



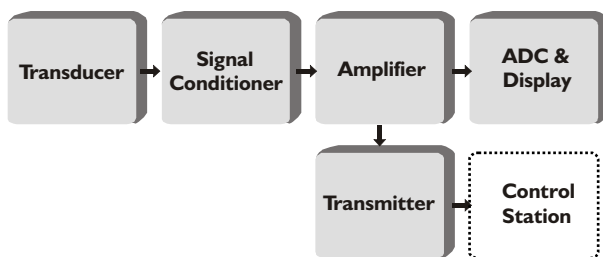
## INTRODUCTION

Temperature Indicators in temperature measurement play an important part in any process industry. Quick and accurate measurement of process temperature will improve the final product quality, reliability and reduce rejection. Temperature indication is therefore one of the prime considerations in any process industry. The ESD 90F series Digital temperature indicators are designed for fast and accurate temperature measurement. The instrument is designed using highly reliable electronic components. The process temperature is displayed directly in digits, which gives better resolution compared to analog indicator. The ESD 90F series accepts all types of Thermocouples, Pt - 100, 0 - 20 mA as well as 4 - 20 mA as input. Wide ranges of measurements are available depending on the sensor used. The instrument is immune to mechanical vibrations. Even the mounting position will not affect the measurement accuracy. The large bright red LED seven segment display allows long distance readability. Use of highly reliable electronic components with low temperature coefficients ensure long and trouble free service. The instrument is tested for its performance under various climatic conditions.

This model is also available with retransmission current or voltage output.



## PRINCIPLE OF OPERATION



The ESD 90F series is based on the principle of a high input impedance amplifier feeding an analog to digital convertor. The input signal generated by the transducer is fed to a sensor compensation circuit, where automatic ambient compensation in case of thermocouple & lead resistance compensation in case of Pt-100 is achieved. Duly compensated signal is fed to a signal conditioning amplifier, output of which is given to digital display. The linearisation of the input signal from the transducer is done by hardware in the input circuit. This gives a standardized signal to the analog to digital convertor which drives the seven segment LED display, indicating the temperature directly.

## APPLICATION

The ESD 90F series temperature indicator can be used in almost any industry where local indication is necessary in the field and also where retransmission signal is needed for control room.

## FEATURES

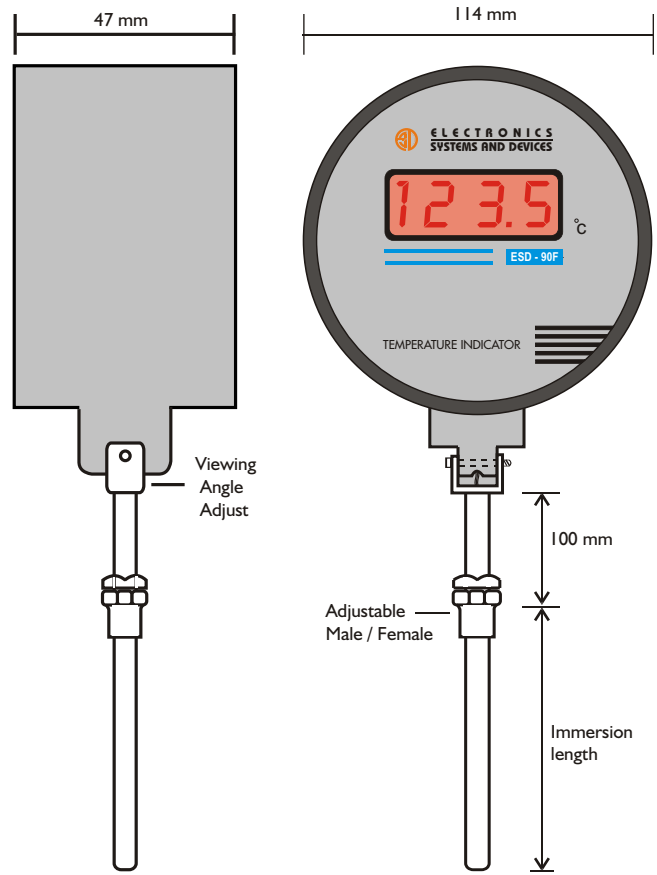
- ✓ Proven troublefree field performance
- ✓ Highly compact
- ✓ Dust and vermin proof enclosure with epoxy powder coating
- ✓ LED display gives better readability at long range
- ✓ Fast response time
- ✓ Designed for Pt-100, Thermocouples and 4 - 20 mA input
- ✓ Maximum MTBF and minimum MTTR
- ✓ Wide supply variation and environmental band
- ✓ Provision for retransmission output

