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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 . 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 and a process temperature range of -50 °C to +205 °C

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.
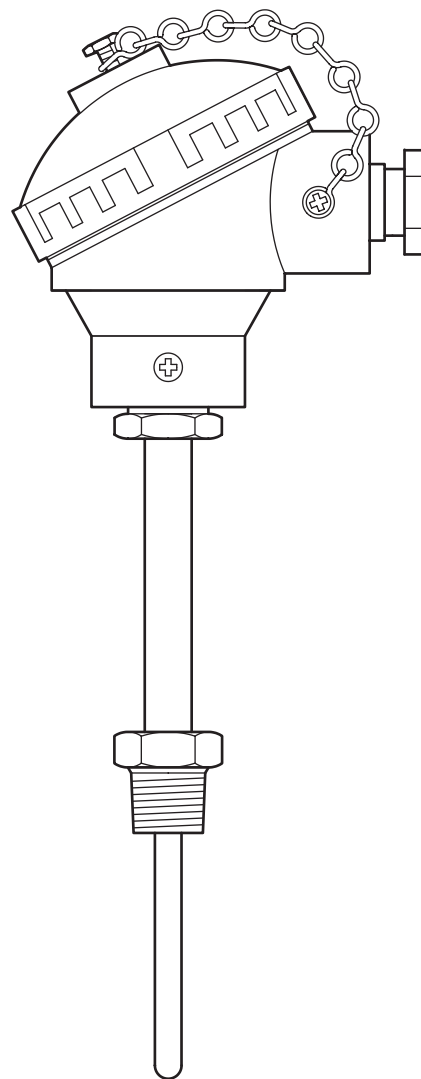
EL2270 and EL2271

EL2270 and EL2271 options
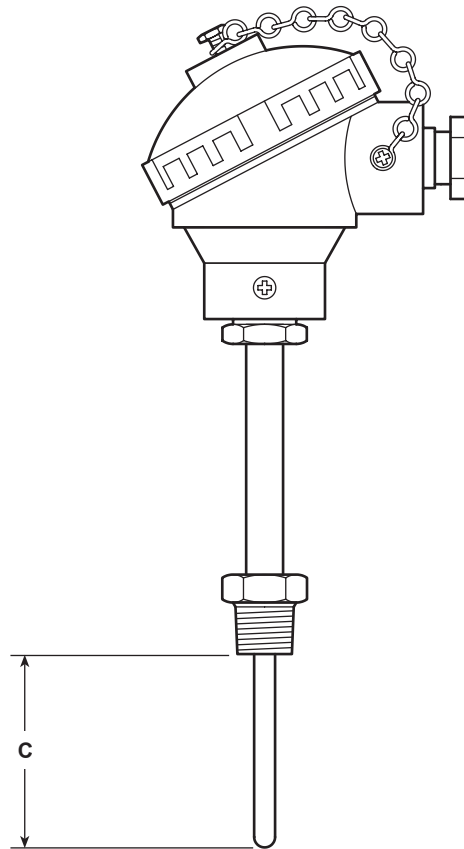
	Process temperature measuring range	Probe length options available Dimension C (mm)	Certification
EL2270	-100 °C to 450 °C	25, 50, 75, 125, 225, 725	Type 2.2, non specific.
EL2270 Quick response	-100 °C to 450 °C	40	
EL2270 Duplex quick response	-100 °C to 450 °C	40	
EL2270 Miniature	-50 °C to 205 °C	35	
EL2271	-50 °C to 50 °C	25, 50, 75, 125	As standard - Type 2.2, non specific. Optional - 3 point calibration certificate.
	0 °C to 100 °C	25, 50, 75, 125	
	0 °C to 150 °C	25, 50, 75, 125	
	100 °C to 250 °C	25, 50, 75, 125	
	-100 °C to 450 °C	75	
	-100 °C to 450 °C	125	

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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.
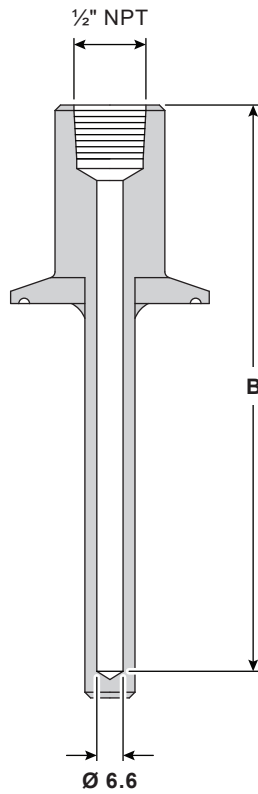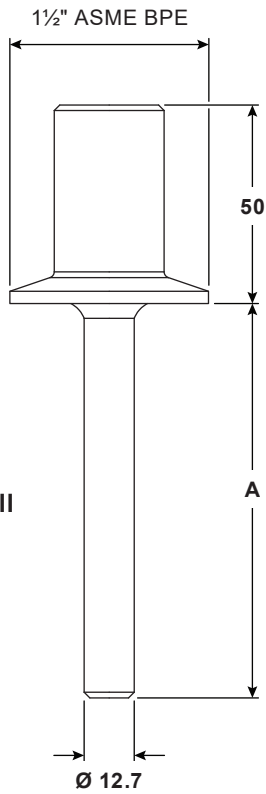
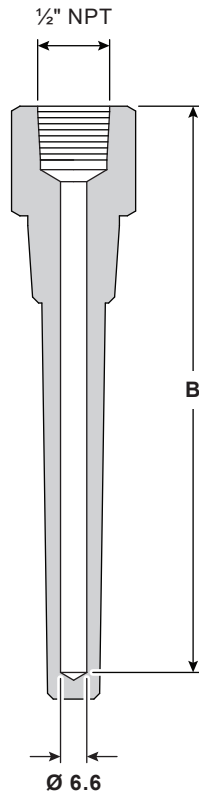### Material

