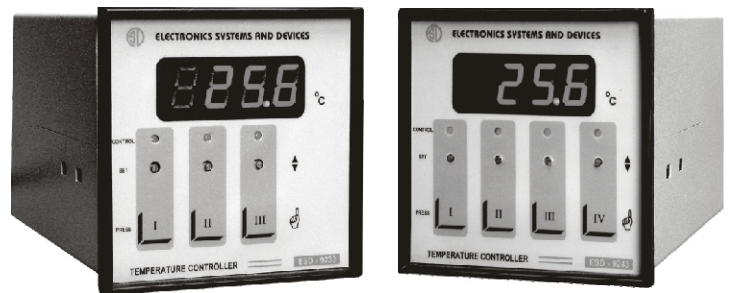




## INTRODUCTION

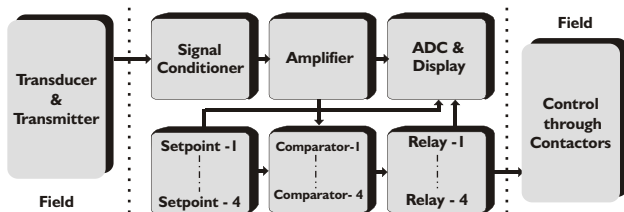
Temperature Indicators / Controllers play an important part in any process industry. Quick and accurate measurement / control of a process temperature will improve the final product quality, reliability and reduce rejection. Temperature indication and control is therefore one of the prime considerations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

The €SD 923 and 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 €SD 923 and 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 €SD 923 and 924 multi setpoint series is based on the principle 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 €SD 923 and 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.

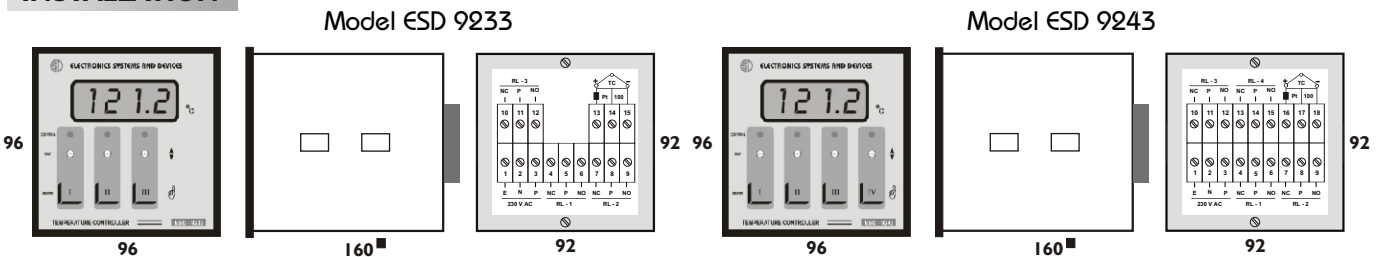
## FEATURES

- ✓ Proven 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
- ✓ 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 9233 / ESD 9243 ESD 9236 / ES D9236	Setpoint	: Three / Four (thr' ten turns potentiometer)
Ranges	: Std. as per chart below (other on demand)	Control action	: ON / OFF
Input	: Pt - 100 / Thermocouple / 4 - 20 mA	Setpoint read	: By pressing self release switch
Indication	: 199.9 12.5 mm Red LED display	Setpoint Setting	: By pressing self release switch and turning set potentiometer
Indication accuracy	: +/- 0.5 % of fullscale +/- 1 digit	Relay Output	: One set of potential free Relay changeover contact 5 Amp resistive at 230V AC per setpoint
Least count	: 0.1 °C upto 200 °C, 1°C above 200 °C	Relay logic	: 1. Actual temp. < setpoint - Relay ON for heating application (Factory set) 2. Actual temp. > setpoint - Relay ON for cooling application (On demand)
Power supply	: 230 V AC, +/- 10 %, 50 Hz with Earth	Relay ON indication	: By Red LED
Relative Humidity	: 90 % Non Condensing	Control Sensitivity	: 0.25% of fullscale (Adjustable inside)
Ambient Temperature	: 0 to 55 °C	Sensor break protection	: Relay 'Off' (Relay 'On' on demand)
Amb. Temp. compensation	: Built in upto 55 °C	Mounting	: Flush mounting
Accuracy deviation due to		Enclosure	: IP 55 mild steel with power coating
a) Temperature change	: +/- 0.002 % / °C, ref at 25 °C	Termination	: PUT 2.5 mm <sup>2</sup>
b) Supply Variation	: +/- 0.005 % / V	Weight	: 1.1 Kg
Sensor break indication	: Up scale [ _ _ _ ] (Down on demand)		
Input impedance	: < 10 Mohms, (only for T/C input)		
Recalibration (if reqd)	: By Zero and Span pots inside		
Power consumption	: 6 VA		

## INSTALLATION



Model	Setpoints	Facia	Cutout	Depth
ESD 9236	3	192 x 96	186 x 92	160
ESD 9246	4	192 x 96	186 x 92	160

Model	Setpoints	Facia	Cutout	Depth
ESD 9233	3	96 x 96	92 x 92	160
ESD 9243	4	96 x 96	92 x 92	160

■ Add 25 for terminals

## ORDERING INFORMATION

ESD 92	X1	X2	X3	X4	X5	X6
	<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 - 48 V AC 4 - 24 V AC 5 - 24 V DC 6 - 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
R, S	800 - 1600		
mA / mV	0 to 100 % or process value		

Ordering eg. ESD 9243 - 1011			
Digital Temp. Controller	ESD 92		
Setpoint	- Four	(1)	
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)	

ALSO SELECT  
ESD ...

### BACKEND

- ✓ Pt - 100
- ✓ Thermocouples
- ✓ Thermowells
- ✓ Compensating Cables

### SAME RANGE

- ✓ One Setpoint Controllers
- ✓ Two Setpoint Controllers
- ✓ Multi channel Controllers
- ✓ Blind Controllers
- ✓ Supersize Controllers
- ✓ Field mounting Controllers

### FRONT END

- ✓ Alarm Annunciators
- ✓ Automation Panels



**ELECTRONICS  
SYSTEMS AND DEVICES**  
Process Control Instrumentation

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