

# MACX MCR-EX-SL-2NAM-T-SP - Isolation switch amplifier



2924090

<https://www.phoenixcontact.com/us/products/2924090>

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.



Ex i-NAMUR isolation switch amplifier for operating proximity sensors and switches in potentially explosive areas. The signals are transmitted to the safe area via 1 transistor output (passive) per channel. number of channels: 2, Standard configuration, 3-way isolation, Line fault detection, Safety Integrity Level (SIL, IEC 61508): 2, Systematic Capability: 3, Push-in 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 disabling of transistor output
- Input for NAMUR proximity sensors (EN 60947-5-6), floating contacts or contacts with resistance circuit, [Ex ia] IIC
- Transistor signal output (passive); up to 5 kHz
- Direction of operation can be selected (operating or closed circuit current behavior)
- LED indicators for supply voltage, switching state, and malfunction in accordance with NAMUR NE 44
- 3-way electrical isolation
- 2-channel

## Commercial data

Item number	2924090
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C430
Product key	DK1213
GTIN	4046356337335
Weight per piece (including packing)	173.4 g
Weight per piece (excluding packing)	133.1 g
Customs tariff number	85365019
Country of origin	DE

# MACX MCR-EX-SL-2NAM-T-SP - Isolation switch amplifier



2924090

<https://www.phoenixcontact.com/us/products/2924090>

## Technical data

### Product properties

Product type	Isolating switch amplifier
Product family	MACX Analog
Application	Digital IN
No. of channels	2
Configuration	DIP switches

### System properties

#### Functionality

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

### Electrical properties

Electrical isolation	3-way isolation
Electrical isolation between input and output	yes
Line monitoring	Line fault detection

#### Electrical isolation

Overvoltage category	II
Pollution degree	2

#### Electrical isolation Input/output IEC/EN 60079-11

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V <sub>PP</sub>

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

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V <sub>PP</sub>

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

Standards/regulations	IEC/EN 61010-1
Rated insulation voltage	300 V <sub>rms</sub>
Test voltage	2.5 kV AC (50 Hz, 60 s)
Insulation	Safe isolation

#### Electrical isolation Output 1/output 2 IEC/EN 61010-1

Standards/regulations	IEC/EN 61010-1
Rated insulation voltage	50 V <sub>rms</sub>
Test voltage	1 kV AC (50 Hz, 60 s)
Insulation	Basic insulation

#### Supply

Nominal supply voltage	24 V DC -20 % ... +25 %
Supply voltage range	19.2 V DC ... 30 V DC
Max. current consumption	< 34 mA (24 V DC)

# MACX MCR-EX-SL-2NAM-T-SP - Isolation switch amplifier



2924090

<https://www.phoenixcontact.com/us/products/2924090>

Power dissipation	≤ 1000 mW
Power consumption	0.85 W

## Input data

Signal: NAMUR

Description of the input	intrinsically safe
Number of inputs	2
Available input sources	NAMUR proximity sensors (IEC/EN 60947-5-6) floating switch contacts Switch contacts with resistance circuit
Input signal	NAMUR
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
Open-circuit voltage	8 V DC

## Output data

Switching: Transistor

Output description	passive
Minimum switching voltage	3 V DC
Maximum switching voltage	30 V DC
Drop (ΔU)	< 1.4 V
Max. switching current	50 mA (short-circuit-proof)
Min. switching current	5 mA (short-circuit-proof)
Switching frequency	≤ 5 kHz

Signal

Number of outputs	2
-------------------	---

## Connection data

Connection method	Push-in connection
Stripping length	10 mm
Conductor cross-section rigid	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross-section flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross-section flexible (2 conductors with same cross section)	0.25 mm <sup>2</sup> ... 0.34 mm <sup>2</sup> (TWIN ferrule without plastic sleeve) 0.5 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (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)

# MACX MCR-EX-SL-2NAM-T-SP - Isolation switch amplifier



2924090

<https://www.phoenixcontact.com/us/products/2924090>

## Ex data

Ex installation (EPL)	Gc
	Div. 2
Ex i circuits (EPL)	[Ga]
	[Da]
	[Ma]
	[Div. 1]

