

EL2270 and EL2271 Temperature Probes

Description

EL2270

The EL2270 is a Pt100 platinum resistance temperature sensor for general industrial use. The sensing device is an RTD 3 wire device that meets EN 60751: Class A. This sensor can be connected directly to any temperature indicator or controller that has a 3 wire Pt100 input. A quick response version [1.5" (40 mm) insertion length only] is also available for applications such as plate heat exchanger control. A miniature version of the EL2270 may also be ordered. This has a 1/4" BSP taper thread, and a tip length of 1.5" (39 mm).

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 and the transmitter has a 4 - 20 mA output. The transmitter (only) meets ATEX II 1G EExia IIC/IIB T4/T5/T6. A comprehensive standard range is normally available from stock. Non-standard ranges can be obtained to special order, subject to a low limit of -58°F (-50°C), and a maximum of 932°F (+500°C). The 4 - 20 mA output can be connected directly to any temperature indicator, controller or flow computer that has a 4 - 20 mA input. Contact your local representative for further details. Transmitters with 3 point calibration are available to special order.

Pockets (thermowells)

General

Three types of pockets are available:

1. Thin wall with a 1/2" NPT process connection for non-flow applications only.
2. Drilled taper with a 1/2" NPT process connection.
3. Hygienic, to 3A sanitary standard, with a 1 1/2" sanitary clamp connection (ASME BPE) electropolished to 0.4 µm (a Declaration of Conformity is available).

Note: No pocket is available for the miniature EL2270.

Material	316 stainless steel
Maximum temperature	932°F (500°C)

Selection

Pockets are sized to suit the probe tip length 'D', and are specified as 'pocket to suit a ___ inch (mm) probe'.

Note 1 - The pocket dimension 'F' is 1" (25 mm) shorter than the probe length 'D', which appears to be incorrect. The reason is that the threaded body of the pocket acts as a stand-off, and therefore allows adequate clearance between the probe tip and the end of the pocket.

Note 2 - Pockets to suit 8.86" (225 mm) and 28.5" (725 mm) probes are for non-flow applications only [maximum flow velocity 2.13 fps (0.65 m/sec)].

Dimensions (approximate) in inches (mm)

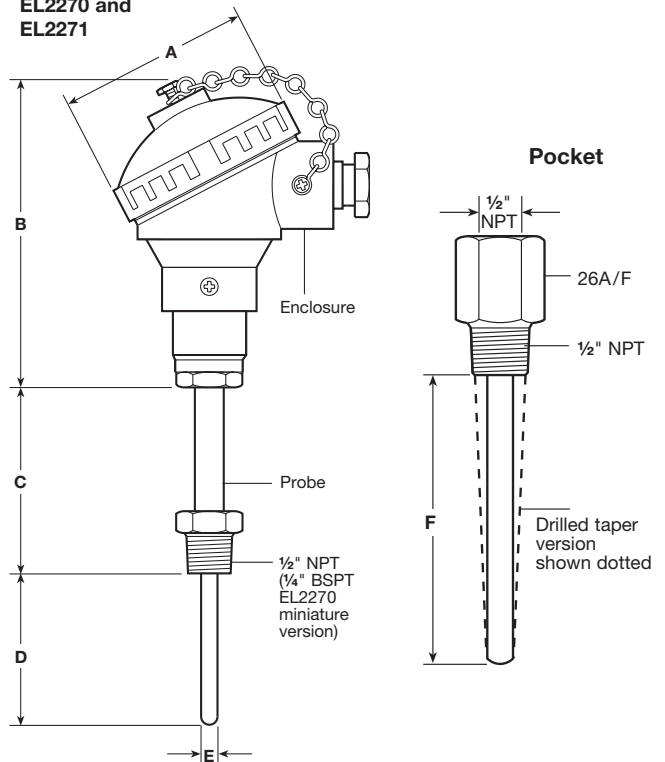
Product range	EL2270*			EL2271
	Standard	Miniature	Quick response and duplex quick response	
A	3.5" (88)	2.25" (58)	3.5" (88)	3.5" (88)
B	5" (130)	2.4" (62)	6" (150)	5" (130)
C	3" (75)	2.5" (63)	3" (75)	3" (75)
D	1", 2", 3", 4", 9", 28.5" (25, 50, 75, 125, 225, 725)	1.54" (39)	1.57" (40)	1", 2", 3", 4" (25, 50, 75, 125)
E	.25" (6)	.25" (6)	.18" (4.5)	.25" (6)

Notes: The quick response EL2270 is only available with an insertion length of 40 mm.

