

MACX MCR-EX-SL-RTD-I-SP-NC - Temperature measuring transducer



2924168

<https://www.phoenixcontact.com/us/products/2924168>

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Ex i temperature transducer: converts signals from resistance temperature detectors installed in the Ex area and transmits a 0/4 - 20 mA signal to a load in the safe area. Freely programmable, spring-cage terminal blocks. Replacement item: 1050252 MACX MCR-EX-RTD-I-SP.

Your advantages

- Power supply possible via DIN rail connector
- Programming during operation with Ex measuring circuit connected and also voltage-free using IFS-USB-PROG-ADAPTER programming adapter
- Input for resistance thermometers and resistance-type sensors, [Ex ia] IIC
- Installation in zone 2, protection type "n" (EN 60079-15) permitted
- 3-way electrical isolation
- Output: 0 mA ... 20 mA or 4 mA ... 20 mA
- Status indicator for supply voltage, cable, sensor, and module errors
- Configuration via software (FDT/DTM): sensor type, connection technology, measuring range, measuring unit, filter, alarm signal, and output range

Commercial data

Item number	2924168
Packing unit	1 pc
Note	Made to order (non-returnable)
Sales key	C430
Product key	CK3121
Catalog page	Page 145 (C-5-2017)
GTIN	4046356438957
Weight per piece (including packing)	179.2 g
Weight per piece (excluding packing)	132.1 g
Customs tariff number	85437090
Country of origin	DE

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Technical data

Product properties

Product type	Temperature transmitter
Application	Temperature
No. of channels	1
Type	Ex i signal conditioners

Insulation characteristics

Overvoltage category	II
Pollution degree	2

Electrical properties

Alignment span	$\pm 5 \%$
Alignment zero	$\pm 5 \%$
Electrical isolation	3-way isolation
Step response (0–99%)	700 ms
	$\leq 1100 \text{ ms}$
Temperature coefficient, typical	0.01 %/K

Electrical isolation Input/output/power supply

Rated insulation voltage	300 V _{rms}
Test voltage	2.5 kV AC (50 Hz, 60 s)
Insulation	Safe isolation in accordance with IEC/EN 61010-1

Electrical isolation Input/output

Electrical isolation	375 V (Peak value in accordance with IEC/EN 60079-11)
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Electrical isolation Input/power supply

Electrical isolation	375 V (Peak value in accordance with IEC/EN 60079-11)
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Supply

Nominal supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC (24 V DC, -20 % ... +25 %)
Power dissipation	< 1 W

Input data

Signal

Number of inputs	1
Input signal	Temperature
	Resistor

Measurement

Description of the input	Intrinsically safe
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Sensor types (RTD) that can be used	Pt, Ni, Cu sensors: 2, 3, 4-wire
Temperature measuring range	-200 °C ... 850 °C (Range depending on the sensor type)
Linear resistance measuring range	0 Ω ... 2000 Ω
Max. permissible overall conductor resistance	50 Ω (Per cable)
Sensor input current	200 μ A ... 1 mA
Temperature measuring range	min. 50 K

Output data

Switching:

Configurable/programmable	no
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Signal

Output description	Current output
Number of outputs	1
Configurable/programmable	Yes
Current output signal	0 mA ... 20 mA 4 mA ... 20 mA
Load/output load current output	$\leq 500 \Omega$
Output ripple (current)	$< 50 \mu$ A _{PP} $< 10 \mu$ A _{rms}
Behavior in the event of a sensor error	As per NE 43 or can be freely defined

Connection data

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

Ex data

Safety data

Max. output voltage U _o	6 V
Max. output current I _o	6.3 mA
Max. output power P _o	9.4 mW
Safety-related maximum voltage U _m	253 V AC 125 V DC
IIC (mixed circuit): Max. external inductivity L _o / Max. external capacitance C _o	100 mH / 1.4 μ F, 10 mH / 1.9 μ F, 1 mH / 2.7 μ F
IIB (mixed circuit): Max. external inductivity L _o / Max. external capacitance C _o	100 mH / 6.9 μ F, 10 mH / 9.4 μ F, 1 mH / 15 μ F
IIA (mixed circuit): Max. external inductivity L _o / Max. external capacitance C _o	100 mH / 10 μ F, 10 mH / 13 μ F, 1 mH / 21 μ F

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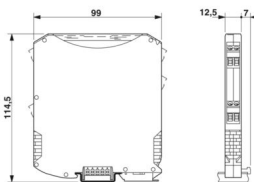
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Signaling

Status display	Green LED (supply voltage, PWR)
	Red LED, flashing 2.4 Hz (cable error, sensor error on input or output, ERR)
	Red LED, flashing 1.2 Hz (service operation, ERR)
	Red LED, permanently on (module error, ERR)

