

MACX MCR-SL-NAM-2RO - Isolation amplifier



2865010

<https://www.phoenixcontact.com/us/products/2865010>

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NAMUR signal conditioner for operating proximity sensors and switches. The signals are transferred to the control level using 2 isolated relay outputs (N/O contact). Line fault detection (LFD), 3-way electrical isolation, SIL 2, screw connection.

Your advantages

- Power supply and error indication possible via DIN rail connector
- Installation in zone 2, protection type "n" (EN 60079-15) permitted
- Up to SIL 2 in accordance with EN 61508
- Line fault detection (LFD), can be activated/deactivated, error indicated by flashing red LED with de-excitation of output relay
- Input for NAMUR proximity sensors (EN 60947-5-6), floating contacts or contacts with resistance circuit
- 4-way electrical isolation
- Direction of operation can be selected (operating or closed circuit current behavior)
- 2 relay signal outputs (N/O contact); output 2 can also be used as an error signaling output
- LED indicators for supply voltage, switching state, and malfunction in accordance with NAMUR NE 44

Commercial data

Item number	2865010
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C402
Product key	CK1141
Catalog page	Page 135 (C-5-2019)
GTIN	4046356491686
Weight per piece (including packing)	181 g
Weight per piece (excluding packing)	140 g
Customs tariff number	85365019
Country of origin	DE

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Technical data

Product properties

Product type	Isolating switch transf.
Product family	MACX Analog
Application	Digital IN
No. of channels	1
Type	Signal conditioners with SIL functional safety
Configuration	DIP switches

Data management status

Article revision	12
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System properties

Functionality

Configuration	DIP switches
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Electrical properties

Electrical isolation	3-way isolation
Electrical isolation between input and output	yes

Electrical isolation Input/supply, DIN rail connector IEC/EN 61010-1

Standards/regulations	IEC/EN 61010-1
Rated insulation voltage	300 V _{rms}
Overvoltage category	II
Pollution degree	2
Insulation	Safe isolation

Electrical isolation Output 1/output 2/input, power supply, DIN rail connector IEC/EN 61010-1

Standards/regulations	IEC/EN 61010-1
Rated insulation voltage	300 V _{rms}
Overvoltage category	III
Pollution degree	2
Insulation	Safe isolation

Electrical isolation Output 1/output 2/input/power supply, DIN rail connector

Test voltage	2.5 kV AC (50 Hz, 60 s)
Overvoltage category	III
Pollution degree	2

Supply

Nominal supply voltage	24 V DC -20 % ... +25 %
Supply voltage range	19.2 V DC ... 30 V DC
Max. current consumption	30 mA (24 V DC)
Power dissipation	< 950 mW

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Power consumption	< 950 mW
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Input data

Signal: NAMUR

Number of inputs	1
Available input sources	NAMUR proximity sensors (IEC/EN 60947-5-6)
	Floating switch contacts
	Switch contacts with resistance circuit
Switching threshold "0" signal current	< 1.2 mA (blocking)
Switching threshold "1" signal, current	> 2.1 mA (conductive)
Short-circuit current	8 mA
Switching hysteresis	< 0.2 mA
Line fault detection	< 0.05 mA ... 0.35 mA (Line break)
	< 100 Ω ... 360 Ω (Short circuit)
	Activated /deactivated via DIP switch
Non-load voltage	8 V DC

Output data

Switching: Relay

Contact switching type	2 N/O contacts
Contact material	AgSnO ₂ , hard gold-plated
Maximum switching voltage	250 V AC (2 A)
	120 V DC (0.2 A)
	30 V DC (2 A)
Maximum switching capacity	500 VA
Recommended minimum load	5 V / 10 mA
Switching frequency	≤ 20 Hz (without load)

Signal

Number of outputs	2
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Connection data

Connection method	Screw connection
Stripping length	7 mm
Screw thread	M3
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 AWG	24 ... 14
Tightening torque	0.5 Nm ... 0.6 Nm

Test socket

Max. diameter	2 mm
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Ex data

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Ex installation (EPL)

Gc

Div. 2

Interfaces

Data

No. of channels

0

Signaling

Status display

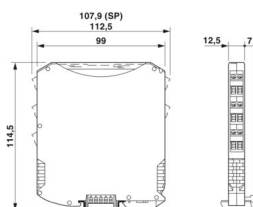
Green LED (supply voltage)

LED yellow (switching state)

Red LED (line errors)

Dimensions

Dimensional drawing



Width

12.5 mm

Height

112.5 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)

Flammability rating according to UL 94

V0 (Housing)

Housing material

PA 6.6-FR

Characteristics

Safety data

Safety Integrity Level (SIL)

2

Safety data: IEC 61508 - Low demand

Safety Integrity Level (SIL)

2

Safety data: IEC 61508 - Low demand

Safety Integrity Level (SIL)

2

Environmental and real-life conditions

Ambient conditions

Degree of protection

IP20 (not assessed by UL)

Ambient temperature (operation)

-40 °C ... 60 °C (Any mounting position)

