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EL2270 Temperature Sensor
EL2271 Temperature Sensor with transmitter with optional Food+ Thermowell

Description

EL2270

The EL2270 is a Pt100 platinum resistance temperature sensor for general industrial use.It is a single 3 wire device that meets EN 60751: Class A, over a process temperature range of -100 °C to +450 °C (-148 °F to 842 °F). This sensor can be connected directly to any temperature indicator or controller that has a 3 wire Pt100 input.

A single or dual element quick response version (40 mm probe length only) is also available for applications such as plate heat exchanger control.

A miniature version may also be ordered, **with an integrated thermowell**, a ¼" BSP taper thread, a probe length of 35 mm (1.37") and a process temperature range of -50 °C to +205 °C (-58 °F to 401 °F)

EL2271

The EL2271 is a combined Pt100 sensor and transmitter assembly. The sensing element is a 3 wire device that meets EN 60751: Class A.

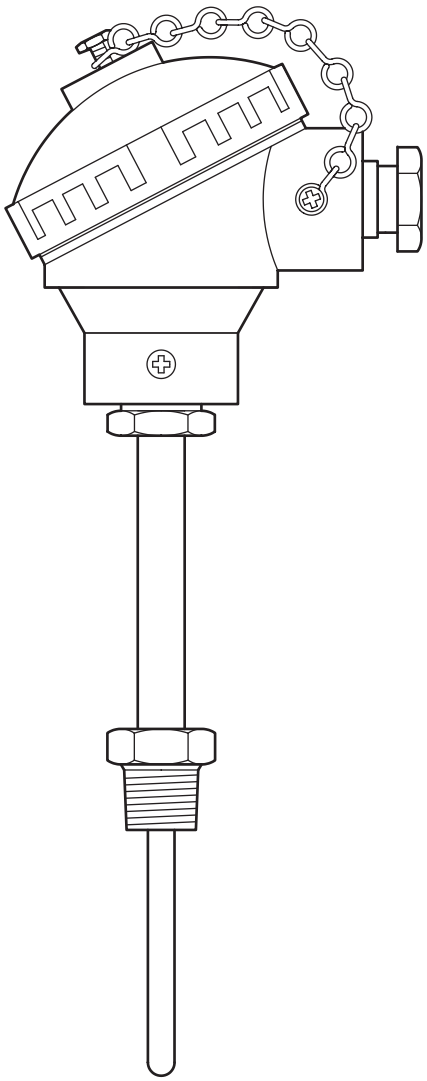
The output is a two wire loop powered 4 - 20 mA transmitter, with a diverse supervisory function.

A comprehensive range of standard process temperature ranges and probe lengths are normally available from stock. Please see page 2.

The 4 - 20 mA output can be connected directly to any temperature indicator, controller or flow computer that has a 4 - 20 mA input.

The EL2271 may be ordered with a 3 point calibration certificate.

Note: The thermowell is typically used to separate the EL2270 or EL2271 temperature sensor from the process fluid. It additionally enables replacement of the sensor during operation. The use of a Food+ thermowell is mandatory in any food contact compliant process.



EL2270 and EL2271

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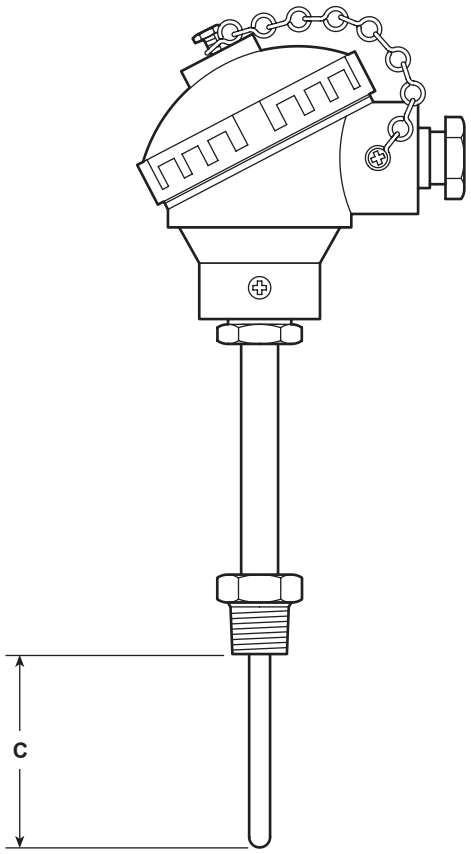
EL2270 and EL2271 options



