

# MACX MCR-EX-SL-NAM-YO-SP - Isolation switch amplifier



2905724

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Ex i NAMUR isolation amplifier. For operating Ex i proximity sensors and switches in hazardous areas. Passive transistor output (resistive, Yokogawa-compatible), line fault transparency, up to SIL 2 according to IEC 61508; Push-in connection

## Your advantages

- Signal input: intrinsically safe [Ex ia]; for NAMUR proximity sensors (EN 60947-5-6) or switch contacts
- Signal output with resistive behavior (transistor), compatible with Yokogawa ProSafe DI card SDV 144
- Signal output with line fault transparency, line fault indication directly via the signal output
- Up to 5 kHz switching frequency
- Direction of operation can be selected
- Line fault detection (LFD) can be enabled and disabled
- SIL 2 according to IEC/EN 61508
- 3-way electrical isolation
- Power supply and error indication possible via DIN rail connector
- Plug-in connection terminals, push-in connection technology
- Installation in zone 2 permitted
- Housing width: 12.5 mm

## Commercial data

Item number	2905724
Packing unit	1 pc
Note	Made to order (non-returnable)
Sales key	C430
Product key	DK1213
GTIN	4046356992374
Weight per piece (including packing)	167 g
Weight per piece (excluding packing)	147.6 g
Customs tariff number	85365019
Country of origin	DE

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## Technical data

### Product properties

Product type	Isolating switch amplifier
Product family	MACX Analog
No. of channels	1
Configuration	DIP switches

Insulation characteristics: GB Standard

Overvoltage category	II
Pollution degree	2

### 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/output

Electrical isolation	375 V (Peak value in accordance with IEC/EN 60079-11)
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Electrical isolation Input/output/supply, DIN rail connector

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

Electrical isolation Input/supply, DIN rail connector

Electrical isolation	375 V (Peak value in accordance with IEC/EN 60079-11)
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Supported controller: YOKOGAWA ProSafe-RS

Suitable I/O card	SDV144
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Supply

Nominal supply voltage	24 V DC
Supply voltage range	9.6 V DC ... 30 V DC (12 V DC ... 24 V DC (-20 % ... +25 %))
Power dissipation	< 0.6 W
Power consumption	< 600 mW

### Input data

Signal: NAMUR

Description of the input	intrinsically safe
Number of inputs	1

NAMUR proximity sensors (IEC/EN 60947-5-6)

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Available input sources	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)
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

### Signal

Number of outputs	1
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## Connection data

Connection method	Push-in connection
Stripping length	8 mm
Conductor cross-section rigid	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section flexible	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section AWG	24 ... 16

### Test socket

Max. diameter	2.3 mm
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## Ex data

### Safety data

Max. internal inductance $L_i$	negligible
Max. internal capacitance $C_i$	negligible
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/DC
IIA (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	1000 mH / 210 μF
IIB/IIIC (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	1000 mH / 26 μF
IIC (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	300 mH / 3.6 μF
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
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, 1 mH / 600 nF, 10 μH / 600 nF

## Interfaces

### Data

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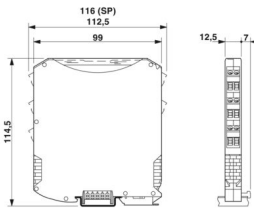
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No. of channels	0
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## Signaling

Status display	Green LED (supply voltage)
	LED yellow (switching state)
	Red LED (line errors)

## Dimensions

Dimensional drawing	
Width	12.5 mm
Height	116 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
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Safety Integrity Level (SIL)	2
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## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20 (not assessed by UL)
Ambient temperature (operation)	-20 °C ... 60 °C (Any mounting position)
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Altitude	≤ 2000 m
Permissible humidity (operation)	10 % ... 95 % (non-condensing)

## Approvals

### CE

Certificate	CE-compliant
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Note	and EN 61326
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## ATEX

Identification	⊕ II (1) G [Ex ia Ga] IIC
	⊕ II (1) D [Ex ia Da] IIIC
	⊕ II 3G Ex nA IIC T4 Gc X
Certificate	IBExU 12 ATEX 1169

## IECEX

Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex nA IIC T4 Gc
Certificate	IECEX IBE 12.0018X

## CCC / China-Ex

Identification	[Ex ia Ga] IIC
	[Ex iaD]
	Ex nA [ia Ga] IIC T4 Gc
Certificate	NEPSI GYJ20.1314X

## UL, USA/Canada

Identification	UL 61010 Listed
Certificate	ⓈⓂⓂ C.D.-No 83104549

## Safety Integrity Level (SIL, IEC 61508)

Identification	2
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## EAC Ex

Identification	ERC [Ex ia Ga] IIC
	ERC [Ex ia Da] IIIC
Certificate	RU C-DE.AB72.B.00093/19

## INMETRO

Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex nA IIC T4 Gc
Certificate	DNV 18.0144 X

## EMC data

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

## 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 3626.20
	GB 3836.1
	GB 3836.4
	GB 3836.8
	GB 12476.1
	GB 12476.4

