

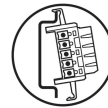
# MACX MCR-EX-SL-2NAM-RO

Order No.: 2865476




<http://eshop.phoenixcontact.de/phoenix/treeViewClick.do?UID=2865476>

Ex-i NAMUR isolating amplifier, 2-channel. For operating proximity sensors and switches in Ex areas. The signals are transmitted via relay outputs (N/O contact) to the safe area. Line fault detection (LFD), 3-way isolation, SIL 2.



## Commercial data

GTIN (EAN)	 4 046356 160490
sales group	H722
Pack	1 pcs.
Customs tariff	85437090
Catalog page information	Page 437 (IF-2009)

## Product notes

WEEE/RoHS-compliant since:  
02/22/2008



<http://www.download.phoenixcontact.com>  
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## Technical data

### Measuring input

Non-load voltage	8 V DC $\pm$ 10 %
Switching points (attenuated)	< 1.2 mA (blocking)
Switching points (unattenuated)	> 2.1 mA (conductive)

### Measurement output

Switching output	Relay output
Contact type	2 N/O contacts
Contact material	AgSnO <sub>2</sub> , hard gold-plated
Maximum switching voltage	250 V AC (2 A)
	120 V DC (0.2 A)
	30 V DC (2 A)
Max. switching power	500 VA
Mechanical service life	10 <sup>7</sup> cycles

### Power supply

Nominal supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC
Max. current consumption	35 mA (24 V DC)
Power consumption	< 1 W

### Connection data

Conductor cross section solid min.	0.2 mm <sup>2</sup>
Conductor cross section solid max.	2.5 mm <sup>2</sup>
Conductor cross section stranded min.	0.2 mm <sup>2</sup>
Conductor cross section stranded max.	2.5 mm <sup>2</sup>
Conductor cross section AWG/kcmil min.	24
Conductor cross section AWG/kcmil max	14
Stripping length	8 mm
Screw thread	M3
Type of connection	Screw connection
Tightening torque, min	0.5 Nm
Tightening torque max	0.6 Nm

### General data

No. of channels	2
Ambient temperature (operation)	-20 °C ... 60 °C (Any mounting position)
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Permissible humidity (operation)	5 % ... 95 % (no condensation)
Status display	Green LED (supply voltage)
	LED yellow (switching state)
	Red LED (line errors)

Width	12.5 mm
Height	99 mm
Depth	114.5 mm
Inflammability class acc. to UL 94	V0
Housing material	PA 66-FR
Color	green
Conformance	CE-compliant, additionally EN 61326
ATEX	II (1) GD [Ex ia] IIC
	Ex II 3 G Ex nAC IIC T4 X
IECEX	[Ex ia] IIC; [Ex iaD]; Ex nAC IIC T4 X
UL, USA / Canada	Class I Div 2; IS for Class I, II, III Div 1
Functional safety (SIL)	SIL 2 according to EN 61508

**Safety characteristic data**

Integrity requirement	for IEC 61508 - Low demand
Designation	Non-inverted operation
Equipment type	Type A
Safety Integrity Level (SIL)	Up to 2
Safe Failure Fraction (SFF)	78 %
$\lambda_{SU}$	$2.49 \times 10^{-7}$ (249 FIT)
$\lambda_{SD}$	$6 \times 10^{-9}$ (6 FIT)
$\lambda_{DU}$	$6.4 \times 10^{-8}$ (64 FIT)
$\lambda_{DD}$	$7 \times 10^{-9}$ (7 FIT)
Probability of a hazardous failure on demand (PFD <sub>AVG</sub> )	$3.09 \times 10^{-4}$ (1 year)
	$6.17 \times 10^{-4}$ (2 years)
	$1.54 \times 10^{-3}$ (5 years)
Diagnostic coverage (DC)	(DC <sub>S</sub> = 2.4%, DC <sub>D</sub> = 9%)
Integrity requirement	for IEC 61508 - Low demand
Designation	Inverted operation
Equipment type	Type A
Safety Integrity Level (SIL)	Up to 2
Safe Failure Fraction (SFF)	78 %
$\lambda_{SU}$	$2.48 \times 10^{-7}$ (248 FIT)
$\lambda_{SD}$	$1 \times 10^{-9}$ (1 FIT)

$\lambda_{DU}$	$6.2 \times 10^{-8}$ (62 FIT)
$\lambda_{DD}$	$6 \times 10^{-9}$ (6 FIT)
Probability of a hazardous failure on demand (PFD <sub>AVG</sub> )	$3.01 \times 10^{-4}$ (1 year)
	$6.02 \times 10^{-4}$ (2 years)
	$1.5 \times 10^{-3}$ (5 years)
Diagnostic coverage (DC)	(DC <sub>S</sub> = 0.4%, DC <sub>D</sub> = 8%)

### Safety data

Max. voltage U <sub>o</sub>	9.6 V
Max. current I <sub>o</sub>	10.3 mA
Max. power P <sub>o</sub>	25 mW

### Certificates / Approvals



Certification

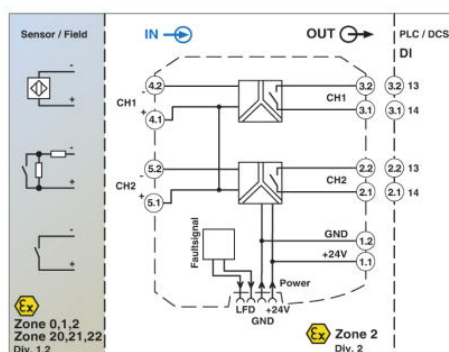
CUL Listed, GL, UL Listed

Certification Ex:

CUL-EX LIS, IECEx, PxC-EX, UL-EX LIS

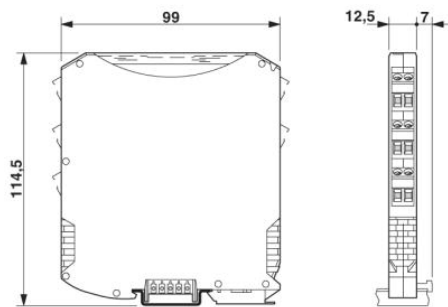
### Diagrams/Drawings

Block diagram



Dimensioned drawing

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**Address**

PHOENIX CONTACT Inc., USA  
586 Fulling Mill Road  
Middletown, PA 17057, USA  
Phone (800) 888-7388  
Fax (717) 944-1625  
<http://www.phoenixcon.com>



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