



## 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 (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 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.

An ATEX approved version is available to special order.

A comprehensive standard range is normally available from stock. Non-standard ranges can be obtained to special order, subject to a low limit of -50 °C, and a maximum of +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 Spirax Sarco 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.

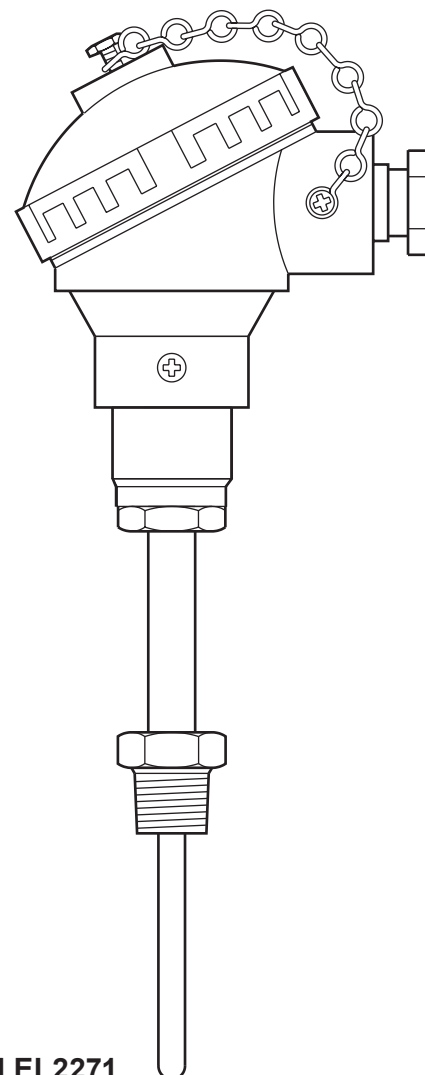
|                     |                     |
|---------------------|---------------------|
| Material            | 316 stainless steel |
| Maximum temperature | 500 °C              |

#### Selection

Pockets are sized to suit the probe tip length 'D', and are specified as 'pocket to suit a \_\_\_ mm probe'.

**Note 1** - The pocket dimension 'F' is 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 225 mm and 725 mm probes are for non-flow applications only (maximum flow velocity 0.65 m/sec).



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**Dimensions (approximate) in mm**

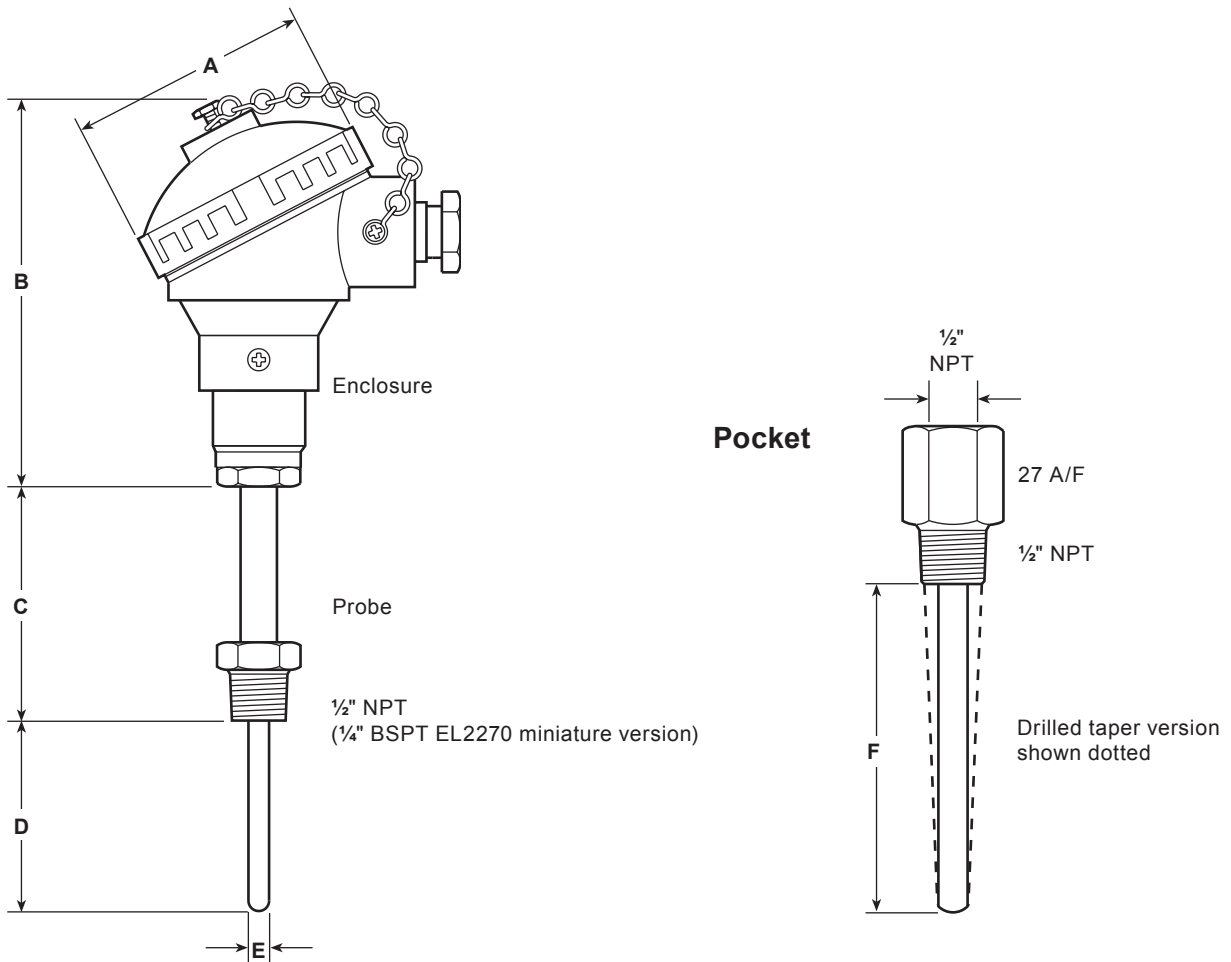
| Product range | Standard                  | EL2270*   |  | EL2271          |
|---------------|---------------------------|-----------|--|-----------------|
|               |                           | Miniature | Quick response and duplex quick response |                 |
| A             | 88                        | 58        | 88                                       | 88              |
| B             | 130                       | 62        | 150                                      | 130             |
| C             | 75                        | 63        | 75                                       | 75              |
| D             | 25, 50, 75, 125, 225, 725 | 39        | 40                                       | 25, 50, 75, 125 |
| E             | 6                         | 6         | 4.5                                      | 6               |

