

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.

Your advantages

- ✓ 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 pc
GTIN	 4 046356 338172
GTIN	4046356338172

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
Height	117.7 mm
Depth	113.7 mm

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

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 (not assessed by UL)
Noise immunity	EN 61000-6-2 When being exposed to interference, there may be minimal deviations.

Input data

Signal input	Active current input, intrinsically safe
Current input signal	4 mA ... 20 mA
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 ... 20 mA
	4 mA ... 20 mA
Voltage drop	< 3.5 V (in input isolating amplifier operation)

Output data

Signal output	Current output
Voltage output signal	1 V ... 5 V (internal resistance, 250 Ω, 0.1%)
	Configurable via DIP switches
Current output signal	4 mA ... 20 mA (active)
	4 mA ... 20 mA (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 _{rms}
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%)
	1 V ... 5 V (internal resistance, 250 Ω, 0.1%)
Current output signal	0 mA ... 20 mA (active)
	4 mA ... 20 mA (active)
	0 mA ... 20 mA (14 ... 26 V ext. source voltage)
	4 mA ... 20 mA (14 ... 26 V ext. source voltage)
Load/output load current output	< 600 Ω (20 mA)
	< 525 Ω (22.5 mA)
Output ripple	< 20 mV _{rms}
Output behavior in the event of an error	0 mA (Cable break in the input)

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

Technical data

Output data

	0 mA (Cable short-circuit in the input)
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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 dissipation	< 1.6 W (24 V DC/ 20 mA)
Designation	Signal conditioner operation
Nominal supply voltage range	24 V AC/DC ... 230 V AC/DC (50/60 Hz)
Supply voltage range	19.2 V AC/DC ... 253 V AC/DC (24 V AC/DC ... 230 V AC/DC (-20 % ... +10 %, 50/60 Hz))
Max. current consumption	< 45 mA (24 V DC/ 20 mA)
Power dissipation	< 1.1 W (24 V DC/ 20 mA)

Connection data

Connection method	Push-in connection
Stripping length	8 mm
Conductor cross section solid	0.2 mm ² ... 1.5 mm ²
Conductor cross section flexible	0.2 mm ² ... 1.5 mm ²
Conductor cross section AWG	24 ... 16

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)
Degree of pollution	2
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
	Input/output
Electrical isolation	375 V (Peak value in accordance with IEC/EN 60079-11)
Designation	Input/power supply
Electrical isolation	375 V (Peak value in accordance with IEC/EN 60079-11)

Data communication (bypass)

HART function	Yes
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Power/input isolating amplifier - MACX MCR-EX-SL-RPSSI-I-UP-SP - 2924029

Technical data

Data communication (bypass)

Protocols supported	HART
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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 capacitance C_o	107 nF
Additional text	simple circuit
Group	IIB
Max. external inductivity L_o	4 mH
Max. external capacitance C_o	820 nF
Additional text	simple circuit
Safety-related maximum voltage U_m	253 V AC/DC (Supply terminals)
Operation	Signal conditioner operation
Input voltage U_i	≤ 30 V
Input current I_i	≤ 150 mA
Max. internal inductance L_i	negligible
Max. internal capacitance C_i	negligible
Safety-related maximum voltage U_m	253 V AC/DC (Supply terminals)

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

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

Technical data

Standards and Regulations

Designation	Conducted interferences
Standards/regulations	EN 61000-4-6
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 [ja Ga] IIC/IIB T4 Gc
IECEX	[Ex ia Ga] IIC/IIB
	[Ex ia Da] IIIC
	Ex nA [ja Ga] IIC/IIB T4 Gc
UL, USA/Canada	Class I Div 2; IS for Class I, II, III Div 1
Group	IIC
	IIB

