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

2906165

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

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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
No. of channels	1
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
Power consumption	≤ 1.2 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	± 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	$AgSnO_2$, 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 mm² ... 2.5 mm²
Conductor cross-section flexible	0.2 mm² ... 2.5 mm²
Conductor cross-section flexible (2 conductors with same cross section)	0.25 mm² ... 0.34 mm² (TWIN ferrule without plastic sleeve)
	0.5 mm² ... 1.5 mm² (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
	Div. 2
Ex i circuits (EPL)	[Ga]
	[Da]
	[Ma]
	[Div. 1]

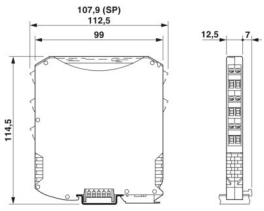
Safety data

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 µF, 5 mH / 4.7 µF, 1 mH / 6.3 µF
IIB/IIIC: Max. external inductivity L_o / Max. external capacitance C_o	100 mH / 16 µF, 5 mH / 24 µF, 1 mH / 35 µF
IIA/I: Max. external inductivity L_o / Max. external capacitance C_o	100 mH / 24 µF, 5 mH / 35 µF, 1 mH / 48 µF

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

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	Ⓔx II (1) G [Ex ia Ga] IIC
	Ⓔx II (1) D [Ex ia Da] IIIC
	Ⓔx II 3(1) G Ex ec nC [ia Ga] IIC T4 Gc
	Ⓔx 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	cULus C.D.-No 83104549

Shipbuilding approval

Certificate	DNV GL TAA000020C

Safety Integrity Level (SIL, IEC 61508)

Identification	2
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

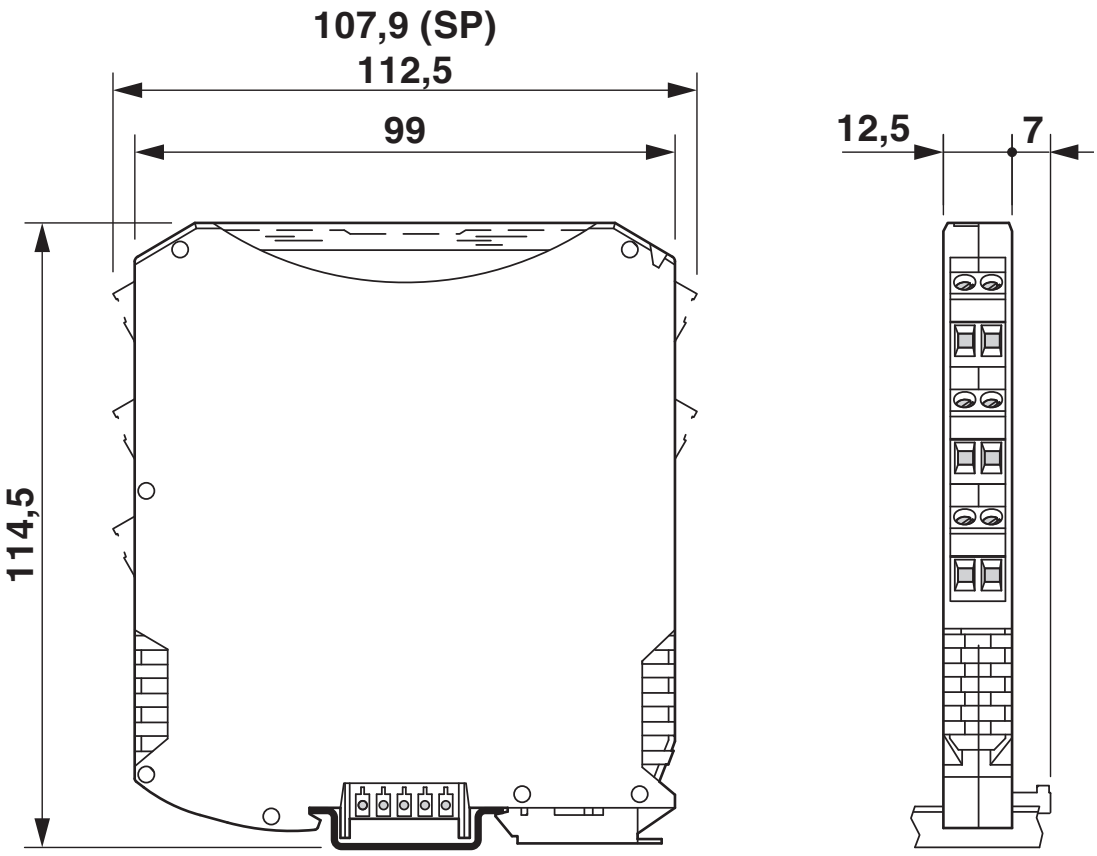
Standards/regulations	GB/T 3836.1
	GB/T 3836.3
	GB/T 3836.4
	GB/T 3836.8

