Power/input isolating amplifier - MACX MCR-EX-SL-RPSSI-I - 2865340

Ex-i repeater power supply and input signal conditioner, HART. Sends fed or active 0/4-20 mA signals from the Ex area to a load (active or passive) to the safe area. Electrical 3-way isolation, SIL 2 in accordance with 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
- 0/4 ... 20 mA input, [Ex ia] IIC (powered or not powered)
- 3-way electrical isolation
- Terminal point with 250 Ω resistor to increase HART impedance for low-resistance systems
- 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 output (active or passive)

Key commercial data

package_quantity	1
GTIN	4046356160353

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

Ambient conditions

Ambient temperature (operation)	-20 °C ... 60 °C (Any mounting position)
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Maximum altitude	≤ 2000 m

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Ambient conditions

Permissible humidity (operation)	10 % ... 95 % (no condensation)
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
Current input signal	4 mA ... 20 mA
Transmitter supply voltage	> 16 V (at 20 mA)
Voltage drop	< 3.5 V (in input isolating amplifier operation)

Output data

Signal output	Current output
Current output signal	0 mA ... 20 mA (active)
Current output signal	4 mA ... 20 mA (active)
Current output signal	0 mA ... 20 mA (14 ... 26 V ext. source voltage)
Current output signal	4 mA ... 20 mA (14 ... 26 V ext. source voltage)
Transmission Behavior	1:1 to input signal
Load/output load current output	< 600 Ω
Output ripple	< 20 mV_{rms}

Power supply

Nominal supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC
Max. current consumption	< 60 mA (at 24 V DC)
Power consumption	< 1.1 W (at 24 V DC / 20 mA)

Connection data

Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	2.5 mm²
Conductor cross section stranded min.	0.2 mm²
Conductor cross section stranded max.	2.5 mm²
Conductor cross section AWG/kcmil min.	24
Conductor cross section AWG/kcmil 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)

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General

Transmission error, typical	< 0.05 % (of final value)
Maximum temperature coefficient	< 0.01 %/K
Step response (10-90%)	< 600 µs (for 4 mA ... 20 mA step)
Status display	Green LED (supply voltage)
Inflammability class according to UL 94	V0
Pollution degree	2
Surge voltage category	II
Electromagnetic compatibility	Electromagnetic HF field
Housing material	PA 66-FR
Color	green
Name	Input/output/power supply
Electrical isolation	300 V_{rms} (Rated insulation voltage (surge voltage category II; pollution degree 2, safe isolation as per EN 61010-1))
Electrical isolation	2.5 kV (50 Hz, 1 min., test voltage)
Name	Input/output
Electrical isolation	375 V (Peak value in accordance with EN 60079-11)
Name	Input/power 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
ATEX	# II (1) D [Ex ia Da] IIIC
ATEX	# II 3 (1) G Ex nA [ia Ga] IIC/IIB T4 Gc
IECEx	[Ex ia Ga] IIC/IIB
IECEx	[Ex ia Da] IIIC
IECEx	Ex nA [ia Ga] IIC/IIB T4 Gc
UL, USA / Canada	Class I Div 2; IS for Class I, II, III Div 1
Functional safety (SIL)	SIL 2 according to EN 61508

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)	Up to 2
Safe Failure Fraction (SFF)	90.7 %
λ_{SU}	4.867 x 10^{-7} (486.7 FIT)
λ_{SD}	0
λ_{DU}	5 x 10^{-8} (50 FIT)
λ_{DD}	0

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Technical data

Safety characteristic data

Probability of a hazardous failure on demand (PFD_{AVG})	2.19 x 10^{-4} (1 year)
Probability of a hazardous failure on demand (PFD_{AVG})	8.76 x 10^{-4} (years)
Probability of a hazardous failure on demand (PFD_{AVG})	1.1 x 10^{-3} (5 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)	90.7 %
λ_{SU}	4.867 x 10^{-7} (486.7 FIT)
λ_{SD}	0
λ_{DU}	5 x 10^{-8} (50 FIT)
λ_{DD}	0
Probability of a hazardous failure per hour (PFH_D)	4,99 x 10^{-8}
Diagnostic coverage (DC)	(DC_S = 0%, DC_D = 0%)

