

# MACX MCR-EX-SL-IDS-I - Output signal conditioner



2865405

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Ex i output signal conditioner, HART. Isolates and transmits 0/4 - 20 mA signals with intrinsic safety to a load (I/P converters, regulating valves, displays) in the Ex area. Open-circuit detection, SIL 2 in accordance with IEC 61508. Replacement item: 2908060 MACX MCR-EX-IDS-I-I.

## Your advantages

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

## Commercial data

Item number	2865405
Packing unit	1 pc
Note	Made to order (non-returnable)
Sales key	C430
Product key	DK1212
GTIN	4046356160421
Weight per piece (including packing)	175.5 g
Weight per piece (excluding packing)	139.3 g
Customs tariff number	85437090
Country of origin	DE

## Technical data

### Product properties

Product type	Output signal conditioner
Application	Analog OUT
No. of channels	1

### Insulation characteristics

Overvoltage category	II
Pollution degree	2

### Electrical properties

Electrical isolation between input and output	yes
Maximum power dissipation for nominal condition	< 1.1 W (24 V DC / 20 mA)
Signal transmission behavior	In = Out
Step response (10-90%)	< 140 $\mu$ s (for 4 mA ... 20 mA step)
Maximum temperature coefficient	< 0.01 %/K
Maximum transmission error	< 0.1 % (of final value)

### Electrical isolation Input/output/power supply

Test voltage	1.5 kV AC (50 Hz, 60 s)
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### Electrical isolation Output/input

Electrical isolation	375 V (Peak value in accordance with IEC/EN 60079-11)
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### Electrical isolation Output/supply

Electrical isolation	375 V (Peak value in accordance with IEC/EN 60079-11)
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### Supply

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 dissipation	< 1.1 W (24 V DC / 20 mA)

### Input data

#### Signal: Current

Number of inputs	1
Current input signal	0 mA ... 20 mA 4 mA ... 20 mA
Input impedance	> 100 k $\Omega$ (If there is a line fault)
Voltage drop	5.4 V (20 mA)

### Output data

#### Signal: Current

Output description	Current output
Number of outputs	1

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Current output signal	0 mA ... 20 mA (intrinsically safe)
	4 mA ... 20 mA (intrinsically safe)
Load/output load current output	< 800 $\Omega$ (20 mA)
	< 730 $\Omega$ (22.5 mA)
Output ripple	< 20 mV <sub>rms</sub>

## Connection data

Connection method	Screw connection
Stripping length	7 mm
Screw thread	M3
Conductor cross-section rigid	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross-section flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross-section AWG	24 ... 14
Tightening torque	0.5 Nm ... 0.6 Nm

## Ex data

### Safety data

Max. output voltage $U_o$	27.7 V
Max. output current $I_o$	92 mA
Max. output power $P_o$	633 mW
Safety-related maximum voltage $U_m$	253 V AC (125 V DC)
IIC: Max. external inductivity $L_o$ / Max. external capacitance $C_o$	2 mH / 85 nF
IIB: Max. external inductivity $L_o$ / Max. external capacitance $C_o$	4 mH / 663 nF

## Interfaces

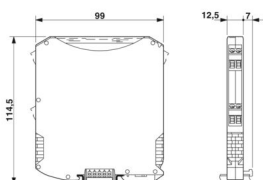
### Data communication (bypass)

HART function	Yes
Protocols supported	HART

## Signaling

Status display	Green LED (supply voltage)
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## Dimensions

Dimensional drawing	
Width	12.5 mm
Height	112.5 mm
Depth	114.5 mm

## Material specifications

Color	gray (RAL 7042)
Flammability rating according to UL 94 (Housing)	V0 (Housing)
Housing material	PA 6.6-FR

## Characteristics

Safety data: IEC 61508 - High demand

Safety Integrity Level (SIL)	2
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Safety data: IEC 61508 - Low demand

Safety Integrity Level (SIL)	2
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## Environmental and real-life conditions

