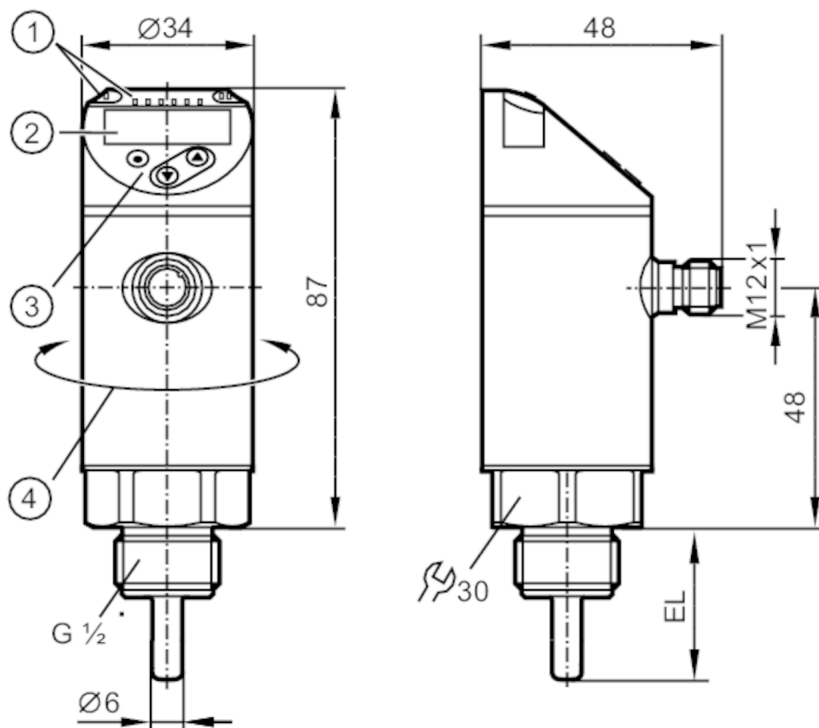


# TN2405



## Temperature sensor with display

TN-030KLBM12-MFRKG/US/



- 1 LEDs Display unit / switching status
- 2 alphanumeric display 4-digit red/green
- 3 programming buttons
- 4 upper part of the housing can be rotated 345°



### Product characteristics

Number of inputs and outputs	Number of digital outputs: 2; Number of analogue outputs: 1	
Measuring range	-50...150 °C	-58...302 °F
Process connection	threaded connection G 1/2	
Installation length EL [mm]	30	

### Application

Special feature	Gold-plated contacts
Measuring element	1 x Pt 1000; (to DIN EN 60751, class A)
Media	liquids and gases
Pressure rating [bar]	300

### Electrical data

Operating voltage [V]	18...32 DC; ("supply class 2" to cULus)
Current consumption [mA]	< 50
Protection class	III
Reverse polarity protection	yes
Power-on delay time [s]	1
Integrated watchdog	yes



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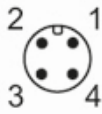
Inputs / outputs	
Number of inputs and outputs	Number of digital outputs: 2; Number of analogue outputs: 1
Outputs	
Total number of outputs	2
Output signal	switching signal; analogue signal; IO-Link; (configurable)
Electrical design	PNP/NPN
Number of digital outputs	2
Output function	normally open / normally closed; (parameterisable)
Max. voltage drop switching output DC [V]	2.5
Permanent current rating of switching output DC [mA]	250
Number of analogue outputs	1
Analogue current output [mA]	4...20
Max. load [ $\Omega$ ]	500
Analogue voltage output [V]	0...10
Min. load resistance [ $\Omega$ ]	2000
Short-circuit protection	yes
Type of short-circuit protection	pulsed
Overload protection	yes
Measuring/setting range	
Measuring range	-50...150 °C      -58...302 °F
Factory setting	-50...150 °C
Set point SP	-49.8...150 °C      -57.6...302 °F
Reset point rP	-50...149.8 °C      -58...301.6 °F
Analogue start point	-50...145 °C      -58...293 °F
Analogue end point	-45...150 °C      -49...302 °F
In steps of	0.1 °C      0.1 °F
Resolution	
Resolution of switching output [K]	0.1
Resolution of analogue output [K]	current output: MS / 4096; voltage output: MS / 3561
Resolution of display [K]	0.1
Accuracy / deviations	
Switch point accuracy [K]	$\pm 0,3 + (\pm 0,1 \% \text{ MS})$
Precision analogue output [K]	$\pm 0,3 + (\pm 0,1 \% \text{ MS})$
Display accuracy [K]	$\pm 0,3 + (\pm 0,1 \% \text{ MS})$
Temperature coefficient [% of the span / 10 K]	0,1; (in case of deviation from the reference condition $25 \pm 5 \text{ °C}$ )
Response times	
Dynamic response T05 / T09 [s]	1 / 3; (to DIN EN 60751)
Software / programming	
Parameter setting options	hysteresis / window; normally open / normally closed; switching logic; switch-on/switch-off delay; Damping; Display unit; current/voltage output

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Interfaces		
Communication interface	IO-Link	
Transmission type	COM2 (38,4 kBaud)	
IO-Link revision	1.1	
Operating conditions		
Ambient temperature	[°C]	-25...80
Storage temperature	[°C]	-40...100
Protection	IP 67	
Tests / approvals		
EMC	DIN EN 61000-6-2	
	DIN EN 61000-6-3	
Shock resistance	DIN IEC 68-2-27	50 g (11 ms)
Vibration resistance	DIN EN 60068-2-6	20 g (10...2000 Hz)
MTTF	[years]	207
UL approval	UL Approval no.	K015
Mechanical data		
Weight	[g]	231.5
Materials	stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC	
Materials (wetted parts)	stainless steel (1.4404 / 316L); O-ring: FKM	
Process connection	threaded connection G 1/2	
Installation length EL	[mm]	30
Displays / operating elements		
Display	Display unit	2 x LED, green
	switching status	2 x LED, yellow
	measured values	alphanumeric display, red/green 4-digit
Remarks		
Remarks	MS = set measuring span The values for accuracy apply to flowing water.	
Pack quantity	1 pcs.	
Electrical connection		
Connector: 1 x M12; Contacts: gold-plated		
		

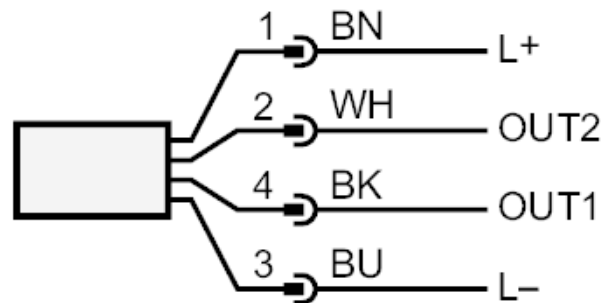
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## Temperature sensor with display

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### Connection



OUT1: switching output / IO-Link

OUT2: switching output / analogue output

colours to DIN EN 60947-5-2

Core colours :

BK = black

BN = brown

BU = blue

WH = white