

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



1290776

<https://www.phoenixcontact.com/us/products/1290776>

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Ex i-Feed and input signal conditioner with 2 limit value relays, feeds 2-, 3-, and 4-conductor measuring transducer, transmits 1:1 passive or active 0 mA/4 mA ... 20 mA input signals and has 2 configurable limit value outputs. number of channels: 1, Standard configuration, 4-way isolation, Safety Integrity Level (SIL, IEC 61508): 2, Push-in connection

## Commercial data

Item number	1290776
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C430
Product key	DK121W
GTIN	4063151522711
Weight per piece (including packing)	205.1 g
Weight per piece (excluding packing)	160 g
Customs tariff number	85437090
Country of origin	DE

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## Technical data

### Notes

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	4-way isolation
Electrical isolation between input and output	yes
Linearity error	≤ 0.1 %
Maximum power dissipation for nominal condition	1.5 W
Typical offset error	≤ 0.1 %
Signal transmission behavior	In = Out
Temperature coefficient, typical	≤ 0.1 % (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/limit value contact 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/limit value contact

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
Supply voltage range	18 V ... 31.2 V
Power dissipation	1.5 W ( $R_L$ 250 $\Omega$ )
Power consumption	2 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	4 mA ... 20 mA (with HART) 2 mA ... 22 mA (Function area)
Short-circuit current	$\leq 35$ mA
Line fault detection	< 3.6 mA (Line break) > 21 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	4 mA ... 20 mA (with HART) 2 mA ... 22 mA (Function area)
Input resistance current input	> 250 $\Omega$ (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) > 21 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

### Switching: Relay

Contact switching type	2 N/O contacts
Max. switching current	$\leq 170$ mA (Resistive load) $\leq 500$ mA ( $\leq 1$ ms)
Typical response time	< 80 ms
Typical turn-off time	< 100 ms

### Signal: Repeater power supply operation

Output description	Current output (active)
Current output signal	4 mA ... 20 mA (with HART) 2 mA ... 22 mA (Function area)

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Load	0 Ω ... 600 Ω
Output ripple (current)	≤ 40 μA (effective)

Signal: Signal conditioner operation

Output description	Signal conditioner operation
Current output signal	4 mA ... 20 mA (with HART) 2 mA ... 22 mA (Function area)
Load	0 Ω ... 600 Ω
Output ripple (current)	≤ 40 μA (effective)

## Connection data

Connection method	Push-in connection
Stripping length	8 mm
Conductor cross-section rigid	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section flexible	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section AWG	24 ... 16

## Ex data

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

Safety data: Repeater power supply operation (2-conductor measuring transducer)

Note	With connection of measuring transducers
Max. internal inductance $L_i$	negligible
Max. internal capacitance $C_i$	negligible
Max. output voltage $U_o$	27 V
Max. output current $I_o$	87.9 mA
Max. output power $P_o$	574 mW
Safety-related maximum voltage $U_m$	253 V AC
IIB/IIIC (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	14 mH / 705 nF
IIC (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	2.3 mH / 90 nF
IIB/IIIC (mixed circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	10 mH / 290 nF, 1 mH / 380 nF, 0.2 mH / 600 nF
IIC (mixed circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	1 mH / 56 nF, 0.5 mH / 72 nF, 0.2 mH / 90 nF

Safety data: Repeater power supply operation (3-conductor measuring transducer)

Note	With connection of measuring transducers
Max. internal inductance $L_i$	negligible
Max. internal capacitance $C_i$	negligible
Max. output voltage $U_o$	27 V
Max. output current $I_o$	88.3 mA
Max. output power $P_o$	574 mW

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IIB/IIIC (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	14 mH / 705 nF
IIC (simple circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	2.3 mH / 90 nF
IIB/IIIC (mixed circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	10 mH / 290 nF, 1 mH / 380 nF, 0.2 mH / 600 nF
IIC (mixed circuit): Max. external inductivity $L_o$ / Max. external capacitance $C_o$	1 mH / 56 nF, 0.5 mH / 72 nF, 0.2 mH / 90 nF

