



## INTRODUCTION

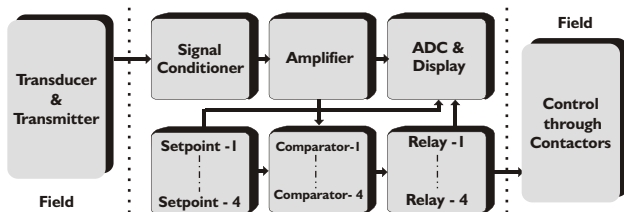
Temperature Indicators / Controllers play an important part in any process industry. Quick and accurate measurement / control of a process temperature will improve the final product quality, reliability and reduce rejection. Temperature indication and control is therefore one of the prime considerations in any process industry.

The ESD 924 multi setpoint series is a On / Off type Digital temperature indicator / controller designed for fast and accurate measurement / control. The instrument is designed using highly reliable electronic components. The process temperature is displayed in digits, which gives better resolution compared to analog indicator. The ESD 924 multi setpoint series accepts all types of Pt - 100, Thermocouples, 0 - 20 mA as well as 4-20 mA as input. 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 lowest temperature coefficient ensure long and trouble free service. The instrument is tested for its performance under various climatic conditions. Wide ranges of measurements are available depending on the sensor used.

## PRINCIPLE OF OPERATION



The ESD 924 multi setpoint series is based on the principle of high input impedance amplifier feeding a comparator followed by a relay and an ADC. The signal from 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 as well as to a comparator. The comparator compares the process value with the desired set value. Output of the comparator is given to the relay which switches ON or OFF depending upon the process value w.r.t. the setpoint. Linearisation of the transducer signal is done by hardware in the input circuit. This gives a standardized signal to the ADC which drives the LED display, indicating the temperature.

## APPLICATION

The ESD 924 multi setpoint series temperature controllers can be used in almost any industry, laboratory etc. where accurate temperature control is needed to be carried out.

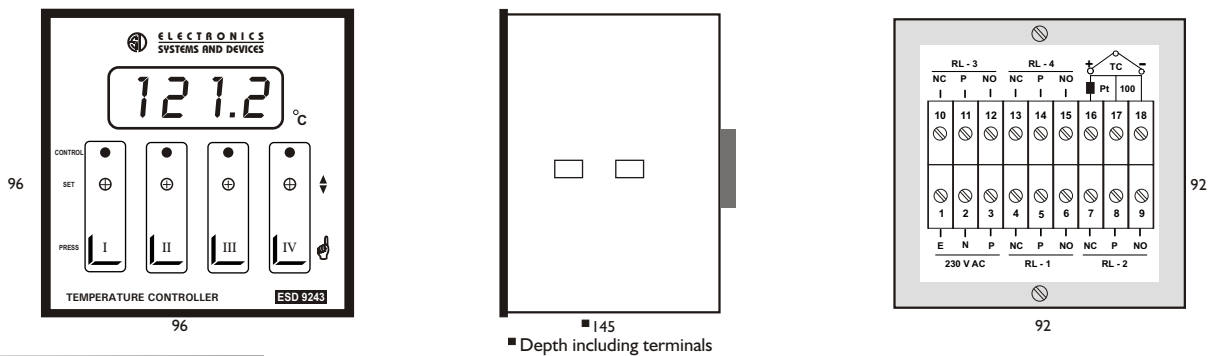
## FEATURES

- ✓ Proven trouble free field performance
- ✓ Highly compact
- ✓ Dust and vermin proof enclosure with epoxy powder coating
- ✓ LED display gives better readability at long range
- ✓ Fast response time
- ✓ Available in different DIN std. cutouts
- ✓ Designed for Pt-100, Thermocouples and 4 - 20 mA input
- ✓ Fail safe relay logic
- ✓ Maximum MTBF and minimum MTTR
- ✓ Feather touch push button
- ✓ Wide supply variation and environmental band

