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# Temperature measuring transducer - MACX PL-EX-T-UIREL-UP-SP - 2904912

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Programmable temperature transducer with analog output and 3 limit value relays, intrinsically safe signal inputs, resistance thermometer in 2-, 3-, or 4-wire technology, thermocouples, electrical isolation, wide-range power supply, spring-cage connection, PLd

The figure shows a version with a screw connection

## Key Commercial Data

Packing unit	1 STK
GTIN	 4 046356 899666

## Technical data

### Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
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### Dimensions

Width	35 mm
Height	99 mm
Depth	114.5 mm

### Ambient conditions

Ambient temperature (operation)	-20 °C ... 65 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Maximum altitude	≤ 2000 m
Permissible humidity (operation)	typ. 5 % ... 95 % (non-condensing)
Noise immunity	EN 61000-6-2 When being exposed to interference, there may be minimal deviations.
Shock	15g, according to IEC 60068-2-27
Vibration (operation)	5g, accordance to IEC 60068-2-6
Degree of protection	IP20

### Input data

Sensor types (RTD) that can be used	Pt, Ni, Cu sensors: 2, 3, 4-wire
Sensor types that can be used (TC)	B, E, J, K, N, R, S, T, L, U, CA, DA, A1G, A2G, A3G, MG, LG

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## Technical data

### Input data

Temperature measuring range	-200 °C ... 850 °C
Input signal range	0 Ω ... 50 kΩ
Potentiometer resistance range	0 Ω ... 50 kΩ
Input signal range	-1000 mV ... 1000 mV

### Output data

Current output signal	4 mA ... 0.02 A
Max. current output signal	22 mA
Load/output load current output	≤ 600 Ω (at 20 mA)
Behavior in the event of a sensor error	according to NE 43 or freely configurable
Output name	Relay output
Output description	1 SIL/PL
Contact type	2 PDT
Contact material	AgSnO <sub>2</sub> , hard gold-plated
Maximum switching voltage	250 V AC (250 V DC)
Maximum inrush current	2 A (250 V AC)
	2 A (28 V DC)
	0.2 A (120 V DC)
Mechanical service life	1 x 10 <sup>5</sup> cycles

### Power supply

Supply voltage range	24 V ... 230 V AC/DC (-20 %/+10 %, 50/60 Hz)
Typical current consumption	< 100 mA (24 V DC)
Power consumption	< 2.4 W

### Connection data

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

### General

Maximum transmission error	0.1 % (e.g. for Pt 100, 300 K span, 4 ... 20 mA)
Maximum temperature coefficient	0.01 %/K
Step response (0–99%)	typ. 1000 ms (With SIL)
	typ. 700 ms (Without SIL)
Status display	Green LED (supply voltage, PWR)

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## Technical data

### General

	Red LED, flashing (line, sensor error, ERR)
	Red LED (module error, ERR)
	Yellow LED (switching output)
Flammability rating according to UL 94	V0
Degree of pollution	2
Overvoltage category	II
Electromagnetic compatibility	Conformance with EMC Directive 2004/108/EC
Housing material	PA 66-FR
Color	yellow
Designation	Input/output/power supply
Electrical isolation	2.5 kV (50 Hz, 1 min., test voltage)
Designation	Input/output
Electrical isolation	375 V (Peak value in accordance with EN 60079-11)
Designation	Input/power supply
Electrical isolation	375 V (Peak value in accordance with EN 60079-11)
Designation	Input/switching output
Electrical isolation	375 V (Peak value in accordance with EN 60079-11)
Designation	Output/supply
Electrical isolation	300 V <sub>rms</sub> (Rated insulation voltage (overvoltage category II; degree of pollution 2, safe isolation as per EN 61010-1))
Conformance	CE-compliant
ATEX	# II (1) G [Ex ia Ga] IIC
	# II (1) D [Ex ia Da] IIIC
	# II 3 G Ex nA nC ic IIC T4 Gc X
IECEX	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex nA nC ic IIC T4 Gc X
UL, USA / Canada	UL 508 Listed
Functional Safety (SIL)	SIL 2

### Safety data

Max. internal inductance L <sub>i</sub>	negligible
Max. internal capacitance C <sub>i</sub>	44 nF
Max. output voltage U <sub>o</sub>	6 V
Max. output current I <sub>o</sub>	7.4 mA
Max. output power P <sub>o</sub>	11 mW
Group	IIC
Max. external inductivity L <sub>o</sub>	100 mH
Max. external capacity C <sub>o</sub>	1.3 µF
Group	IIC

