

## Output signal conditioner - MACX MCR-SL-IDS1-I - 2865971

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Output signal conditioner, HART. Isolates and transfers 0/4-20 mA signals to a load (I/P converters, control valves, displays). 3-way electrical isolation, line fault detection, SIL 2 as per IEC 61508.

### Product Features

- Power supply possible via DIN rail connector
- Up to SIL 2 according to EN 61508
- Installation in zone 2, protection type "n" (EN 60079-15) permitted
- Line fault detection (LFD)
- 3-way electrical isolation
- Plug-in screw or spring-cage connection technology (Push-in technology), with integrated sockets for HART communicators
- Bidirectional transmission of digital HART communication signals
- 0/4 ... 20 mA input
- 0/4 ... 20 mA output



### Key Commercial Data

Packing unit	1 pc
Weight per Piece (excluding packing)	140.0 g
Custom tariff number	85437090
Country of origin	Germany

### Technical data

#### Note

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

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## Technical data

### Dimensions

Width	12.5 mm
Height	99 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)
Noise immunity	EN 61000-6-2 When being exposed to interference, there may be minimal deviations.
Degree of protection	IP20

### Input data

Current input signal	0 mA ... 20 mA
	4 mA ... 20 mA
Input voltage limitation	5.4 V (at 20 mA)
Input impedance	> 100 kΩ (If there is a line fault)

### Output data

Signal output	Current output
Current output signal	0 mA ... 20 mA
	4 mA ... 20 mA
Transmission Behavior	1:1 to input signal
Load/output load current output	< 800 Ω (20 mA)
	< 730 Ω (22.5 mA)
Output ripple	< 20 mV <sub>rms</sub>

### Power supply

Nominal supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC (24 V DC -20%...+25%)
Max. current consumption	< 46 mA (24 V DC / 20 mA)
Power consumption	< 1.1 W (24 V DC / 20 mA)

### 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 flexible min.	0.2 mm <sup>2</sup>
Conductor cross section flexible max.	2.5 mm <sup>2</sup>
Conductor cross section AWG min.	24

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### Connection data

Conductor cross section AWG max.	14
Stripping length	7 mm
Screw thread	M3
Connection method	Screw connection
Tightening torque, min	0.5 Nm
Tightening torque max	0.6 Nm

### General

No. of channels	1
Maximum transmission error	< 0.1 % (of final value)
Maximum temperature coefficient	< 0.01 %/K
Step response (10-90%)	< 140 µs (for 4 mA ... 20 mA step)
Status display	Green LED (supply voltage)
Flammability rating according to UL 94	V0
Degree of pollution	2
Overvoltage category	II
Emitted interference	EN 61000-6-4
Housing material	PA 66-FR
Color	green
Designation	Input/output/power supply
Electrical isolation	1.5 kV (50 Hz, 1 min., test voltage)
	300 V <sub>rms</sub> (Rated insulation voltage (overvoltage category II, degree of pollution 2))
Designation	Input/output
Electrical isolation	375 V (Peak value in accordance with EN 60079-11)
Designation	Output/supply
Electrical isolation	375 V (Peak value in accordance with EN 60079-11)
Conformance	CE-compliant, additionally EN 61326-1
ATEX	# II 3 G Ex nA IIC T4 Gc X
UL, USA / Canada	UL 508 Listed
	UL 61010 Listed
	Class I, Div. 2, Groups A, B, C, D T4
	Class I, Zone 2, Group IIC T4
GL	C, EMC1

### Data communication (bypass)

HART function	Yes
Protocols supported	HART

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## Technical data

### Safety characteristic data

Integrity requirement	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 year)
	$6.1 \times 10^{-4}$ (5 years)
	$12.2 \times 10^{-4}$ (10 years)
Diagnostic coverage (DC)	DC <sub>S</sub> = 0%, DC <sub>D</sub> = 0%
Integrity requirement	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%

### EMC data

Designation	Electromagnetic RF field
Standards/regulations	EN 61000-4-3

### Standards and Regulations

Noise emission	EN 61000-6-4
Designation	Electromagnetic RF field
Standards/regulations	EN 61000-4-3
Flammability rating according to UL 94	V0
Conformance	CE-compliant, additionally EN 61326-1
ATEX	# II 3 G Ex nA IIC T4 Gc X
UL, USA / Canada	UL 508 Listed
	UL 61010 Listed
	Class I, Div. 2, Groups A, B, C, D T4

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## Technical data

### Standards and Regulations

	Class I, Zone 2, Group IIC T4
GL	C, EMC1

## Classifications

### eCl@ss

eCl@ss 4.0	27210121
eCl@ss 4.1	27210121
eCl@ss 5.0	27210121
eCl@ss 5.1	27210121
eCl@ss 6.0	27210121
eCl@ss 7.0	27210121
eCl@ss 8.0	27210121

### ETIM

ETIM 2.0	EC001431
ETIM 3.0	EC001596
ETIM 4.0	EC002653
ETIM 5.0	EC002653

### UNSPSC

UNSPSC 6.01	30211506
UNSPSC 7.0901	39121008
UNSPSC 11	39121008
UNSPSC 12.01	39121008
UNSPSC 13.2	39121008

## Approvals

### Approvals

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#### Approvals

Functional Safety / UL Listed / cUL Listed / EAC / cULus Listed

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#### Ex Approvals

UL Listed / cUL Listed / ATEX / cULus Listed

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# Output signal conditioner - MACX MCR-SL-IDS1-I - 2865971

## Approvals

Approvals submitted

### Approval details

Functional Safety

UL Listed

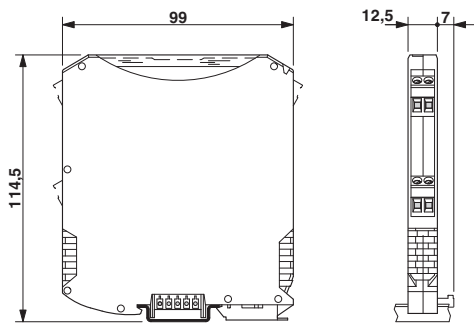
cUL Listed

EAC

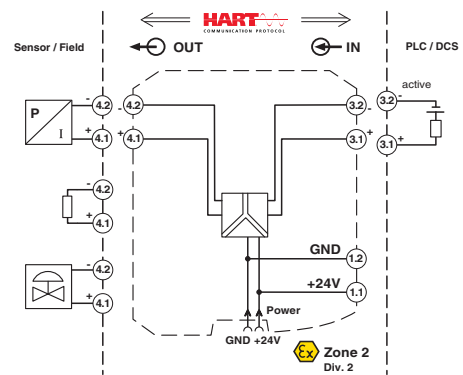
cULus Listed

## Drawings

Dimensional drawing



Block diagram



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