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	-40 °C ... 70 °C (Derating)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	5 % ... 95 % (non-condensing)

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)	-40 °C ... 60 °C -40 °C ... 70 °C (Derating)
Rated insulation voltage	253 V AC (Power supply, input / output) 125 V DC (Power supply, input / output)

Altitude range (≤ 3000 m)

Height range	> 2000 m ... 3000 m
Ambient temperature (operation)	-40 °C ... 54 °C -40 °C ... 63 °C (Derating)
Rated insulation voltage	190 V AC (Power supply, input / output) 110 V DC (Power supply, input / output)

Altitude range (≤ 4000 m)

Height range	> 3000 m ... 4000 m
Ambient temperature (operation)	-40 °C ... 48 °C -40 °C ... 56 °C (Derating)
Rated insulation voltage	60 V AC/DC (Power supply, input / output)

Altitude range (≤ 5000 m)

Height range	> 4000 m ... 5000 m
Ambient temperature (operation)	-40 °C ... 42 °C -40 °C ... 49 °C (Derating)
Rated insulation voltage	60 V AC/DC (Power supply, input / output)

Approvals

CE

Certificate	CE-compliant
Note	and EN 61326-1

ATEX

Identification	Ⓔ II 3G Ex ec nC IIC T4 Gc
Certificate	IBExU 07 ATEX 1069 X

UKCA Ex (UKEX)

Identification	Ⓔ II 3G Ex ec nC IIC T4 Gc
Certificate	PxCIF21UKEX2865049X

IECEx

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Identification	Ex ec nC IIC T4 Gc
Certificate	IBE 08.0001 X

CCC / China-Ex

Identification	Ex ec nC IIC T4 Gc
Certificate	2021122304114179

UL, USA/Canada

Identification	UL 508 Listed
	UL 61010 Listed
	Class I, Div. 2, Groups A, B, C, D T4
	Class I, Zone 2, Group IIC T4

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 nC IIC T4 Gc
Certificate	DNV 18.0114 X

EAC Ex

Identification	Ex ec nC 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
	EN 61326
Electromagnetic compatibility	Conformance with EMC directive
Noise emission	EN 61000-6-4

Standards and regulations

Electrical isolation	3-way isolation
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GB Standard

Standards/regulations	GB/T 3836.1
	GB/T 3836.3
	GB/T 3836.8

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Mounting

Mounting type	DIN rail mounting
Thread type	()

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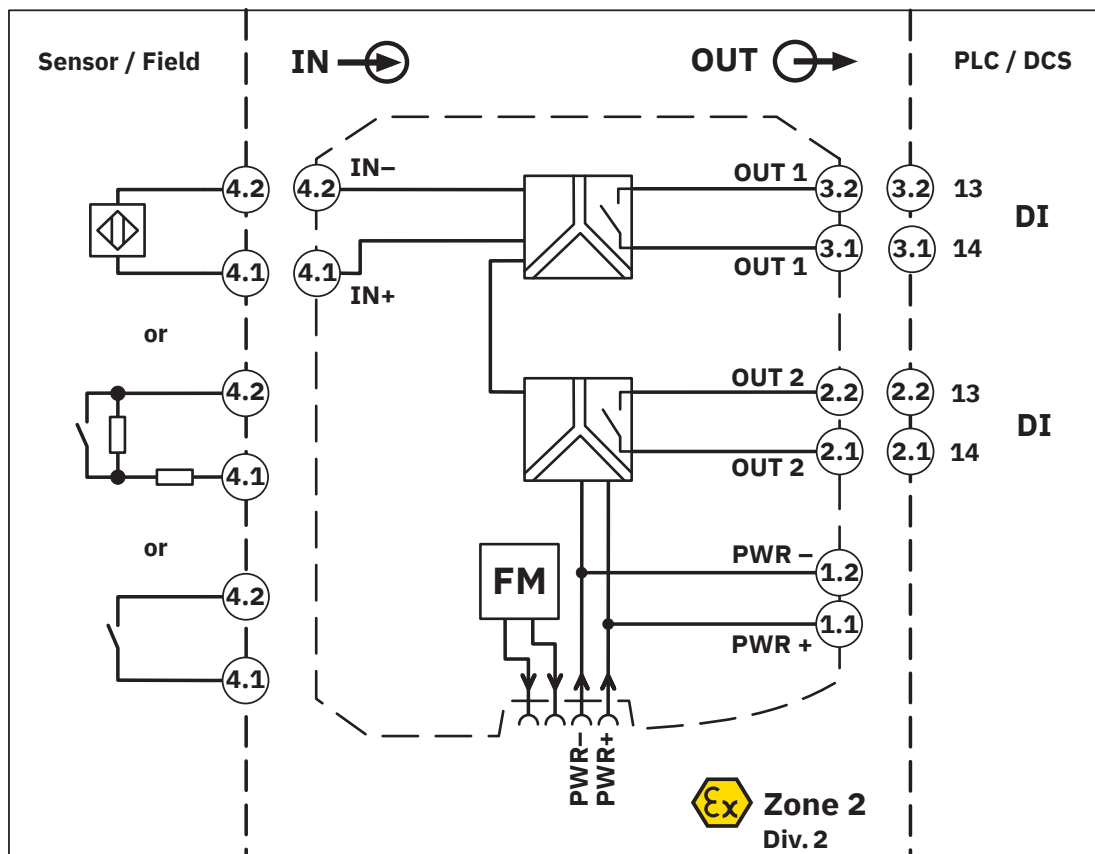


