

## Isolation amplifier - MACX MCR-EX-SL-NAM-HO - 2907404

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Ex i NAMUR signal conditioners. For operating Ex i proximity sensors and switches in hazardous areas. Passive transistor output (resistive, Honeywell-compatible), line fault transparency, up to SIL 2 according to IEC 61508; screw 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 FC-RUSIO-3224 and FC-RUSLS-3224 universal safety IO modules from Honeywell
- ✔ 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, screw connection technology
- ✔ Installation in zone 2 permitted
- ✔ Housing width: 12.5 mm



COMPLETE RoHS

### Key Commercial Data

Packing unit	1 pc
GTIN	 4 055626 200309
GTIN	4055626200309
Weight per Piece (excluding packing)	150.400 g
Custom tariff number	85437090
Country of origin	Germany
Note	Made to Order (non-returnable)

### Technical data

Note

# Isolation amplifier - MACX MCR-EX-SL-NAM-HO - 2907404

## 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	112.5 mm
Depth	113.7 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 FC-RUSIO-3224 and FC-RUSLS-3224
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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	Screw connection
Stripping length	7 mm
Conductor cross section solid	0.2 mm² ... 2.5 mm²
Conductor cross section flexible	0.2 mm² ... 2.5 mm²
Conductor cross section AWG	24 ... 14
Torque	0.5 Nm ... 0.6 Nm

### Connection data 2

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## Technical data

### 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 EN 60079-11)
Designation	Input/output/supply, DIN rail connector
Electrical isolation	300 V <sub>rms</sub> (Rated insulation voltage (overvoltage category II; degree of pollution 2, safe isolation as per EN 61010-1)) 2.5 kV (50 Hz, 1 min., test voltage)
Designation	Input/supply, DIN rail connector
Electrical isolation	375 V (Peak value in accordance with EN 60079-11)
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
SIL	2

### Safety characteristic data

Safety Integrity Level (SIL)	1
	1

### 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

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## Technical data

### Safety data

Group	IIC
Max. external inductivity $L_o$	300 mH
Max. external capacitance $C_o$	3.6 $\mu$ F
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
Additional text	mixed circuit

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## Technical data

### Safety data

Group	IIB/IIA/IIIC
Max. external inductivity L <sub>o</sub>	10 µH
Max. external capacitance C <sub>o</sub>	1 µF
Additional text	mixed circuit
Safety-related maximum voltage U <sub>m</sub>	253 V AC/DC

### Standards and Regulations

Electromagnetic compatibility	Conformance with EMC directive
Noise emission	EN 61000-6-4
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

### 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 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 8.0	27210121
eCl@ss 9.0	27210121

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## Classifications

### ETIM

ETIM 2.0	EC001485
ETIM 3.0	EC001485
ETIM 4.0	EC001485
ETIM 5.0	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 / EAC

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Ex Approvals

IECEX / ATEX

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### Approval details

Functional Safety	12/06-054 R016 V2R0
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EAC		RU C- DE.A*30.B.01082
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## Accessories

Accessories

Device marking

## Isolation amplifier - MACX MCR-EX-SL-NAM-HO - 2907404

### Accessories

#### Plastic label - UC-EMLP (11X9) - 0819291



Plastic label, Sheet, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

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#### Plastic label - UC-EMLP (11X9) YE - 0822602



Plastic label, Sheet, yellow, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

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#### Plastic label - UC-EMLP (11X9) SR - 0828094



Plastic label, Sheet, silver, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

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#### Plastic label - US-EMLP (11X9) - 0828789



Plastic label, Card, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 135

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#### Plastic label - US-EMLP (11X9) YE - 0828871



Plastic label, Card, yellow, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 135

## Isolation amplifier - MACX MCR-EX-SL-NAM-HO - 2907404

### Accessories

#### Plastic label - US-EMLP (11X9) SR - 0828872



Plastic label, Card, silver, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 135