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

**Pockets**

| Product range | Standard   |               | Hygienic 1½" sanitary clamp connector Fabricated |
|---------------|------------|---------------|--|
|               | Fabricated | Solid drilled |  |
| F             | 200, 700   | 25, 50, 100   | 25, 50, 100, 200                                 |

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## Mechanical data

| Product range         |         | EL2270*                                       | EL2271  |
|-----------------------|---------|---|---|
| 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  |
| Ambient temperature   | Minimum | -50 °C  | -50 °C  |
|                       | Maximum | +70 °C  | +85 °C  |

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

## Electrical data

|   |                            |  |
|---|----------------------------|--|
| Available ranges  | -50 °C to +500 °C          | -50 °C to +500 °C<br>0 °C to +100 °C<br>100 °C to +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 <sub>TAMB</sub> per EN 60770 ± 0.2%  |
| Maximum values for connection of the current loop circuit (connections + and -) | -                          | U <sub>o</sub> = 30 Vdc I <sub>o</sub> = 120 mA<br>P <sub>i</sub> = 800 mW C <sub>i</sub> = 6.2 μF<br>L <sub>i</sub> = 110 μH  |
| Maximum values for connection of the sensor circuit (connections 1 up to 3)     | -                          | U <sub>o</sub> = 6.4 Vdc I <sub>o</sub> = 42.6 mA<br>P <sub>o</sub> = 37.1 mW<br><b>Group II B:</b><br>C <sub>o</sub> = 500 μF L <sub>o</sub> = 50 mH<br><b>Group II C:</b><br>C <sub>o</sub> = 20 μF L <sub>o</sub> = 10 mH |
| EMC emissions and susceptibility  | -                          | EMC directive 89/336/EEC<br>EN 61326:1997/A1, 1998/A2.2001   |

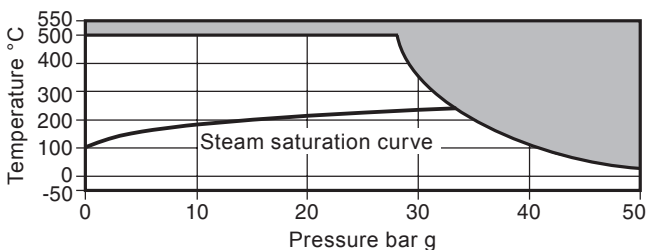
## Pressure/temperature limits

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 45 m/s (32 m/s for fabricated pockets).

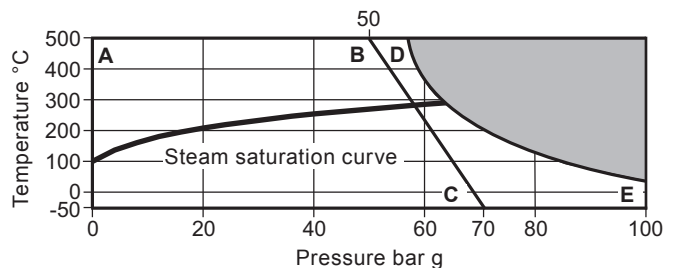
For liquids a recommended velocity is 5 m/s (700 mm and 200 mm non-flow applications only).

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