

MACX MCR-EX-AP-RPSS-I-I - Repeater power supply



1291191

<https://www.phoenixcontact.com/us/products/1291191>

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Ex i-Feed and input signal conditioner feeds 2-, 3- and 4-conductor measuring transducer and transmits 1:1 passive or active 0 mA / 4 mA ... 20 mA Ex i input signals as active non Ex i output signal. number of channels: 1, Standard configuration, 3-way isolation, Safety Integrity Level (SIL, IEC 61508): 3, Screw connection

Commercial data

Item number	1291191
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C430
Product key	DK121W
GTIN	4063151522698
Weight per piece (including packing)	199 g
Weight per piece (excluding packing)	160 g
Customs tariff number	85437090
Country of origin	DE

Technical data

Notes

Note on application	Accuracy, typically specified as a percentage of the measuring span (20 mA) at U_N , 23°C
Notes on operation	Installation conditions influence the ambient temperature. Please refer to the "Control cabinet installation instructions".
Notes on operation	Output behavior = input signal

Product properties

Product type	Repeater power supply
Product family	MACX Analog
No. of channels	1

Electrical properties

Electrical isolation	3-way isolation
Electrical isolation between input and output	yes
Signal transmission behavior	In = Out
Temperature coefficient, typical	$\leq 0.05\%$ (10 K)
Reverse polarity protection	yes

Electrical isolation Input/output IEC/EN 60079-11

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V _{PP}

Electrical isolation Input/power supply IEC/EN 60079-11

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V _{PP}

Electrical isolation Input/error message output IEC/EN 60079-11

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V _{PP}

Electrical isolation Input 1 / input 2 IEC/EN 60079-11

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V _{PP}

Electrical isolation Output/supply

Test voltage	350 V (50 Hz, 60 s)
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Electrical isolation Output 1/output 2

Test voltage	350 V (50 Hz, 60 s)
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Electrical isolation Output/supply/error message output

Test voltage	350 V (50 Hz, 60 s)
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Supply

Nominal supply voltage	24 V DC
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Supply voltage range	18 V ... 31.2 V
Power dissipation	2.2 W (R_L 250 Ω)
Power consumption	2.7 W (20 mA)

Input data

Signal: Repeater power supply operation

Description of the input	active and passive current input, intrinsically safe
Input signal	Current
Current input signal	0 mA ... 20 mA
	4 mA ... 20 mA (with HART)
	0 mA ... 24 mA (Function area)
Input resistance current input	$\leq 100 \Omega$ (for mA sources)
Input current	≤ 50 mA (for mA sources)
Short-circuit current	≤ 35 mA
Line fault detection	< 3.6 mA (Line break)
	> 20.5 mA (Short circuit)
Open-circuit voltage	≤ 26 V

Signal: Signal conditioner operation

Description of the input	Passive current input, intrinsically safe
Current input signal	0 mA ... 20 mA
	4 mA ... 20 mA (with HART)
	0 mA ... 24 mA (Function area)
Input resistance current input	$\leq 100 \Omega$ (for mA sources)
Input current	≤ 50 mA
Short-circuit current	≤ 35 mA
Line fault detection	< 3.6 mA (Line break)
	> 20.5 mA (Short circuit)
Open-circuit voltage	≤ 26 V

Output data

Signal: Error message output

Maximum switching voltage	30 V
Max. switching current	100 mA

Signal: Repeater power supply operation

Output description	Current output (active)
Current output signal	0 mA ... 20 mA
	4 mA ... 20 mA (with HART)
	0 mA ... 24 mA (Function area)
Load	0 Ω ... 600 Ω
	0 Ω ... 379 Ω (with internal 221 Ω resistance for HART)
Output ripple (current)	$\leq 40 \mu\text{A}$ (effective)
Line fault detection	< 3.6 mA (Line break)

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Signal: Signal conditioner operation

Output description	Signal conditioner operation
Current output signal	0 mA ... 20 mA
	4 mA ... 20 mA (with HART)
	0 mA ... 24 mA (Function area)
Load	0 Ω ... 600 Ω
	0 Ω ... 379 Ω (with internal 221 Ω resistance for HART)
Output ripple (current)	≤ 40 μA (effective)

Connection data

Connection method	Screw connection
Stripping length	7 mm
Screw thread	M3
Conductor cross-section rigid	0.2 mm ² ... 2.5 mm ²
Conductor cross-section flexible	0.2 mm ² ... 2.5 mm ²
Conductor cross-section AWG	24 ... 14
Tightening torque	0.5 Nm ... 0.6 Nm

Ex data

Ex installation (EPL)	Gc
Ex i circuits (EPL)	[Ga]
	[Da]
	[Ma]