	Process temperature measuring range	Probe length options available Dimension C mm (inches)	Certification
EL2270	-100 °C to 450 °C (-148 °F to 842 °F)	25, 50, 75, 125, 225, 725 (0.98, 1.96, 2.95, 4.92, 8.85, 28.54)	Type 2.2, non specific.
EL2270 Quick response	-100 °C to 450 °C (-148 °F to 842 °F)	40 (1.57)	
EL2270 Duplex quick response	-100 °C to 450 °C (-148 °F to 842 °F)	40 (1.57)	
EL2270 Miniature	-50 °C to 205 °C (-58 °F to 401 °F)	40 (1.57)	
EL2271	-50 °C to 50 °C (-58 °F to 122 °F)	25, 50, 75, 125 (0.98, 1.96, 2.95, 4.92)	As standard - Type 2.2, non specific. Optional - 3 point calibration certificate.
	0 °C to 100 °C (32 °F to 212 °F)	25, 50, 75, 125 (0.98, 1.96, 2.95, 4.92)	
	0 °C to 150 °C (32 °F to 302 °F)	25, 50, 75, 125 (0.98, 1.96, 2.95, 4.92)	
	100 °C to 250 °C (212 °F to 482 °F)	25, 50, 75, 125 (0.98, 1.96, 2.95, 4.92)	
	-100 °C to 450 °C (-148 °F to 842 °F)	75 (2.95)	
	-100 °C to 450 °C (-148 °F to 842 °F)	125 (4.92)	

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Food+ Thermowells

General

Three types of Thermowells are available.

Type A 1½" ASME BPE sanitary clamp connection, two piece welded construction.

Type B ½" NPT pipe thread connection, one piece.

Type C ½" NPT pipe thread connection, fabricated and welded construction for non flow applications.

Surface finish of all wetted faces is Ra < 0.76µm. The EL2270 Miniature does not require the use of a thermowell and is not suitable for food contact compliant processes.

Certification

The thermowells are available with certification to EN 10204 3.1 at additional cost.
Note: All certification/inspection requirements must be stated at the time of order placement.

Designed, manufactured and approved for steam and condensate applications, all Food+ thermowells comply with:

- (EC)1935:2004 Materials and Articles Intended to come into Contact with Food
- (EC)2023:2006 Good Manufacturing Practice for Materials and Articles Intended to come into Contact with Food
- (EU)10/2011 Plastic Materials and Articles Intended to come into Contact with Food
- FDA Code of Federal Regulations - title 21 - Food and Drugs

This product is intended to be connected into a system that can operate a food contact compliant process. A list of the materials that could come directly or indirectly into contact with foodstuffs can be found in the Declaration of Compliance available for this product.

Material

Type A and Type B 316 / 316L

Type C 316 Ti (1.4571)