## SPECIFICATIONS

Model	: ESD 9243	Setpoint read	: By pressing self release switch
Ranges	: Std. as per chart below (other on demand)	Setpoint setting	: By pressing self release switch and turning set potentiometer
Input	: Pt - 100 / Thermocouple / 4 - 20 mA	Relay output	: One set of potential free relay changeover contact rated 5 Amp resistive at 230V AC per setpoint
Indication	: 199.9 12.5 mm RED LED display	Relay logic	: 1. Actual temp. < setpoint - Relay ON for heating application (Factory set) 2. Actual temp. > setpoint - Relay ON for cooling application (on demand)
Indication accuracy	: +/- 0.5 % of full scale +/- 1 digit	Relay ON indication	: 3mm RED LED
Least count	: 0.1°C up to 200°C, 1°C above 200°C	Control sensitivity	: 0.25% of full scale (adjustable inside)
Power supply	: 230 V AC, +/- 10 % , 50 Hz with earth	Sensor break protection	: Relay 'Off' (relay 'On' on demand)
Relative humidity	: Less than 90 % non condensing	Front facia	: ABS plastic suitable for IP 55 having size 96 x 96 mm
Ambient temperature	: 0 to 55°C	Mounting	: Flush panel
Amb. Temp. compensation	: Built in up to 55°C	Enclosure	: Mild steel CRCA sheet with powder coating
Accuracy deviation due to		panel cutout	: 92 x 92 mm
a) Temperature change	: +/- 0.002 % /°C , ref at 25°C	Termination	: Screwed type suitable for 2.5mm <sup>2</sup> wire
b) Supply variation	: +/- 0.001 % / V	Weight	: 1 kg approximately
Sensor break indication	: Up scale [   _ _ _ ] (down on demand)		
Input impedance	: < 10 Mohms, (only for T/C input)		
Recalibration (if reqd)	: By zero and span potentiometers inside		
Power consumption	: 6 VA		
Control action	: ON / OFF		
Setpoint	: 4 (through ten turns potentiometer)		

## INSTALLATION



## ORDERING INFORMATION

<b>ESD 9243</b>	<b>X1</b>	<b>X2</b>	<b>X3</b>	<b>X4</b>	<b>X5</b>	<b>X6</b>																											
	<b>Setpoints</b> 3 - Three 4 - Four	<b>Panel Cutout</b> 3 - 92 x 92 6 - 186 x 92	<b>Input</b> 1 - Pt - 100 2 - J type T/C 3 - K type T/C 4 - R type T/C 5 - S type T/C 6 - 0 to 20 mA 7 - 4 to 20 mA 8 - 0 to 2V DC 9 - 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 - 0 to 1000°C 8 - 0 to 1200°C 9 - Other	<b>Relay Output</b> 1 - 1 C/O 5 Amp 2 - 1 C/O 10 Amp 3 - 2 C/O 5 Amp 4 - Other	<b>Power Supply</b> 1 - 230 V AC 2 - 110 V AC 3 - 24 V AC 4 - 24 V DC 5 - Other																											
						<b>Ordering eg. ESD 9243 - 1011</b> Digital Temp. Controller ESD 92 Setpoint - Four (4) Panel cutout - 92 x 92 mm (3) Input - Pt - 100 (1) Range - -50°C to 50°C (0) Relay output - 1 C/o 5 Amp (1) Power Supply- 230 V AC (1)																											
						<table border="1"> <thead> <tr> <th>Input</th> <th colspan="3">Standard Ranges in °C</th> </tr> </thead> <tbody> <tr> <td>Pt-100</td> <td>-50 - 50</td> <td>0 - 100</td> <td>0 - 200</td> </tr> <tr> <td>J</td> <td>0 - 200</td> <td>0 - 400</td> <td>0 - 600</td> </tr> <tr> <td rowspan="2">K</td> <td>0 - 200</td> <td>0 - 400</td> <td>0 - 600</td> </tr> <tr> <td>0 - 800</td> <td>0 - 1000</td> <td>0 - 1200</td> </tr> <tr> <td>R, S</td> <td colspan="3">800 - 1600</td> </tr> <tr> <td>mA / mV</td> <td colspan="3">0 to 100 % or process value</td> </tr> </tbody> </table>	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	0 - 1000	0 - 1200	R, S	800 - 1600			mA / mV	0 to 100 % or process value		
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ALSO SELECT  
ESD ..

### BACK END

- ✓ Pt - 100
- ✓ Thermocouple
- ✓ Thermowells
- ✓ Compensating Cables

### SAME RANGE

- ✓ Single Setpoint Controllers
- ✓ Two Setpoint Controllers
- ✓ Dual Channel Controllers
- ✓ Multi Channel Controllers
- ✓ Blind Controllers
- ✓ Supersize Controllers
- ✓ Flameproof Controllers

### FRONT END

- ✓ Alarm Annunciators
- ✓ Automation Panels



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ESD HOUSE,  
55, Hadapsar Indl. Estate,  
Pune - 411013 (INDIA).

Phone : (020) 26819611 to 15

E-mail : sales@esd-india.com

Web : www.esd-india.com

