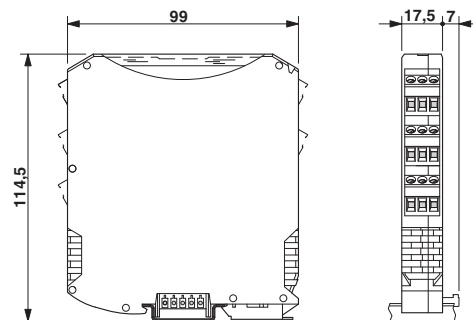
Functional Safety

## Drawings

Block diagram



Dimensioned drawing



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Schematic diagram

