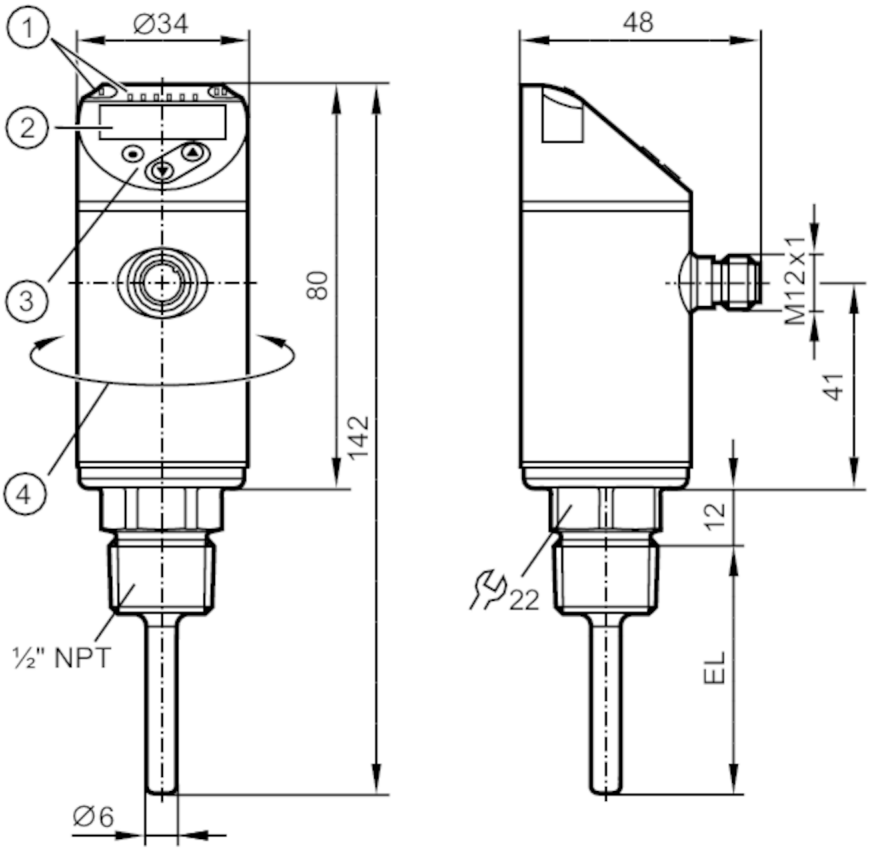
TN2313

Temperature sensor with display

TN-050KLBN12-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
Communication interface		IO-Link	
Process connection		threaded connection 1/2" NPT external thread	
Installation length EL	[mm]	50	
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; ("supply class 2" to cULus)	
Current consumption	[mA]	< 50	
Protection class		III	
Reverse polarity protection		yes	
Power-on delay time	[s]	1	

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Integrated watchdog		yes	
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	[Ω]	500	
Analogue voltage output	[V]	0...10	
Min. load resistance	[Ω]	2000	
Short-circuit protection		yes	
Type of short-circuit protection		pulsed	
Overload protection		yes	
Measuring/setting range			
Probe length L	[mm]	34.4	
Measuring range		-50...150 °C	-58...302 °F
Factory setting		0...300 °F	
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]	± 0,3 + (± 0,1 % MS)	
Precision analogue 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)	
Response times			
Dynamic response T05 / T09	[s]	1 / 3; (to DIN EN 60751)	

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Software / programming			
Parameter setting options		hysteresis / window; normally open / normally closed; switching logic; switch-on/switch-off delay; Damping; Display unit; current/voltage output	
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	707
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]	226.5	
Housing		cylindrical	
Dimensions	[mm]	Ø 34 / L = 142	
Materials		stainless steel (316L/1.4404); PBT+PC-GF30; PBT-GF20; PC	
Materials (wetted parts)		stainless steel (316L/1.4404)	
Process connection		threaded connection 1/2" NPT external thread	
Probe diameter	[mm]	6	
Installation length EL	[mm]	50	
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.	

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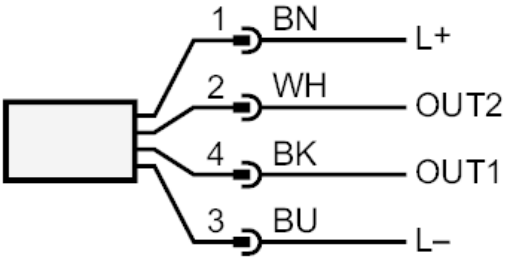
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Electrical connection

Connector: 1 x M12; coding: A; Contacts: 4, gold-plated



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