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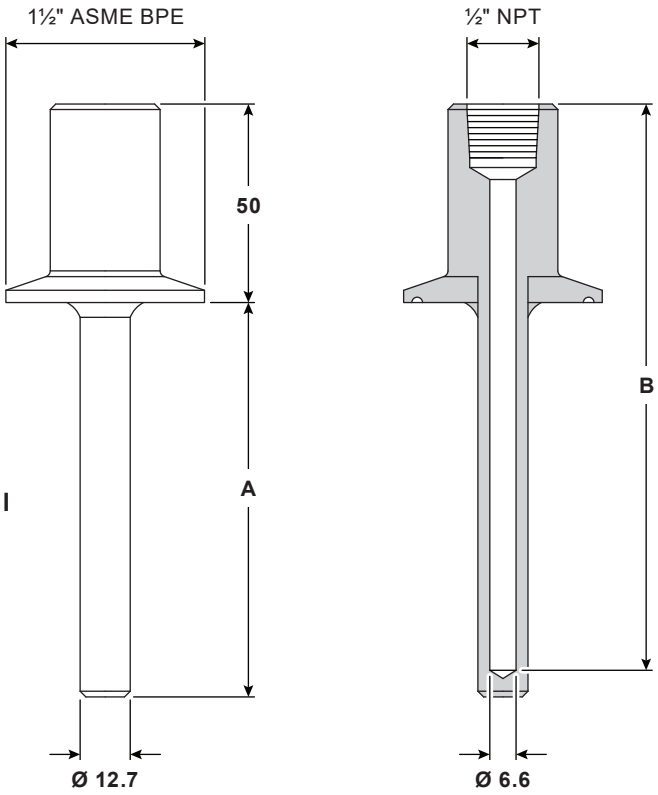
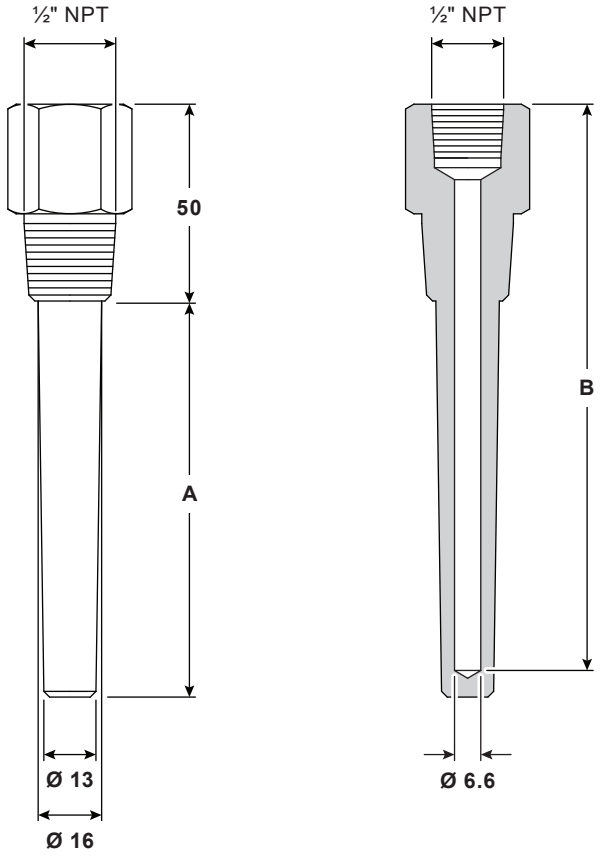
Thermowell Pocket options

Type A Thermowell



Type B Thermowell



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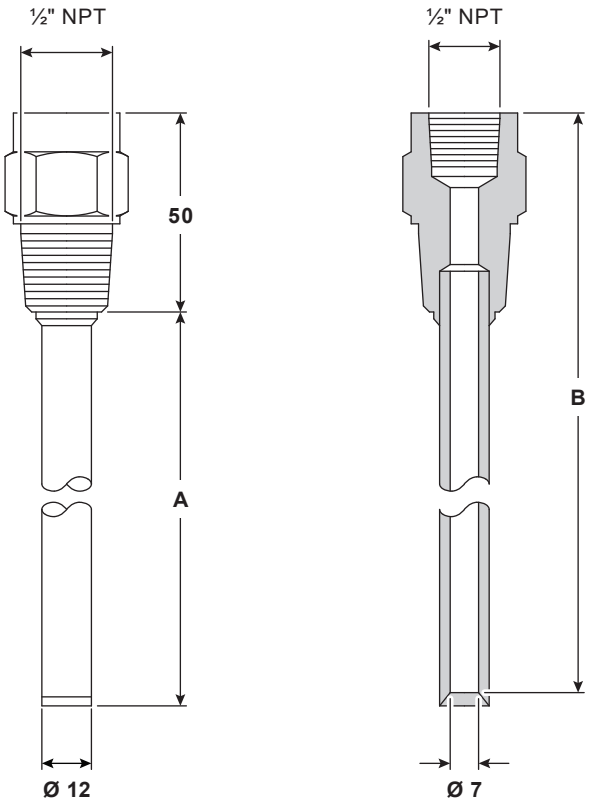
Type C Thermowell



Thermowells are sized to suit the probe length, refer to the following table.

