

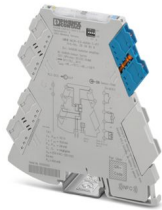
# MINI MCR-EX-NAM-2T-PT - Isolation switch amplifier



1157854

<https://www.phoenixcontact.com/us/products/1157854>

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Ex i-NAMUR signal conditioner for operating proximity sensors and switches in the Ex area. The signals are transmitted to the safe area via 2 transistor outputs (passive). Standard configuration, 3-way isolation, Line fault detection, Safety Integrity Level (SIL, IEC 61508): 3, Push-in connection

## Commercial data

Item number	1157854
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C430
Product key	DK1223
GTIN	4063151163099
Weight per piece (including packing)	116.4 g
Weight per piece (excluding packing)	116.4 g
Customs tariff number	85365019
Country of origin	DE

# MINI MCR-EX-NAM-2T-PT - Isolation switch amplifier



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## Technical data

### Product properties

Product type	Isolating switch amplifier
Product family	MINI Analog Pro
Configuration	DIP switches

### System properties

#### Functionality

Configuration	DIP switches
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### Electrical properties

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

#### Electrical isolation

Overvoltage category	II ( $\leq 5000$ m)
Pollution degree	2 ( $\leq 5000$ m)

#### Electrical isolation Input/output, power supply 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	Double/reinforced insulation

#### Electrical isolation Input/output, power supply IEC/EN 60079-11

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	265 V <sub>rms</sub>

#### Electrical isolation Input/output, power supply IEC/EN 60079-7

Standards/regulations	IEC/EN 60079-7
Rated insulation voltage	251 V <sub>rms</sub>

#### Supply

Nominal supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC (24 V DC, -20 % ... +25 %)
Power consumption	$\leq 650$ mW

### 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

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## Output data

Switching: Transistor

Output description	passive
Max. switching current	50 mA
Switching frequency	≤ 10 kHz ( $I_{OUT} \geq 5$ mA)
	≤ 20 kHz ( $I_{OUT} \geq 30$ mA (further information in the data sheet))

## 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> (with ferrule)
	0.14 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> (without ferrule)
Conductor cross-section flexible	0.14 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross-section AWG	24 ... 12 (flexible)

## 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 $C_i$	negligible
Max. output voltage $U_o$	10.1 V
Max. output current $I_o$	10.9 mA
Max. output power $P_o$	28 mW
Safety-related maximum voltage $U_m$	253 V AC (≤ 2000 m)
	125 V DC (≤ 2000 m)
	121 V AC (> 2000 m ... 3000 m)
	110 V DC (> 2000 m ... 3000 m)
	33 V AC/DC (> 3000 m ... 4000 m)
	33 V AC/DC (> 4000 m ... 5000 m)
IIA (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	300 mH / 93 μF
IIB/IIC (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	100 mH / 19.4 μF
IIC (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	300 mH / 2.87 μF
I (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	300 mH / 160 μF
IIB/IIA (mixed circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	100 mH / 1 μF

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IIIC (mixed circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	100 mH / 1 $\mu$ F
IIC (mixed circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	100 mH / 500 nF, 50 mH / 570 nF, 5 mH / 590 nF, 1 mH / 590 nF, 10 $\mu$ H / 590 nF
I/IIA/IIIC (mixed circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	100 mH / 1 $\mu$ F, 5 mH / 1 $\mu$ F, 1 mH / 1 $\mu$ F, 10 $\mu$ H / 1 $\mu$ F
I (mixed circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	100 mH / 1 $\mu$ F

## Signaling

Status display	Green LED (supply voltage)
	Yellow LED (switching state / status, lights up when output circuit is active)
	Red LED (line errors)

## Dimensions

Width	6.2 mm
Height	109.81 mm
Depth	119.2 mm

## Material specifications

Color	gray (RAL 7042)
Housing material	PBT

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	5 % ... 95 % (non-condensing)

### Altitude range (IEC/EN 61010-1)

Height range	> 2000 m ... 3000 m
Ambient temperature (operation)	-40 °C ... 63 °C
Rated insulation voltage	300 V <sub>rms</sub> (Input/output, power supply)
Insulation	Double/reinforced insulation

