

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



2906165

<https://www.phoenixcontact.com/us/products/2906165>

Please be informed that the data shown in this PDF document is generated from our online catalog. Please find the complete data in the user documentation. Our general terms of use for downloads are valid.



Limit value switch with Ex i 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	2906165
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C430
Product key	DK1217
GTIN	4055626043739
Weight per piece (including packing)	250 g
Weight per piece (excluding packing)	268.2 g
Customs tariff number	85437090
Country of origin	DE

## Technical data

### Product properties

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

### System properties

#### Functionality

Configuration	DIP switches
	Potentiometer

### 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 60079-11

Standards/regulations	IEC/EN 60079-11
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 60079-11

Standards/regulations	IEC/EN 60079-11
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

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



2906165

<https://www.phoenixcontact.com/us/products/2906165>

Power consumption	$\leq 1.2 \text{ W}$
-------------------	----------------------

## Input data

Signal: Voltage/current

Description of the input	intrinsically safe
Voltage input signal	0.1 V ... 10 V 0.1 V ... 10.5 V (Maximum range)
Total error of the voltage input maximum	$\pm 10 \text{ mV}$
Current input signal	0.2 mA ... 20 mA 0.18 mA ... 21 mA (Maximum range)
Total error of the current input maximum	$\pm 20 \mu\text{A}$
Input resistance of voltage input	$> 100 \text{ k}\Omega$
Input resistance current input	$< 28 \Omega$
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	$< 0.1 \text{ mA}$ (Line break) $> 21.1 \text{ mA}$ (Short circuit)

## Output data

Switching: Relay

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

## Ex data

Ex installation (EPL)	Gc
-----------------------	----

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



2906165

<https://www.phoenixcontact.com/us/products/2906165>

	Div. 2
Ex i circuits (EPL)	[Ga]
	[Da]
	[Ma]
	[Div. 1]

## Safety data

Input voltage $U_i$	30 V (Current and voltage input)
Input current $I_i$	120 mA (Current and voltage input)
Input power $P_i$	0.9 W (Current and voltage input)
Max. internal inductance $L_i$	negligible
Max. internal capacitance $C_i$	75 nF (for current input)
	Negligible at voltage input
Max. output voltage $U_o$	0 V DC (Current input)
	3.9 V DC (Voltage input)
Max. output current $I_o$	0 mA (Current input)
	0.1 mA (Voltage input)
Max. output power $P_o$	0 mW (Current input)
	0.5 mW (Voltage input)
Safety-related maximum voltage $U_m$	253 V AC
	125 V DC
IIC: Max. external inductivity $L_o$ / Max. external capacitance $C_o$	100 mH / 3.3 $\mu$ F, 5 mH / 4.7 $\mu$ F, 1 mH / 6.3 $\mu$ F
IIB/IIIC: Max. external inductivity $L_o$ / Max. external capacitance $C_o$	100 mH / 16 $\mu$ F, 5 mH / 24 $\mu$ F, 1 mH / 35 $\mu$ F
IIA/I: Max. external inductivity $L_o$ / Max. external capacitance $C_o$	100 mH / 24 $\mu$ F, 5 mH / 35 $\mu$ F, 1 mH / 48 $\mu$ F

## Signaling

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

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



2906165

<https://www.phoenixcontact.com/us/products/2906165>

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 (1) G [Ex ia Ga] IIC
	⊕ II (1) D [Ex ia Da] IIIC
	⊕ II 3(1) G Ex ec nC [ia Ga] IIC T4 Gc
	⊕ I (M1) [Ex ia Ma] I
Certificate	TÜV 17 ATEX 8061 X

### IECEX

Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec nC [ia Ga] IIC T4 Gc
Certificate	IECEX TUR 18.0014X

### CCC / China-Ex

Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec nC [ia Ga] IIC T4 Gc
Certificate	2022122316115960

### UL, USA/Canada

Identification	UL 61010 Listed
	Class I Div 2; IS for Class I, II, III Div 1
Certificate	Ⓢ.C.D.-No 83104549

### Shipbuilding approval

Certificate	DNV GL TAA000020C
-------------	-------------------

### Safety Integrity Level (SIL, IEC 61508)

Identification	2
----------------	---

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



2906165

<https://www.phoenixcontact.com/us/products/2906165>

Certificate	TÜV Rheinland 968/FSP 1481.01/23
-------------	----------------------------------

## Systematic Capability

Identification	3
----------------	---

## Performance Level (ISO 13849)

Identification	c
----------------	---

## INMETRO

Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex ec nC [ia Ga] 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
-----------------------	--------------

