



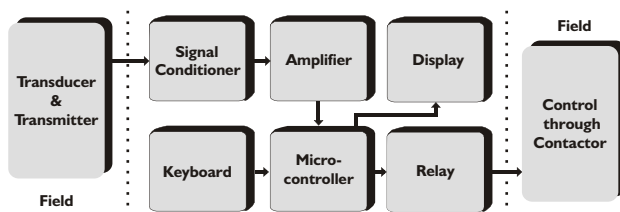
INTRODUCTION

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 **Sleek 92** series is microcontroller based programmable 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 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 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 **Sleek 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 Sleek 92 series temperature controllers can be used in almost any industry, laboratory etc. where accurate temperature control is needed to be carried out.

FEATURES

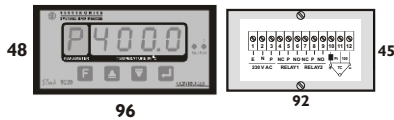
- ✓ Proven troublefree field performance
- ✓ Highly compact
- ✓ Dust and vermin proof enclosure with epoxy powder coating
- ✓ LED display gives better readability at long range
- ✓ Fast response time
- ✓ Highly accurate
- ✓ Available in different DIN std. cutouts
- ✓ Designed for Pt-100, Thermocouples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

SPECIFICATIONS

Model	<input type="checkbox"/> Sleek 921X <input type="checkbox"/> Sleek 9220 <input type="checkbox"/> Sleek 9223 <input type="checkbox"/> Sleek 9243	Control action	: Proportional
Ranges	: Std. as per chart below (other on demand)	Set point Adjust	: Through Flat Membrane key pads
Input	: Pt - 100 / Thermocouple / 4 - 20 mA	On / Off differential	: From 1 to 7 °C (for LC = 1 °C) From 0.1 to 2 °C (for LC = 0.1 °C)
Indication	: 3 9 9 . 9 12.5 mm Red LED display	Duty Cycle	: Self tuning
Indication accuracy	: +/- 0.2 % of fullscale +/- 1 digit	Cycle Time (On/Off)	: From 6 to 240 Sec.
Least count	: 0.1°C upto 400 °C, 1°C above 400 °C	Proportional Band	: From +/- 0.2 to +/- 9.9 °C around setpoint
Power supply	: 230 V AC, +/- 10 % , 50 Hz with Earth	Relay Output	: One set of potential free Relay contact changeover contact 5 Amp resistive at 230V AC
Relative Humidity	: 90 % Non Condensing	Output (optional)	: 4 - 20 mA for retransmission 24 V DC, 100mA field supply
Ambient Temperature	: 0 to 55 °C	Relay logic	: User selectable High or Low
Amb. Temp. compensation	: Built in upto 55 °C	Relay ON indication	: By Red LED
Accuracy deviation due to		Sensor break protection	: Relay 'Off' (Relay 'On' on demand)
a) Temperature change	: +/- 0.002 % / °C, ref at 25 °C	Mounting	: Flush mounting
b) Supply Variation	: +/- 0.005 % / V	Enclosure	: IP 55 mild steel with power coating
Sensor break indication	: O P E N	Termination	: PUT 2.5 mm ² / PBT
Input impedance	: < 10 Mohms, (only for T/C input)	Weight	: 700 grams
Recalibration (if reqd)	: By Zero and Span pots inside		
Power consumption	: 6 VA		
Setpoints	<input type="checkbox"/> One <input type="checkbox"/> Two <input type="checkbox"/> Four		

INSTALLATION

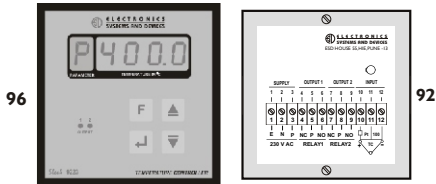
Model Sleek 9220



48 45

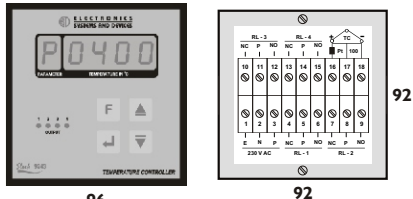
96 92

Model Sleek 9223




96 92

Model Sleek 9243



96 92

Model Sleek 921X



48 45

Model	Facia	Cutout	Depth
Sleek 921X	48 x 48	45 x 45	100
Sleek 9220	96 x 48	92 x 45	100
Sleek 9223	96 x 96	92 x 92	80
Sleek 9243	96 x 96	92 x 92	80

■ Add 25 for terminals

ORDERING INFORMATION

Sleek 92	X1	X2	X3	X4	X5	X6
	Setpoints 1 - One 2 - Two 4 - Four	Panel Cutout X - 45 x 45 0 - 92 x 45 3 - 92 x 92	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	Range 0 - -100 to 200 °C 1 - 0 to 400 °C 2 - 0 to 100 % 3 - 0 to 600 °C 4 - 0 to 1200 °C 5 - 0 to 1600 °C 6 - Other	Relay Output 1 - 1 C/O 5 Amp 2 - 1 C/O 10 Amp 3 - 2 C/O 5 Amp 4 - Other	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	-100 - 200	0 - 400
J	0 - 400	0 - 600
K	0 - 400	0 - 1200
R, S	0 - 1600	
mA / mV	0 to 100 % or process value	

Ordering eg. Sleek 9223 - 1111
 Digital Temp. Controller Sleek 92
 Setpoint - Two (1)
 Panel cutout - 92 x 92 mm (3)
 Input - Pt - 100 (1)
 Range - 0 °C to 400 °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

- ✓ Profile Controllers

FRONT END

- ✓ Alarm Annunciators
- ✓ Automation Panels



ELECTRONICS SYSTEMS AND DEVICES
 Process Control Instrumentation

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