Output signal conditioner - MACX MCR-SL-IDSI-I-SP - 2924223

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The illustration shows the versions with screw connection

Output signal conditioner, HART. Isolates and transfers 0/4-20 mA signals to a load (I/P converters, control valves, displays). Electrical 3-way isolation, wire break recognition, SIL 2 in accordance with IEC 61508, spring-cage connection.

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)
- 0/4 ... 20 mA output
- 0/4 ... 20 mA input
- Plug-in screw or spring-cage connection technology (Push-in technology), with integrated sockets for HART communicators
- 3-way electrical isolation
- Bidirectional transmission of digital HART communication signals

Key Commercial Data

Packing unit	1 pc
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

Dimensions

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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_{rms}

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 mm²
Conductor cross section solid max.	1.5 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	1.5 mm²
Conductor cross section AWG min.	24

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Connection data

Conductor cross section AWG max.	16
Stripping length	8 mm
Connection method	Push-in connection

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_{rms} (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

Safety characteristic data

Integrity requirement	IEC 61508 - Low demand
Equipment type	Type A

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Safety characteristic data

Safety Integrity Level (SIL)	Up to 2
Safe Failure Fraction (SFF)	94.68 %
λ_{SU}	4.965 x 10^{-7} (496.5 FIT)
λ_{SD}	0
λ_{DU}	2.79 x 10^{-8} (27.9 FIT)
λ_{DD}	0
Probability of a hazardous failure on demand (PFD_{AVG})	1.22 x 10^{-4} (1 year)
	6.1 x 10^{-4} (5 years)
	12.2 x 10^{-4} (10 years)
Diagnostic coverage (DC)	DC_S = 0%, DC_D = 0%
Integrity requirement	IEC 61508 - High demand
Equipment type	Type A
Safety Integrity Level (SIL)	Up to 2
Safe Failure Fraction (SFF)	94.68 %
λ_{SU}	4.965 x 10^{-7} (496.5 FIT)
λ_{SD}	0
λ_{DU}	2.79 x 10^{-8} (27.9 FIT)
λ_{DD}	0
Probability of a hazardous failure per hour (PFH_D)	2,79 x 10^{-8}
Diagnostic coverage (DC)	DC_S = 0%, DC_D = 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
	Class I, Zone 2, Group IIC T4

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Technical data

Standards and Regulations

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

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

Ex Approvals

UL Listed / cUL Listed / ATEX / cULus Listed

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Approvals

Approvals submitted

Approval details

Functional Safety

UL Listed

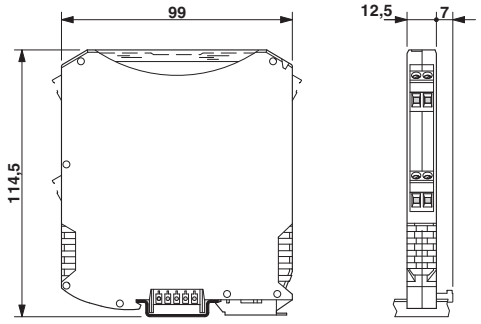
cUL Listed

EAC

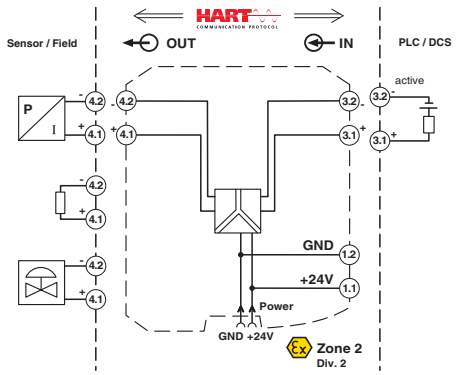
cULus Listed

Drawings

Dimensional drawing



Block diagram



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