## Standards and regulations

Electrical isolation	3-way isolation
----------------------	-----------------

## GB Standard

Standards/regulations	GB/T 3836.1
	GB/T 3836.3
	GB/T 3836.4
	GB/T 3836.8

## Mounting

Mounting type	DIN rail mounting
---------------	-------------------

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



2906165

<https://www.phoenixcontact.com/us/products/2906165>

## Drawings

Dimensional drawing



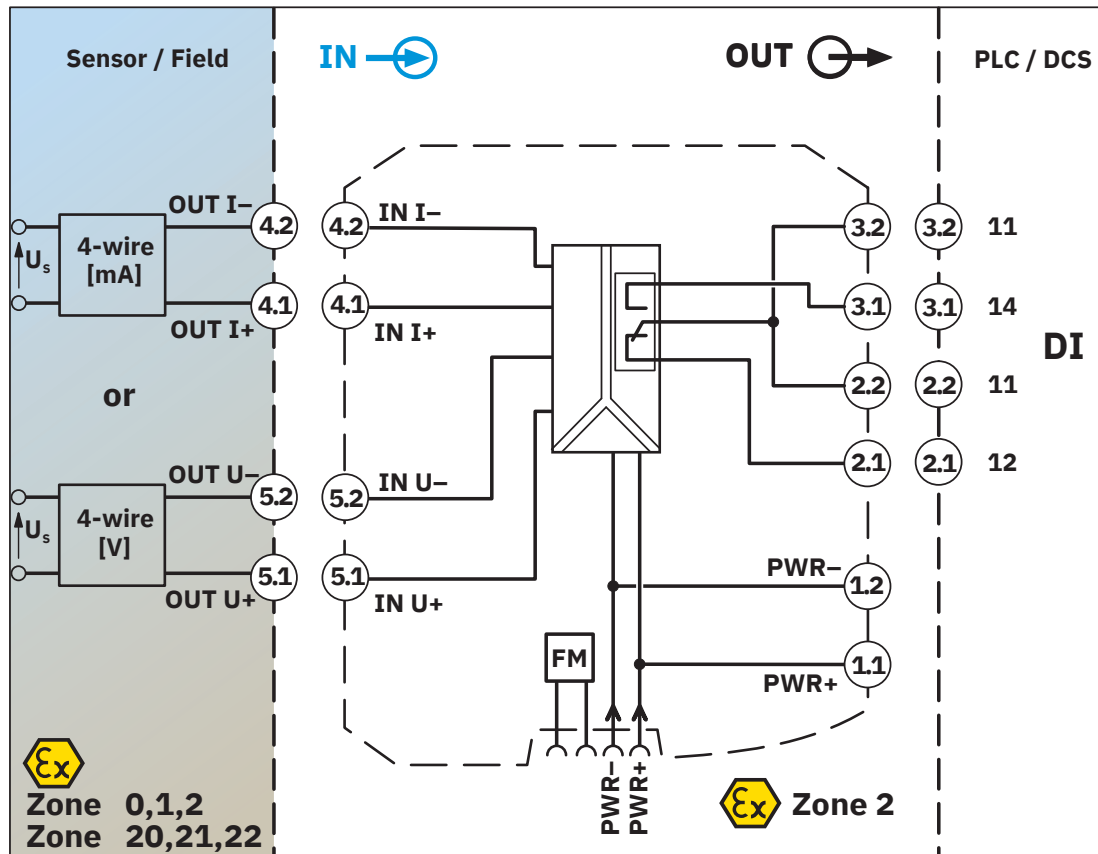
# MACX MCR-EX-SL-UI-REL-SP - Limit value switch



2906165

<https://www.phoenixcontact.com/us/products/2906165>

Block diagram



2906165

<https://www.phoenixcontact.com/us/products/2906165>

## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2906165>

### 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: 2022122316115960



### cUL Listed

Approval ID: FILE E 199827



### UL Listed

Approval ID: E199827

### INMETRO

Approval ID: DNV 21.0089 X



### ATEX

Approval ID: TÜV 17 ATEX 8061 X

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



2906165

<https://www.phoenixcontact.com/us/products/2906165>

## Classifications

### ECLASS

ECLASS-13.0	27210120
ECLASS-15.0	27210120

### ETIM

ETIM 10.0	EC002653
-----------	----------

### UNSPSC

UNSPSC 21.0	39121000
-------------	----------

2906165

<https://www.phoenixcontact.com/us/products/2906165>

## 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	bed41982-a3f6-4478-8b70-ffe4d6d0d782

Phoenix Contact 2026 © - all rights reserved  
<https://www.phoenixcontact.com>

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