Conformance/approvals

Designation	CE
Identification	CE-compliant
Additional text	and EN 61326
Designation	ATEX
	# II (1) G [Ex ia Ga] IIC/IIB
	# II (1) D [Ex ia Da] IIIC
	# II 3(1) G Ex nA [ja Ga] IIC/IIB T4 Gc
Certificate	BVS 08 ATEX E 094 X
Designation	IECEX
	[Ex ia Ga] IIC/IIB
	[Ex ia Da] IIIC
	Ex nA [ja Ga] IIC/IIB T4 Gc
Certificate	IECEX BVS 08.0035X
Designation	UL, USA/Canada
	Class I Div 2; IS for Class I, II, III Div 1
Certificate	#, C.D.-No 83104549
Designation	Safety Integrity Level (SIL, IEC 61508)
	2
Designation	EAC Ex
	# [Ex ia Ga] IIC
	# [Ex ia Da] IIIC
Certificate	RU C-DE.AB72.B.00093/19
Designation	INMETRO
	[Ex ia Ga] IIC/IIB
	[Ex ia Da] IIIC
	Ex nA [ja Ga] IIC/IIB T4 Gc

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

Technical data

Conformance/approvals

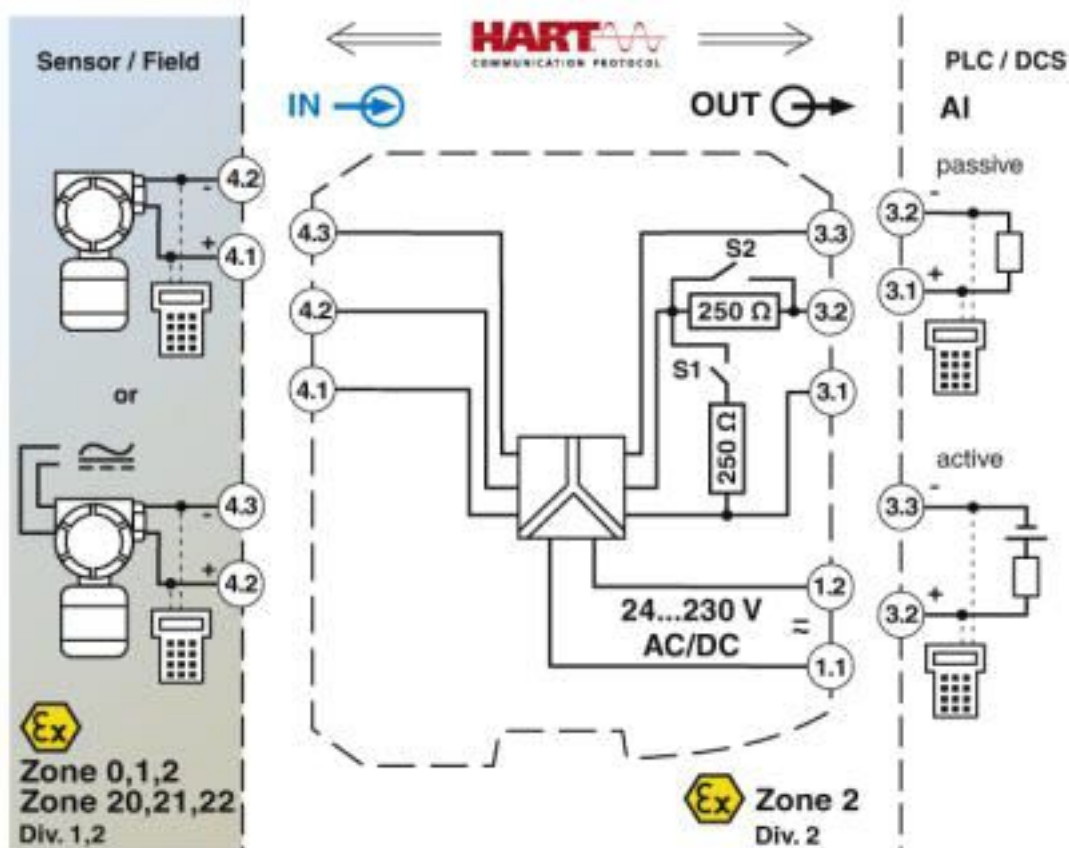
Certificate	DNV 18.0138 X
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Environmental Product Compliance