Safety data: Repeater power supply operation

Max. internal inductance L_i	negligible
Max. internal capacitance C_i	negligible
Max. output voltage U_o	27 V
Max. output current I_o	88 mA
Max. output power P_o	576 mW
Safety-related maximum voltage U_m	253 V AC
IIA (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	28 mH / 2330 nF
IIB/IIIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	17 mH / 705 nF
IIC (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	2.3 mH / 90 nF
I (simple circuit): Max. external inductivity L_o / Max. external capacitance C_o	40 mH / 3750 nF
IIA (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	28 mH / 410 nF, 2 mH / 480 nF, 1 mH / 540 nF, 0.2 mH / 820 nF
IIB/IIIC (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	17 mH / 290 nF, 2 mH / 320 nF, 0.5 mH / 460 nF, 0.2 mH / 600 nF
IIC (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	2 mH / 42 nF, 1 mH / 56 nF, 0.5 mH / 72 nF, 0.2 mH / 90 nF

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I (mixed circuit): Max. external inductivity L_o / Max. external capacitance C_o	40 mH / 480 nF, 20 mH / 660 nF, 0.5 mH / 810 nF, 0.1 mH / 1200 nF
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Safety data: Signal conditioner operation

Note	With connection of power sources
Input voltage U_i	30 V
Input current I_i	100 mA
Input power P_i	limited internally
Max. internal inductance L_i	negligible
Max. internal capacitance C_i	negligible
Max. output voltage U_o	4.1 V
Safety-related maximum voltage U_m	253 V AC

Interfaces

Data communication (bypass)

Protocols supported	HART-transparent
Frequency measuring range	0.5 kHz ... 10 kHz (bidirectional HART transmission)

Signaling

Status display	Green LED (supply voltage)
	Red LED (line errors)

Dimensions

Dimensional drawing	
Width	17.5 mm
Height	112.5 mm
Depth	113.7 mm
Depth NS 35/7,5	114.5 mm (Snapped onto DIN rail NS 35/7,5 in accordance with EN 60715)

Material specifications

Flammability rating according to UL 94	V0
Housing material	PA 6.6

Environmental and real-life conditions

Ambient conditions

Degree of protection	IP20 (Terminal blocks)
	IP30 (Housing)
	-20 °C ... 70 °C (Stand-alone device: any mounting position)

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Ambient temperature (operation)	-20 °C ... 55 °C (Group assembly: vertical DIN rail without circulating air)
	-20 °C ... 65 °C (Group assembly: vertical DIN rail with circulating air)
	-20 °C ... 60 °C (Group assembly: horizontal DIN rail without circulating air)
	-20 °C ... 65 °C (Group assembly: horizontal DIN rail with circulating air)
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Altitude	≤ 2000 m
Permissible humidity (operation)	≤ 95 % (non-condensing)

Approvals

ATEX

Identification	⊕ II (1) G [Ex ia Ga] IIC
	⊕ II (1) D [Ex ia Da] IIIC
	⊕ II 3 (1) G Ex nA nC [ia Ga] IIC T4 Gc
	⊕ I (M1) [Ex ia Ma] I

IECEX

Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex nA nC [ia Ga] IIC T4 Gc
	[Ex ia Ma] I

Safety Integrity Level (SIL, IEC 61508)

Identification	3
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EMC data

Electromagnetic compatibility	Tested in accordance with the following standards and regulations: EN 61326-1 For industrial use, NAMUR NE 21
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Standards and regulations

Electrical isolation	3-way isolation
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Mounting

Mounting type	NS 35/15, NS 35/7,5
Mounting position	vertical, horizontal

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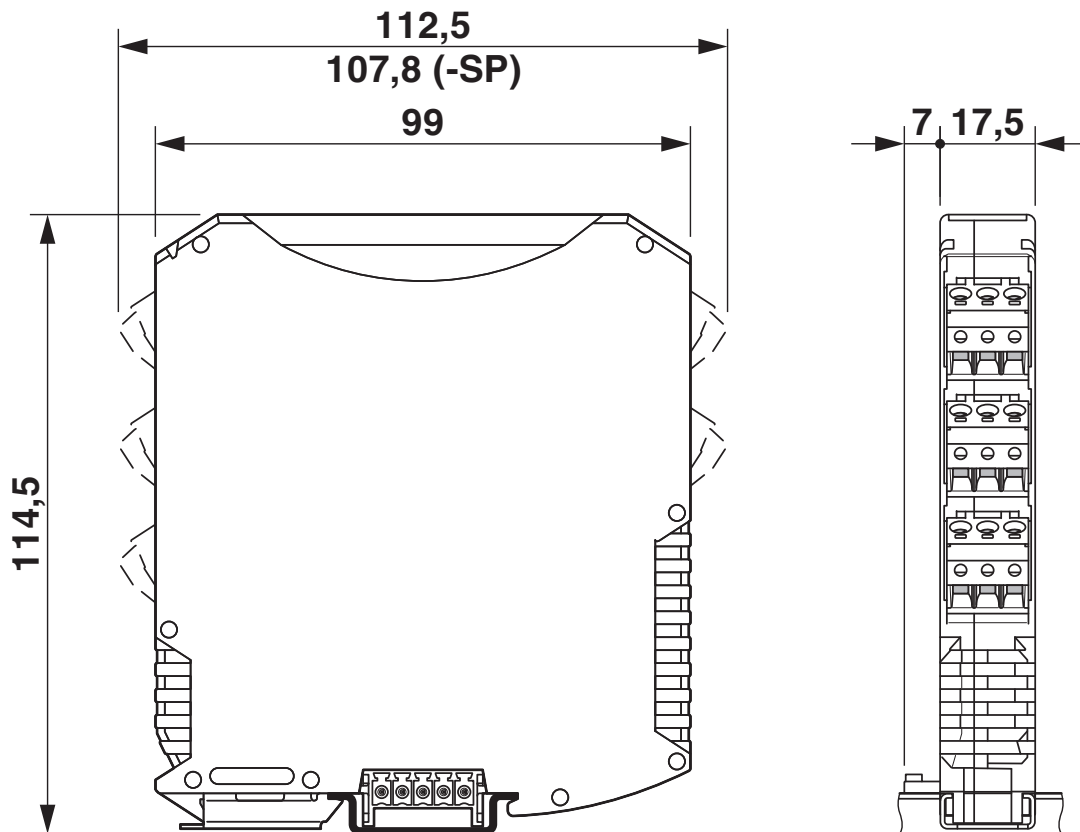


