E L E C T R O N I C S
SYSTEMS AND DEVICES
Process Control Instrumentation

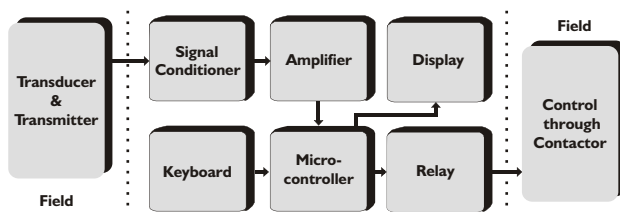**DUAL CHANNEL**
PROCESS INDICATOR
SLEEK 9013 D

INTRODUCTION

Process Indicators / Controllers play an important part in any process industry. Quick and accurate measurement / control of a process parameter will improve the final product quality, reliability and reduce rejection. Process indication and control is therefore one of the prime considerations in any process industry. The Sleek 90 series is microcontroller based programmable process indicator/controller designed for fast and accurate measurement / control. The instrument is designed using highly reliable electronic components. The process parameter is displayed in digits, which gives better resolution compared to analog indicator. The ESD Sleek 90 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 90 series is based on the principle of a high input impedance amplifier feeding a microcontroller followed by an inbuilt 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 the 12 bit analog to digital convertor which is inbuilt the microcontroller. The linearisation of the transducer signal is done by software. The microcontroller also drives the LED display, indicating the temperature .

APPLICATION

The Sleek 90 series process indicators can be used in almost any industry, laboratory etc. where accurate process value measurement is 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
- ✓ Highly accurate
- ✓ Available in different DIN std. cutouts
- ✓ Designed for Pt-100, Thermocouples and 4 - 20 mA input
- ✓ Maximum MTBF and minimum MTTR
- ✓ Feather touch push button
- ✓ Wide supply variation and environmental band
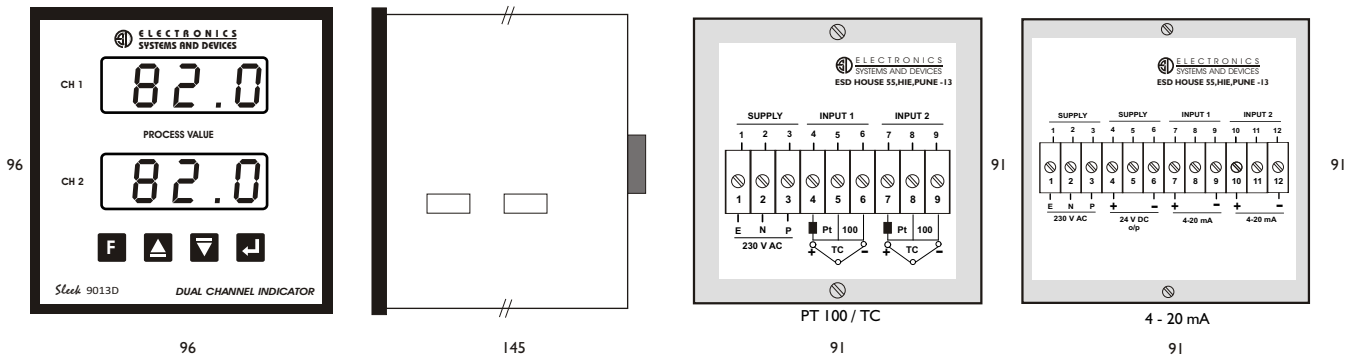- ✓ User friendly programming

SPECIFICATIONS

Model	: Sleek 9013D	Power consumption	: 5 VA
Ranges	: Refer chart below (other on demand)	Transmitter supply	: 24 V DC @ 50mA (only for 4-20mA)
No of inputs	: 2	Front facia	: ABS plastic suitable for IP 55 having size 96 x 96 mm
Input	: Pt - 100 / Thermocouple / 4 - 20 mA	Mounting	: Flush panel
Indication	: 999.9 12.5 mm RED LED display	Enclosure	: Mild steel CRCA sheet with powder coating
Indication accuracy	: +/- 0.25 % of full scale +/- 1 digit		
Least count	: Refer chart below (other on demand)	Termination	: Screwed type suitable for 2.5mm^2 wire
No of displays	: 2 (1 nos. for each input)	Panel cutout	: 92 x 92 mm
Power supply	: 230 V AC, +/- 10 % , 50 Hz with earth	Weight	: 800 grams approximately
Relative humidity	: Less than 90 % non condensing	Optional	
Ambient temperature	: 0 to 55°C	Serial interface	: Isolated RS 485 (2wire) / RS 232
Amb. Temp. compensation	: Built in up to 55°C	Protocol	: Modbus RTU
Accuracy deviation due to		Chart	:

Accuracy deviation due to
 a) Temperature change : +/- 0.002 % /°C , ref at 25°C
 b) Supply variation : +/- 0.001 % / V
Sensor break indication : OPEN
Input impedance : < 10 Mohms, (only for T/C input)
Recalibration (if reqd) : By software using keypad
Programming : Using 4 keys membrane keypad. default password is 134

Input	Std. Ranges in °C	Least count
Pt-100	-100 to 200 0 to 400	0.1°C
J	0 to 600	1°C
K	0 to1200	
R, S	0 to1600	
mA / mV	Programmable from -999 to 9999	Settable

INSTALLATION

Sleek 9013D

PT 100 / TC

4 - 20 mA

ORDERING INFORMATION

Sleek 901 X1 **D** X3 X4 X5

X1
Panel Cutout
0 - 92 x 45
3 - 92 x 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

X4
Range
0 - -100 to 200
1 - 0 to 400
2 - 0 to 600
3 - 0 to 1200
4 - 0 to 1600
5 - Programmable

X5
Power Supply
1 - 230 V AC
2 - 110 V AC
3 - 24 V AC
4 - 24 V DC
5 - Other

Ordering eg. Sleek 9013 D - 101
Process Indicator Sleek 9013D
Panel cutout - 92 x 45 mm   (3)
Input   - Pt - 100   (1)
Range   - -100 to 200   (0)
Power supply - 230 V AC   (1)

ALSO SELECT ESD ...

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

SAME RANGE
✓ Temperature Indicators
✓ Supersize Indicators
✓ Loop Powered Indicators
✓ Portable Indicators
✓ Field Mounting Indicators
✓ Flameproof Indicators
✓ Auto Manual Station

FRONT END
✓ ON OFF Controllers
✓ PI Controllers
✓ Process Scanners
✓ Automation Panels

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