

# ELPRT 100SPT

TWO WIRE SMART PRESSURE TRANSMITTER

## Features

- Piezo Resistive & Capacitive Sensor
- ATEX Certified
- Excellent Long Term Stability
- Two Wire System
- Long Operational Life
- Range-ability 100:1
- LCD Display
- Faster Response Time
- Application flexibility with HART Communication



ELPRT 100SPT



ELPRT 100SPT With Remote Seal

## Description

Electronet series ELPRT-100SPT (GP & AP) can accurately measure the pressure of gases, vapors and liquids used in refineries, petrochemicals, oil & gas, power, chemical industries, food processing & pharmaceutical industries. Based on a mechanical and rugged silicon sensor & capacitive sensor, the ELPRT-100SPT (GP & AP) is suitable for Absolute & Gauge Pressure Measurements.

## Technical Specifications

| Output Signal                       |                                                                                      |
|-------------------------------------|--------------------------------------------------------------------------------------|
| 2-Wire-System                       | 4-20mA with super imposed signal for HART protocol, digital communication            |
| Supply Voltage                      | 12.5 - 45 VDC                                                                        |
| Signal Range                        | 3.9mA - 20.8mA                                                                       |
| Measuring Range                     | Refer Pressure Range Table                                                           |
| Electrical Protection               |                                                                                      |
| Insulation Resistance               | >100 MΩ at 100VDC                                                                    |
| Wiring Protection                   | Protection against Over Voltage & Short Circuit                                      |
| Reverse Polarity Protection         | Available                                                                            |
| Temperature Limits                  |                                                                                      |
| Ambient Conditions                  | -20 to 70°C                                                                          |
| Storage                             | -40 to 85°C                                                                          |
| Process Temperature                 | -20 to 125°C                                                                         |
| Ingress Protection                  | IP 66                                                                                |
| Electromagnetic Compatibility (EMC) | Compliant with IEC 61000-4-3 and IEC 61000-4-6 Radiated and Conducted Susceptibility |

## Technical Specifications

| Performance                  |                                                                                                                                                                                                                                                       |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accuracy                     | 1) $\pm 0.075\%$ of URL for $\text{SPAN} \geq 5:1$<br>2) $\pm (0.025 + 0.015 \text{ of } (\text{URL} / \text{SPAN}))\%$ of SPAN for $\text{SPAN} < 5:1$<br>*In case of remote seal process connection the accuracy will be less than $\pm 1\%$ of URL |
| Power Supply Effect          | $< \pm 0.005\%$ of calibrated SPAN per volt                                                                                                                                                                                                           |
| Vibration Effect             | $< 0.2\%$ of SPAN/g @ 200Hz                                                                                                                                                                                                                           |
| Installation Position Effect | Zero shifts up to $\pm 0.15\%$ of URL, which can be calibrated out. No SPAN effect.                                                                                                                                                                   |
| Thermal Effect               | Range code 4 to 8      Zero error = $\pm 0.3\%$ URL per 280C<br>Total error = $\pm 0.3\%$ URL + $0.25\%$ of calibrated span per 280C                                                                                                                  |
|                              | Double the effect for Range code 3, 2                                                                                                                                                                                                                 |
| Turndown Ratio               | 100:1                                                                                                                                                                                                                                                 |
| Turn On Time                 | Less than 5 Sec.                                                                                                                                                                                                                                      |
| Response Time                | 200 ms (without considering electronic damping)                                                                                                                                                                                                       |
| Damping                      | 0.1 to 30.0 Sec.                                                                                                                                                                                                                                      |
| Humidity                     | 5-98% Relative Humidity                                                                                                                                                                                                                               |
| Stability                    | Less than $\pm 0.2\%$ of URL per Year                                                                                                                                                                                                                 |
| Over Pressure                | 2 times max. Pressure range                                                                                                                                                                                                                           |
| Burst Pressure               | 3 times max. Pressure range                                                                                                                                                                                                                           |

