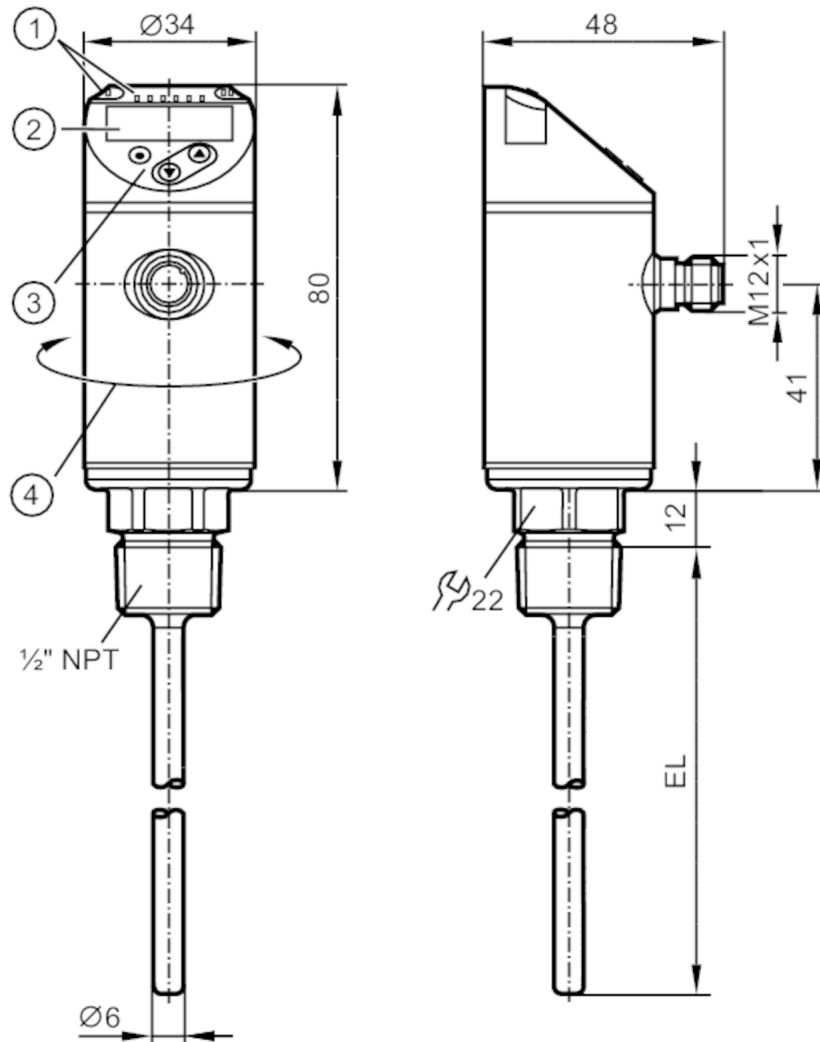


# TN2333



## Temperature sensor with display

TN-100KLBN12-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]	100	

### Application

Special feature	Gold-plated contacts	
Measuring element	1 x Pt 1000; (to DIN EN 60751, class A)	
Media	liquids and gases	
Pressure rating	250 bar	25 MPa



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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
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]	83.4
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)

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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)	
<b>Response times</b>			
Dynamic response T05 / T09	[s]	1 / 3; (to DIN EN 60751)	
<b>Software / programming</b>			
Parameter setting options		hysteresis / window; normally open / normally closed; switching logic; switch-on/switch-off delay; Damping; Display unit; current/voltage output	
<b>Interfaces</b>			
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		<b>Type of operation</b>	<b>DeviceID</b>
		default	707
<b>Operating conditions</b>			
Ambient temperature	[°C]	-25...80	
Storage temperature	[°C]	-40...100	
Protection		IP 67	
<b>Tests / approvals</b>			
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
<b>Mechanical data</b>			
Weight	[g]	300	
Housing		cylindrical	
Dimensions	[mm]	Ø 34 / L = 192	
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]	100	
<b>Displays / operating elements</b>			
Display		Display unit	2 x LED, green
		switching status	2 x LED, yellow
		measured values	alphanumeric display, red/green 4-digit

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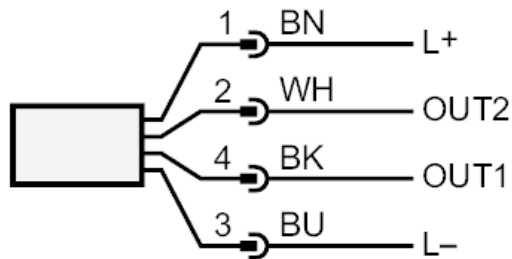
Remarks	
Remarks	MS = set measuring span The values for accuracy apply to flowing water.
Pack quantity	1 pcs.

### Electrical connection

Connector: 1 x M12; coding: A; Contacts: 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