



Features

- Universal Temperature Input (J, K, T, R, S, B, N Thermocouples & RTD Pt100)
- Programmable Input Signal Conditioning (Digital Filter & Zero Offset)
- Self Tune PID or On-Off Control
- Heat (Reverse) or Cool (Direct) Control Mode
- Relay / SSR or DC Linear Voltage / Current Control Output
- In-built 8 Segment Ramp/Soak Profile
- Optional, 2 Programmable Alarm / Auxiliary Control Outputs
- Optional Serial Communication Port
- DIN Standard Dimensions : 48(H) X 48(W) X 110(D), mm
96(H) X 96(W) X 65(D), mm

Specifications

Display	
Digital Readout 48 X 48	Upper Readout : 4 digits, 0.39" Bright Red LED, 7 Segment Lower Readout : 4 digits, 0.3" Luminous Green LED, 7 Segment
Digital Readout 96 X 96	Upper Readout : 4 digits, 0.56" Bright Red LED, 7 Segment Lower Readout : 4 digits, 0.56" Luminous Green LED, 7 Segment
Status Indicators	5 Red LEDs (3mm Round)
Keys	
Type	4 Tactile Switches
Functions	PAGE, DOWN, UP, ENTER
Sensor / Signal Input	
Type (User Programmable)	Thermocouple : J, K, T, R, S, B, N RTD Pt100, 3 wire
Corrections	<ul style="list-style-type: none"> • In-built Cold-Junction Compensation for Thermocouples • In-built Lead Resistance Compensation for RTD (Upto 22 Ohms in each lead)

Accuracy	$\pm 0.25\%$ of reading $\pm 1^\circ\text{C}$
Display Range	Refer Table 1 for Thermocouples & RTD Inputs
Display Resolution (User Programmable)	Thermocouples : 1°C Fixed RTD Pt100 : $0.1 / 1^\circ\text{C}$
Zero Offset	User Adjustable over Full Range
ADC	16 Bit ($\pm 32,768$ Counts), Sigma-Delta ($\Sigma\Delta$)
Sampling Time	200mS (5 Samples per Second)
Input Resistance	$> 8 \text{ MOhm}$
Common Mode Rejection	$> 100\text{dB}$ at 50/60 Hz
Signal Conditioning	L-C Analog Filter with Programmable Digital Low-Pass Filter
Alarms	
Numbers	2, Independent
Programmable Parameters	Type : Process Low, Process High, Deviation, Window Logic : Normal, Reverse Hysteresis : 1 to 999 Unit Counts Inhibit : No, Yes
Outputs (Optional)	Relay Change-over Contacts or SSR Drive (Jumper Selectable) Output-2 (OP-2) for Alarm-1, Output-3 (OP-3) for Alarm-2
Auxiliary Control	
Control Type	Second Setpoint or Blower / Compressor Setpoint
Control Parameters	• Second Setpoint : Hysteresis, Control Logic • Blower / Compressor : Hysteresis, Time Delay
Main Control	
Type	ON-OFF Or Self Tune PID
Mode	Heat only, Cool only
Control Parameters	• ON-OFF : Hysteresis • Self Tune PID : Proportional Band, Integral Time, Derivative Time, Cycle Time, Power Low, Power High, Overshoot Inhibit
Setpoint Profile	
Segments	8 (4 Ramp + 4 Soak)
Hold Back Band	Separate Ramp Band and Soak Band
Power-fail Recovery	Servo Start
Outputs (Refer Table 2 : Output Option Selection & Function Assignments)	
Relay	Contact Type : Potential-free Change-over Contacts Contact Rating : 5A Resistive @ 120/240 Vac Contact Life : $> 5,00,000$ Operations at Rated Voltage / Current
SSR Drive	$> 4.2 \text{ VDC}$ into 1KOhm Minimum
DC Linear	Voltage : 0-5V, 0-10V (into 1KOhm Minimum) Current : 0-20mA, 4-20mA (into 500 Ohm Maximum)

Serial Communication

Port	RS485, 2-wire, Half Duplex, Start-Stop Synchronized
Protocol	Modbus RTU
Baud Rate	Settable : 1200, 2400, 4800, 9600
Max. Units per Loop	31
Max. Distance	1200 Metres