Safety data

Max. output voltage U_o	25.2 V
Max. output current I_o	93 mA
Max. output power P_o	587 mW
Gas group	IIC
Max. external inductivity L_o	2 mH
Max. external capacity C_o	107 nF
Safety-related maximum voltage U_m	253 V AC (125 V DC)
Input voltage U_i	≤ 30 V
Input current I_i	≤ 130 mA
Input power P_i	(negligible)
Max. internal capacitance C_i	(negligible)

EMC data

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

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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	27210120
eCl@ss 7.0	27210120
eCl@ss 8.0	27210120

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

IECEx / ATEX / UL Listed / cUL Listed / cULus Listed / UL Listed / cUL Listed / Functional Safety / cULus Listed / GL /

Approval details

IECEx

ATEX

UL Listed

cUL Listed

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approvals

cULus Listed

Functional Safety

GL

Drawings

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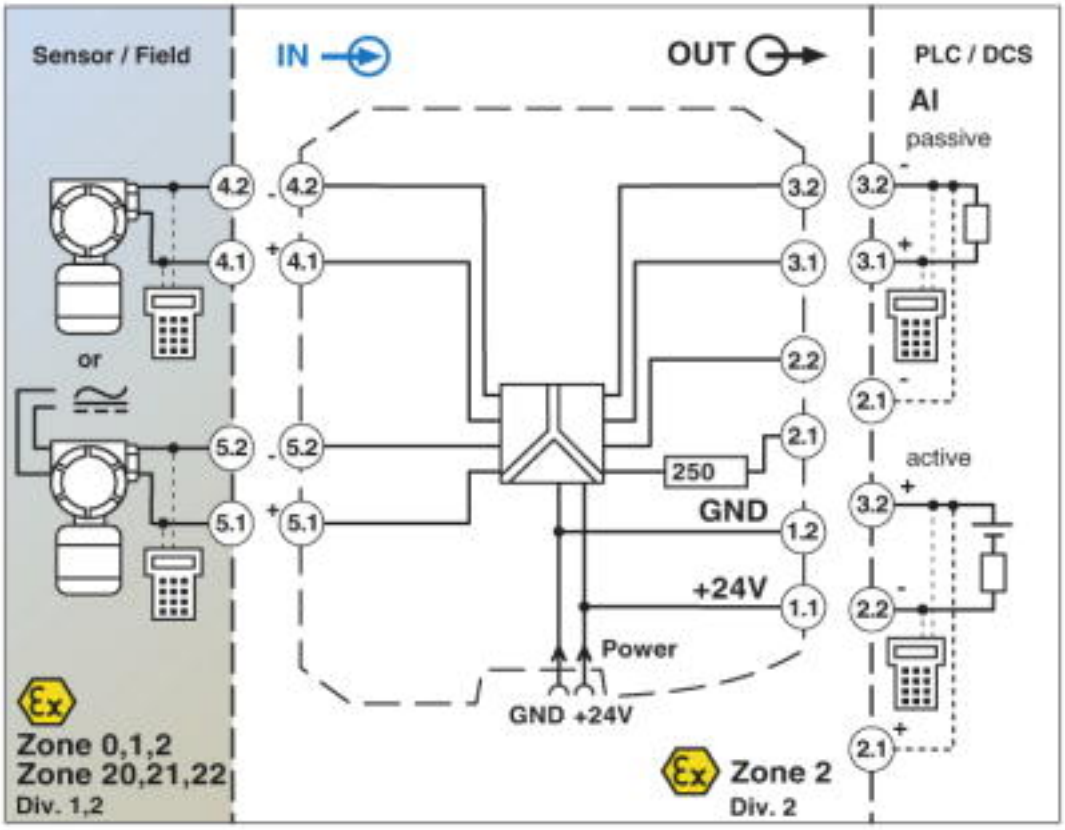
Block diagram



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Dimensioned drawing