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Drawings

Block diagram



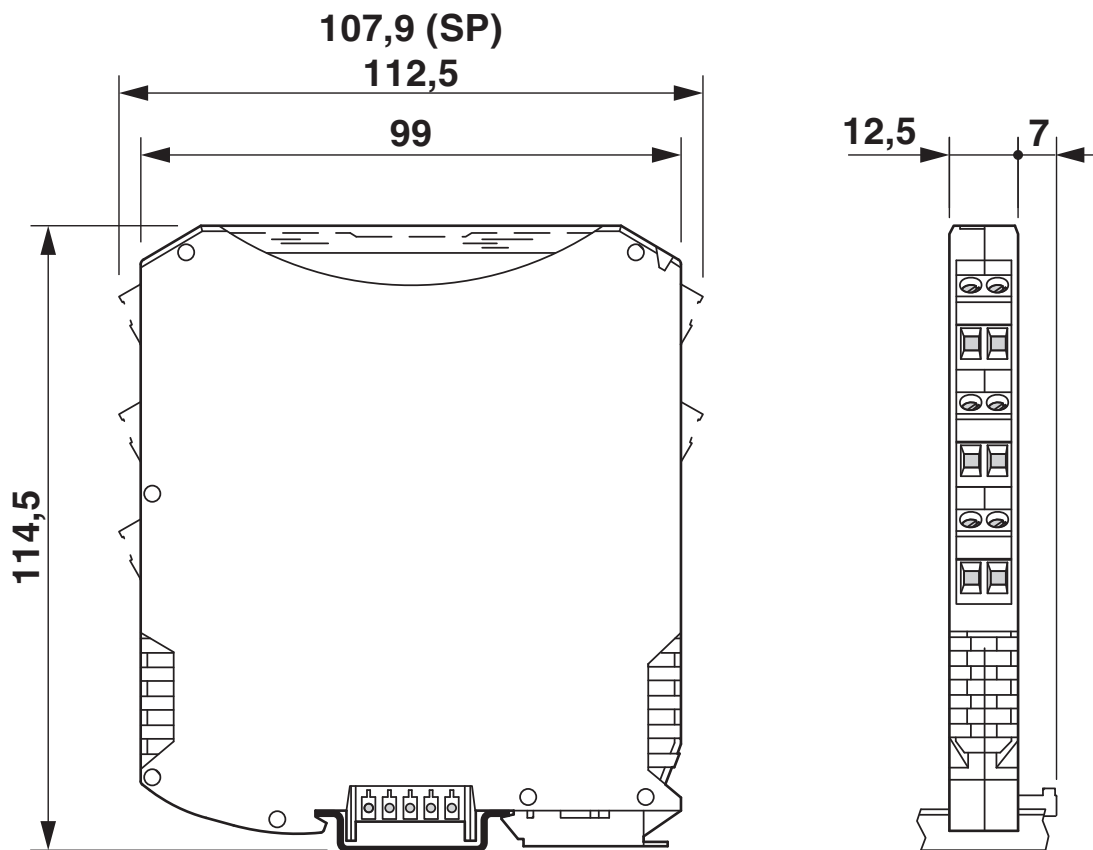
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Dimensional drawing



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Approvals

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DNV GL

Approval ID: TAA00000AG



UL Listed

Approval ID: E330267



cUL Listed

Approval ID: E330267

Functional Safety

Approval ID: 07-06-39 R005 V2R2



EAC Ex

Approval ID: TP012 103.01 00078



IECEx

Approval ID: IECEx IBE 08.0001X



cUL Listed

Approval ID: E199827



UL Listed

Approval ID: FILE E 199827



ATEX

Approval ID: IBExU07ATEX1069

INMETRO

Approval ID: DNV 18.0114 X



IECEx

Approval ID: IECEx IBE 08.0001X

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CCC

Approval ID: 2021122304114179

cULus Listed

cULus Listed

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Classifications

ECLASS

ECLASS-11.0	27210121
ECLASS-12.0	27210121
ECLASS-13.0	27210121

ETIM

ETIM 9.0	EC001485
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UNSPSC

UNSPSC 21.0	39121000
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Environmental product compliance

EU RoHS	
Fulfills EU RoHS substance requirements	Yes
Exemption	7(a), 7(c)-I
China RoHS	
Environment friendly use period (EFUP)	EFUP-50
	An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required.
EU REACH SVHC	
REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)
	2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol(CAS: 79-94-7)
SCIP	ad6f0b08-c702-44d6-84eb-8243184986f1