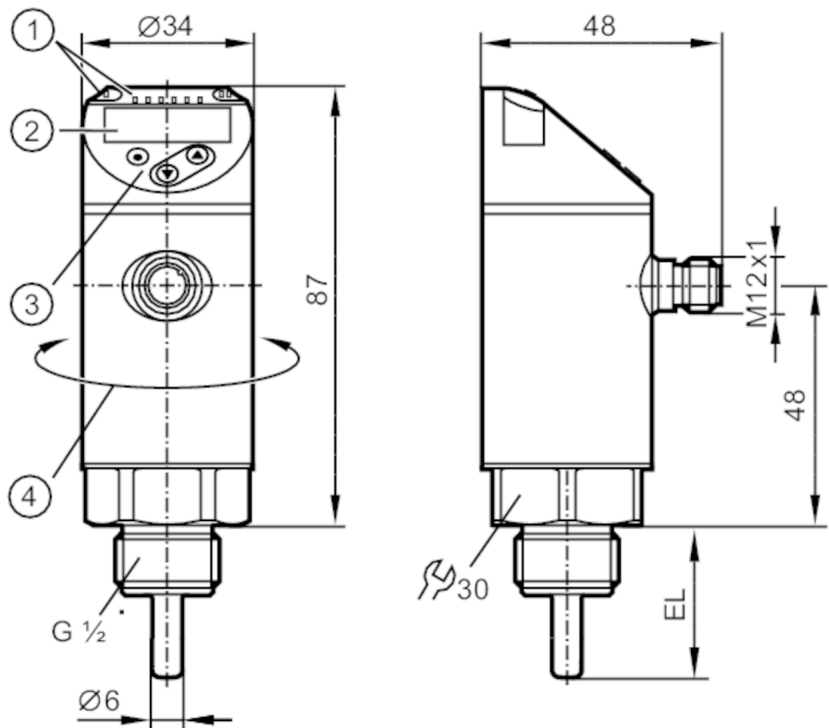


TN2405



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 analog outputs: 1	
Measuring range	-50...150 °C	-58...302 °F
Communication interface	IO-Link	
Process connection	threaded connection G 1/2 external thread	
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	300 bar	30 MPa
Electrical data		
Operating voltage [V]	18...32 DC; (cULus - Class 2 source required)	
Current consumption [mA]	< 50	
Protection class	III	
Reverse polarity protection	yes	
Power-on delay time [s]	1	
Integrated watchdog	yes	



Temperature sensor with display

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Inputs / outputs		
Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 1	
Outputs		
Total number of outputs	2	
Output signal	switching signal; analog signal; IO-Link; (configurable)	
Electrical design	PNP/NPN	
Number of digital outputs	2	
Output function	normally open / closed; (configurable)	
Max. voltage drop switching output DC [V]	2.5	
Permanent current rating of switching output DC [mA]	250	
Number of analog outputs	1	
Analog current output [mA]	4...20	
Max. load [Ω]	500	
Analog voltage output [V]	0...10	
Min. load resistance [Ω]	2000	
Short-circuit protection	yes	
Type of short-circuit protection	yes (non-latching)	
Overload protection	yes	
Measuring/setting range		
Probe length L [mm]	16	
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
Analog start point	-50...145 °C	-58...293 °F
Analog 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 analog output [K]	current output: MS / 4096; voltage output: MS / 3561	
Resolution of display [K]	0.1	
Accuracy / deviations		
Switch point accuracy [K]	± 0,3 + (± 0,1 % MS)	
Precision analog output [K]	± 0,3 + (± 0,1 % MS)	
Display accuracy [K]	± 0,3 + (± 0,1 % MS)	
Temperature coefficient [% of the span / 10 K]	0,1; (In case of deviation from the reference condition 25 ± 5 °C)	
Reaction times		
Dynamic response T05 / T09 [s]	1 / 3; (according to DIN EN 60751)	
Software / programming		
Parameter setting options	hysteresis / window; normally open / 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	
Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
Min. process cycle time	[ms]	2.3
Supported DeviceIDs	Type of operation	DeviceID
	default	706
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 number	K015
Mechanical data		
Weight	[g]	231.5
Housing		tubular
Dimensions	[mm]	Ø 34 / L = 117
Material		stainless steel (1.4404 / 316L); PBT+PC-GF30; PBT-GF20; PC
Materials (wetted parts)		stainless steel (1.4404 / 316L); O-ring: FKM
Tightening torque	[Nm]	45
Process connection		threaded connection G 1/2 external thread
Probe diameter	[mm]	6
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; coding: A; Contacts: 4, gold-plated		
		

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Connection



OUT1: Switching output / IO-Link
OUT2: Switching output / analog output
Colors to DIN EN 60947-5-2
Core colors :
BK = black
BN = brown
BU = blue
WH = white