Pockets

Product range	Standard		Hygienic 1 1/2" sanitary clamp connector Fabricated
	Fabricated	Solid drilled	
F	7.87", 27.6" (200, 700)	1", 2", 4" (25, 50, 100)	1", 2", 4", 7.87" (25, 50, 100, 200)

EL2270 and EL2271



Mechanical data

	EL2270*	EL2271
Product range	Note: A quick response version of the EL2270 is also available to order	
Enclosure	KNE - aluminium alloy - epoxy coated	KNE - aluminium alloy - epoxy coated
Probe	316 stainless steel	316 stainless steel
Process connection	½" NPT	½" NPT
Electrical connection	M20 with cable gland fitted to BS 4568 Part 1	M20 with cable gland fitted to BS 4568 Part 1
Enclosure rating	IP65	IP65
Maximum ambient temperature	158°F (70°C)	Maximum 185°F (85°C) (dependant on ATEX requirement)

* The EL2270 quick response sensor has a time constant of 1.7 seconds.

Electrical data

Available ranges	-58°F (-50°C) to 932°F (+500°C)	-58°F (-50°C) to 932°F (+500°C) 46°F (0°C) to 212°F (+100°C) 212°F (100°C) to + 482°F (250°C)
Output	Pt100 to EN 60751: Class A	Loop powered 4 - 20 mA
Output on sensor failure	-	23 mA typical
Supply	-	10 to 30 Vdc
Maximum loop resistance	-	636 Ω at 24 Vdc 909 Ω at 30 Vdc
Transmitter - Thermal drift measuring deviation	-	± 0.1% / 10 K _{TAMB} per EN 60770 ± 0.2%

Approvals

Ex-protection per Directive 94/9/EC ATEX. Intrinsic Safety per EN 50020	-	ATEX II 1G EExia IIC/IIB T4/T5/T6 (Transmitter only)
Permissible ambient temperature	-	-58°F (-50°C) ... 185°F (+85°C) with T4 -58°F (-50°C) ... 158°F (+75°C) with T5 -58°F (-50°C) ... 140°F (+60°C) with T6
Maximum values for connection of the current loop circuit (connections + and -)	-	U _o = 30 Vdc I _o = 120 mA P _i = 800 mW C _i = 6.2 μF L _i = 110 μH
Maximum values for connection of the sensor circuit (connections 1 up to 3)	-	U _o = 6.4 Vdc I _o = 42.6 mA P _o = 37.1 mW Group II B: C _o = 500 μF L _o = 50 mH Group IIC: C _o = 20 μF L _o = 10 mH
EMC emissions and susceptibility	-	EMC directive 89/336/EEC EN 61326:1997 / A1, 1998 / A2.2001

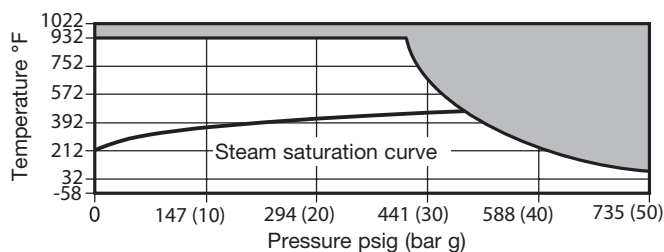
Pressure/temperature limits

The EL2270 and EL2271 temperature probes can be used in applications where the process temperature is within the following limits. Where greater temperatures and pressures are present, the temperature probe should be fitted with a pocket.

For air and steam applications, flow velocities must be below 147 fps (45 m/s) 105 fps (32 m/s for fabricated pockets).

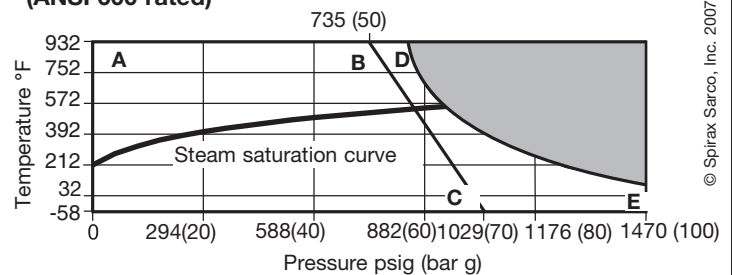
For liquids a recommended velocity is 16 fps (5 m/s) [27.5 in. (700 mm) and 7.87 in. (200 mm) non-flow applications only].

Pressure and temperature limits of temperature probe. (ANSI 300 rated)



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

Pressure and temperature limits of standard pockets. (ANSI 600 rated)



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

A-B-C Fabricated pocket
A-D-E Solid drilled pocket

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