## Safety data

Max. internal inductance $L_i$	negligible
Max. internal capacitance $C_i$	1.1 nF
Max. output voltage $U_o$	9.6 V
Max. output current $I_o$	10 mA
Max. output power $P_o$	25 mW
Safety-related maximum voltage $U_m$	253 V AC
	125 V DC
IIC (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	300 mH / 3.6 $\mu$ F
IIB/IIIC (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	1000 mH / 26 $\mu$ F
IIA (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	1000 mH / 210 $\mu$ F
IIC (mixed circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	100 mH / 510 nF, 50 mH / 580 nF, 5 mH / 600 nF
IIB/IIA/IIIC (mixed circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	100 mH / 1 $\mu$ F

## 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

# MACX MCR-EX-SL-2NAM-T-SP - Isolation switch amplifier



2924090

<https://www.phoenixcontact.com/us/products/2924090>

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 (Housing)	V0 (Housing)
Housing material	PA 6.6-FR

## Characteristics

### Safety data

Safety Integrity Level (SIL)	2
------------------------------	---

### Safety data

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 ... 80 °C
Permissible humidity (operation)	10 % ... 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	265 V AC/DC ( $U_{\text{Isolation "ec"}}$ : 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)
Safety-related maximum voltage $U_m$	190 V AC 110 V DC
Rated insulation voltage	190 V AC/DC ( $U_{\text{Isolation "ec"}}$ : 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)
Safety-related maximum voltage $U_m$	60 V

# MACX MCR-EX-SL-2NAM-T-SP - Isolation switch amplifier



2924090

<https://www.phoenixcontact.com/us/products/2924090>

Rated insulation voltage	60 V AC/DC (U <sub>Isolation "ec"</sub> : 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)
Safety-related maximum voltage U <sub>m</sub>	60 V
Rated insulation voltage	60 V AC/DC (U <sub>Isolation "ec"</sub> : Supply, input / output)

## Approvals

### CE

Certificate	CE-compliant
Note	and EN 61326

### ATEX

Identification	Ⓜ II (1) G [Ex ia Ga] IIC
	Ⓜ II (1) D [Ex ia Da] IIIC
	Ⓜ II 3(1) G Ex ec [ia Ga] IIC T4 Gc
	Ⓜ I (M1) [Ex ia Ma] I
Certificate	IBExU 08 ATEX 1100 X

### IECEX

Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec [ia Ga] IIC T4 Gc
	[Ex ia Ma] I
Certificate	IECEX IBE 08.0005X

### CCC / China-Ex

Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec [ia Ga] IIC T4 Gc
Certificate	2022122316115977

### UL, USA/Canada

Identification	Class I Div 2; IS for Class I, II, III Div 1
Certificate	Ⓜ-Ⓜ C.D.-No 83104549

### Shipbuilding approval

Certificate	DNV GL TAA00000AG
-------------	-------------------

### Safety Integrity Level (SIL, IEC 61508)

Identification	2
Certificate	IN-AT-AS-MRL-25-00008

### Systematic Capability

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

# MACX MCR-EX-SL-2NAM-T-SP - Isolation switch amplifier



2924090

<https://www.phoenixcontact.com/us/products/2924090>

## INMETRO

Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec [ia Ga] IIC T4 Gc
	[Ex ia Ma] I
Certificate	DNV 18.0141 X

## Shipbuilding 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

Electromagnetic compatibility	Conformance with EMC directive
Noise immunity	EN 61000-6-2

## Noise emission

Standards/regulations	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 3836.4

