



Features

- 2 Rows of 5 Digits Display (0.5" Height)
- 9 Front Panel Indicators for Enhanced Status Indications
- 8 Front Panel Keys for Simplest Operation
- Universal Input (Thermocouples, RTD Pt100, DC Linear mA/mV/V)
- Programmable Range / Resolution for DC Linear Inputs
- Programmable Input Signal Conditioning (Digital Filter & Zero Offset)
- *32 Point User Defined Linearization for DC Linear Input
- Up to 3 Analog Outputs, 5 Digital Outputs & 2 Digital Inputs
- Self Tune PID, On-Off, Pulsed Control Mode
- Auto / Manual Control with Bumpless Transfer
- Uni-Directional / Bi-Directional Control
- *In-built 16 Segment Ramp / Soak Profile
- Auxiliary Control Set Point with Remote Switching Input
- Optional Programmable Alarms / Retransmission Outputs
- Optional Serial Communication Port
- DIN Standard Dimensions (mm) : 96(H) X 96(W) X 100(D)

* 'User Linearisation' & 'Ramp / Soak Profile' features are mutually exclusive

Specifications

Display	
Digital Readout	Upper Readout : 5 digits, 0.56" Bright Red LED, 7 Segment Lower Readout : 5 digits, 0.56" Luminous Green LED, 7 Segment
Status Indicators	9 Red LEDs (3mm Round)
Keys	
Type	8 Tactile Switches
Functions	PAGE, DOWN, UP, ENTER OR ALARM ACK, A/M, CMD, OPR, PRF
Sensor / Signal Input	
Type (User Programmable)	Thermocouple : J, K, T, R, S, B, N RTD Pt100, 3 wire DC Linear : 0-20 mA, 4-20 mA 0-50 mV, 0-200 mV 0-1.25 V, 0-5 V, 0-10 V, 1-5 V
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	For Thermocouples & RTD : $\pm 0.25\%$ of reading $\pm 1^\circ\text{C}$ For DC Linear Volts / Current : $\pm 0.25\%$ of reading ± 1 LSD
Display Range	Refer Table 1 for Thermocouples & RTD Inputs Adjustable from -19999 to 30000 Counts for DC Linear mA/mV/V
Display Resolution (User Programmable)	For Thermocouples & RTD : 0.1 / 1°C For DC Linear Volts / Current : 0.001 / 0.01 / 0.1 / 1 Counts
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 MOhm
Common Mode Rejection	> 100dB at 50/60 Hz
Signal Conditioning	L-C Analog Filter with Programmable Digital Low-Pass Filter
Excitation Voltage	
Rating	24VDC @ 80mA
Alarms	
Numbers	2, Independent
Programmable Parameters	Type : Process Low, Process High, Deviation, Window Logic : Normal, Reverse Hysteresis : 1 to 3000 Unit Counts Inhibit : No, Yes Latch : No, Yes
Outputs (Optional)	Relay Change-over Contacts or SSR Drive (Jumper Selectable) Output-3 (OP-3) for Alarm-1, Output-4 (OP-4) for Alarm-2
Retransmission	
Parameter Type	Process Value (PV) or Setpoint (SP)
Parameter Value	User Settable through 'Range Low' & 'Range High' Parameters
Output Signal	DC Volts (0-5/10 V) or DC Current (0/4-20 mA)
Control	
Type	Self Tune PID, ON-OFF, Pulsed ON-OFF
Mode	Heat only, Cool only, Heat & Cool
Control Parameters	<ul style="list-style-type: none"> • ON-OFF : Hysteresis • Self Tune PID : Proportional Band, Integral Time, Derivative Time, Cycle Time, Relative Cool Gain, Power Low, Power High, Overshoot Inhibit • Pulsed ON-OFF : Hysteresis, Pulse Period, Pulse-ON Time
Manual Control	Bump-less Transfer between Auto PID and Manual Control through front panel Key
Setpoint Profile (Not available if controller is ordered with 'User Linearisation' feature)	
Segments	16, Free Formeable Ramp or Soak
Hold Back Band	Common for entire Profile or Independent for each Segment
Repeat Cycles	1 to 9999
Power-fail Recovery	User Programable for Resumption or Abortion of Profile
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 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 : 4800, 9600, 19200, 38400, 57600
Parity	Settable : None, Even, Odd
Max. Units per Loop	31
Max. Distance	1200 Meters
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	96(H) X 96(W) X 100(D), mm
Panel Cutout	92(H) X 92(W), mm
Terminals	Screw Type
Weight	400 gm, Appx.
Environmental	
Operating Ambient	0~55°C & 5~90%RH Non-condensing
Storage Temperature	-10 to +70 °C
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

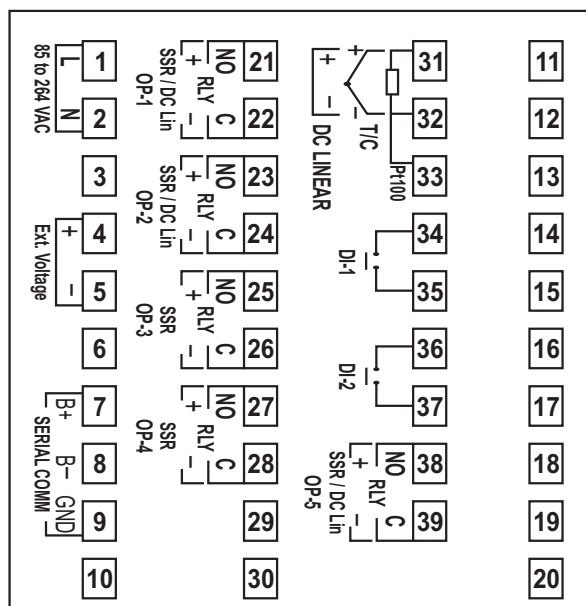


Table 1 : Temperature Ranges for Thermocouples & RTD

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 <input type="checkbox"/> 0-5/10 V <input type="checkbox"/> 0/4-20 mA	✓ Cool Control Output ✓ End of Profile Output
Output-3 (OP-3)	<input type="checkbox"/> Relay / SSR	✓ Alarm-1 Output ✓ End of Profile Output
Output-4 (OP-4)	<input type="checkbox"/> Relay / SSR	✓ Alarm-2 Output
Output-5 (OP-5)	<input type="checkbox"/> 0-5/10 V <input type="checkbox"/> 0/4-20 mA	✓ Retransmission Output

Ordering Code

Input*		Output 1		Output 2		Output 3		Output 4		Output 5		Option 1		Option 2	
TC	Thermocouple	0	None	0	None	0	None	0	None	0	None	P	Ramp / Soak Profile (Available as Default)	N	None
PT	RTD Pt100	1	Relay**	1	Relay**	1	Relay**	1	Relay**	3	0-5/10 V	L	User Linearisation	S	Serial Port
LV	Linear Voltage	2	SSR**	2	SSR**	2	SSR**	2	SSR**	4	0/4-20 mA				
LC	Linear Current	3	0-5/10 V	3	0-5/10 V										
		4	0/4-20mA	4	0/4-20mA										

Example Code

TC-4-1-1-0-0-P-S

Thermocouple Input, Output-1 0/4-20 mA, Output-2 Relay, Output-3 Relay, Output-4 None, Output-5 None (No Retransmission), Ramp / Soak Profile, Serial Port

- * Input type is universal and requires appropriate jumper settings. 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 if Relay/SSR output option is ordered .