

# MACX MCR-SL-UI-REL-SP - Limit value switch



2906170

<https://www.phoenixcontact.com/us/products/2906170>

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Limit value switch with input for active current and voltage signals and a limit-value relay output (changeover contact). Can be set via DIP switch and potentiometer, galvanic 3-way electrical isolation, up to SIL2 (SC3), PLc Cat.1, Push-in connection.

## Commercial data

Item number	2906170
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C402
Product key	DK1117
GTIN	4055626043906
Weight per piece (including packing)	248.8 g
Weight per piece (excluding packing)	265 g
Customs tariff number	85437090
Country of origin	DE

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## Technical data

### Product properties

Product type	Limit value switch
Product family	MACX Analog
Configuration	DIP switches

### System properties

#### Functionality

Configuration	DIP switches
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### Electrical properties

Electrical isolation	3-way isolation
Electrical isolation between input and output	yes
Switching point accuracy	< 0.1 %
Step response (0–99%)	≤ 22 ms
Maximum temperature coefficient	0.01 %/K
Maximum transmission error	0.1 %

#### Electrical isolation

Test voltage	2.5 kV AC (50 Hz, 60 s)
Overvoltage category	II
Pollution degree	2

#### Electrical isolation Output/supply IEC/EN 60079-7

Standards/regulations	IEC/EN 60079-7
Rated insulation voltage	250 V AC

#### Electrical isolation Input/output/power supply IEC/EN 61010-1

Standards/regulations	IEC/EN 61010-1
Rated insulation voltage	300 V AC
Insulation	Safe isolation

#### Electrical isolation Input/output, power supply IEC/EN 60079-7

Standards/regulations	IEC/EN 60079-7
Rated insulation voltage	375 V AC

### Supply

Nominal supply voltage range	12 V DC ... 24 V DC -20 % ... +25 %
Supply voltage range	9.6 V DC ... 30 V DC
Typical current consumption	38 mA (24 V DC)
Max. current consumption	90 mA (10 V DC)
Power dissipation	< 0.9 W
Power consumption	≤ 1.2 W

## Input data

Signal: Voltage/current

Voltage input signal	0.1 V ... 10 V
	0.1 V ... 10.5 V (Maximum range)
Total error of the voltage input maximum	± 10 mV
Current input signal	0.2 mA ... 20 mA
	0.18 mA ... 21 mA (Maximum range)
Total error of the current input maximum	± 20 µA
Input resistance of voltage input	> 100 kΩ
Input resistance current input	< 28 Ω
Switching threshold "0" signal current	Configurable via DIP switch (in 1.25% increments) and potentiometer (linearly up to 2% of the switching threshold set via the DIP switch)
Switching hysteresis	off: approx. 0.5 %, on: approx. 1 %
Line fault detection	< 0.1 mA (Line break)
	> 21.1 mA (Short circuit)

## Output data

Switching: Relay

Contact switching type	1 changeover contact
Contact material	AgSnO <sub>2</sub> , hard gold-plated
Max. switching current	≤ 4 A AC (cos phi = 1)
	≤ 1 A DC (ohmic load, 24 V DC, 50 mW)
	≤ 0.2 A DC (ohmic load, 120 V DC)

## Connection data

Connection method	Push-in connection
Stripping length	10 mm
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 flexible (2 conductors with same cross section)	0.25 mm <sup>2</sup> ... 0.34 mm <sup>2</sup> (TWIN ferrule without plastic sleeve)
	0.5 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (TWIN ferrule with plastic sleeve)
Conductor cross-section AWG	24 ... 14
	24 ... 22 (TWIN ferrule without plastic sleeve)
	20 ... 16 (TWIN ferrule with plastic sleeve)

Test socket

Max. diameter	2 mm
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## Ex data

Ex installation (EPL)	Gc
	Div. 2

## Signaling

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Status display	Green LED (supply voltage)
	Yellow LED (switching output)
	Red LED, flashing (line, sensor error, ERR)

## Dimensions

Dimensional drawing	
Width	12.5 mm
Height	107.9 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

Color	gray (RAL 7042)
Flammability rating according to UL 94 (Housing)	V0 (Housing)
Housing material	PA 6.6-FR

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-20 °C ... 65 °C (Any mounting position)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Altitude	≤ 2000 m
Permissible humidity (operation)	5 % ... 95 % (non-condensing)

## Approvals

### CE

Certificate	CE-compliant
Note	and EN 61326

### ATEX

Identification	⊕ II 3G Ex ec nC IIC T4 Gc
Certificate	TÜV 18 ATEX 8222 X

### IECEX

Identification	Ex ec nC IIC T4 Gc
Certificate	IECEX TUR 18.0014X

### CCC / China-Ex

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Identification	Ex ec nC IIC T4 Gc
Certificate	2022122304115959

## UL, USA/Canada

Identification	UL 61010 Listed
	Class I, Div. 2, Groups A, B, C, D T4
	Class I, Zone 2, Group IIC T4

## Shipbuilding approval

Certificate	DNV GL TAA000020C
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## Safety Integrity Level (SIL, IEC 61508)

Identification	2
Certificate	TÜV Rheinland 968/FSP 1481.01/23

## Systematic Capability

Identification	3
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## Performance Level (ISO 13849)

Identification	c
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## INMETRO

Identification	Ex ec nC IIC T4 Gc
Certificate	DNV 21.0089 X

## Shipbuilding data

Temperature	B
Humidity	B
Vibration	A
EMC	A
Enclosure	Required protection according to the Rules shall be provided upon installation on board

## EMC data

Electromagnetic compatibility	Conformance with EMC directive
Noise immunity	EN 61000-6-2
Note	When being exposed to interference, there may be minimal deviations.