	Insertion length Dimension A mm (inches)	Thermowell depth Dimension B mm (inches)	For use with probe length Dimension C mm (inches)	Mass kg (lbs)	Pressure rating	Maximum allowable pressure bar g (psi g)	Maximum allowable temperature °C (°F)
Type A Sanitary Clamp Thermowell	25 (0.98)	68.5 (2.39)	50 (1.96)	0.27 (0.59)	ASME BPE Table DT-2-1	13.79 (200	204 (399)
	50 (1.96)	93.5 (3.68)	75 (2.95)	0.29 (0.63)			
	100 (3.93)	143.5 (5.64)	125 (4.92)	0.325 (0.71)			
	200 (7.87	243.5 (9.23)	225 (8.85)	0.4 (0.88)			
Type B Screwed One Piece Thermowell	25 (0.98)	68.5 (2.39)	50 (1.96)	0.2 (0.44)	PN40	40 (580)	450 (852)
	50 (1.96)	93.5 (3.68)	75 (2.95)	0.225 (0.49)			
	100 (3.93)	143.5 (5.64)	125 (4.92)	0.27 (0.59)			
***Type C Screwed Fabricated Thermowell**	200 (7.87	243.5 (9.23)	225 (8.85)	0.28 (0.61)	PN40	40 (580)	450 (852)
	700 (27.55)	743.5 (29.27)	725 (28.54)	0.57 (1.25)			

* Type C fabricated thermowells are for use in non-flow applications only.
Note: the EL2270 Miniature does not require the use of a thermowell and is not suitable for food contact compliant processes.

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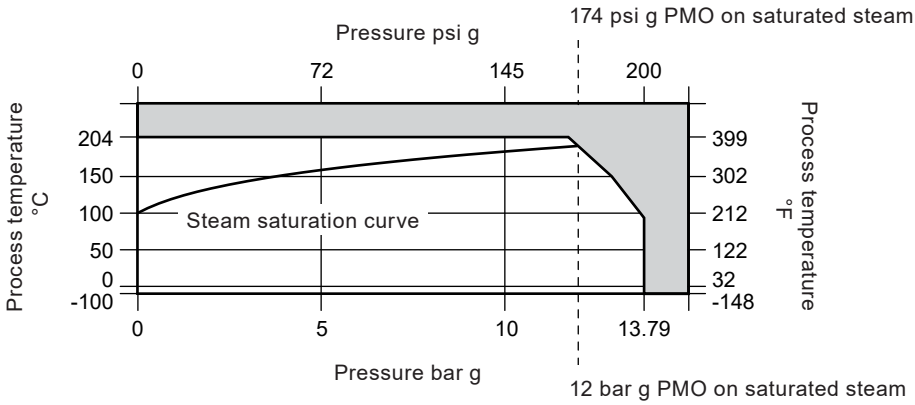
Pressure/temperature limits

The temperature probes when used in conjunction with associated thermowells, can be used in applications where the pressure/ temperature is within the following limits.
For air and steam applications, flow velocities must be below 45 m/s (32 m/s for fabricated thermowells).

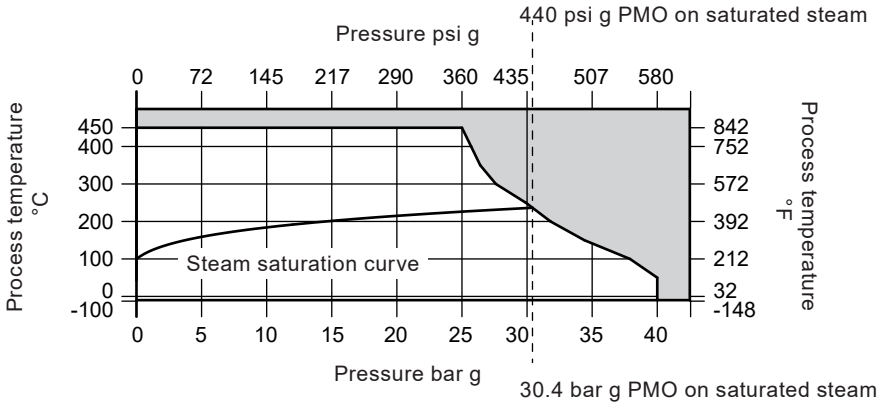
For liquids, a maximum velocity of 5 m/s is recommended. Type C thermowells are for use in non flow applications only.

Type A Thermowell - Sanitary clamp connection



The product **must not** be used in this region.

Type B and Type C Thermowells



The product **must not** be used in this region.