### Altitude range (IEC/EN 61010-1)

Height range	> 3000 m ... 4000 m
Ambient temperature (operation)	-40 °C ... 56 °C
Rated insulation voltage	300 V <sub>rms</sub> (Input/output, power supply)
Insulation	Double/reinforced insulation

### Altitude range (IEC/EN 61010-1)

Height range	> 4000 m ... 5000 m
Ambient temperature (operation)	-40 °C ... 49 °C
Rated insulation voltage	150 V <sub>rms</sub> (Input/output, power supply)

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Insulation	Double/reinforced insulation
Altitude range (IEC/EN 60079-11)	
Height range	> 2000 m ... 3000 m
Ambient temperature (operation)	-40 °C ... 63 °C
Rated insulation voltage	150 V <sub>rms</sub> (Input/output, power supply)
Altitude range (IEC/EN 60079-11)	
Height range	> 3000 m ... 4000 m
Ambient temperature (operation)	-40 °C ... 56 °C
Rated insulation voltage	60 V <sub>rms</sub> (Input/output, power supply)
Altitude range (IEC/EN 60079-11)	
Height range	> 4000 m ... 5000 m
Ambient temperature (operation)	-40 °C ... 49 °C
Rated insulation voltage	60 V <sub>rms</sub> (Input/output, power supply)
Altitude range (IEC/EN 60079-7)	
Height range	> 2000 m ... 3000 m
Ambient temperature (operation)	-40 °C ... 63 °C
Rated insulation voltage	162 V <sub>rms</sub> (Input/output, power supply)
Altitude range (IEC/EN 60079-7)	
Height range	> 3000 m ... 4000 m
Ambient temperature (operation)	-40 °C ... 56 °C
Rated insulation voltage	60 V <sub>rms</sub> (Input/output, power supply)
Altitude range (IEC/EN 60079-7)	
Height range	> 4000 m ... 5000 m
Ambient temperature (operation)	-40 °C ... 49 °C
Rated insulation voltage	60 V <sub>rms</sub> (Input/output, power supply)

## Approvals

### CE

Certificate	CE-compliant
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### 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 21 ATEX 1061 X

### IECEX

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

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	[Ex ia Ma] I
Certificate	IECEX IBE 21.0022 X

## CCC / China-Ex

Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec [ia Ga] IIC T4 Gc
Certificate	2023122316116235

## UL, USA/Canada

Identification	UL 61010-2-201 Listed
	Class I, Div. 1, Groups A, B, C, D
	Class II, Div. 1, Groups E, F, G
	Class III, Div. 1
	Class I, Zone 0, 1, 2, Groups IIC, IIB, IIA
	Class I, Div. 2, Groups A, B, C, D T4
	Class I, Zone 2
	AEx ec [ia Ga] IIC T4 Gc; AEx ec [ia IIIC Da] IIC T4 Gc
	Ex ec [ia Ga] IIC T4 Gc X; Ex ec [ia IIIC Da] IIC T4 Gc X
	Class I, Zone 0, [AEx ia Ga] IIC, [Ex ia Ga] IIC X
Class I, Zone 20, [AEx ia Da] IIIC, [Ex ia Da] IIIC X	
Certificate	ⓈⓂⓂ C.D.-No 097285872

## Shipbuilding approval

Certificate	DNV TAA00003FZ
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## Safety Integrity Level (SIL, IEC 61508)

Identification	3
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## INMETRO

Identification	[Ex ia Ma] I
	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec [ia Ga] IIC T4 Gc
Certificate	DNV 23.0188 X

## Shipbuilding data

Temperature	B
Humidity	B
Vibration	A
EMC	A
Enclosure	Required protection according to the Rules shall be provided upon installation on board

## EMC data

Electromagnetic compatibility	Tested in accordance with the following standards and regulations: EN 61326-1 For industrial use, NAMUR NE 21
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Noise immunity	EN 61000-6-2
Noise immunity	EN 61326-3-2

## Noise emission

Standards/regulations	EN 61000-6-4
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## 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 3836.4