Ambient conditions

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

## Approvals

CE

Certificate	CE-compliant
Note	and EN 61326

ATEX

Identification	⊕ II (1) G [Ex ia Ga] IIC/IIB
	⊕ II (1) D [Ex ia Da] IIIC
	⊕ II 3(1) G Ex nA [ia Ga] IIC/IIB T4 Gc
Certificate	IECEX BVS 08.0025 X

IECEX

Identification	[Ex ia Ga] IIC/IIB
	[Ex ia Da] IIIC
	Ex nA [ia Ga] IIC/IIB T4 Gc
Certificate	IECEX BVS 08.0025 X

UL, USA/Canada

Identification	Class I Div 2; IS for Class I, II, III Div 1
Certificate	UL, C.D.-No 83104549

KC-s

Identification	[Ex ia] IIC/IIB
Certificate	17-KA4BO-0413X

# MACX MCR-EX-SL-IDSII - Output signal conditioner



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## Shipbuilding approval

Certificate	DNV GL TAA00000AG
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## Safety Integrity Level (SIL, IEC 61508)

Identification	2
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## EAC Ex

Identification	Ex [Ex ia Ga] IIC Ex [Ex ia Da] IIIC
Certificate	RU C-DE.AB72.B.00093/19

## Shipbuilding data

Temperature	B
Humidity	B
Vibration	A
EMC	B
Enclosure	Required protection according to the Rules shall be provided upon installation on board

## EMC data

Electromagnetic compatibility	Conformance with EMC directive
Noise immunity	EN 61000-6-2
Note	When being exposed to interference, there may be minimal deviations.

## Noise emission

Standards/regulations	EN 61000-6-4
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## Electromagnetic HF field

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

## Mounting

Mounting type	DIN rail mounting
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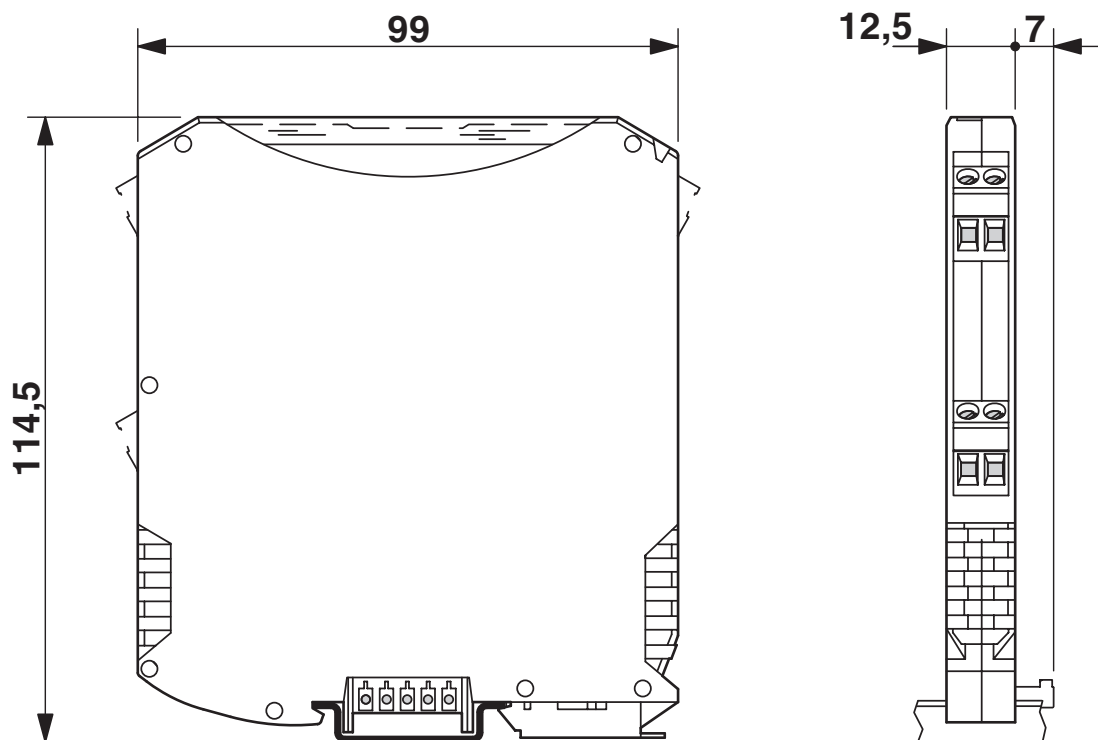


