

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



2924294

<https://www.phoenixcontact.com/us/products/2924294>

Please be informed that the data shown in this PDF document is generated from our online catalog. Please find the complete data in the user documentation. Our general terms of use for downloads are valid.



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

Your advantages

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

Commercial data

Item number	2924294
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C402
Product key	CK1141
Catalog page	Page 136 (C-5-2019)
GTIN	4046356492096
Weight per piece (including packing)	179 g
Weight per piece (excluding packing)	140 g
Customs tariff number	85365019
Country of origin	DE

Technical data

Product properties

Product type	Isolating switch transf.
Product family	MACX Analog
Application	Digital IN
No. of channels	2
Type	Signal conditioners with SIL functional safety
Configuration	DIP switches

Data management status

Article revision	13
------------------	----

System properties

Functionality

Configuration	DIP switches
---------------	--------------

Electrical properties

Electrical isolation	3-way isolation
Electrical isolation between input and output	yes
Maximum power dissipation for nominal condition	< 1 W

Electrical isolation Input/output IEC/EN 60079-11

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V _{PP}
Overvoltage category	III
Pollution degree	2

Electrical isolation Input/supply, DIN rail connector IEC/EN 60079-11

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V _{PP}
Overvoltage category	II
Pollution degree	2

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

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



2924294

<https://www.phoenixcontact.com/us/products/2924294>

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	35 mA (24 V DC)
Power dissipation	< 1 W
Power consumption	< 1 W

Input data

Signal: NAMUR

Number of inputs	2
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	1 N/O contact per channel
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
-------------------	---

Connection data

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



2924294

<https://www.phoenixcontact.com/us/products/2924294>

Connection method	Push-in connection
Stripping length	10 mm
Conductor cross section rigid	0.2 mm² ... 2.5 mm²
Conductor cross section flexible	0.2 mm² ... 2.5 mm²
Conductor cross section flexible (2 conductors with same cross section)	0.25 mm² ... 0.34 mm² (TWIN ferrule without plastic sleeve)
	0.5 mm² ... 1.5 mm² (TWIN ferrule with plastic sleeve)
Conductor cross section AWG	24 ... 14
	24 ... 22 (TWIN ferrule without plastic sleeve)
	20 ... 16 (TWIN ferrule with plastic sleeve)

Ex data

Ex installation (EPL)	Gc
	Div. 2

Interfaces

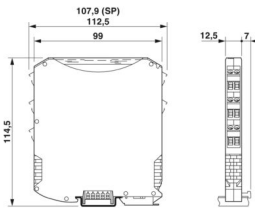
Data

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	107.9 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

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



2924294

<https://www.phoenixcontact.com/us/products/2924294>

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)
	-40 °C ... 70 °C (Derating)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	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
-------------	--------------

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



2924294

<https://www.phoenixcontact.com/us/products/2924294>

Note	and EN 61326-1
------	----------------

ATEX

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

IECEX

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
-------------	-------------------

Safety Integrity Level (SIL, IEC 61508)

Identification	2
----------------	---

Systematic Capability

Identification	3
----------------	---

INMETRO

Identification	Ex ec nC IIC T4 Gc
Certificate	DNV 18.0114 X

EAC Ex

Identification	Ex II 3G 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

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



2924294

<https://www.phoenixcontact.com/us/products/2924294>

Noise emission	EN 61000-6-4
----------------	--------------

Electromagnetic HF field

Designation	Electromagnetic RF field
Standards/regulations	EN 61000-4-3
Evaluation criterion	A

Fast transients (burst)

Designation	Fast transients (burst)
Standards/regulations	EN 61000-4-4
Evaluation criterion	A

Conducted interference

Designation	Conducted interferences
Standards/regulations	EN 61000-4-6
Evaluation criterion	A

Standards and regulations

Electrical isolation	3-way isolation
----------------------	-----------------

GB Standard

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

Mounting

Mounting type	DIN rail mounting
Thread type	()