Type A and Type B	316 / 316L
Type C	316 Ti (1.4571)

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Thermowell Pocket options

Type A Thermowell

1½" ASME BPE

50

A

Ø 12.7

½" NPT

B

Ø 6.6

Type B Thermowell

½" NPT

50

A

Ø 13

Ø 16

½" NPT

B

Ø 6.6

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½" NPT   ½" NPT

Type C Thermowell

50

A

B

Ø 12   Ø 7
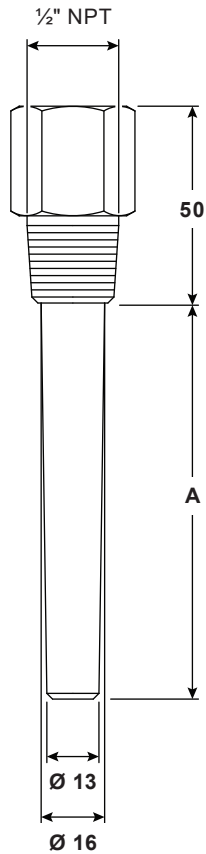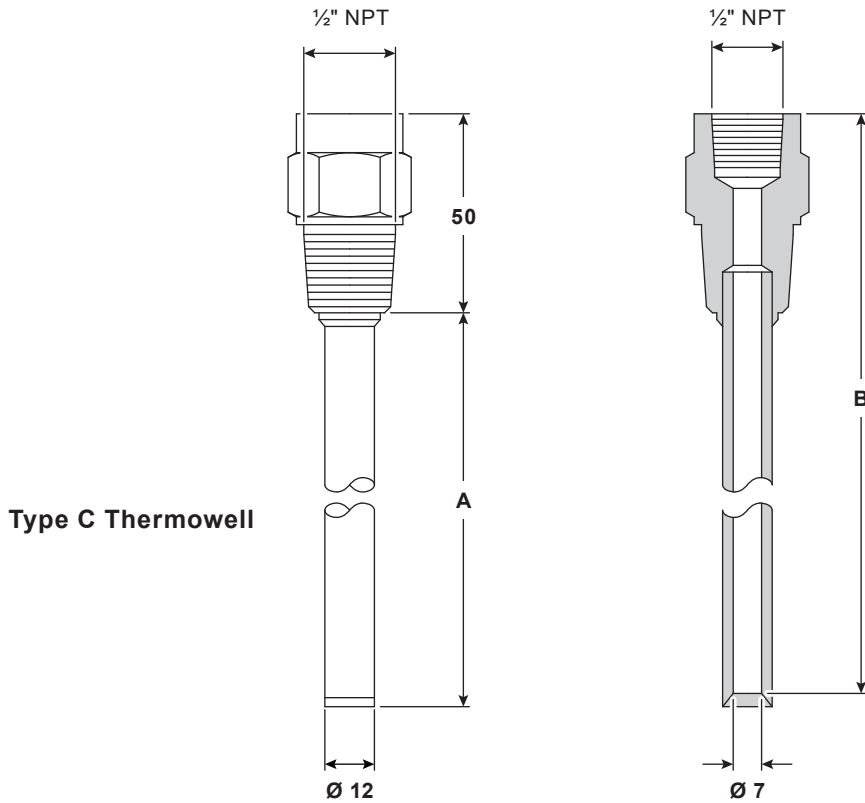
Thermowells are sized to suit the probe length, refer to the following table.

	Insertion length Dimension A (mm)	Thermowell depth Dimension B (mm)	For use with probe length Dimension C (mm)	Mass (kg)	Pressure rating	Maximum allowable pressure	Maximum allowable temperature
Type A Sanitary Clamp Thermowell	25	68.5	50	0.27	ASME BPE Table DT-2-1	13.79 bar g	204 °C
	50	93.5	75	0.29			
	100	143.5	125	0.325			
	200	243.5	225	0.4			
Type B Screwed One Piece Thermowell	25	68.5	50	0.2	PN40	40 bar g	450 °C
	50	93.5	75	0.225			
	100	143.5	125	0.27			
*Type C Screwed Fabricated Thermowell	200	243.5	225	0.28	PN40	40 bar g	450 °C
	700	743.5	725	0.57			

* 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.