## Noise emission

Standards/regulations	EN 61000-6-4
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## Standards and regulations

Electrical isolation	3-way isolation
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## GB Standard

Standards/regulations	GB/T 3836.1
	GB/T 3836.3
	GB/T 3836.8

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## Mounting

Mounting type	DIN rail mounting
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## Drawings

Dimensional drawing



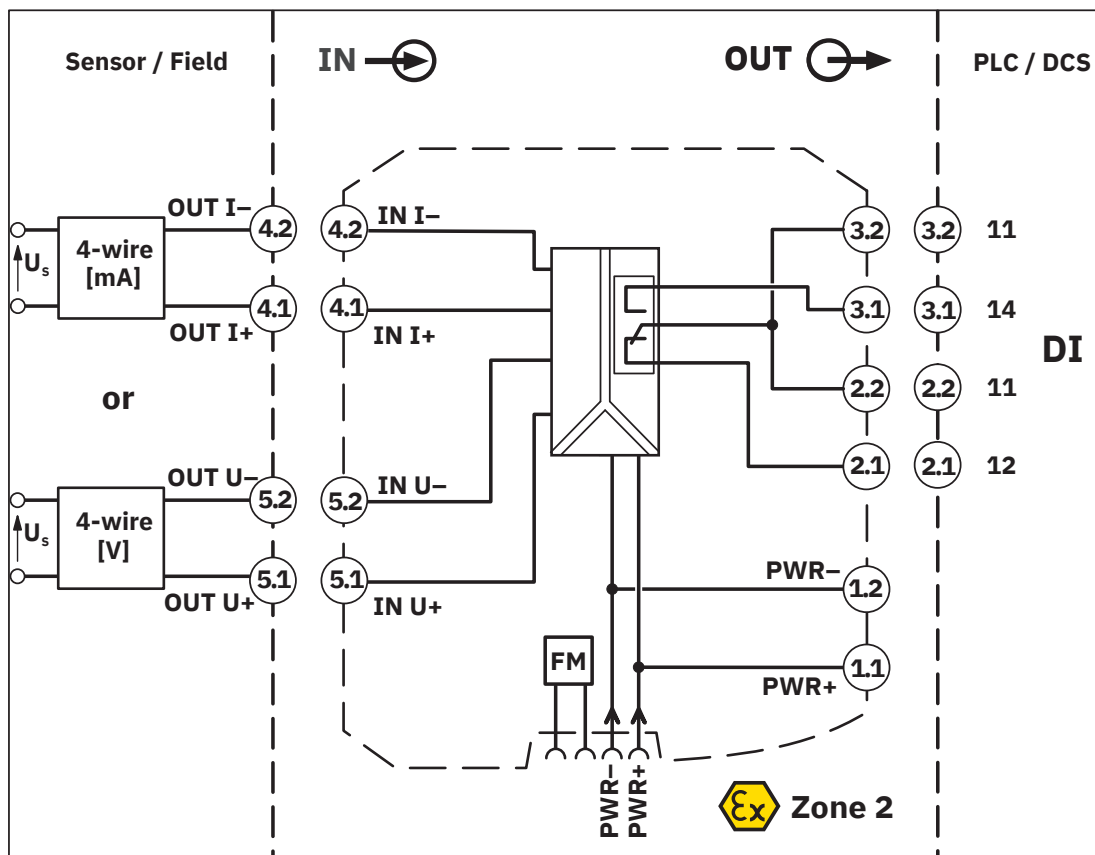
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Block diagram



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2906170>

### DNV

Approval ID: TAA000020C



### UL Listed

Approval ID: E330267



### cUL Listed

Approval ID: FILE E 330267



### Functional Safety

Approval ID: 968/FSP 1481.00/17



### EAC Ex

Approval ID: RU C-DE.HB49.B.00145



### IECEX

Approval ID: IECEX TUR 18.0014X



### CCC

Approval ID: 2022122304115959



### cUL Listed

Approval ID: E199827



### UL Listed

Approval ID: E199827

### INMETRO

Approval ID: DNV 21.0089 X



### ATEX

Approval ID: TÜV 18 ATEX 8222 X

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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)
	2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol(CAS: 79-94-7)
SCIP	e714d929-e531-46f6-9946-b52a24be1eff

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Phoenix Contact USA  
586 Fulling Mill Road  
Middletown, PA 17057, United States  
(+717) 944-1300  
[info@phoenixcon.com](mailto:info@phoenixcon.com)