

# 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	≤ 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 <sub>PP</sub>

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

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V <sub>PP</sub>

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

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V <sub>PP</sub>

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

Standards/regulations	IEC/EN 60079-11
Rated insulation voltage	375 V <sub>PP</sub>

#### 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 $\Omega$ )
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	$\leq 50$ mA (for mA sources)
Short-circuit current	$\leq 35$ mA
Line fault detection	< 3.6 mA (Line break)
	> 20.5 mA (Short circuit)
Open-circuit voltage	$\leq 26$ 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	$\leq 50$ mA
Short-circuit current	$\leq 35$ mA
Line fault detection	< 3.6 mA (Line break)
	> 20.5 mA (Short circuit)
Open-circuit voltage	$\leq 26$ 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 $\Omega$ ... 600 $\Omega$
	0 $\Omega$ ... 379 $\Omega$ (with internal 221 $\Omega$ 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 <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross-section flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
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

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

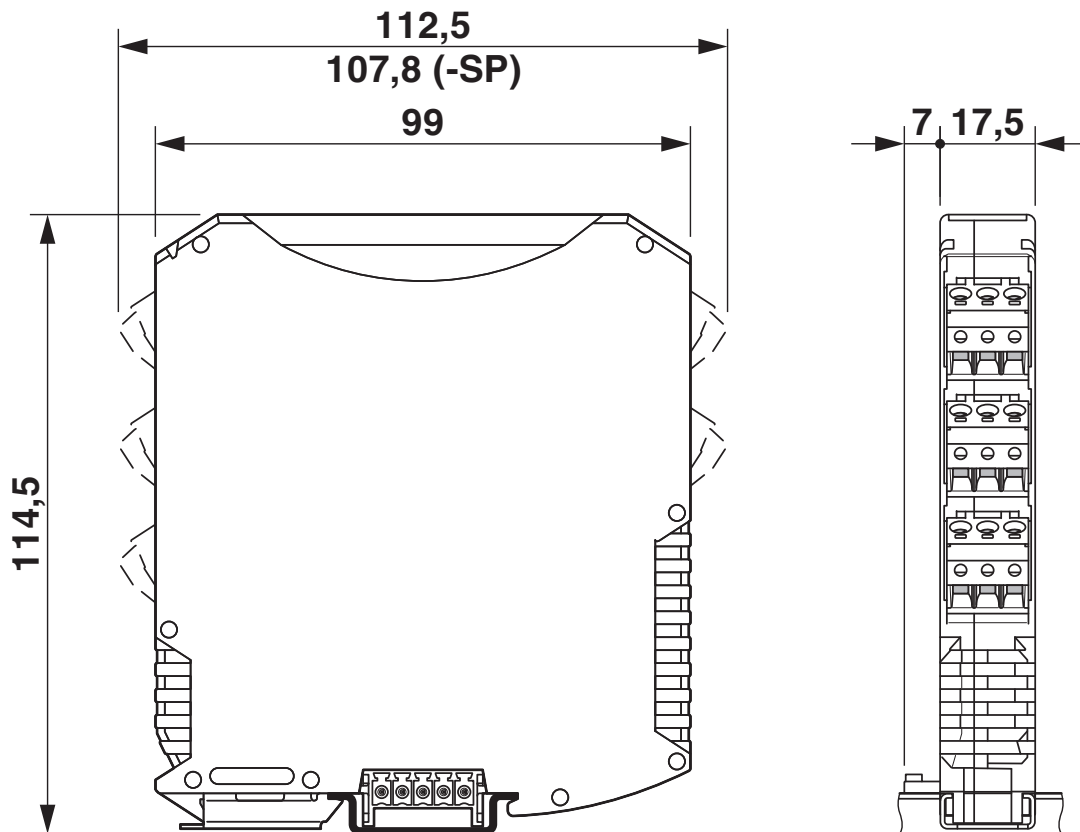


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## Drawings

Dimensional drawing



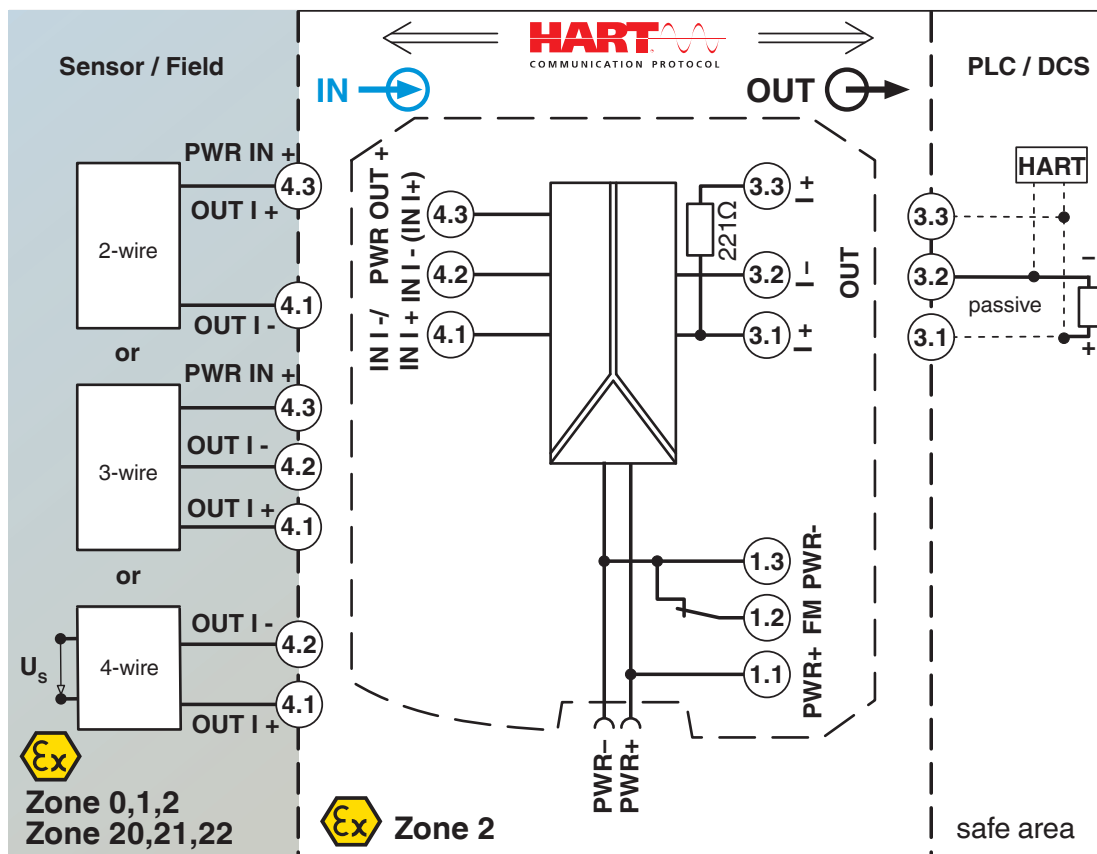
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Block diagram



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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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