Dimensions

Dimensional drawing	
Width	12.5 mm
Height	116 mm
Depth	114.5 mm

Material specifications

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

Environmental and real-life conditions

Ambient conditions

Degree of protection	IP20 (not assessed by UL)
Ambient temperature (operation)	-20 °C ... 60 °C (Any mounting position)
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Altitude	≤ 2000 m
Permissible humidity (operation)	5 % ... 95 % (non-condensing)

Approvals

CE

Certificate	CE-compliant
Note	and EN 61326

ATEX

Identification	Ex II (1) G [Ex ia Ga] IIC/IIB
	Ex II (1) D [Ex ia Da] IIIC
	Ex II 3(1) G Ex nA ic [ia Ga] IIC T4 Gc X
Certificate	IBExU 09 ATEX 1013

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IECEX

Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex nA ic [ia Ga] IIC T4 Gc
Certificate	IECEX IBE 09.0001X

UL, USA/Canada

Identification	Class I Div 2; IS for Class I, II, III Div 1
Certificate	••• C.D.-No 83104549

KC-s

Identification	[Ex ia] IIC/IIB
Certificate	17-KA4BO-0414X

Shipbuilding approval

Identification	C, EMC1
Certificate	GL 86 644-10HH

EAC Ex

Identification	ERC [Ex ia Ga] IIC
	ERC [Ex ia Da] IIIC
Certificate	RU C-DE.AB72.B.00093/19

INMETRO

Identification	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex nA [ia Ga] IIC T4 Gc
Certificate	DNV 18.0142 X

EMC data

Noise immunity	EN 61000-6-2
Note	When being exposed to interference, there may be minimal deviations.
Noise emission	EN 61000-6-4

Electromagnetic HF field

Designation	Electromagnetic RF field
Standards/regulations	EN 61000-4-3

Fast transients (burst)

Designation	Fast transients (burst)
Standards/regulations	EN 61000-4-4

Conducted interference

Designation	Conducted interferences
Standards/regulations	EN 61000-4-6

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Standards and regulations

Electrical isolation	3-way isolation
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Mounting

Mounting type	DIN rail mounting
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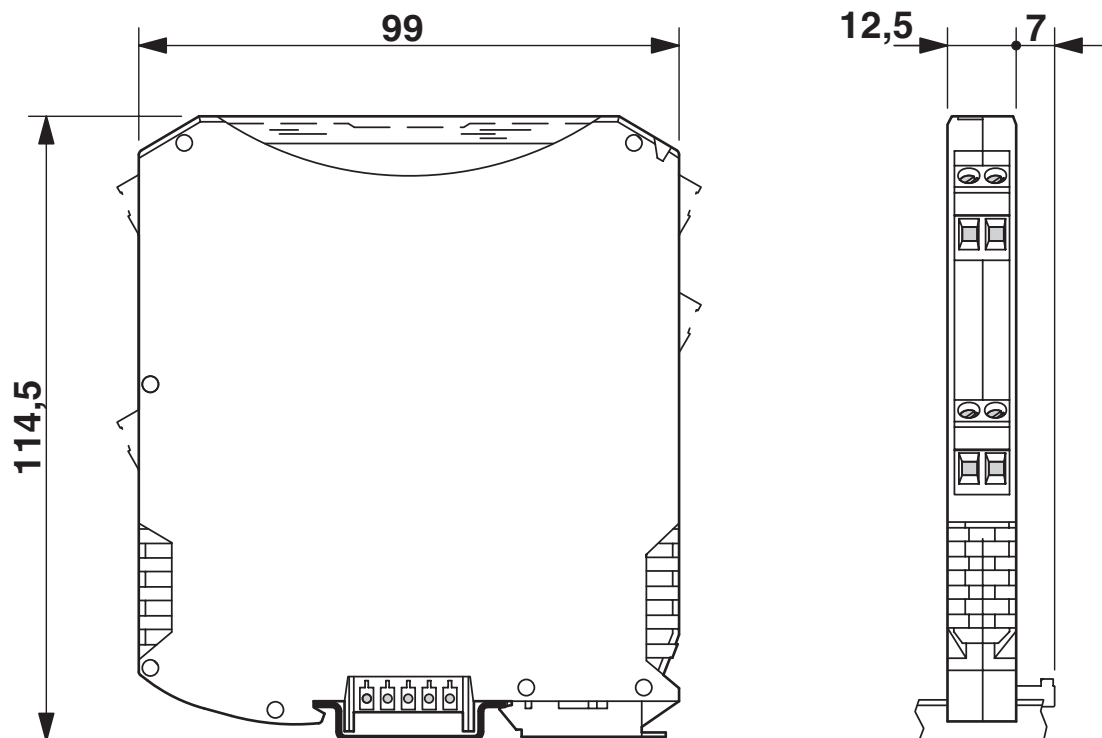