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## Drawings

Dimensional drawing



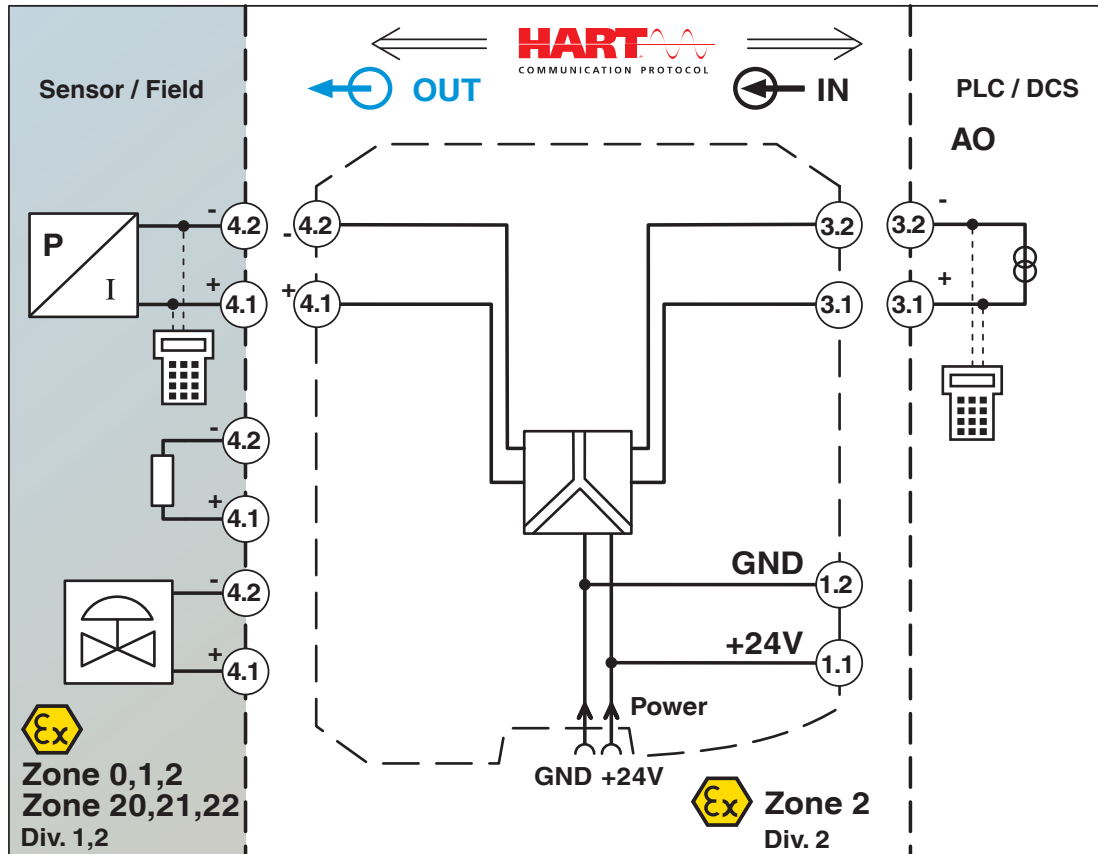
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Block diagram



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## Classifications

### UNSPSC

UNSPSC 21.0	39121008
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## Environmental product compliance

### EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	7(a), 7(c)-I

### China RoHS

Environment friendly use period (EFUP)	EFUP-50
	An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required.

### EU REACH SVHC

REACH candidate substance (CAS No.)	No substance above 0.1 wt%
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