Power Supply

Type	Switch Mode (SMPS)
Line Voltage	Standard : 85~264 VAC, 50/60Hz Optional : 18~36 VDC
Consumption	5VA Max

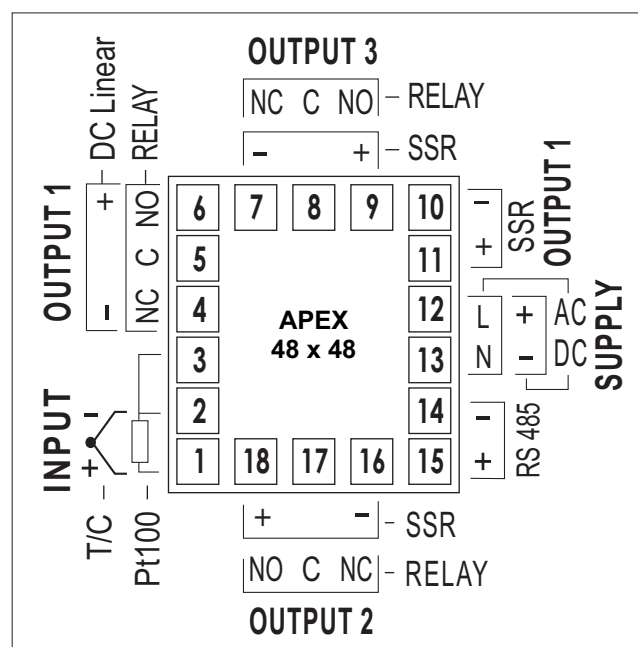
Physical

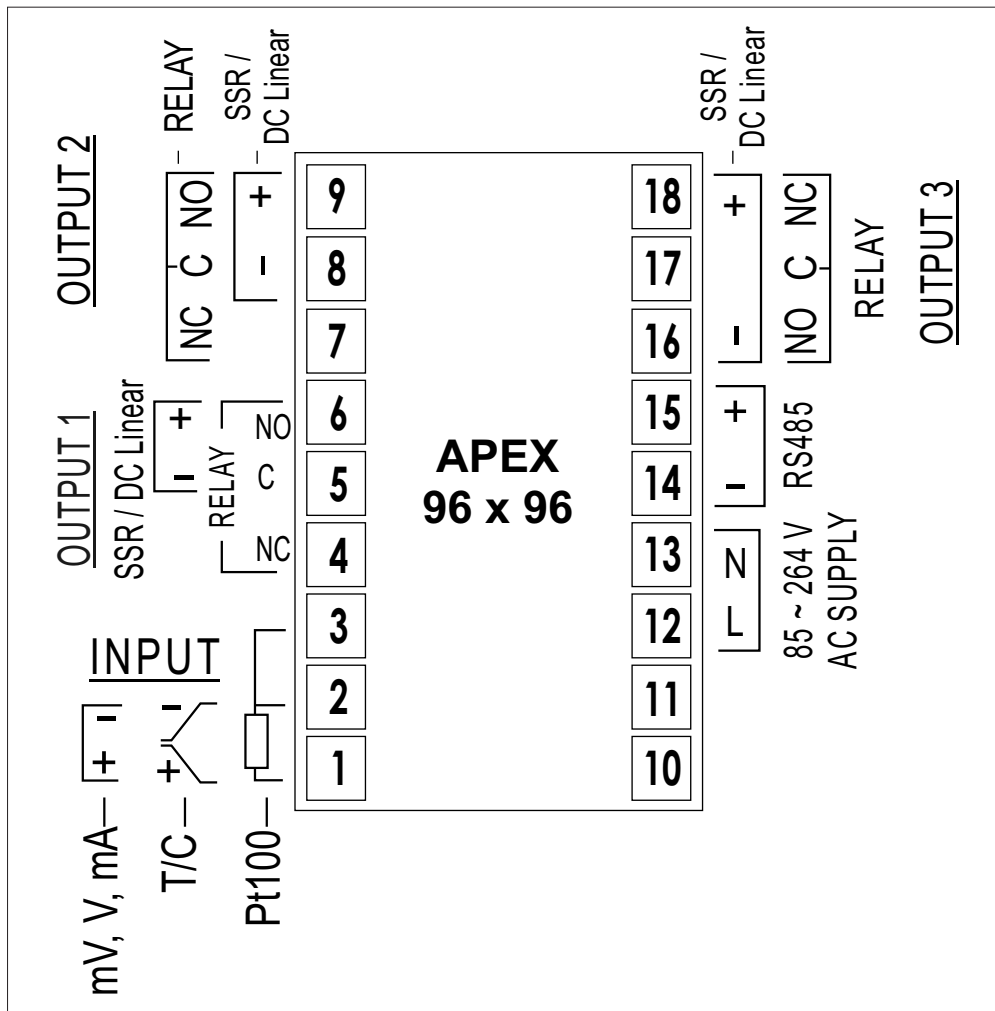
Mounting	Plug-in with Panel Mounting Clamps
Overall Dimensions	48(H) X 48(W) X 110(D), mm 96(H) X 96(W) X 65(D), mm
Panel Cutout	45(H) X 45(W), mm 92(H) X 92(W), mm
Terminals	Screw Type
Weight	48 X 48 : 225 gm, Appx., 96 X 96 : 400 gm, Appx.