Mounting

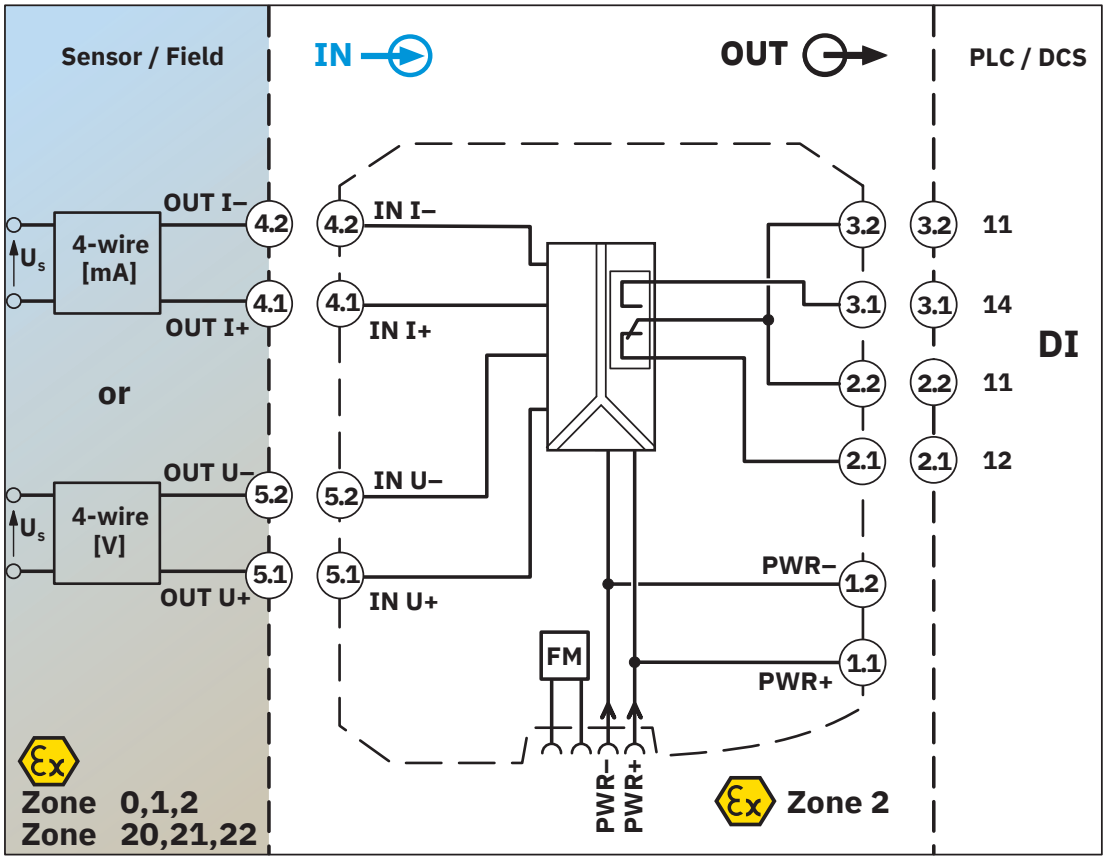
Mounting type	DIN rail mounting

Drawings

Dimensional drawing



Block diagram



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

Classifications

ECLASS

ECLASS-13.0	27210120
ECLASS-15.0	27210120

ETIM

ETIM 10.0	EC002653

UNSPSC

UNSPSC 21.0	39121000

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

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