

## Isolation amplifier - MACX MCR-EX-SL-NAM-YO-SP - 2905724

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Ex i NAMUR signal conditioners. 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 61508/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



### Key Commercial Data

Packing unit	1 pc
GTIN	
GTIN	4046356992374
Custom tariff number	85437090
Country of origin	Germany

# Isolation amplifier - MACX MCR-EX-SL-NAM-YO-SP - 2905724

## Technical data

### Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
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### Dimensions

Width	12.5 mm
Height	116 mm
Depth	114.5 mm

### Ambient conditions

Ambient temperature (operation)	-20 °C ... 60 °C (Any mounting position)
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Maximum altitude	≤ 2000 m
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Degree of protection	IP20 (not assessed by UL)
Noise immunity	EN 61000-6-2

### Input data

Non-load voltage	~ 8 V DC
Switching points (attenuated)	< 1.2 mA (blocking)
Switching points (unattenuated)	> 2.1 mA (conductive)
Signal input	Intrinsically safe
Available input sources	NAMUR proximity sensors (EN 60947-5-6)
Switching hysteresis	< 0.2 mA
Line fault detection	Break 0.05 mA < IIN < 0.35 mA
	Short circuit 100 Ω < RSensor < 360 Ω

### Output data

Switching output	Resistive (transistor, passive) compatible with Yokogawa ProSafe DI - SDV144
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### Power 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

### Connection data

Connection method	Push-in connection
Stripping length	8 mm
Conductor cross section solid	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>

# Isolation amplifier - MACX MCR-EX-SL-NAM-YO-SP - 2905724

## Technical data

### Connection data

Conductor cross section AWG	24 ... 16
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### Connection data 2

Connection name	Test socket
Max. diameter	2.3 mm

### General

No. of channels	1
Status display	Green LED (supply voltage) LED yellow (switching state) Red LED (line errors)
Degree of pollution	2
Overvoltage category	II
Electromagnetic compatibility	Conformance with EMC directive
Interference emission	EN 61000-6-4
Housing material	PA 6.6-FR
Color	gray
Designation	Input/output
Electrical isolation	375 V (Peak value in accordance with IEC/EN 60079-11)
Designation	Input/output/supply, DIN rail connector
Rated insulation voltage	300 V <sub>rms</sub>
Test voltage	2.5 kV AC (50 Hz, 1 min.)
Insulation	Safe isolation in accordance with IEC/EN 61010-1
Designation	Input/supply, DIN rail connector
Electrical isolation	375 V (Peak value in accordance with IEC/EN 60079-11)

### Safety characteristic data

Safety Integrity Level (SIL)	2
	2

### Safety data

Max. internal inductance L <sub>i</sub>	negligible
Max. internal capacitance C <sub>i</sub>	negligible
Max. output voltage U <sub>o</sub>	9.6 V
Max. output current I <sub>o</sub>	10 mA
Max. output power P <sub>o</sub>	25 mW
Group	IIC
Max. external inductivity L <sub>o</sub>	300 mH
Max. external capacitance C <sub>o</sub>	3.6 µF

# Isolation amplifier - MACX MCR-EX-SL-NAM-YO-SP - 2905724

## Technical data

### Safety data

Additional text	simple circuit
Group	IIC
Max. external inductivity $L_o$	100 mH
Max. external capacitance $C_o$	510 nF
Additional text	mixed circuit
Group	IIC
Max. external inductivity $L_o$	50 mH
Max. external capacitance $C_o$	580 nF
Additional text	mixed circuit
Group	IIC
Max. external inductivity $L_o$	5 mH
Max. external capacitance $C_o$	600 nF
Additional text	mixed circuit
Group	IIC
Max. external inductivity $L_o$	1 mH
Max. external capacitance $C_o$	600 nF
Additional text	mixed circuit
Group	IIC
Max. external inductivity $L_o$	10 $\mu$ H
Max. external capacitance $C_o$	600 nF
Additional text	mixed circuit
Group	IIB/IIIC
Max. external inductivity $L_o$	1000 mH
Max. external capacitance $C_o$	26 $\mu$ F
Additional text	simple circuit
Group	IIB/IIA/IIIC
Max. external inductivity $L_o$	100 mH
Max. external capacitance $C_o$	1 $\mu$ F
Additional text	mixed circuit
Group	IIB/IIA/IIIC
Max. external inductivity $L_o$	5 mH
Max. external capacitance $C_o$	1 $\mu$ F
Additional text	mixed circuit
Group	IIB/IIA/IIIC
Max. external inductivity $L_o$	1 mH
Max. external capacitance $C_o$	1 $\mu$ F