## Mounting

Mounting type	DIN rail mounting
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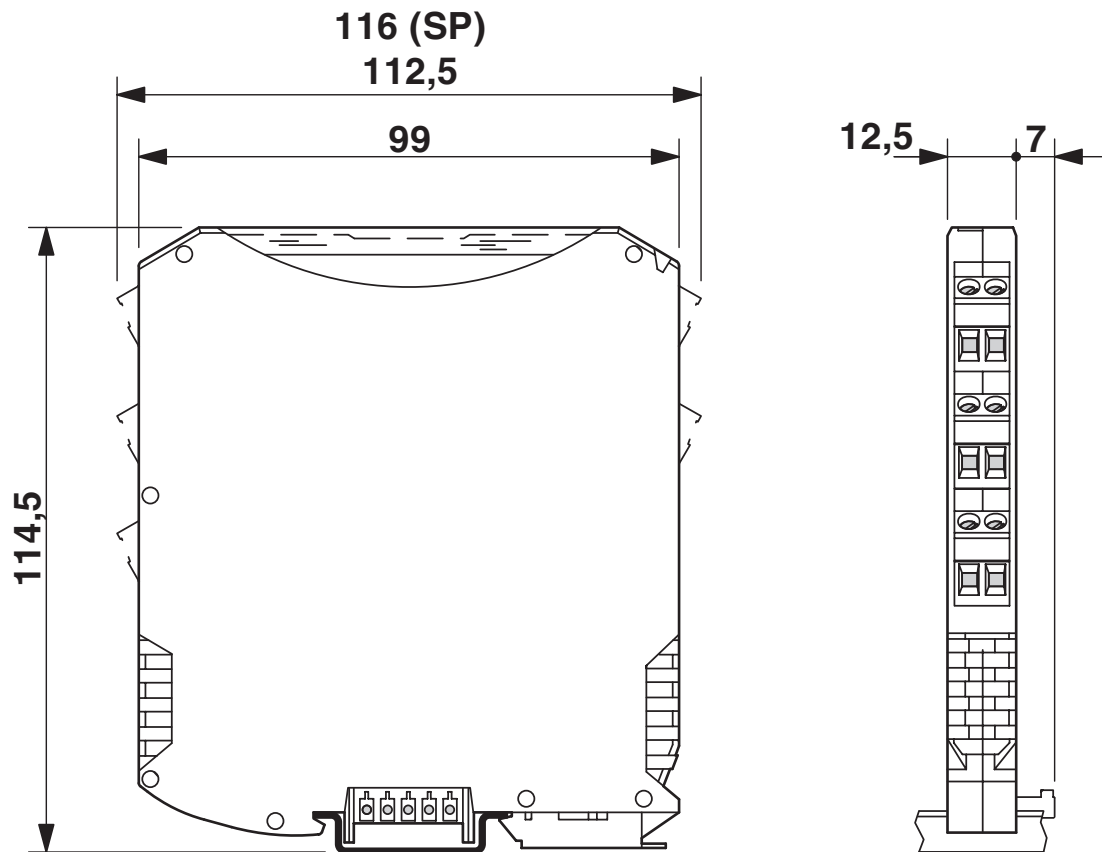


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## Drawings

Dimensional drawing



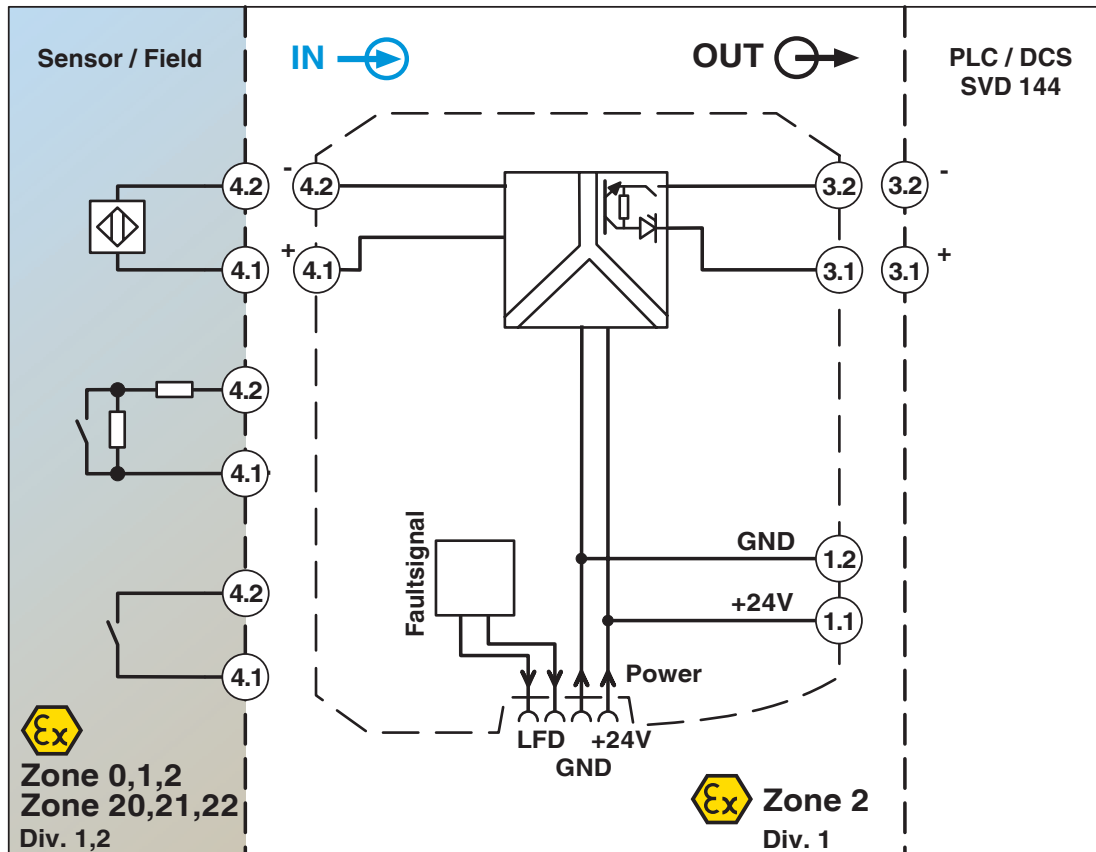
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Block diagram



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## Classifications

### 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)
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