## Mounting

Mounting type	DIN rail mounting
---------------	-------------------

# MACX MCR-EX-SL-2NAM-T-SP - Isolation switch amplifier



2924090

<https://www.phoenixcontact.com/us/products/2924090>

## Drawings

Dimensional drawing



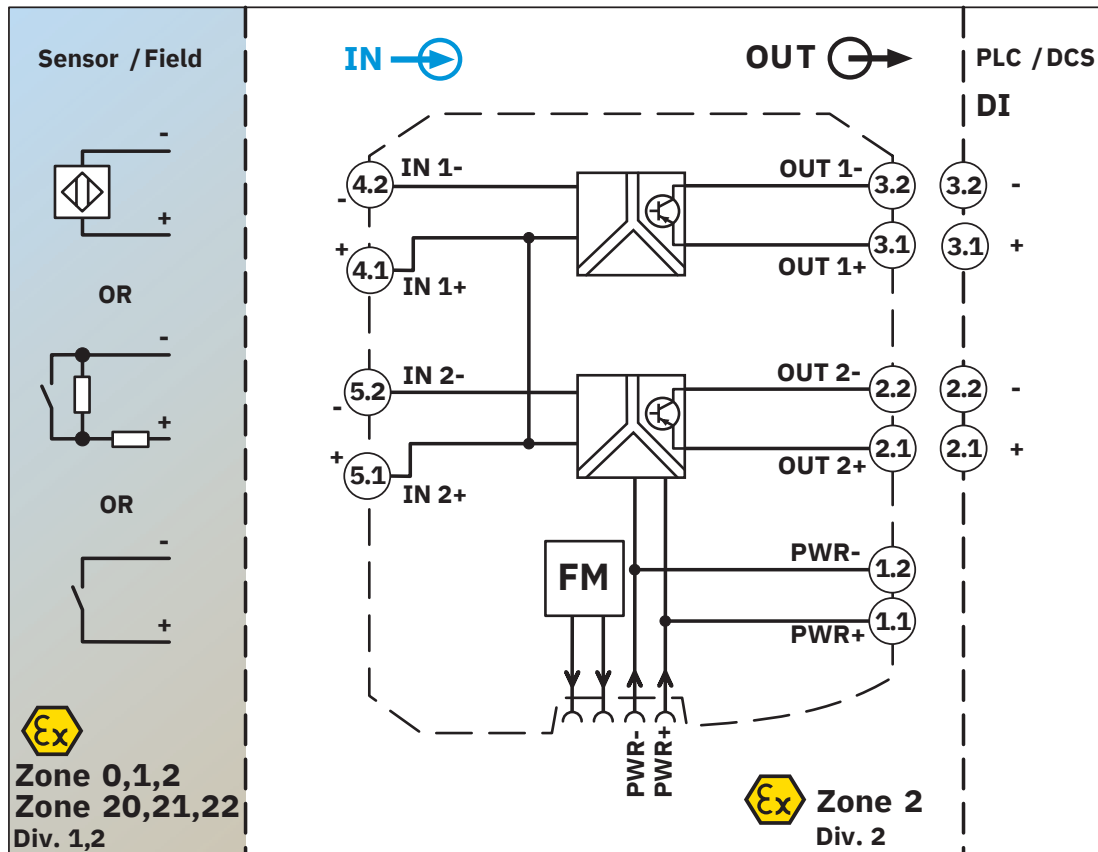
# MACX MCR-EX-SL-2NAM-T-SP - Isolation switch amplifier



2924090

<https://www.phoenixcontact.com/us/products/2924090>

Block diagram



# MACX MCR-EX-SL-2NAM-T-SP - Isolation switch amplifier



2924090

<https://www.phoenixcontact.com/us/products/2924090>

## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2924090>


 **UL Listed**  
Approval ID: E330267

 **cUL Listed**  
Approval ID: E330267

**DNV**  
Approval ID: TAA00000AG


**TUEV Austria FS**  
Approval ID: IN-AT-AS-MRL-25-0008

**ECAS**  
Approval ID: 163682 E25 08 169507


 **IECEX**  
Approval ID: IECEX IBE 08.0005X

 **cUL Listed**  
Approval ID: E199827

 **UL Listed**  
Approval ID: E199827

 **ATEX**  
Approval ID: IBExU 08 ATEX 1100

**INMETRO**  
Approval ID: DNV 18.0141 X

 **CCC**  
Approval ID: 2022122316115977

# MACX MCR-EX-SL-2NAM-T-SP - Isolation switch amplifier



2924090

<https://www.phoenixcontact.com/us/products/2924090>

## Classifications

### ECLASS

ECLASS-13.0	27210121
ECLASS-15.0	27210121

### ETIM

ETIM 10.0	EC001485
-----------	----------

### UNSPSC

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

# MACX MCR-EX-SL-2NAM-T-SP - Isolation switch amplifier



2924090

<https://www.phoenixcontact.com/us/products/2924090>

## 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	b0d2a925-2ab8-4611-ae11-a5e820a615b4

### EF3.1 Climate Change

CO2e kg	4.867 kg CO2e
---------	---------------

Phoenix Contact 2026 © - all rights reserved  
<https://www.phoenixcontact.com>

Phoenix Contact USA  
586 Fulling Mill Road  
Middletown, PA 17057, United States  
(+717) 944-1300  
[info@phoenixcon.com](mailto:info@phoenixcon.com)