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Drawings

Dimensional drawing

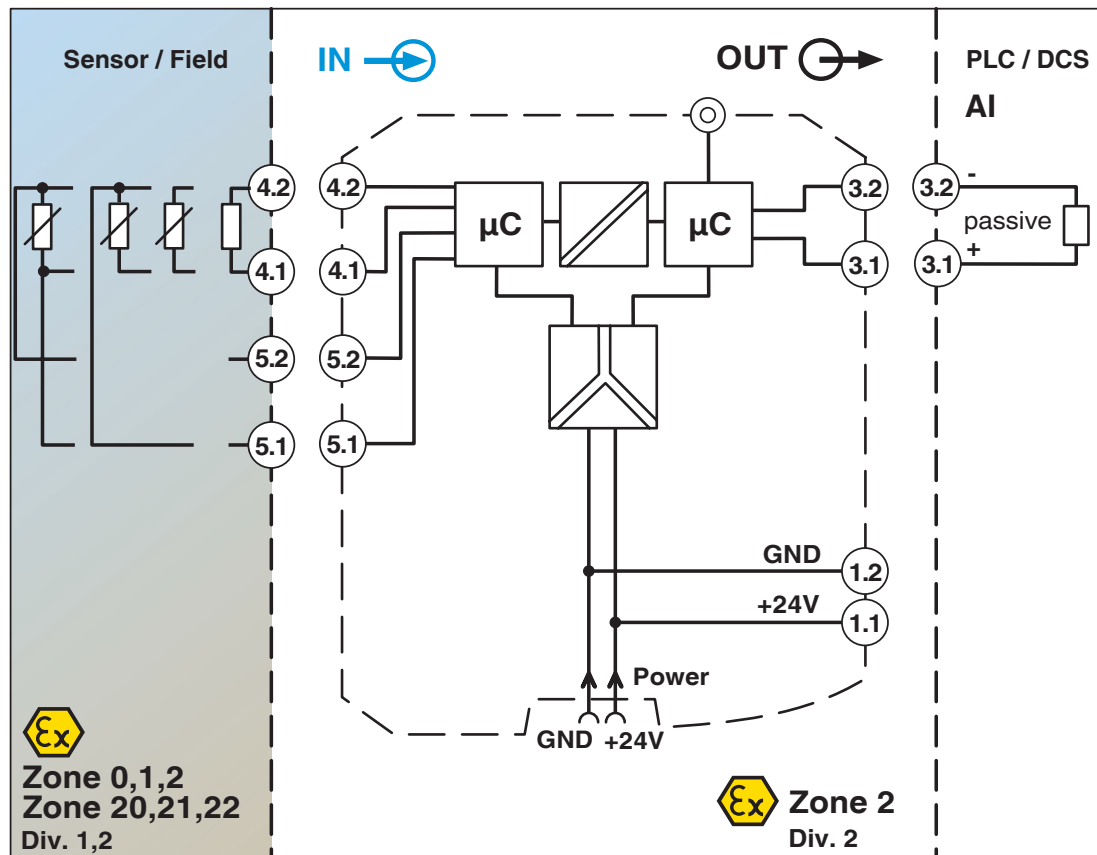


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Block diagram



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Classifications

ECLASS

ECLASS-11.0	27210129
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ETIM

ETIM 9.0	EC002919
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UNSPSC

UNSPSC 21.0	41112105
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Environmental product compliance

China RoHS	Environmentally Friendly Use Period = 50 years
	For information on hazardous substances, refer to the manufacturer's declaration available under "Downloads"

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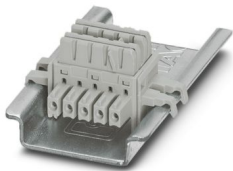
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Accessories

ME 6,2 TBUS-2 1,5/5-ST-3,81 GY - DIN rail bus connectors

2695439

<https://www.phoenixcontact.com/us/products/2695439>



DIN rail connector (TBUS), 5-pos., for bridging the supply voltage, can be snapped onto NS 35/... DIN rail in accordance with EN 60715

MACX MCR-PTB - Power and error message module

2865625

<https://www.phoenixcontact.com/us/products/2865625>



Power and fault signaling module with screw connection, including corresponding ME 17,5 TBUS 1,5/ 5-ST-3,81 GY DIN rail connector

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MACX MCR-PTB-SP - Power and error message module

2924184

<https://www.phoenixcontact.com/us/products/2924184>



Power and fault signaling module with Push-in connection, including corresponding ME 17,5 TBUS 1,5/ 5-ST-3,81 GY DIN rail connector

IFS-USB-PROG-ADAPTER - Programming adapter

2811271

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Programming adapter with USB interface, for programming with software. The USB driver is included in the software solutions for the products to be programmed, such as measuring transducers or motor managers.