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

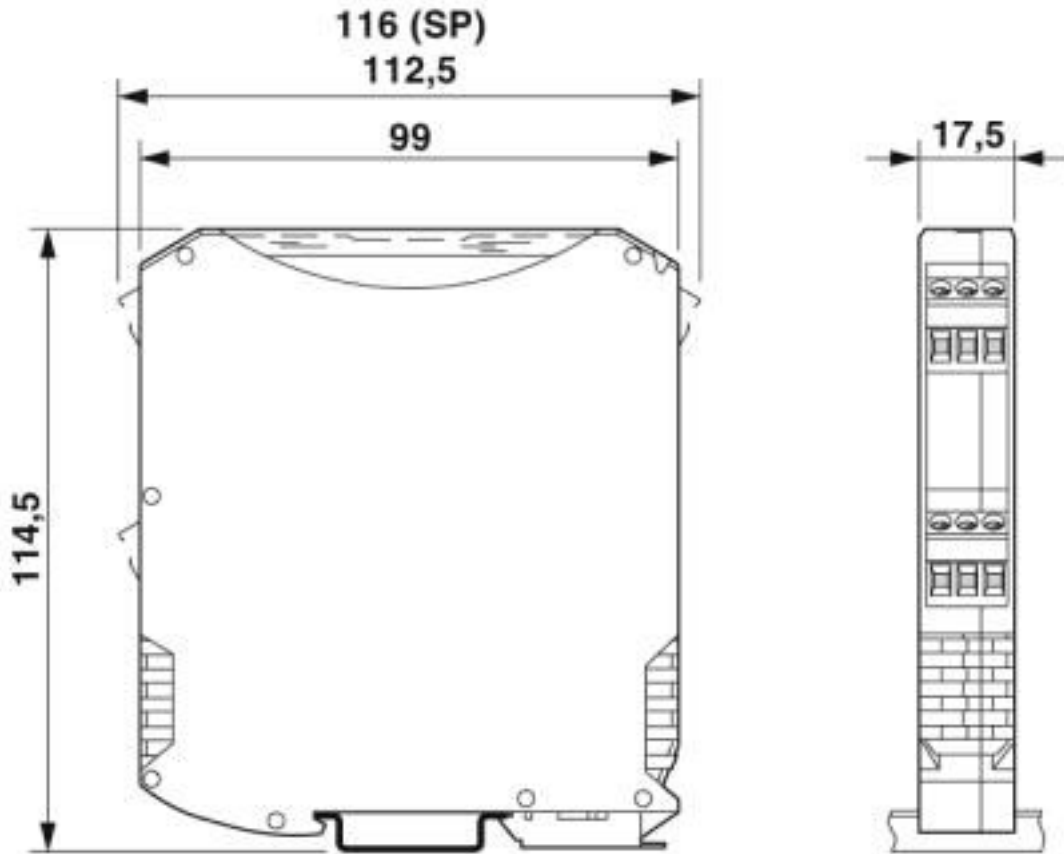
Drawings

Block diagram

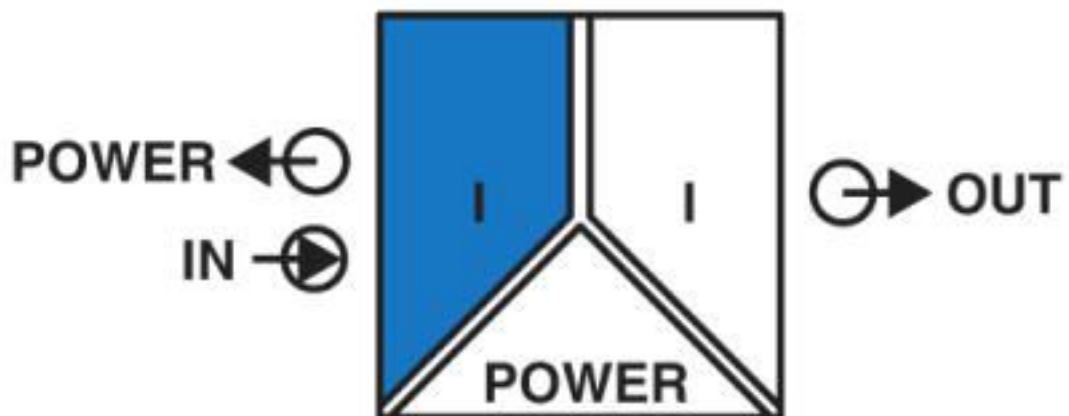


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Dimensional drawing



Pictogram



Classifications

eCl@ss

eCl@ss 10.0.1

27210120

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

Classifications

eCl@ss

eCl@ss 4.0	27210100
eCl@ss 4.1	27210100
eCl@ss 5.0	27210100
eCl@ss 5.1	27210100
eCl@ss 6.0	27210100
eCl@ss 7.0	27210120
eCl@ss 8.0	27210120
eCl@ss 9.0	27210120