## SPECIFICATIONS

<b>Model</b>	■ <b>ESD 90F</b>
<b>Ranges</b>	■ Std. as per chart below (other on demand)
<b>Input</b>	■ Pt - 100 / Thermocouple / 4 - 20 mA
<b>Indication</b>	■ 1 9 9 . 9 12.5 mm Red LED display
<b>Indication accuracy</b>	■ +/- 0.5 % of fullscale +/- 1 digit
<b>Least count</b>	■ 0.1 °C upto 200 °C, 1°C above 200
<b>Power supply</b>	■ 230V AC, +/- 10 % ,50 Hz with Earth
<b>Relative Humidity</b>	■ 90 % Non Condensing
<b>Ambient Temperature</b>	■ 0 to 55 °C
<b>Amb. Temp. compensation</b>	■ Built in upto 55 °C
<b>Accuracy deviation due to</b>	
a) Temperature change	■ +/- 0.002 % / °C , ref at 25 °C
b) Supply Variation	■ +/- 0.005 % / V
<b>Sensor break indication</b>	■ Up scale [ / _ _ _ ] (Down on demand)
<b>Input impedance</b>	■ < 10 Mohms, (only for T/C input)
<b>Recalibration (if reqd)</b>	■ By Zero and Span pots inside
<b>Power consumption</b>	■ 5 VA
<b>Mounting</b>	■ Direct on location
<b>Mounting accessories</b>	■ 1" BSP M/F with male thread (std.) (for other refer ordering information)
<b>Termination</b>	■ Input direct, Supply thr' 3 core cable
<b>Dimensions (mm)</b>	■ 114 diameter and 47 depth
<b>Sensor</b>	■ As per ordering information

<b>Model</b>	■ <b>ESD 90F</b> ( with retransmission output)		
<b>Output</b>	■ 4 - 20 mA	■ 0 - 20 mA	■ 0 - 2 V
	■ 10 mV / °C	■ 10 mV / °C	

## INSTALLATION



## ORDERING INFORMATION

ESD 90F	X1	X2	X3	X4	X5	X6
<b>Output</b>	1 - Nil 2 - 4 - 20 mA 3 - 0 - 20 mA 4 - 0 - 2 V 5 - 10 mV / °C 6 - 1 mV / °C 7 - Other	<b>Input</b> 1 - Pt - 100 2 - J type T/C 3 - K type T/C 4 - Other	<b>Range</b> 0 - -50 to 50 °C 1 - 0 to 100 °C 2 - 0 to 200 °C 3 - 0 to 100 % 4 - 0 to 400 °C 5 - 0 to 600 °C 6 - 0 to 800 °C 7 - Other	<b>Power Supply</b> 1 - 230 V AC 2 - 110 V AC 3 - 48 V AC 4 - 24 V AC 5 - 24 V DC 6 - Other	<b>Sensor Dimensions</b> 1 - 8 x 200 2 - 8 x 300 3 - 8 x 400 4 - 10 x 300 5 - 10 x 400 6 - 12 x 400 7 - Other	<b>Mounting</b> 1 - 1/2" BSP M/F 2 - 3/4" BSP M/F 3 - 1" BSP M/F 4 - 1/2" NPT M/F 5 - 3/4" NPT M/F 6 - 1" NPT M/F 7 - Other

Input	Standard Ranges in °C		
Pt-100	-50 - 50	0 - 100	0 - 200
J	0 - 200	0 - 400	0 - 600
K	0 - 200	0 - 400	0 - 600
	0 - 800		

**Ordering eg. ESD 90F - 10111**  
 Digital Temp. Indicator ESD 90 F  
 Input - Pt - 100 (1)  
 Range - -50 °C to 50 °C (0)  
 Power Supply - 230 V AC (1)  
 Sensor dimensions - 8 x 200 mm (1)  
 Mounting - 1/2" BSP M/F (1)

## ADDITIONAL CHOICE

### BACKEND

- ✓ Thermowells

### SAME RANGE

- ✓ Single input Indicators
- ✓ Multi Input Indicators
- ✓ Portable Indicators
- ✓ Supersize Indicators
- ✓ Multi Channel Indicators
- ✓ Flameproof Indicators

### FRONT END

- ✓ Temperature Controllers
- ✓ Scanners and DAS
- ✓ Alarm Annunciators
- ✓ Automation Panel



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