## Physical Specifications

| Process Connection       | $\frac{1}{4}$ " NPT (M/F), $\frac{1}{2}$ " NPT (M/F), $\frac{1}{4}$ " BSP (M/F), $\frac{1}{2}$ " BSP (M/F)                                                                                           |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Diaphragm                | SS316L / Hastelloy C / With Remote Seal                                                                                                                                                              |
| Seals                    | Viton / Neoprene / Red silica / EPDM                                                                                                                                                                 |
| Wetted Parts             | SS304 / SS316 / SS316L / Hastelloy C                                                                                                                                                                 |
| MOC Electronic Enclosure | Die Cast Aluminium PU Painted / SS 316                                                                                                                                                               |
| Sight Glass              | Laminated Safety Glass                                                                                                                                                                               |
| Filling Fluid            | Silicon Oil / Inert (for capacitive sensor)                                                                                                                                                          |
| Electrical Connection    | M20*1.5 / $\frac{1}{2}$ " NPT (F)                                                                                                                                                                    |
| Others                   |                                                                                                                                                                                                      |
| Display Type             | LCD Display                                                                                                                                                                                          |
| Display Visible Range    | 32.5 x 22.5mm                                                                                                                                                                                        |
| Main Display             | 5-Digit                                                                                                                                                                                              |
| Digit height             | 8 mm                                                                                                                                                                                                 |
| Bargraph                 | 51 Segments                                                                                                                                                                                          |
| Weight                   | Standard model approx. 3.4 Kg                                                                                                                                                                        |
| Certification            | CE &  ATEX Certification : ATEX (II 2 GD Ex d IIC T6 Gb $-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$ ) |
|                          |  Safety Integrity Level (SIL)                                                                                     |

### Pressure Range Table

Table A : Absolute Pressure Transmitter Ranges

| Range Code | Lower Range Limit (LRL) | Upper Range Limit (URL) | Minimum SPAN        |
|------------|-------------------------|-------------------------|---------------------|
| 4          | 0                       | 100 kPa (1.000002 Bar)  | 1 kPa (0.01 Bar)    |
| 5          | 0                       | 250 kPa (2.500005 Bar)  | 2.5 kPa (0.025 Bar) |
| 6          | 0                       | 400 kPa (4.000007 Bar)  | 4 kPa (0.04 Bar)    |
| 7          | 0                       | 600 kPa (6.000011 Bar)  | 6 kPa (0.06 Bar)    |

Table B : Gauge Pressure Transmitter Ranges

| Range Code | Lower Range Limit (LRL)  | Upper Range Limit (URL) | Minimum SPAN        |
|------------|--------------------------|-------------------------|---------------------|
| 3          | -7.997 kPa (-0.080 Bar)  | 70 kPa (0.7 Bar)        | 0.7 kPa (0.007 Bar) |
| 4          | -39.99 kPa (-0.400 Bar)  | 100 kPa (1 Bar)         | 1 kPa (0.01 Bar)    |
| 5          | -101.35 kPa (-1.013 Bar) | 250 kPa (2.5 Bar)       | 2.5 kPa (0.025 Bar) |
| 6          | -101.35 kPa (-1.013 Bar) | 400 kPa (4 Bar)         | 4 kPa (0.04 Bar)    |
| 7          | -101.35 kPa (-1.013 Bar) | 600 kPa (6 Bar)         | 6 kPa (0.06 Bar)    |
| 8          | -101.35 kPa (-1.013 Bar) | 1000 kPa (10 Bar)       | 10 kPa (0.10 Bar)   |
| 9          | -101.35 kPa (-1.013 Bar) | 1600 kPa (16 Bar)       | 16 kPa (0.16 Bar)   |
| 10         | -101.35 kPa (-1.013 Bar) | 2500 kPa (25 Bar)       | 25 kPa (0.25 Bar)   |
| 11         | -101.35 kPa (-1.013 Bar) | 4000 kPa (40 Bar)       | 40 kPa (0.40 Bar)   |
| 12         | -101.35 kPa (-1.013 Bar) | 6000 kPa (60 Bar)       | 60 kPa (0.60 Bar)   |
| 13         | -101.35 kPa (-1.013 Bar) | 10000 kPa (100 Bar)     | 100 kPa (1.0 Bar)   |
| 14         | -101.35 kPa (-1.013 Bar) | 16000 kPa (160 Bar)     | 160 kPa (1.6 Bar)   |
| 15         | -101.35 kPa (-1.013 Bar) | 25000 kPa (250 Bar)     | 250 kPa (2.5 Bar)   |
| 16         | -101.35 kPa (-1.013 Bar) | 40000 kPa (400 Bar)     | 400 kPa (4.0 Bar)   |
| 17         | -101.35 kPa (-1.013 Bar) | 60000 kPa (600 Bar)     | 600 kPa (6.0 Bar)   |
| 18         | -101.35 kPa (-1.013 Bar) | 100000 kPa (1000 Bar)   | 1000 kPa (10.0 Bar) |