## Safety data: Signal conditioner operation

Note	With connection of power sources
Input voltage $U_i$	30 V
Input current $I_i$	100 mA
Max. internal inductance $L_i$	negligible
Max. internal capacitance $C_i$	negligible
Max. output voltage $U_o$	4.1 V
Max. output current $I_o$	0 mA
Max. output power $P_o$	0 mW

## 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)
	LED yellow (switching state)
	Red LED (line errors)

## Dimensions

Dimensional drawing	
Width	17.5 mm
Height	107.8 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
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Housing material	PA 6.6
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## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20 (Terminal blocks)
	IP30 (Housing)
Ambient temperature (operation)	-40 °C ... 70 °C (Stand-alone device: any mounting position)
	-40 °C ... 48 °C (Group assembly: vertical DIN rail without circulating air)
	-40 °C ... 58 °C (Group assembly: vertical DIN rail with circulating air)
	-40 °C ... 56 °C (Group assembly: horizontal DIN rail without circulating air)
	-40 °C ... 60 °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	2
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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	4-way isolation
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## Mounting

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

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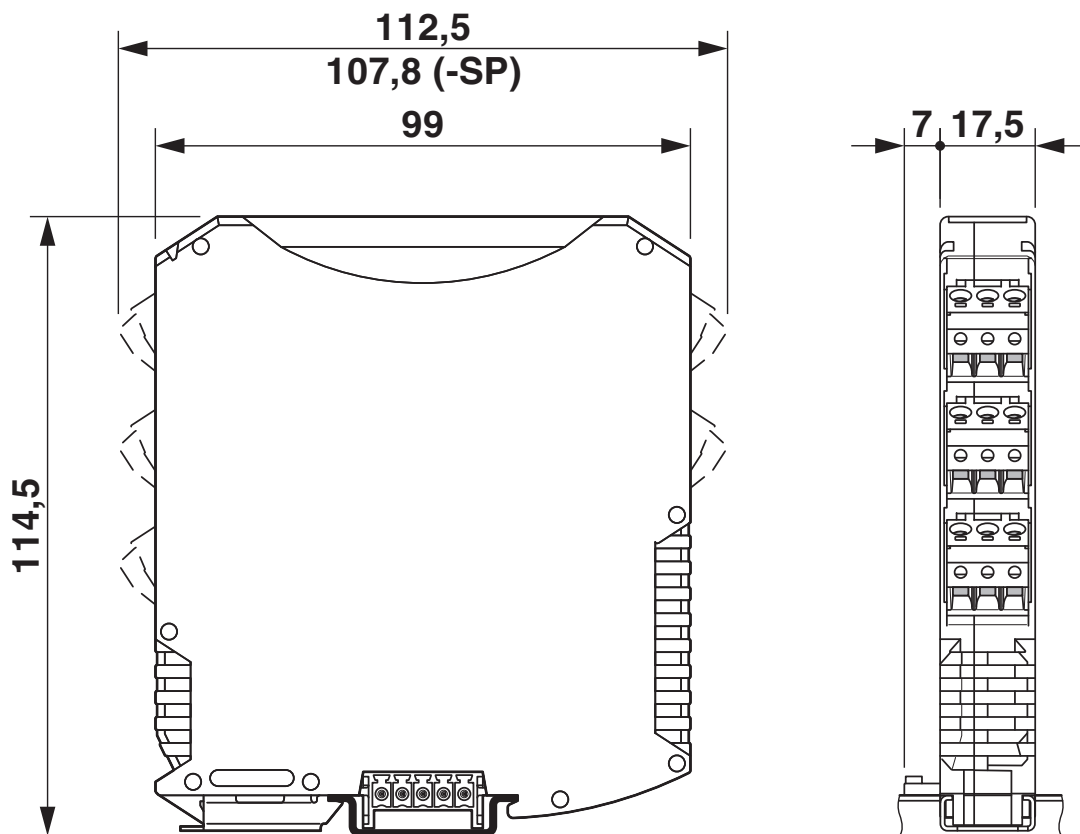


