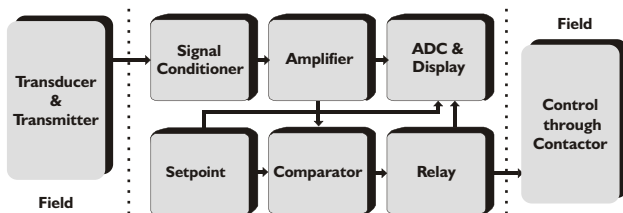




## INTRODUCTION

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 921 single 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 921 single 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

## PRINCIPLE OF OPERATION



The €SD 921 single 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.



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.

## APPLICATION

The €SD 921 single setpoint series temperature controllers can be used in almost any industry, laboratory etc. where accurate temperature control is needed to be carried out.

## FEATURES

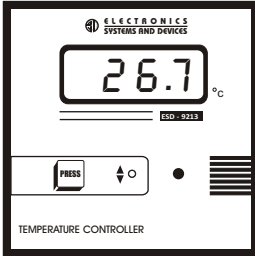
- ✓ Proven trouble free field performance
- ✓ Highly compact
- ✓ Dust and vermin proof enclosure with epoxy powder coating
- ✓ LED display gives better readability at long range
- ✓ Fast response time
- ✓ Available in different DIN std. cutouts
- ✓ Designed for Pt-100, Thermocouples and 4 - 20 mA input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

## SPECIFICATIONS

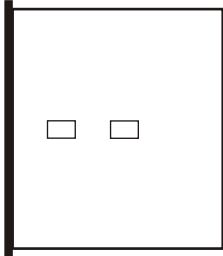
Model	: ESD 9213 / ESD 9212 / ESD 9210	Control action	: ON / OFF
Ranges	: Std. as per chart below (other on demand)	Setpoint read	: By pressing self release switch
Input	: Pt - 100 / Thermocouple / 4 - 20 mA	Setpoint setting	: By pressing self release switch and simultaneously turning set potentiometer
Indication	: 199.9 12.5 mm RED LED display	Relay output	: One set of potential free relay changeover contact rated 5 Amp resistive at 230V AC
Indication accuracy	: +/- 0.5 % of full scale +/- 1 digit	Relay logic	: 1. Actual temp. < setpoint - Relay ON for heating application (factory set) 2. Actual temp. > setpoint - Relay ON for cooling application (on demand)
Least count	: 0.1°C up to 200°C, 1°C above 200°C	Relay ON indication	: 3mm RED LED
Power supply	: 230 V AC, +/- 10 % , 50 Hz with earth	Control sensitivity	: 0.25% of full scale (adjustable inside)
Relative humidity	: Less than 90 % non condensing	Sensor break protection	: Relay 'Off' (relay 'On' on demand)
Ambient temperature	: 0 to 55°C	Front facia	: ABS plastic suitable for IP 55
Amb. Temp. compensation	: Built in up to 55°C	Mounting	: Flush panel
Accuracy deviation due to		Enclosure	: Mild steel CRCA sheet with powder coating
a) Temperature change	: +/- 0.002 % /°C , ref at 25°C	Termination	: Screwed type suitable for 2.5 mm <sup>2</sup> wire
b) Supply variation	: +/- 0.001 % / V	Weight	: 700 gram 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		
Setpoint	:   (through ten turns potentiometer)		

## INSTALLATION

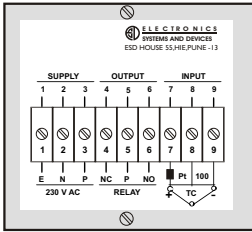
Model ESD 9213 / 9212



96/72

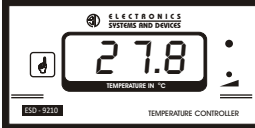


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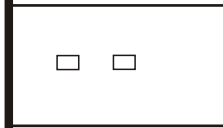


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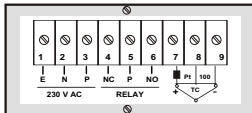
Model ESD 9210



96



145



92

Model	Facia	Cutout	Depth
ESD 9213	96 x 96	92 x 92	105
ESD 9212	72 x 72	68 x 68	125
ESD 9210	96 x 48	92 x 45	145

\*Depth including terminals

## ORDERING INFORMATION

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		

**Ordering eg. ESD 9213 - 1011**  
Digital Temp. Controller ESD 92

Setpoint	- One	(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)

**ESD 92 X1**  
Setpoints  
1 - One

**ESD 92 X2**  
Panel Cutout  
0 - 92 x 45  
1 - 45 x 92  
2 - 67 x 67  
3 - 92 x 92  
4 - 138 x 67

**ESD 92 X3**  
Input  
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

**ESD 92 X4**  
Range  
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

**ESD 92 X5**  
Relay Output  
1 - 1 C/O 5 Amp  
2 - 1 C/O 10 Amp  
3 - 2 C/O 5 Amp  
4 - Other

**ESD 92 X6**  
Power Supply  
1 - 230 V AC  
2 - 110 V AC  
3 - 24 V AC  
4 - 24 V DC  
5 - Other

ALSO SELECT ESD ...

### BACK END

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

### SAME RANGE

- ✓ Two Setpoint Controllers
- ✓ Multi 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,  
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Web : www.esd-india.com