### EMI/EMC Tests

| No. | Tests                                                             | Basic Standards | Test Conditions                            | Performance Level |
|-----|-------------------------------------------------------------------|-----------------|--------------------------------------------|-------------------|
| 1   | Conducted Emission (Mains)                                        | CISPR11         | 150KHz-30MHz                               | A                 |
| 2   | Radiated Emission (in GTEM)                                       | IEC61000-4-20   | 30MHz-1000MHz                              | A                 |
| 3   | Conducted Radio Frequency Immunity (Mains)                        | IEC61000-4-6    | 150KHz-80MHz                               | A                 |
| 4   | Electrical Fast Transient/Burst (EFT/B) Immunity (on Mains)       | IEC61000-4-4    | 1KV(5/50nSec,5KHz)                         | A                 |
| 5   | Combination wave surge Immunity (on Mains)                        | IEC61000-4-5    | 1KV(Line to Line)<br>( 1.2/50us)           | A                 |
| 6   | Immunity to Radiated Electromagnetic Fields (Amplitude Modulated) | IEC61000-4-3    | 80MHz - 1000MHz<br>(10V/M)                 | A                 |
| 7   | Damped Oscillatory surge Immunity (on Mains)                      | IEC61000-4-18   | 1KV(Line to Ground)<br>0.5KV(Line to Line) | A                 |
| 8   | Electrostatic Discharge (ESD) Immunity                            | IEC61000-4-2    | 6KV(Contact) 8KV(Air)                      | A                 |

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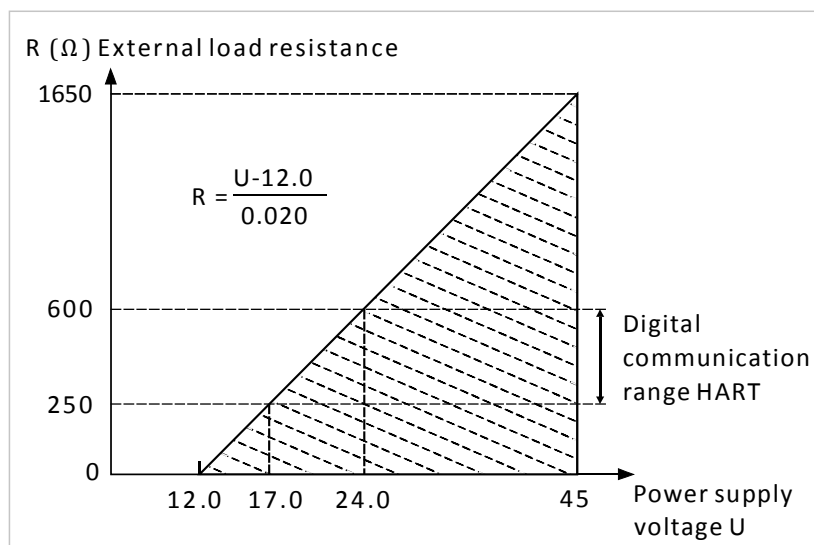
## Menu Function

| LCD Display Unit   |                                            | Transmission Module Type |                       |                |
|--------------------|--------------------------------------------|--------------------------|-----------------------|----------------|
| Display mode       | Details                                    | Output Signal            | Local Control         | Remote Control |
| PV                 | Process value shown on main screen         | 4-20mA + HART            | LCD/2 Buttons on Body | HART           |
| mA                 | Current shown on main screen               | 4-20mA                   | LCD/2 Buttons on Body | –              |
| %                  | Percentage shown on main screen            | Measuring Menu           |                       |                |
| Progress Bar       | Progress bar shown on main screen top side | Mark                     | State                 |                |
| Analog Output Type |                                            | URL                      | Upper Range Limit     |                |
|                    |                                            | LRL                      | Lower Range Limit     |                |
| Parameters         | Output Type                                |                          |                       |                |
| mA LINER           | Linearity                                  |                          |                       |                |
| mA√                | Square Root                                |                          |                       |                |

## Menu Function

| Units              |                                |       |                             |
|--------------------|--------------------------------|-------|-----------------------------|
| Unit               | Defination                     | Unit  | Defination                  |
| bar                | bar                            | kPa   | Kilopascal                  |
| mbar               | Millibar                       | mmHg  | Millimeter of mercury @ 0°C |
| mmH2O              | Millimeter of water @ 4°C      | psi   | Pounds per square inch      |
| kg/cm <sup>2</sup> | Kilogram per square centimeter | inH2O | Inch of Water               |