# Isolation amplifier - MACX MCR-EX-SL-NAM-YO-SP - 2905724

## Technical data

### Safety data

Additional text	mixed circuit
Group	IIB/IIA/IIIC
Max. external inductivity $L_o$	10 $\mu$ H
Max. external capacitance $C_o$	1 $\mu$ F
Additional text	mixed circuit
Safety-related maximum voltage $U_m$	253 V AC/DC

### Standards and Regulations

Electromagnetic compatibility	Conformance with EMC directive
Noise emission	EN 61000-6-4
Designation	GB Standard
Standards/regulations	GB 3626.20
	GB 3836.1
	GB 3836.4
	GB 3836.8
	GB 12476.1
	GB 12476.4
Conformance	CE-compliant, additionally EN 61326
ATEX	# II (1) G [Ex ia Ga] IIC
	# II (1) D [Ex ia Da] IIIC
	# II 3G Ex nA IIC T4 Gc X
IECEX	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex nA IIC T4 Gc
UL, USA/Canada	UL 61010 Listed
Group	IIC
	IIC
	IIC
	IIC
	IIC
	IIC

### Conformance/approvals

Designation	CE
Identification	CE-compliant
Additional text	and EN 61326
Designation	ATEX
Identification	# II (1) G [Ex ia Ga] IIC

# Isolation amplifier - MACX MCR-EX-SL-NAM-YO-SP - 2905724

## Technical data

### Conformance/approvals

	# II (1) D [Ex ia Da] IIIC
	# II 3G Ex nA IIC T4 Gc X
Certificate	IBExU 12 ATEX 1169
Designation	IECEX
Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex nA IIC T4 Gc
Certificate	IECEX IBE 12.0018X
Designation	CCC / China-Ex
Identification	[Ex ia Ga] IIC
	[Ex iaD]
	Ex nA [ia Ga] IIC T4 Gc
Certificate	NEPSI GYJ20.1314X
Designation	UL, USA/Canada
Identification	UL 61010 Listed
Certificate	#, C.D.-No 83104549
Designation	Safety Integrity Level (SIL, IEC 61508)
Identification	2
Designation	EAC Ex
Identification	# [Ex ia Ga] IIC
	# [Ex ia Da] IIIC
Certificate	RU C-DE.AB72.B.00093/19
Designation	INMETRO
Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex nA IIC T4 Gc
Certificate	DNV 18.0144 X

### Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50 years
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

## Classifications

eCl@ss

eCl@ss 10.0.1	27210121
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## Classifications

### eCl@ss

eCl@ss 11.0	27210121
eCl@ss 4.0	27210100
eCl@ss 4.1	27210100
eCl@ss 5.0	27210100
eCl@ss 5.1	27210100
eCl@ss 6.0	27210100
eCl@ss 7.0	27210121
eCl@ss 9.0	27210121

### ETIM

ETIM 2.0	EC001485
ETIM 3.0	EC001485
ETIM 4.0	EC001485
ETIM 6.0	EC001485
ETIM 7.0	EC001485

### UNSPSC

UNSPSC 13.2	39121008
UNSPSC 18.0	39121008
UNSPSC 19.0	39121008
UNSPSC 20.0	39121008
UNSPSC 21.0	39121008

## Approvals

### Approvals

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#### Approvals

Functional Safety / CCC

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#### Ex Approvals

IECEx / ATEX / EAC Ex / ATEX / INMETRO

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### Approval details

Functional Safety	12/06-054 R016 V2R0
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## Approvals

CCC		2020322 316001584
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