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#### Device marker - LS-EMLP (11X9) WH - 0831678



Device marker, Sheet, white, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255

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#### Device marker - LS-EMLP (11X9) YE - 0831732



Device marker, Sheet, yellow, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255

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#### Device marker - LS-EMLP (11X9) SR - 0831705



Device marker, Sheet, silver, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255

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### DIN rail connector

#### DIN rail bus connectors - ME 6,2 TBUS-2 1,5/5-ST-3,81 GN - 2869728



DIN rail connector for DIN rail mounting. Universal for TBUS housing. Gold-plated contacts, 5-pos.

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### End cover



## Isolation amplifier - MACX MCR-EX-SL-NAM-HO - 2907404

### Accessories

End cover - D-UKK 3/5 - 2770024



End cover, length: 56 mm, width: 2.5 mm, height: 52 mm, color: gray

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End cover - D-UKK 3/5 BU - 2770105



End cover, length: 56 mm, width: 2.5 mm, height: 62 mm, color: blue

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### Insulating sleeve

Insulating sleeve - MPS-IH BK - 0201731



Insulating sleeve, color: black

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Insulating sleeve - MPS-IH GY - 0201728



Insulating sleeve, color: gray

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Insulating sleeve - MPS-IH GN - 0201702



Insulating sleeve, color: green

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## Isolation amplifier - MACX MCR-EX-SL-NAM-HO - 2907404

### Accessories

Insulating sleeve - MPS-IH YE - 0201692

Insulating sleeve, color: yellow



Insulating sleeve - MPS-IH BU - 0201689

Insulating sleeve, color: blue



Insulating sleeve - MPS-IH RD - 0201676

Insulating sleeve, color: red



Insulating sleeve - MPS-IH WH - 0201663

Insulating sleeve, color: white



### Labeled device marker

Plastic label - UC-EMLP (11X9) CUS - 0824547



Plastic label, can be ordered: by sheet, white, labeled according to customer specifications, mounting type: adhesive, lettering field size: 11 x 9 mm

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## Isolation amplifier - MACX MCR-EX-SL-NAM-HO - 2907404

### Accessories

Plastic label - UC-EMLP (11X9) YE CUS - 0824548



Plastic label, can be ordered: by sheet, yellow, labeled according to customer specifications, mounting type: adhesive, lettering field size: 11 x 9 mm

Plastic label - UC-EMLP (11X9) SR CUS - 0828098



Plastic label, can be ordered: by sheet, silver, labeled according to customer specifications, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

### Module carrier

Module carrier - TC-D37SUB-ADIO16-EX-P-UNI - 2924854



Universal termination carrier for connecting 16 MACX Analog Ex i signal conditioners to digital or analog I/O cards, via D-SUB connector, 37-pos. (1:1 connection)

Module carrier - TC-D37SUB-AIO16-EX-PS-UNI - 2902932



Universal termination carrier for connecting 16 MACX Analog Ex i signal conditioners to digital or analog I/O cards, via D-SUB connector, 37-pos. (1:1 connection), with HART multiplexer connection

### Power module

Power and error message module - MACX MCR-PTB - 2865625



Power and fault signaling module with screw connection, including corresponding ME 17,5 TBUS 1,5/ 5-ST-3,81 GY DIN rail connector

## Isolation amplifier - MACX MCR-EX-SL-NAM-HO - 2907404

### Accessories

Power and error message module - MACX MCR-PTB-SP - 2924184



Power and fault signaling module with Push-in connection, including corresponding ME 17,5 TBUS 1,5/ 5-ST-3,81 GY DIN rail connector

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Test plug terminal block

Test plugs - MPS-MT - 0201744



Test plugs, with solder connection up to 1 mm<sup>2</sup> conductor cross section, color: gray

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Component terminal block - UKK 5-2R/NAMUR - 2941662



Double-level terminal block, with preassembled resistors