## Power Supply & Load Requirements



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## Assembly Overview

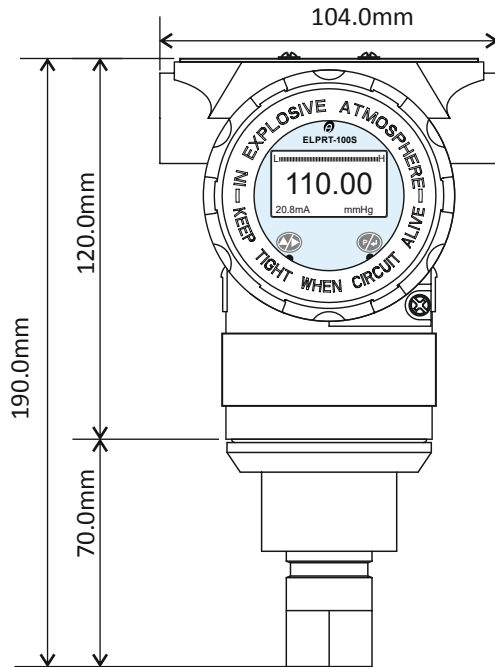


Fig.1 Front View

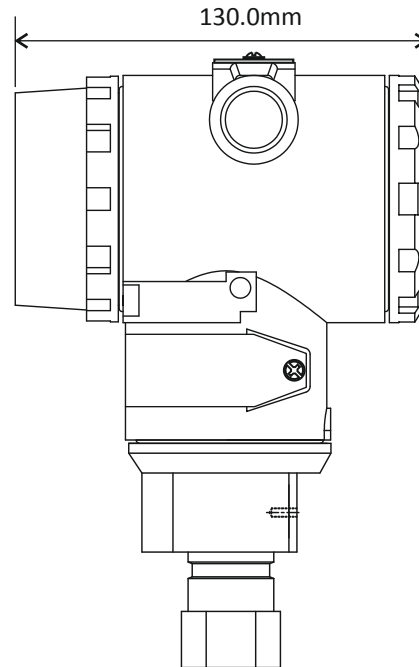
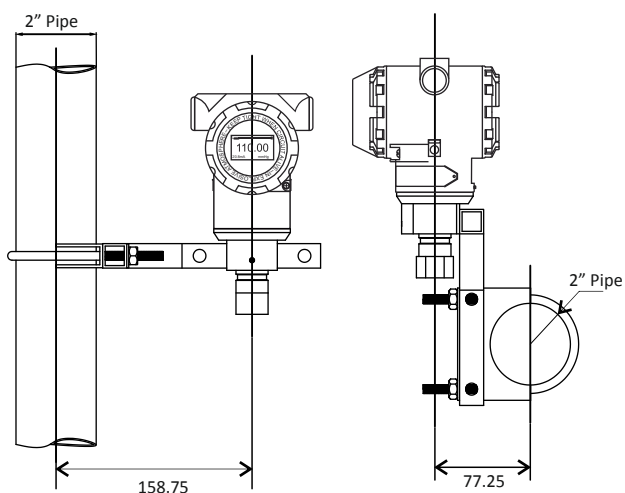