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TC-D37SUB-ADIO16-EX-P-UNI - Module carrier

2924854

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Universal termination carrier for connecting 16 MACX Analog Ex i signal conditioners to digital or analog I/O cards, via D-SUB connector, 37-pos. (1:1 connection)

TC-D37SUB-AIO16-EX-PS-UNI - Module carrier

2902932

<https://www.phoenixcontact.com/us/products/2902932>



Universal termination carrier for connecting 16 MACX Analog Ex i signal conditioners to digital or analog I/O cards, via D-SUB connector, 37-pos. (1:1 connection), with HART multiplexer connection

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UC-EMLP (11X9) - Plastic label

0819291

<https://www.phoenixcontact.com/us/products/0819291>



Plastic label, Sheet, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

UC-EMLP (11X9) CUS - Plastic label

0824547

<https://www.phoenixcontact.com/us/products/0824547>



Plastic label, can be ordered: by sheet, white, labeled according to customer specifications, mounting type: adhesive, lettering field size: 11 x 9 mm

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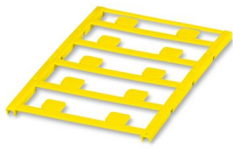
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UC-EMLP (11X9) YE - Plastic label

0822602

<https://www.phoenixcontact.com/us/products/0822602>

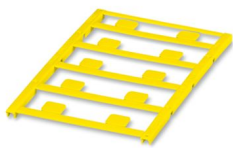


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UC-EMLP (11X9) YE CUS - Plastic label

0824548

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Plastic label, can be ordered: by sheet, yellow, labeled according to customer specifications, mounting type: adhesive, lettering field size: 11 x 9 mm

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UC-EMLP (11X9) SR - Plastic label

0828094

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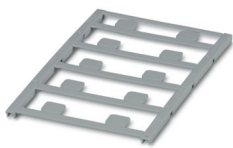


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UC-EMLP (11X9) SR CUS - Plastic label

0828098

<https://www.phoenixcontact.com/us/products/0828098>



Plastic label, can be ordered: by sheet, silver, labeled according to customer specifications, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 10

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US-EMLP (11X9) - Plastic label

0828789

<https://www.phoenixcontact.com/us/products/0828789>



Plastic label, Card, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 135

US-EMLP (11X9) YE - Plastic label

0828871

<https://www.phoenixcontact.com/us/products/0828871>



Plastic label, Card, yellow, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 135

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US-EMLP (11X9) SR - Plastic label

0828872

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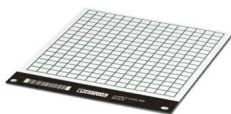


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LS-EMLP (11X9) WH - Device marker

0831678

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Device marker, Sheet, white, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255

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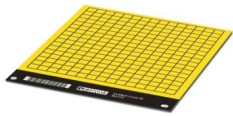
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LS-EMLP (11X9) YE - Device marker

0831732

<https://www.phoenixcontact.com/us/products/0831732>

Device marker, Sheet, yellow, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255



LS-EMLP (11X9) SR - Device marker

0831705

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Device marker, Sheet, silver, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: adhesive, lettering field size: 11 x 9 mm, Number of individual labels: 255



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MPS-MT - Test plug

0201744

<https://www.phoenixcontact.com/us/products/0201744>



Test plug, with solder connection up to 1 mm² conductor cross section, number of positions: 1, color: gray

MPS-IH BK - Insulating sleeve

0201731

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Insulating sleeve, color: black



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MPS-IH GY - Insulating sleeve

0201728

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Insulating sleeve, color: gray



MPS-IH GN - Insulating sleeve

0201702

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Insulating sleeve, color: green



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MPS-IH YE - Insulating sleeve

0201692

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Insulating sleeve, color: yellow

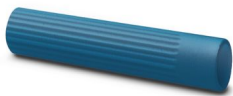


MPS-IH BU - Insulating sleeve

0201689

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Insulating sleeve, color: blue



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MPS-IH RD - Insulating sleeve

0201676

<https://www.phoenixcontact.com/us/products/0201676>

Insulating sleeve, color: red



MPS-IH WH - Insulating sleeve

0201663

<https://www.phoenixcontact.com/us/products/0201663>

Insulating sleeve, color: white



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