## INTRODUCTION

Process 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 92 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 value is displayed in digits, which gives better resolution compared to analog indicator. The Sleek 92 series accepts mV signal 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
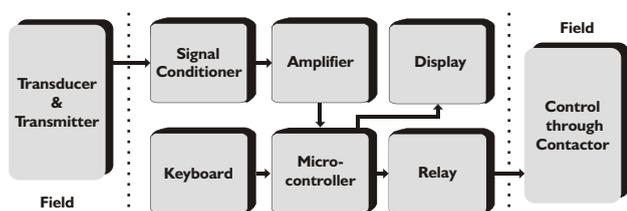


The Sleek 92 series is based on the principle of a high input impedance amplifier feeding a microcontroller followed by a relay and an inbuilt ADC. The signal from the transducer is fed to a sensor compensation circuit. Where automatic ambient compensation in case of thermocouple & lead resistance compensation 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. This microcontroller then switches the relay ON or OFF depending upon the process value with respect to the setpoint. Linearisation of the transducer signal is done by software. The microcontroller also 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 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
- ✓ Programmable range fail safe relay logic
- ✓ Maximum MTBF and minimum MTTR
- ✓ Feather touch push button
- ✓ Wide supply variation and environmental band
- ✓ Minimum overshoot undershoot
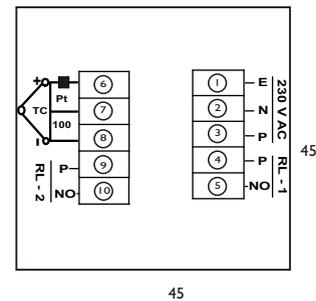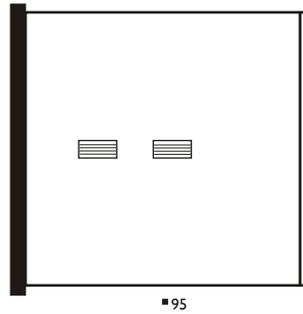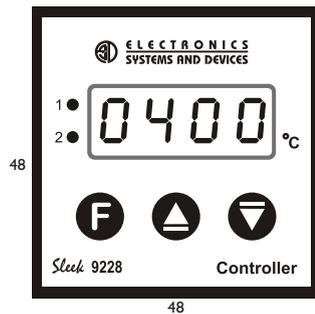- ✓ User friendly programming

## SPECIFICATIONS

| | | | |
|---|---|---|---|
| Model | : Sleek 9228 | On / Off delay time | : From 0 to 240 seconds |
| Ranges | : Refer chart below (other on demand) | Relay output | : One set of potential free relay changeover contact rated 5 amp resistive at 230V AC per setpoint |
| Input | : Pt 100 / Thermocouple / 4-20mA | | |
| Indication | : 999.9  10 mm  RED LED display | | |
| Indication accuracy | : +/- 0.1 % of  full scale +/- 1 digit | Relay logic | : User selectable high or low |
| Least count | : Refer chart below (other on demand) | Relay ON indication | : 3mm RED LED |
| Power supply | : 230 V AC, +/- 10 % , 50 Hz with earth | Sensor break protection | : Relay 'Off' (relay 'On' on demand) |
| Relative humidity | : Less than 90% non condensing | Front facia | : ABS plastic suitable for IP 55 having size 48 x 48 mm |
| Ambient temperature | : 0 to 55°C | | |
| Amb. Temp compensation | : Built in up to 55°C | Mounting | : Flush panel |
| Accuracy deviation due to | | Enclosure | : ABS plastic |
| a) Temperature change | : +/-  0.002 % /°C, ref at 25°C | Panel cutout | : 45 x 45 mm |
| b) Supply variation | : +/- 0.001 % / V | Weight | : 200 grams |
| Sensor break indication | : OPEN | Optional | |
| Input impedance | : < 10 Mohms, (only for T/C input) | Retransmission o/p | : Isolated 4-20mA proportional to process value |
| Recalibration  (if reqd) | : By software using keypad | Resolution | : 10 bit (0.016 mA step change) |
| Programming | : Using 3 keys membrane keypad. Default password is 134 | Load resistance | : Max 500 ohms |
| | | Chart | |
| Power consumption | : 6 VA | | |
| Transmitter supply | : 24 V DC @ 30mA (only for 4-20mA) | | |
| Setpoints | : 2 | | |
| Control action | : ON- OFF | | |
| Set point adjust | :  Using 3 keys membrane keypad | | |
| On / Off differential | : From 1 to 99°C (for LC = 1°C) From 0.1 to 9.9°C (for LC = 0.1°C) | | |

| 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



## ORDERING INFORMATION

**Sleek 92**  X1  X2  X3  X4  X5  X6

**Setpoints**
2 - Two
4 - Four

**Panel Cutout**
0 - 92 x 45
3 - 92 x 92
8 - 45 x 45

**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 600°C
3 - 0 to 1200°C
4 - 0 to 1600°C
5 - 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 - 24 V  AC
4 - 24 V  DC
5 - Other

**Ordering eg. Sleek 9228 - 1111**
Digital Temp. Controller Sleek 92
Setpoint        -  Two            (2)
Panel cutout  -  45 x 45 mm    (8)
Input           -  Pt - 100        (1)
Range          -  0°C to 400°C  (1)
Relay output  -  1 C/O 5 Amp  (1)
Power Supply -  230 V AC       (1)

## ALSO SELECT ESD ...

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

**SAME RANGE**
✓ Dual Channel Controllers
✓ Supersize Controllers
✓ PI Controllers
✓ Field Mounting Controllers
✓ Profile Controllers

**FRONT END**
✓ Alarm Annunciators
✓ Automation Panels

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