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# Power/input isolating amplifier - MACX MCR-EX-SL-RPSSI-I-UP-SP - 2924029

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Ex-i repeater power supply and input isolating amplifier, 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, wide range power supply.

The illustration shows the versions with screw connection

## Why buy this product

- 250 Ω resistor that can be activated via DIP switches to increase HART impedance for low-resistance systems
- 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
- 0/4 ... 20 mA output (active or passive), 0/1 ... 5 V, can be selected via DIP switches
- Wide-range power supply of 19.2 ... 253 V AC/DC
- Bidirectional transmission of digital HART communication signals
- Plug-in screw or spring-cage connection technology (Push-in technology), with integrated sockets for HART communicators



## Key Commercial Data

Packing unit	1 STK
GTIN	 4 046356 338172

## Technical data

### Note

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

Width	17.5 mm
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## Technical data

### Dimensions

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

Signal input	Active current input, intrinsically safe
Current input signal	4 mA ... 0.02 A
Transmitter supply voltage	> 16 V (20 mA)
	> 15.3 V (22.5 mA)
Signal input	Passive current input, intrinsically safe
Current input signal	0 mA ... 0.02 A
	4 mA ... 0.02 A
Voltage drop	< 3.5 V

### Output data

Signal output	Current output
Voltage output signal	1 V ... 5 V (internal resistance, 250 Ω, 0.1%)
Current output signal	4 mA ... 0.02 A (active)
	4 mA ... 0.02 A (14 ... 26 V ext. source voltage)
Transmission Behavior	1:1 to input signal
Load/output load current output	< 600 Ω (20 mA)
	< 525 Ω (22.5 mA)
Output ripple	< 20 mV <sub>rms</sub>
Output behavior in the event of an error	0 mA (Cable break in the input)
	≥ 22.5 mA (Cable short-circuit in the input)
Signal output	Current output (active and passive)
Voltage output signal	0 V ... 5 V (internal resistance, 250 Ω, 0.1%)
Current output signal	0 mA ... 0.02 A (active)
	4 mA ... 0.02 A (active)
	0 mA ... 0.02 A (14 ... 26 V ext. source voltage)
	4 mA ... 0.02 A (14 ... 26 V ext. source voltage)
Load/output load current output	< 600 Ω (20 mA)
	< 525 Ω (22.5 mA)

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## Technical data

### Output data

Output ripple	< 20 mV <sub>rms</sub>
Output behavior in the event of an error	0 mA (Cable break in the input)
	0 mA (Cable short-circuit in the input)

### Power supply

Designation	Repeater power supply operation
Supply voltage range	24 V ... 230 V AC/DC (-20 %/+10 %, 50/60 Hz)
Max. current consumption	< 80 mA (24 V DC / 20 mA)
Power consumption	< 1.6 W (24 V DC/ 20 mA)

### Connection data

Conductor cross section solid min.	0.2 mm <sup>2</sup>
Conductor cross section solid max.	1.5 mm <sup>2</sup>
Conductor cross section flexible min.	0.2 mm <sup>2</sup>
Conductor cross section flexible max.	1.5 mm <sup>2</sup>
Conductor cross section AWG min.	24
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)
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)
Flammability rating according to UL 94	V0
Degree of pollution	2
Overvoltage category	II
Electromagnetic compatibility	Conformance with EMC Directive 2004/108/EC
Emitted interference	EN 61000-6-4
Housing material	PA 66-FR
Color	green
Designation	Input/output/power supply
Electrical isolation	300 V <sub>rms</sub> (Rated insulation voltage (overvoltage category II; degree of pollution 2, safe isolation as per EN 61010-1))
	2.5 kV (50 Hz, 1 min., test voltage)
Designation	Input/output
Electrical isolation	375 V (Peak value in accordance with EN 60079-11)
Designation	Input/power supply

# Power/input isolating amplifier - MACX MCR-EX-SL-RPSSI-I-UP-SP - 2924029

## Technical data

### General

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
Functional Safety (SIL)	SIL 2

### Data communication (bypass)

HART function	Yes
Protocols supported	HART

### Safety data

Operation	Repeater power supply operation
Max. output voltage $U_o$	25.2 V
Max. output current $I_o$	93 mA
Max. output power $P_o$	587 mW
Group	IIC
Max. external inductivity $L_o$	2 mH
Max. external capacity $C_o$	107 nF
Group	IIB
Max. external inductivity $L_o$	4 mH
Max. external capacity $C_o$	820 nF
Safety-related maximum voltage $U_m$	253 V AC/DC (Supply terminals)
Operation	Signal conditioner operation
Input voltage $U_i$	$\leq 30$ V
Input current $I_i$	$\leq 150$ mA
Max. internal inductance $L_i$	negligible
Max. internal capacitance $C_i$	negligible

### 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 %

# Power/input isolating amplifier - MACX MCR-EX-SL-RPSSI-I-UP-SP - 2924029

## Technical data

### EMC data

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 2004/108/EC
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
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
Group	IIC
	IIB

## 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	27210120

### ETIM

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

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## Classifications

### 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

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

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#### Ex Approvals

IECEx / UL Listed / cUL Listed / ATEX / EAC Ex / cULus Listed

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#### Approvals submitted

GL

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### Approval details

UL Listed

cUL Listed

Functional Safety

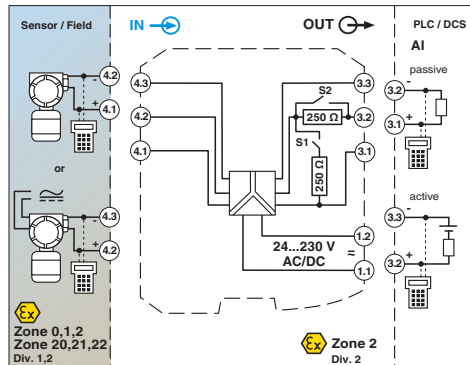
EAC

cULus Listed

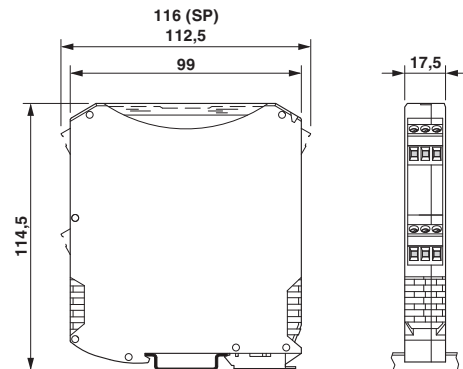
## Drawings

# Power/input isolating amplifier - MACX MCR-EX-SL-RPSSI-I-UP-SP - 2924029

Block diagram



Dimensional drawing



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