

## MACX MCR-EX-SL-IDSII-SP

Order No.: 2924032

The illustration shows the versions with screw connection



Ex-i output isolating amplifier, HART. Isolates and sends intrinsically safe 0/4-20 mA signals to a load (I/P converters, control valves, displays) in Ex areas. Electrical 3-way isolation, wire break recognition, SIL 2 in accordance with IEC 61508, spring-cage connection.

**SIL 2**

Commercial data	
EAN	4046356337342
Pack	1
Customs tariff	85389091
Weight/Piece	137.80 g
Country of Origin	DE
Catalog page information	Page 434 (IF-2009)

**Product notes**WEEE/RoHS-compliant since:  
27/04/2009

Please note that the data given here has been taken from the online catalog. For comprehensive information and data, please refer to the user documentation at <http://www.download.phoenixcontact.com>. The General Terms and Conditions of Use apply to Internet downloads.

**Technical data**

Measuring input	
Current input signal	0 mA ... 20 mA
	4 mA ... 20 mA
Input voltage limitation	5.4 V (at 20 mA)

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**Measurement output**

Signal output	Current output
Current output signal	0 mA ... 20 mA
	4 mA ... 20 mA
Load/output load current output	< 800 $\Omega$ (at 20 mA)

**Power supply**

Supply voltage range	19.2 V DC ... 30 V DC
Max. current consumption	< 46 mA (at 24 V DC / 20 mA)
Power consumption	< 1.1 W (at 24 V DC / 20 mA)

**Connection data**

Conductor cross section solid min.	0.2 mm <sup>2</sup>
Conductor cross section solid max.	1.5 mm <sup>2</sup>
Conductor cross section stranded min.	0.2 mm <sup>2</sup>
Conductor cross section stranded max.	1.5 mm <sup>2</sup>
Conductor cross section AWG/kcmil min.	24
Conductor cross section AWG/kcmil max	16
Stripping length	7 mm
Type of connection	Spring-cage conn.

**General data**

No. of channels	1
Maximum transmission error	< 0.1 % (of final value)
Maximum temperature coefficient	< 0.01 %/K
Ambient temperature (operation)	-20 °C ... 60 °C (Any mounting position)
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Permissible humidity (operation)	10 % ... 95 % (no condensation)
Step response (10-90%)	< 140 $\mu$ s
Status display	Green LED (supply voltage)
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

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ATEX	II (1) GD [Ex ia] IIC
	Ex II 3 (1GD) G Ex nA [ia] IIC T4
IECEX	[Ex ia] IIC; Ex nA[ia] IIC T4
UL, USA / Canada	UL applied for
Functional safety (SIL)	SIL 2 according to EN 61508

#### Data communication (bypass)

HART function	Yes
Protocols supported	HART

#### Safety characteristic data

Integrity requirement	for IEC 61508 - Low demand
Equipment type	Type A
Safety integrity level (SIL)	Up to 2
Safe Failure Fraction (SFF)	94.68 %
$\lambda_{SU}$	$4.965 \times 10^{-7}$ (496.5 FIT)
$\lambda_{SD}$	0
$\lambda_{DU}$	$2.79 \times 10^{-8}$ (27.9 FIT)
$\lambda_{DD}$	0
Probability of a hazardous failure on demand (PFD <sub>AVG</sub> )	$1,22 \times 10^{-4}$ (1 Jahr)
	$6,1 \times 10^{-4}$ (5 Jahre)
	$12,2 \times 10^{-4}$ (10 Jahre)
Diagnostic coverage (DC)	(DC <sub>S</sub> = 0%, DC <sub>D</sub> = 0%)
Integrity requirement	for IEC 61508 - High demand
Equipment type	Type A
Safety integrity level (SIL)	Up to 2
Safe Failure Fraction (SFF)	94.68 %
$\lambda_{SU}$	$4.965 \times 10^{-7}$ (496.5 FIT)
$\lambda_{SD}$	0
$\lambda_{DU}$	$2.79 \times 10^{-8}$ (27.9 FIT)
$\lambda_{DD}$	0
Probability of a hazardous failure per hour (PFH <sub>D</sub> )	$2,79 \times 10^{-8}$
Diagnostic coverage (DC)	(DC <sub>S</sub> = 0%, DC <sub>D</sub> = 0%)

### Safety data

Max. voltage $U_o$	27.7 V
Max. current $I_o$	92 mA
Max. power $P_o$	633 mW
Gas group	II C
Max. external inductivity $L_o$	2 mH
Max. external capacity $C_o$	85 nF

### Certificates



Certification

CUL Listed, UL Listed

Certification Ex:

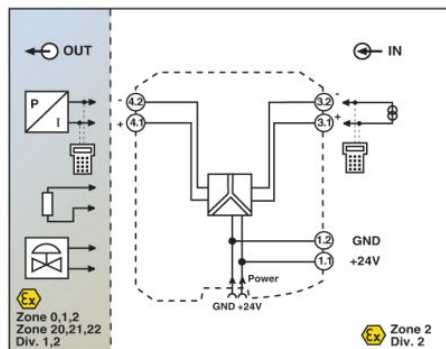
IECEX

Certifications applied for:

UL-EX LIS / CUL-EX LIS

### Drawings

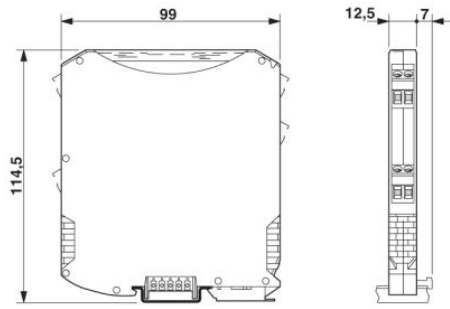
Block diagram



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Dimensioned drawing

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