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## Technical data

### Safety data

Max. external inductivity L <sub>o</sub>	10 mH
Max. external capacity C <sub>o</sub>	1.7 µF
Group	IIC
Max. external inductivity L <sub>o</sub>	1 mH
Max. external capacity C <sub>o</sub>	2.6 µF
Group	IIC
Max. external inductivity L <sub>o</sub>	0 mH
Max. external capacity C <sub>o</sub>	10 µF
Group	IIB
Max. external inductivity L <sub>o</sub>	100 mH
Max. external capacity C <sub>o</sub>	6.8 µF
Group	IIB
Max. external inductivity L <sub>o</sub>	10 mH
Max. external capacity C <sub>o</sub>	9.2 µF
Safety-related maximum voltage U <sub>m</sub>	253 V AC/DC

### EMC data

Designation	Electromagnetic RF field
Standards/regulations	EN 61000-4-3
Typical deviation from the measuring range final value	2 %
Designation	Fast transients (burst)
Standards/regulations	EN 61000-4-4
Typical deviation from the measuring range final value	2 %
Designation	Conducted interferences
Standards/regulations	EN 61000-4-6
Typical deviation from the measuring range final value	2 %

### Standards and Regulations

Electromagnetic compatibility	Conformance with EMC Directive 2004/108/EC
Shock	15g, according to IEC 60068-2-27
Designation	Electromagnetic RF field
Standards/regulations	EN 61000-4-3
	EN 61000-4-4
Designation	Conducted interferences
Standards/regulations	EN 61000-4-6
Electrical isolation	4-way, between input/output/power supply/switching output
Flammability rating according to UL 94	V0
Vibration (operation)	5g, accordance to IEC 60068-2-6
Conformance	CE-compliant
ATEX	# II (1) G [Ex ia Ga] IIC

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## Technical data

### Standards and Regulations

	# II (1) D [Ex ia Da] IIIC
	# II 3 G Ex nA nC ic IIC T4 Gc X
IECEEx	[Ex ia Ga] IIC
	[Ex ia Da] IIIC
	Ex nA nC ic IIC T4 Gc X
UL, USA / Canada	UL 508 Listed
Group	IIC
	IIC
	IIC
	IIC
	IIB
	IIB

## Classifications

### eCl@ss

eCl@ss 5.1	27200206
eCl@ss 6.0	27200206
eCl@ss 8.0	27371503

### ETIM

ETIM 4.0	EC002653
ETIM 5.0	EC002568

## Approvals

### Approvals

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#### Approvals

UL Listed / cUL Listed / GL / Functional Safety / cULus Listed

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#### Ex Approvals

IECEEx / ATEX / UL Listed / cUL Listed / EAC Ex / cULus Listed

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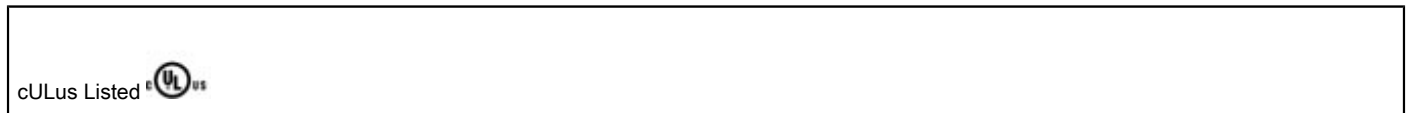
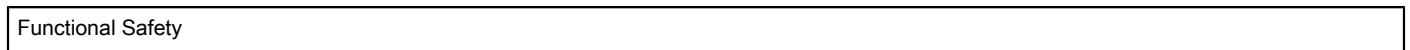
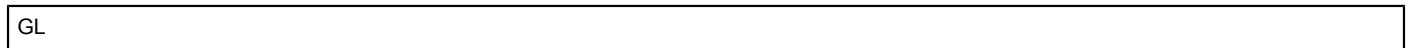
Approvals submitted

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### Approval details

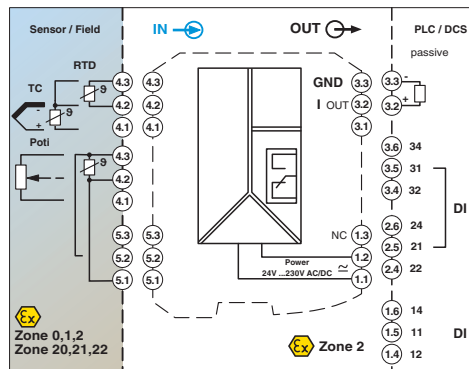
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## Approvals



## Drawings

Block diagram



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