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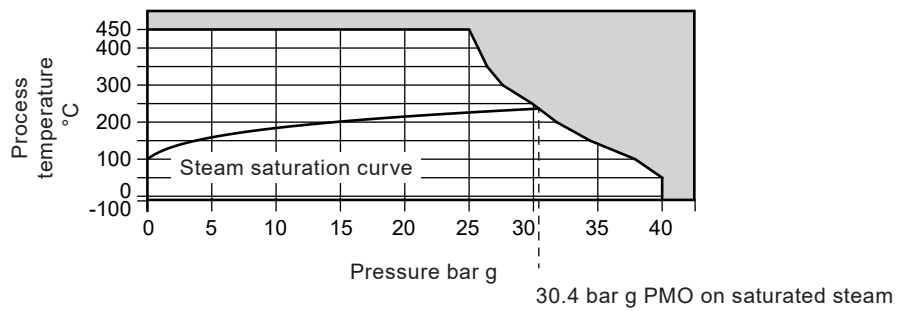
For liquids, a maximum velocity of 5 m/s is recommended. Type C thermowells are for use in non flow applications only.

Type A Thermowell - Sanitary clamp connection
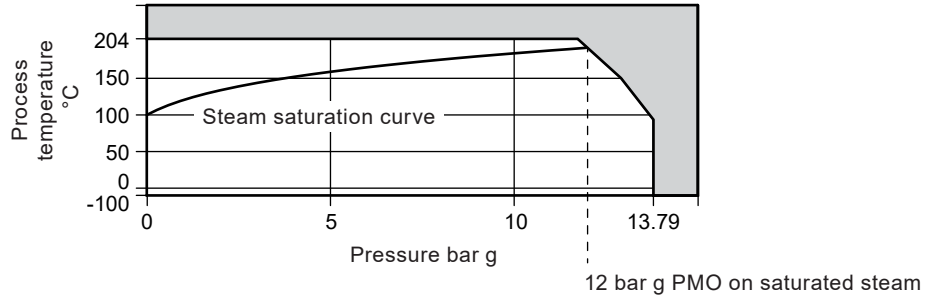
The product **must not** be used in this region.

Type B and Type C Thermowells

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

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Mechanical data

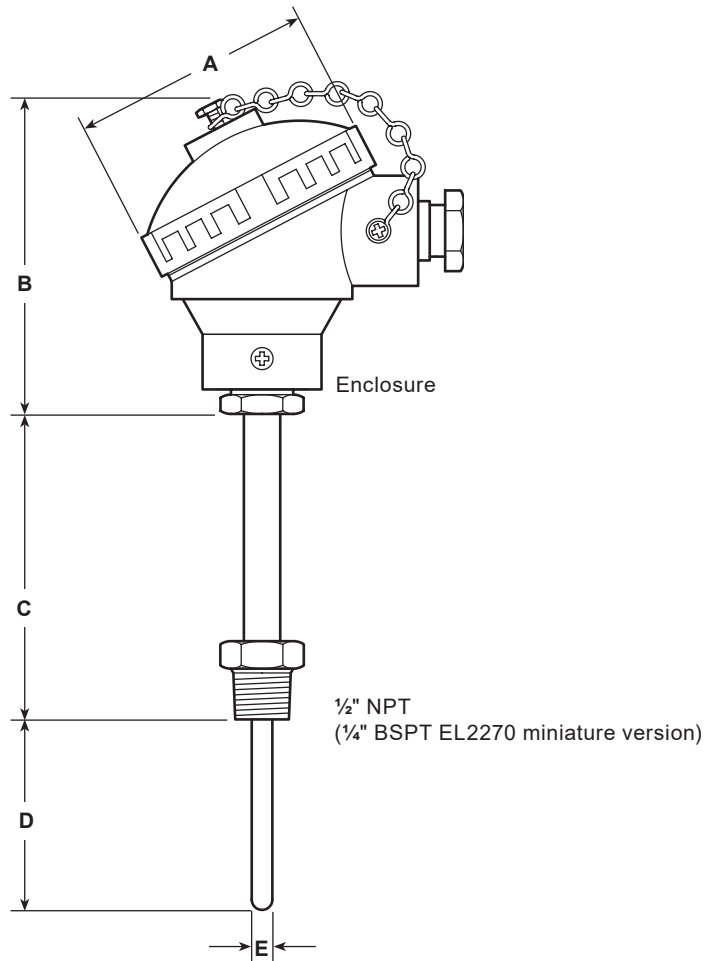| Product range		EL2270	EL2271
Enclosure material		Aluminium (epoxy coated)	
Probe material		316 stainless steel	
Terminals/transmitter material	Single element	Ceramic 45%Al203	Plastic PBT, glass-fibre reinforced
	Dual element	Plastic PBT, glass fibre reinforced	
Process connection	Standard	½" NPT	½"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

Dimensions (approximate) in mm

Product range	EL2270 and EL2271		
	Standard EL2270 and EL2271	Miniature EL2270	Quick repsonse and duplex quick response EL2270
A	82	58	82
B	94	70	94
C	25, 50, 75, 125, 225, 725	35	40
D	110	61	110
E	6	4.5	4.5

EL2270 and EL2271 probe

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