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

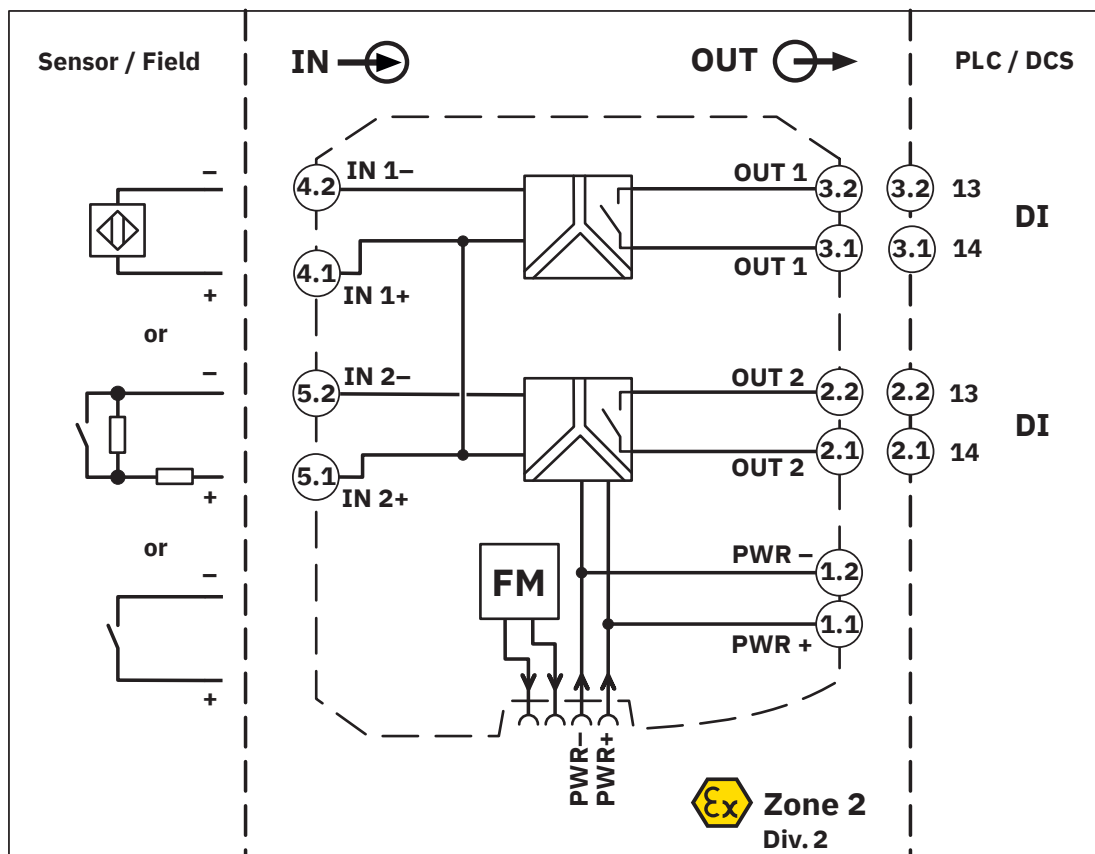


2924294

<https://www.phoenixcontact.com/us/products/2924294>

Drawings

Block diagram



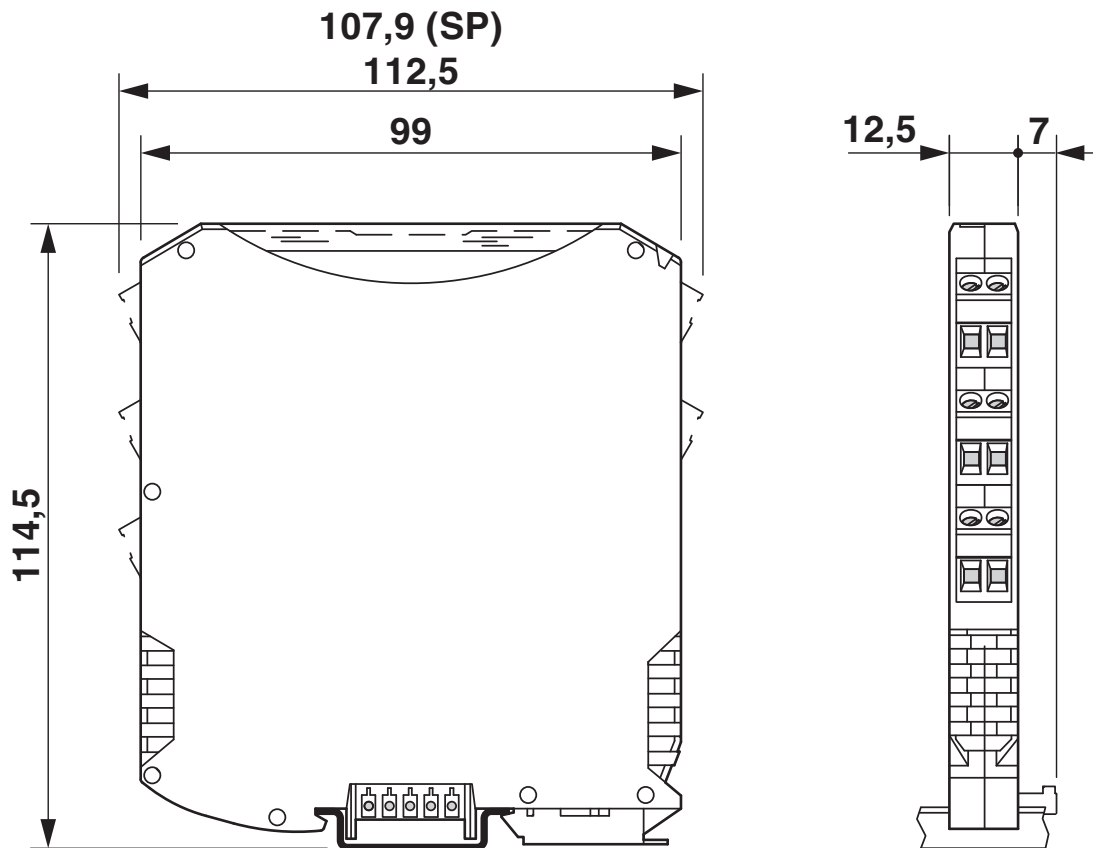
MACX MCR-SL-2NAM-RO-SP - Isolation amplifier

2924294

<https://www.phoenixcontact.com/us/products/2924294>



Dimensional drawing



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



2924294

<https://www.phoenixcontact.com/us/products/2924294>

Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2924294>



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

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



2924294

<https://www.phoenixcontact.com/us/products/2924294>



CCC
Approval ID: 2021122304114179

cULus Listed

cULus Listed

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



2924294

<https://www.phoenixcontact.com/us/products/2924294>

Classifications

ECLASS

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

ETIM

ETIM 9.0	EC001485
----------	----------

UNSPSC

UNSPSC 21.0	39121000
-------------	----------

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	d94a74ea-7c4d-4d0a-9120-9af75e6e640f