ETIM

ETIM 4.0	EC002653
ETIM 5.0	EC002653
ETIM 6.0	EC002653
ETIM 7.0	EC002653

UNSPSC

UNSPSC 6.01	30211506
UNSPSC 7.0901	39121008
UNSPSC 11	39121008
UNSPSC 12.01	39121008
UNSPSC 13.2	39121008
UNSPSC 18.0	39121008
UNSPSC 19.0	39121008
UNSPSC 20.0	39121008
UNSPSC 21.0	39121008

Approvals

Approvals

Approvals

UL Listed / cUL Listed / Functional Safety / cULus Listed

Ex Approvals

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

Approvals submitted

GL

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

Approvals

Approval details

UL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 330267
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cUL Listed		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 330267
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Functional Safety	BVS PB 09/08
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cULus Listed	
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Accessories

Accessories

Device marking

Plastic label - UC-EMLP (11X9) - 0819291



Plastic label, Sheet, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

Plastic label - UC-EMLP (11X9) YE - 0822602



Plastic label, Sheet, yellow, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

Plastic label - UC-EMLP (11X9) SR - 0828094



Plastic label, Sheet, silver, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

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

Accessories

Plastic label - US-EMLP (11X9) - 0828789



Plastic label, Card, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 135

Plastic label - US-EMLP (11X9) YE - 0828871



Plastic label, Card, yellow, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 135

Plastic label - US-EMLP (11X9) SR - 0828872



Plastic label, Card, silver, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 135

Device marker - LS-EMLP (11X9) WH - 0831678



Device marker, Sheet, white, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255

Device marker - LS-EMLP (11X9) YE - 0831732



Device marker, Sheet, yellow, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255

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

Accessories

Device marker - LS-EMLP (11X9) SR - 0831705

Device marker, Sheet, silver, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255



Insulating sleeve

Insulating sleeve - MPS-IH BK - 0201731

Insulating sleeve, color: black



Insulating sleeve - MPS-IH GY - 0201728

Insulating sleeve, color: gray



Insulating sleeve - MPS-IH GN - 0201702

Insulating sleeve, color: green



Insulating sleeve - MPS-IH YE - 0201692

Insulating sleeve, color: yellow



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

Accessories

Insulating sleeve - MPS-IH BU - 0201689

Insulating sleeve, color: blue



Insulating sleeve - MPS-IH RD - 0201676

Insulating sleeve, color: red



Insulating sleeve - MPS-IH WH - 0201663

Insulating sleeve, color: white



Labeled device marker

Plastic label - UC-EMLP (11X9) CUS - 0824547



Plastic label, can be ordered: by sheet, white, labeled according to customer specifications, mounting type: adhesive, lettering field size: 11 x 9 mm

Plastic label - UC-EMLP (11X9) YE CUS - 0824548



Plastic label, can be ordered: by sheet, yellow, labeled according to customer specifications, mounting type: adhesive, lettering field size: 11 x 9 mm

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

Accessories

Plastic label - UC-EMLP (11X9) SR CUS - 0828098



Plastic label, can be ordered: by sheet, silver, labeled according to customer specifications, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

Programming cable

Cable adapter - GW HART USB MODEM - 1003824



USB HART modem cable for communication between a PC and HART devices, cable length: 1m.

Test plug terminal block

Test plugs - MPS-MT - 0201744



Test plugs, with solder connection up to 1 mm² conductor cross section, color: gray

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[2281759](#) [2906251](#) [2907808](#) [5601749](#) [5541962](#) [1776613-1](#) [GCN1-004A](#) [ADAM-3920R-AE](#) [060-6827-06](#) [2311030](#) [2287708](#) [XW2C-20G6-](#)
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