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## Drawings

Dimensional drawing



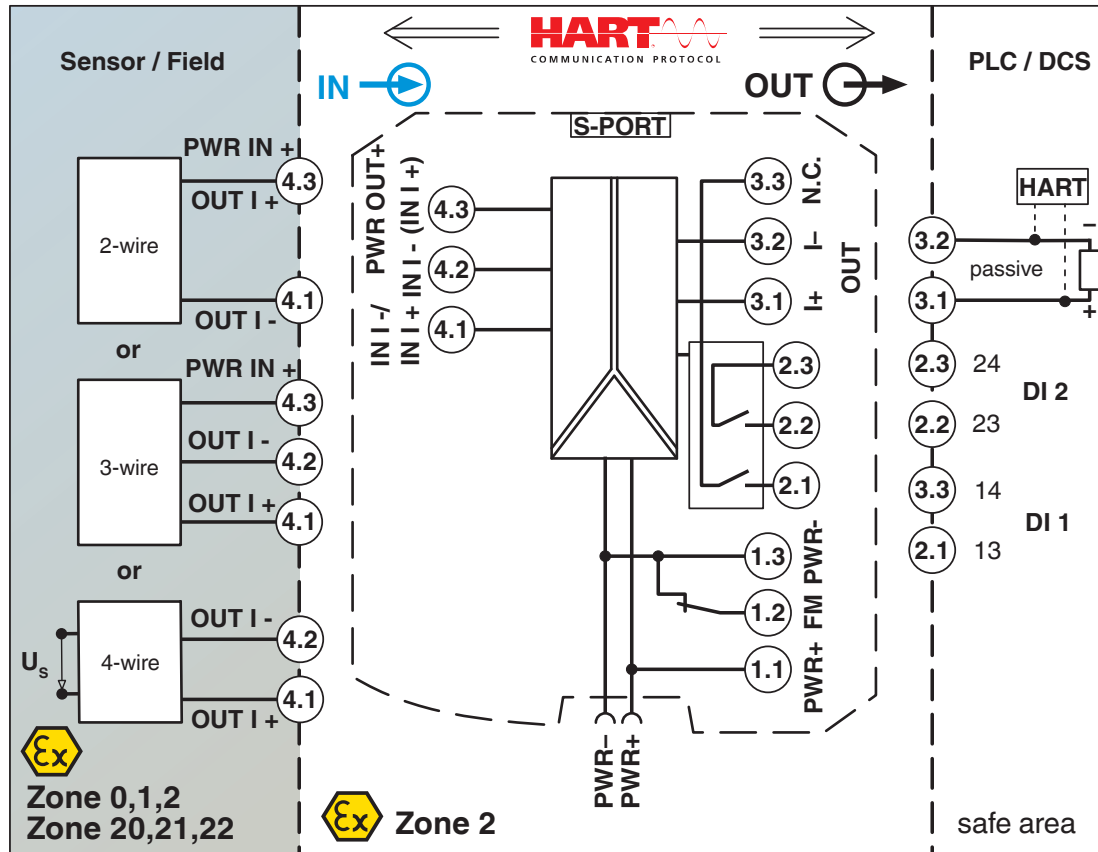
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Block diagram



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1290776>

### Functional Safety

Approval ID: 22/05-248 R030 V1R0



### IECEX

Approval ID: IECEx BVS 21.0020X



### ATEX

Approval ID: BVS 21 ATEX E 018X

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## Classifications

### ECLASS

ECLASS-13.0	27210120
ECLASS-15.0	27210120

### ETIM

ETIM 10.0	EC002653
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### UNSPSC

UNSPSC 21.0	39121000
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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	ef8c88ba-fd59-4cd3-9e72-66732d2d170b

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