

# 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

## Product Features



## Key commercial data

Packing unit	1 pc
Custom tariff number	85437090
Country of origin	Germany

## 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)

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### Ambient conditions

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
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 ... 20 mA
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>

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### Connection data

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)
	Red LED, flashing (line, sensor error, ERR)
	Red LED (module error, ERR)
	Yellow LED (switching output)
Inflammability class according to UL 94	V0
Pollution degree	2
Surge voltage 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 (surge voltage category II; pollution degree 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

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## Technical data

### General

	[Ex ia Da] IIC
	Ex nA nC ic IIC T4 Gc X
UL, USA / Canada	UL 508 Listed
Functional Safety (SIL)	SIL 2

### Safety data

Max. internal inductance $L_i$	negligible
Max. internal capacitance $C_i$	44 nF
Max. output voltage $U_o$	6 V
Max. output current $I_o$	7.4 mA
Max. output power $P_o$	11 mW
Group	IIC
Max. external inductivity $L_o$	100 mH
Max. external capacity $C_o$	1.3 $\mu$ F
Group	IIC
Max. external inductivity $L_o$	10 mH
Max. external capacity $C_o$	1.7 $\mu$ F
Group	IIC
Max. external inductivity $L_o$	1 mH
Max. external capacity $C_o$	2.6 $\mu$ F
Group	IIC
Max. external inductivity $L_o$	0 mH
Max. external capacity $C_o$	10 $\mu$ F
Group	IIB
Max. external inductivity $L_o$	100 mH
Max. external capacity $C_o$	6.8 $\mu$ F
Group	IIB
Max. external inductivity $L_o$	10 mH
Max. external capacity $C_o$	9.2 $\mu$ F
Safety-related maximum voltage $U_m$	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)

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## Technical data

### EMC data

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 %

## Classifications

### eCl@ss

eCl@ss 5.1	27200206
eCl@ss 6.0	27200206

### ETIM

ETIM 4.0	EC002653
ETIM 5.0	EC002653

## Approvals

### Approvals

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#### Approvals

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

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#### Ex Approvals


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

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#### Approvals submitted

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### Approval details

UL Listed 
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## Approvals

cUL Listed

GL

Functional Safety

cULus Listed

## Drawings

Block diagram

