Output signal conditioner - MACX MCR-EX-SL-IDSI-I-SP - 2924032

Please be informed that the data shown in this PDF Document is generated from our Online Catalog. Please find the complete data in the user's documentation. Our General Terms of Use for Downloads are valid (http://phoenixcontact.com/download)

Ex i output signal conditioner, 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.

Your advantages

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

Key Commercial Data

Packing unit	1 pc
GTIN	4 046356 337342
GTIN	4046356337342

Technical data

Note

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

Dimensions

Width	12.5 mm
Height	99 mm
Depth	114.5 mm

Output signal conditioner - MACX MCR-EX-SL-IDSI-I-SP - 2924032

Technical data

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

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 (intrinsically safe)
	4 mA ... 20 mA (intrinsically safe)
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 (at 24 V DC / 20 mA)
Power dissipation	< 1.1 W (at 24 V DC / 20 mA)

Connection data

Connection method	Push-in connection
Stripping length	8 mm
Conductor cross section solid	0.2 mm² ... 1.5 mm²
Conductor cross section flexible	0.2 mm² ... 1.5 mm²
Conductor cross section AWG	24 ... 16

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

Output signal conditioner - MACX MCR-EX-SL-IDSI-I-SP - 2924032

Technical data

General

Overvoltage category	II
Electromagnetic compatibility	Conformance with EMC directive
Interference emission	EN 61000-6-4
Housing material	PA 6.6-FR
Color	gray
Designation	Input/output/power supply
Electrical isolation	1.5 kV (50 Hz, 1 min., test voltage)
Designation	Output/input
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
ATEX	# 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
IECEx	[Ex ia Ga] IIC/IIB
	[Ex ia Da] IIIC
	Ex nA [ia Ga] IIC/IIB T4 Gc
UL, USA/Canada	Class I Div 2; IS for Class I, II, III Div 1
SIL	2

Data communication (bypass)

HART function	Yes
Protocols supported	HART

Safety characteristic data

Integrity requirement	IEC 61508 - Low demand
Equipment type	Type A
Safety Integrity Level (SIL)	2
Safe Failure Fraction (SFF)	94.68 %
λ_{SU}	4.965×10^{-7} (496.5 FIT)
λ_{SD}	0
λ_{DU}	2.79×10^{-8} (27.9 FIT)
λ_{DD}	0
Probability of a hazardous failure on demand (PFD_{AVG})	1.22×10^{-4} (1 year)
	6.1×10^{-4} (5 years)
	12.2×10^{-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)	2

Output signal conditioner - MACX MCR-EX-SL-IDSI-I-SP - 2924032

Technical data

Safety characteristic data

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 %

Safety data

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

EMC data

Designation	Electromagnetic RF field
Standards/regulations	EN 61000-4-3
Typical deviation from the measuring range final value	1 %
Designation	Fast transients (burst)
Standards/regulations	EN 61000-4-4
Typical deviation from the measuring range final value	1 %
Designation	Conducted interferences
Standards/regulations	EN 61000-4-6
Typical deviation from the measuring range final value	1 %

Standards and Regulations

Electromagnetic compatibility	Conformance with EMC directive
Noise emission	EN 61000-6-4
Designation	Electromagnetic RF field
Standards/regulations	EN 61000-4-3
	EN 61000-4-4
Designation	Conducted interferences
Standards/regulations	EN 61000-4-6
Flammability rating according to UL 94	V0
Conformance	CE-compliant, additionally EN 61326

Output signal conditioner - MACX MCR-EX-SL-IDSI-I-SP - 2924032

Technical data

Standards and Regulations

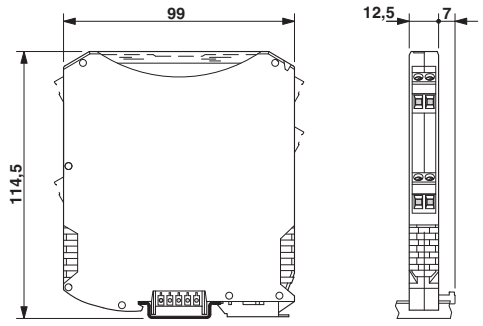
ATEX	# II (1) G [Ex ia Ga] IIC/IIB
	# II (1) D [Ex ia Da] IIIC
	# II 3(1) G Ex nA [ia Ga] IIC/IIB T4 Gc
IECEx	[Ex ia Ga] IIC/IIB
	[Ex ia Da] IIIC
	Ex nA [ia Ga] IIC/IIB T4 Gc
UL, USA/Canada	Class I Div 2; IS for Class I, II, III Div 1
DNV GL-Temperature	B
DNV GL-Humidity	B
DNV GL-Vibration	A
DNV GL-EMC	B
DNV GL-Enclosure	Required protection according to the Rules shall be provided upon installation on board
Group	IIC
	IIB

Environmental Product Compliance

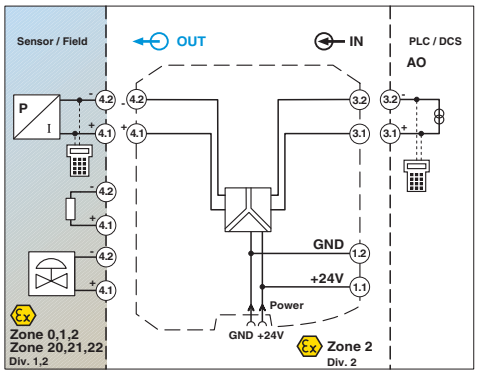
REACh SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50
	For details about hazardous substances go to tab “Downloads”, Category “Manufacturer's declaration”

Drawings

Dimensional drawing

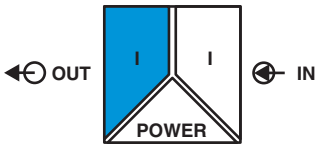


Block diagram



Output signal conditioner - MACX MCR-EX-SL-IDSI-I-SP - 2924032

Pictogram



Approvals

Approvals

Approvals

DNV GL / UL Listed / cUL Listed / Functional Safety / cULus Listed

Ex Approvals

KC-s / IECEx / ATEX / UL Listed / cUL Listed / EAC Ex / cULus Listed

Approval details

DNV GL		https://approvalfinder.dnvgl.com/	TAA00000AG
UL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 330267
cUL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 330267
Functional Safety			BVS Pb 05/08
cULus Listed			

PHOENIX CONTACT GmbH & Co. KG
Flachsmarktstr. 8
32825 Blomberg
Germany
Tel. +49 5235 300
Fax +49 5235 3 41200
http://www.phoenixcontact.com