ELECTRONICS
SYSTEMS AND DEVICES
Process Control Instrumentation

MULTI CHANNEL TEMPERATURE CONTROLLERS

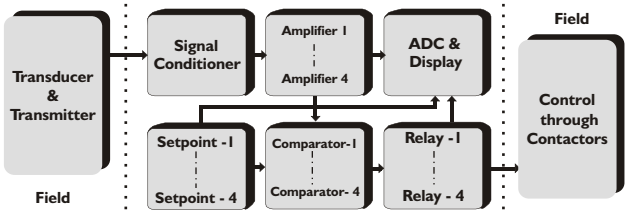
INTRODUCTION

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 92series 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 921series 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 92 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 ESD 92 series temperature controllers can be used in almost any industry, laboratory etc. where accurate temperature control is needed to be carried out.

FEATURES

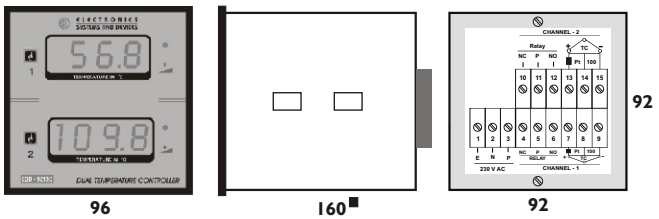
- ✓ Proven troublefree field performance
- ✓ Highly compact
- ✓ Dust and vermin proof enclosure with epoxy powder coating
- ✓ LED display gives better readability at long range
- ✓ Fast response time
- ✓ Available in different DIN std. cutouts
- ✓ Designed for Pt-100, Thermocouples and 4 - 20 mA input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

SPECIFICATIONS

Model	: ESD 9213D / ESD 9223D / ESD 9246 ESD ES3346
Ranges	: Std. as per chart below (other on demand)
No of channels	: 1 to 4 as per model
Input	: Pt - 100 / Thermocouple / 4 - 20 mA
Indication	: 199.9 12.5 mm Red LED display
Indication acuracy	: +/- 0.5 % of fullscale +/- 1 digit
Least count	: 0.1 °C upto 200 °C, 1°C above 200 °C
No of displays	: 1 to 4 as per model
Power supply	: 230 V AC, +/- 10 % , 50 Hz with Earth
Relative Humidity	: 90 % Non Condensing
Ambient Temperature	: 0 to 55 °C
Amb. Temp. compensation	: Built in upto 55 °C
Accuracy deviation due to	
a) Temperature change	: +/- 0.002 % / °C , ref at 25 °C
b) Supply Variation	: +/- 0.005 % / V
Sensor break indication	: Up scale[1 _ _ _] (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
Setpoints	: 1 to 4 as per model
Control action	: ON / OFF
Setpoint read	: By pressing self release switch
Setpoint Setting	: By pressing self release switch and turning set potentiometer
Relay Output	: One set of potential free Relay changeover contact 5 Amp resistive at 230V AC
Relay logic	: 1. Actual temp. < setpoint - Relay ON for heating application (Factory set) 2. Actual temp. > setpoint - Relay ON for cooling application (On demand)
Relay ON indication	: By Red LED
Control Sensitivity	: 0.25% of fullscale (Adjustable inside)
Sensor break protection	: Relay 'Off' (Relay 'On' on demand)
Mounting	: Flush mounting
Enclosure	: IP 55 mild steel with power coating
Termination	: PUT 2.5 mm^2 / PBT
Weight	: 2 Kgs

INSTALLATION

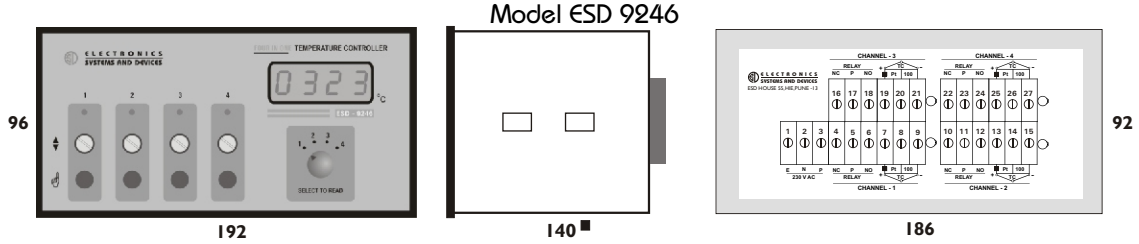
Model ESD 9213D



Model	Input	Displays	Setpoints	Facia	Depth
ESD 9213D	2	2	1	96 x 96	120
ESD 9223D	2	2	2	192 x 96	80
ESD 9246	4	1	1	192 x 96	140
ESD ES3346	3	3	4	192 x 96	140

■ Add 25 for terminals

Model ESD 9246



ORDERING INFORMATION

ESD ES XC XD X1 X2 X3 X4 X5 X6

XC - No of channels
2 - Two
3 - Three
4 - Four

XD - Total no of displays
1 - One
2 - Two
3 - Three
4 - Four

X1 - Panel Cutout
3 - 92 x 92
6 - 186 x 92

X2 - Total no. of Setpoints
2 - Two
3 - Three
4 - Four
5 - Five

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

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 to1000 °C
8 - 0 to1200 °C
9 - Other

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

X6 - Power Supply
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
	0 - 800	0 -1000	0 - 1200
R, S	800 -1600		
mA / mV	0 to 100 % or process value		

These models are customised for specific application. This ordering information chart shows possible options available. For further details please contact

ALSO SELECET ESD ...

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

SAME RANGE
- ✓ Single Setpoint Controllers
- ✓ Two Setpoint Controllers
- ✓ Multi Setpoint Controllers
- ✓ Blind Controllers
- ✓ Supersize Controllers
- ✓ Field mounting Controllers

FRONT END
- ✓ Alarm Annunciators
- ✓ Automation Panels

ELECTRONICS SYSTEMS AND DEVICES
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Unspecified dimensions are in mm. Photos not to the scale. Due to continuous development above details are likely to change.