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Mechanical data

Product range		EL2270	EL2271
Enclosure material		Aluminium (epoxy coated)	
Probe material		316 stainless steel	
Terminals/transmitter material	Single element	Ceramic 45%Al203	Plastic PBT, glass-fibre reinforced
	Dual element	Plastic PBT, glass fibre reinforced	
Process connection	Standard	½" NPT	½" NPT
	Minature	¼" R (BSPT)	
Absolute process temperature	Standard	-100 °C to +450 °C (-148 °F to 842 °F) (See note 1 and 2)	
	Minature	-50 °C to +205 °C (-58 °F to 122 °F (See note 1 and 2)	-
Weight (Max.)	Standard	0.6 kg (1.32 lbs) (length dependent)	0.6 kg (1.32 lbs) (approx)
	Minature	0.255 kg (0.56 lbs) (approx)	-

Notes :

1. **Warning: Risk of damaging the product if upper or lower limits of the absolute process temperature are exceeded.**
2. Also see the Thermowells and Pressure/temperature limits sections.

Electrical data

Product range		EL2270	EL2271
Output		Pt100 to EN 60751: Class A	Two wire loop powered 4 - 20 mA
Output on sensor failure		-	< 3.6 mA (3.5 mA typically)
Output over-range		-	3.8 mA to 20.5 mA
Supply (UB)		-	8 to 35 Vdc
Maximum loop resistance (RA)		-	≤ (UB - 8 V) / 0.0215 A with RA in Ω and UB in V.
			744 Ω at 24 Vdc
			1023 Ω at 30 Vdc
PT100 measuring current		0.1...1mA	-
Electrical Connection	Standard	M20 x 1.5 mm with cable gland	M20 x 1.5 mm with cable gland
	Miniature	M16 x 1.5 mm with cable gland	

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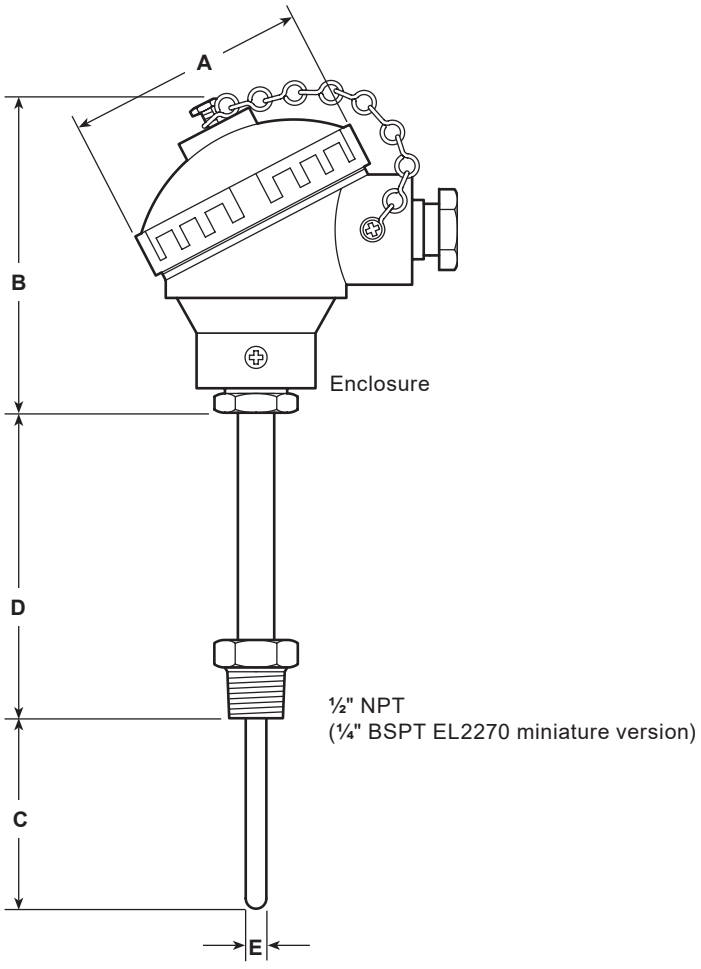
Dimensions (approximate) in mm (inches)

Product range	EL2270 and EL2271		
	Standard EL2270 and EL2271	Miniature EL2270	Quick repsonse and duplex quick response EL2270
A	82 (3.22)	58 (2.28)	82 (3.22)
B	94 (3.70)	70 (2.75)	94 (3.70)
C	25, 50, 75, 125, 225, 725 (0.98, 1.96, 2.95, 4.92, 8.85, 28.54)	35 (1.37)	40 (1.57)
D	110 (4.33)	61 (2.4)	110 (4.33)
E	6 (0.23)	4.5 (0.177)	4.5 (0.177)



EL2270 and EL2271 probe