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Drawings

Dimensional drawing



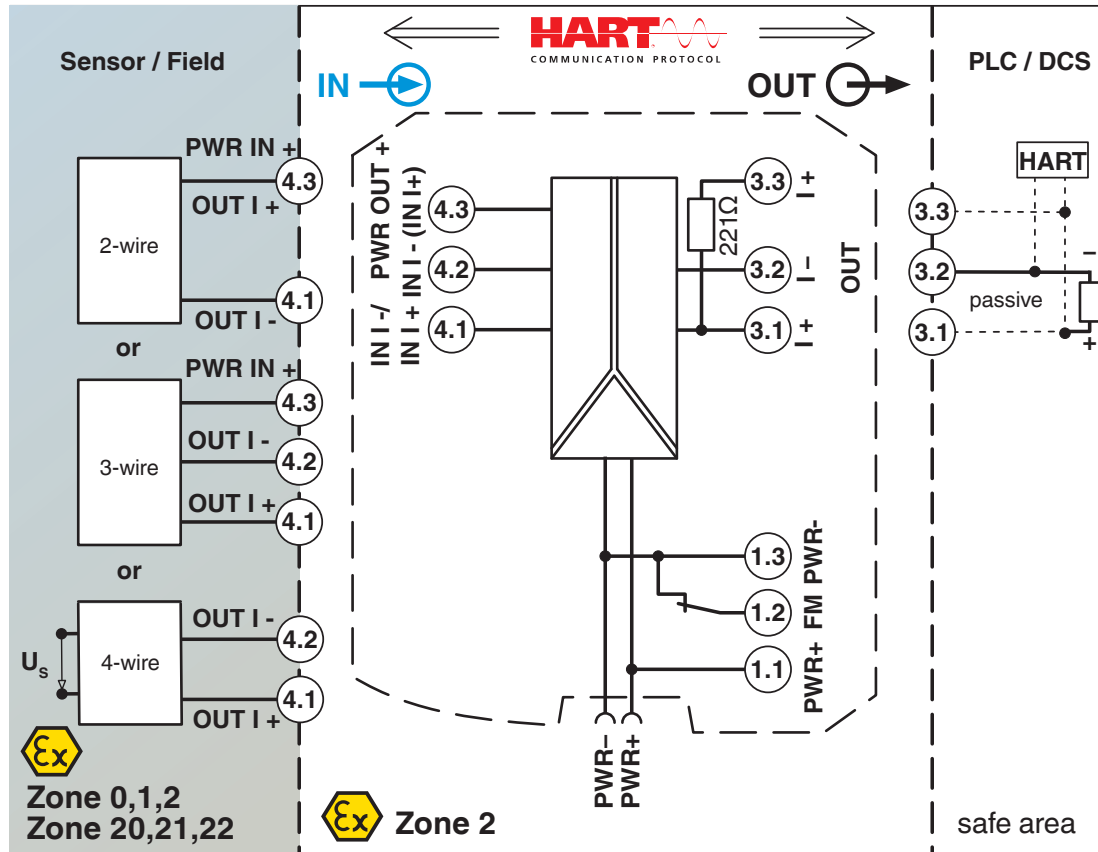
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Block diagram



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Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1291191>

Functional Safety

Approval ID: 22/05-248 R029 V1R0



IECEX

Approval ID: IECEx BVS 21.0019X



ATEX

Approval ID: BVS 21 ATEX E 017X

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Classifications

ECLASS

ECLASS-13.0	27210120
ECLASS-15.0	27210120

ETIM

ETIM 10.0	EC002653
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Environmental product compliance

EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	6(c), 7(a), 7(c)-I

China RoHS

Environment friendly use period (EFUP)	EFUP-50
	An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required.

EU REACH SVHC

REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)
SCIP	4b176659-68ca-4889-9cce-3fffba2742ba

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