MINI MCR-EX-NAM-2T - NAMUR isolation switch amplifier

1157852

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CRA-READY



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). number of channels: 1, Standard configuration, 3-way isolation, Line fault detection, Safety Integrity Level (SIL, IEC 61508): 3, Screw connection

Commercial data

Item number	1157852
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C430
Product key	DK1223
GTIN	4063151163303
Weight per piece (including packing)	122.1 g
Weight per piece (excluding packing)	122.1 g
Customs tariff number	85365019
Country of origin	DE

Technical data

Notes

Note on application

Note on application	As things stand now, we are preparing the product so that, as of December 11, 2027, it will comply with the requirements of the EU Cyber Resilience Act (CRA) based on the information currently available regarding the CRA.

Product properties

Product type	Isolating switch amplifier
Product family	MINI Analog Pro
No. of channels	1
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 (≤ 5000 m)
Pollution degree	2 (≤ 5000 m)

Electrical isolation Input/output, power supply IEC/EN 61010-1

Standards/regulations	IEC/EN 61010-1
Rated insulation voltage	300 V_{rms}
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_{rms}

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

Standards/regulations	IEC/EN 60079-7
Rated insulation voltage	251 V_{rms}

Supply

Nominal supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC (24 V DC, -20 % ... +25 %)
Power consumption	≤ 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

Output data

Switching: Transistor

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

Connection data

Connection method	Screw connection
Stripping length	10 mm
Screw thread	M3
Conductor cross-section rigid	0.2 mm² ... 1.5 mm² (with ferrule)
	0.14 mm² ... 2.5 mm² (without ferrule)
Conductor cross-section flexible	0.14 mm² ... 2.5 mm²
Conductor cross-section AWG	24 ... 12 (flexible)
Tightening torque	0.5 Nm ... 0.6 Nm

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/IIIC (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
IIIC (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	100 mH / 1 µF
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 µH / 590 nF
I/IIB/IIA/IIIC (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	100 mH / 1 µF, 5 mH / 1 µF, 1 mH / 1 µF, 10 µH / 1 µF
I (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	100 mH / 1 µF

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_{rms} (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_{rms} (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_{rms} (Input/output, power supply)
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_{rms} (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_{rms} (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_{rms} (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_{rms} (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_{rms} (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_{rms} (Input/output, power supply)

Approvals

CE

Certificate	CE-compliant

ATEX

Identification	Ⓔx I (M1) [Ex ia Ma] I
	Ⓔx II (1) G [Ex ia Ga] IIC
	Ⓔx II (1) D [Ex ia Da] IIIC
	Ⓔx II 3 (1) G Ex ec [ia Ga] IIC T4 Gc
Certificate	IBExU 21 ATEX 1061 X

IECEx

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

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

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	cULus C.D.-No 097285872

Shipbuilding approval

Certificate	DNV TAA00003FZ

Safety Integrity Level (SIL, IEC 61508)

Identification	3

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
Noise immunity	EN 61000-6-2
	EN 61326-3-2

Noise emission

Standards/regulations	EN 61000-6-4

Standards and regulations

Electrical isolation	3-way isolation

GB Standard

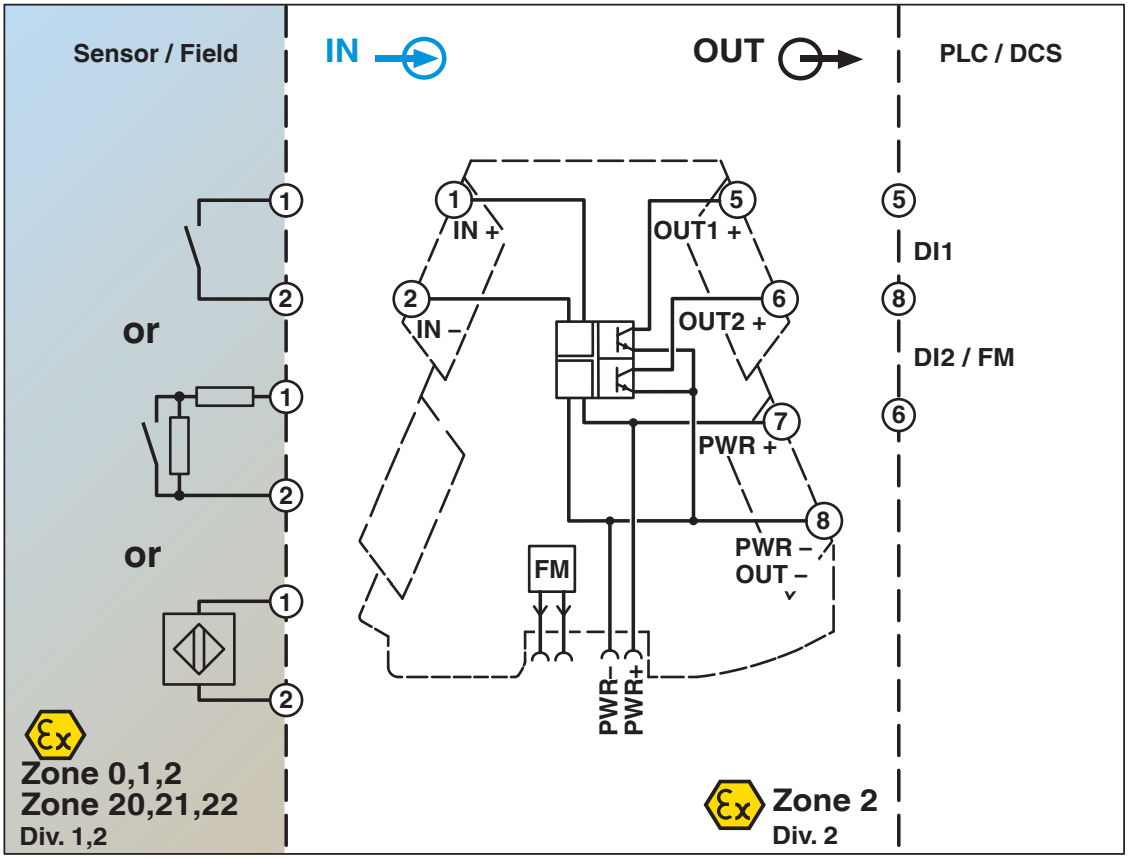
Standards/regulations	GB/T 3836.1
	GB/T 3836.3
	GB/T 3836.4

Mounting

Mounting type	DIN rail mounting
Mounting position	any

Drawings

Block diagram



Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/1157852

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

Classifications

ECLASS

ECLASS-13.0	27210121
ECLASS-15.0	27210121

ETIM

ETIM 10.0	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	2a5b527f-e640-4aa0-9fce-461e2a4c0656

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