## Mounting

Mounting type	DIN rail mounting
Mounting position	any

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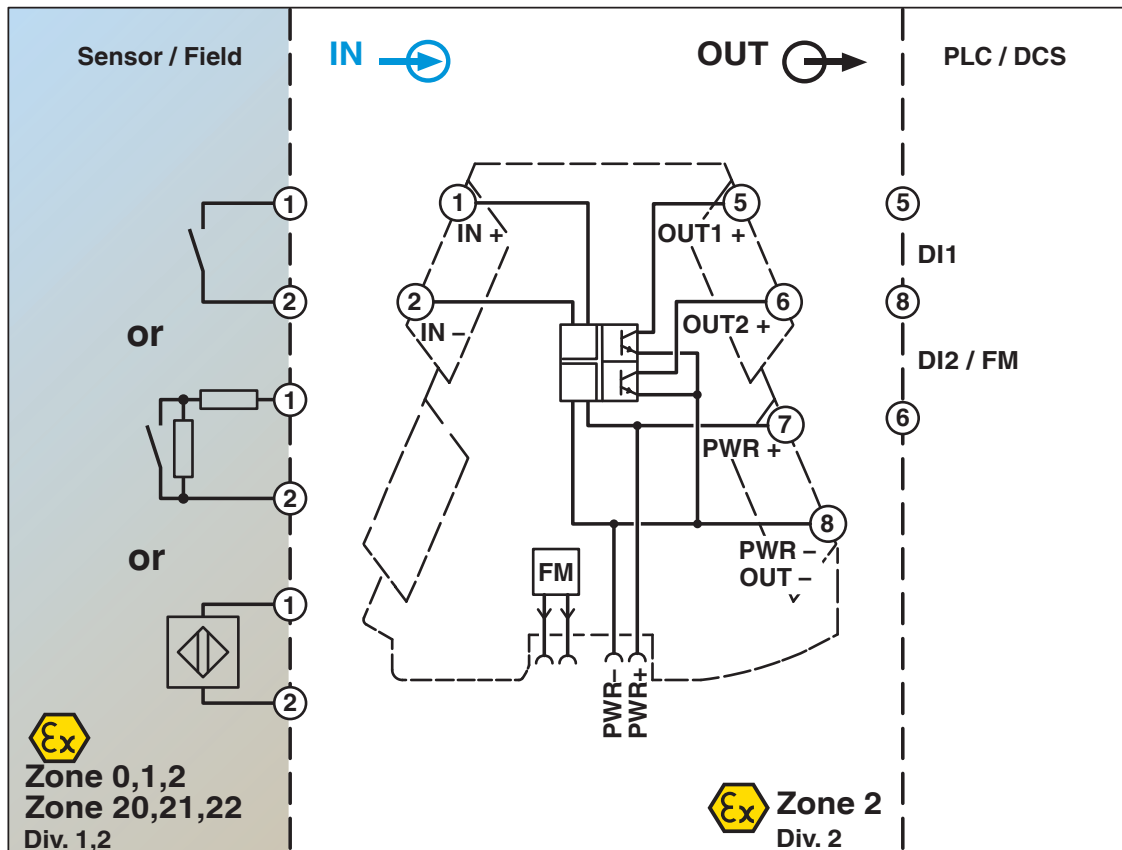


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## Drawings

Block diagram



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1157854>



**cULus Listed**

Approval ID: E238705



**Functional Safety**

Approval ID: 1435.IM.131623/19

**DNV**

Approval ID: TAA00003FZ



**cULus Listed**

Approval ID: E238705



**IECEx**

Approval ID: IECEx IBE 21.0022X



**ATEX**

Approval ID: IBExU21ATEX1061 X



**CCC**

Approval ID: 2023122316116235

**INMETRO**

Approval ID: DNV 23.0188 X



**cULus Listed**

Approval ID: E196811



**cULus Listed**

Approval ID: E196811

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## Classifications

### ECLASS

ECLASS-13.0	27210121
ECLASS-15.0	27210121

### ETIM

ETIM 10.0	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	153e2927-aa2f-4d54-b3d8-e478ae5edd31

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