Environmental

Operating Ambient	0~55°C & 5~90%RH Non-condensing
Storage Temperature	-10 to +70°C
Panel Sealing	IP65, NEMA 4X
EMC Standards	EN50081-2 & EN 50082-2 Generic Stds for Industrial Environment
Safety Standards	Meets EN61010, Installation Catagory II
Atmospheres	Not Suitable for use in Corrosive or Explosive Atmospheres. The Panel in which the Instrument is Mounted must be free of Electrically Conductive Pollution.

Back Panel Terminations





Tables

Table 1 : Temperature Ranges for Thermocouples & RTD

Input Type	Range (Min. to Max.)
Type J Thermocouple (Fe-K)	0 to +960°C / +32 to +1760°F
Type K Thermocouple (Cr-Al)	-200 to +1376°C / -328 to +2508°F
Type T Thermocouple (Cu-Con)	-200 to +385°C / -328 to +725°F
Type R Thermocouple (Pt/Pt-Rh13%)	0 to +1770°C / +32 to +3218°F
Type S Thermocouple (Pt/Pt-Rh10%)	0 to +1765°C / +32 to +3209°F
Type B Thermocouple	0 to +1825°C / +32 to +3092°F
Type N Thermocouple	0 to +1300°C / +32 to +2372°F
3-wire, RTD Pt100	-199 to +600°C / -328 to +1112°F or -199.9 to 600.0°C / -199.9 to 999.9°F

Table 2 : Output Option Selection & Function Assignments

	Available Options (Specify while Ordering)	Function Assignments (User Programmable)
Output-1 (OP-1)	<input type="checkbox"/> Relay, SSR <input type="checkbox"/> 0-5/10 V <input type="checkbox"/> 0/4-20 mA	✓ Main Control Output
Output-2 (OP-2)	<input type="checkbox"/> Relay, SSR (Jumper Selectable)	✓ Alarm-1 Output ✓ Auxiliary Control Output ✓ Blower Control Output
Output-3 (OP-3)	<input type="checkbox"/> Relay, SSR (Jumper Selectable)	✓ Alarm-2 Output ✓ Auxiliary Control Output

Ordering Code

Input*		Output 1		Output 2		Output 3		Power Supply		Options		Size	
TC	Thermocouple	1	Relay/SSR	0	None	0	None	0	85~264 VAC	N	None	48	48 X 48
PT	RTD Pt100	3	0-5/10 V	1	Relay**	1	Relay**			S	Serial Port	96	96 X 96
		4	0/4-20 mA	2	SSR**	2	SSR**						

Example Code **TC-1-1-1-0-S-48**

Thermocouple Input, Output-1 Relay/SSR, Output-2 Relay, Output-3 Relay,
85~264 VAC Supply, Serial Port, 48X 48

* Input type is universal and user programmable. The ordering code only implies the factory settings at the time of dispatch.

** Relay and SSR selection is jumper settable by user. The ordering code only implies the factory settings at the time of dispatch.