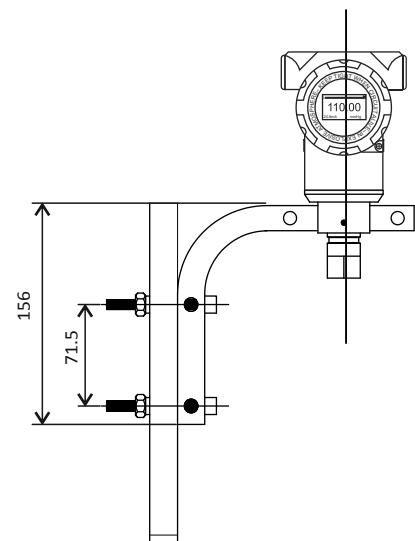
Fig.2 Side View

## Installation Drawing & Dimensions

### Pipe Mounting



### Panel Mounting



### Measuring Medium

Liquid, Gas or Steam

### Field of Application

Pressure & Level

### Approvals



# ELPRT 100SPT

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## Ordering Information

Sample Order Code : ELPRT 100SPT-A1-B1-C1-D1-E1-F1-G1-H1-I1-J1-K1-L1

| Parameter |                           | Code | Description                                      |
|-----------|---------------------------|------|--------------------------------------------------|
| A         | Measurement Type          | A1   | AP                                               |
|           |                           | A2   | GP                                               |
| B         | Pressure Range            | B1   | 10 kPa                                           |
|           |                           | B2   | 35 kPa                                           |
|           |                           | B3   | 70 kPa                                           |
|           |                           | B4   | 100 kPa                                          |
|           |                           | B5   | 250 kPa                                          |
|           |                           | B6   | 400 kPa                                          |
|           |                           | B7   | 600 kPa                                          |
|           |                           | B8   | 1000 kPa                                         |
|           |                           | B9   | 1600 kPa                                         |
|           |                           | B10  | 2500 kPa                                         |
|           |                           | B11  | 4000 kPa                                         |
|           |                           | B12  | 6000 kPa                                         |
|           |                           | B13  | 10000 kPa                                        |
|           |                           | B14  | 16000 kPa                                        |
|           |                           | B15  | 25000 kPa                                        |
|           |                           | B16  | 40000 kPa                                        |
|           |                           | B17  | 60000 kPa                                        |
|           |                           | B18  | 100000 kPa                                       |
| C         | Cerification              | C1   | Weather Proof IP-67                              |
|           |                           | C2   | ATEX (II 2 GD Ex d IIC T6 Gb -20°C ≤ Ta ≤ +60°C) |
|           |                           | C3   | Flameproof (CMRI IIA IIB Certified)              |
| D         | MOC Electronics Enclosure | D1   | Aluminium Die Cast PU Painted                    |
|           |                           | D2   | SS-316                                           |
| E         | Electrical Connection     | E1   | M 20 x 1.5 (F)                                   |
|           |                           | E2   | ½” NPT (F)                                       |
|           |                           | EY   | Other                                            |
| F         | Output                    | F1   | 4 to 20 mA                                       |
|           |                           | F2   | 4 to 20 mA with HART                             |
|           |                           | F3   | 4 to 20 mA with PROFIBUS PA                      |

| Parameter |                                                   | Code | Description                 |
|-----------|---------------------------------------------------|------|-----------------------------|
| G         | Diaphragm Material                                | G1   | SS-316L                     |
|           |                                                   | G2   | Hastelloy C                 |
|           |                                                   | GY   | Other                       |
| H         | Sensor Fill Fluid                                 | H1   | Silicon Oil                 |
|           |                                                   | HY   | Other                       |
| I         | MOC of Sensor, Flange, Adapter & Drain Vent Valve | I1   | SS-316                      |
|           |                                                   | I2   | Hastelloy C                 |
|           |                                                   | IY   | Other                       |
| J         | O Ring Material                                   | J1   | Buna - N                    |
|           |                                                   | J2   | Ethylene - Propylene        |
|           |                                                   | J3   | Teflon                      |
|           |                                                   | J4   | Viton                       |
| K         | Process Connection (In SS-316)                    | K1   | ¼” NPT (M)                  |
|           |                                                   | K2   | ½” NPT (M)                  |
|           |                                                   | K3   | ¼” BSP (M)                  |
|           |                                                   | K4   | ½” BSP (M)                  |
|           |                                                   | K5   | ¼” NPT (F)                  |
|           |                                                   | K6   | ½” NPT (F)                  |
|           |                                                   | K7   | ¼” BSP (F)                  |
|           |                                                   | K8   | ½” BSP (F)                  |
|           |                                                   | K9   | Flush Diaphragm (Triclover) |
|           |                                                   | K10  | Flush Diaphragm (1" BSP)    |
|           |                                                   | K11  | Diaphragm Seal 1" (SS-316)  |
|           |                                                   | K12  | Diaphragm Seal 2" (SS-316)  |
|           |                                                   | K13  | Diaphragm Seal 3" (SS-316)  |
|           |                                                   | K14  | 5 Mtr Capillary (1" Flange) |
|           |                                                   | K15  | 5 Mtr Capillary (2" Flange) |
|           |                                                   | K16  | 5 Mtr Capillary (3" Flange) |
| KY        | Other                                             |      |                             |
| L         | Mounting Bracket                                  | L1   | MS                          |
|           |                                                   | L2   | SS-316                      |

Note :

- Due to our continuous product revisions, design specification and model numbers are subject to change without notice.
- Accuracy defined at Lab Conditions.
- For other requirement please consult factory.
- This product is meant for laboratory/Process application only and not for custody transfer application.

## ELECTRONET EQUIPMENTS PVT. LTD.



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