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**Jumper-less Universal Temperature Input
(RTD & Thermocouples)**

Self-Tune PID / ON-OFF Control

Compressor Control with Time Delay

In-built Programmable Timer

Door Open Detection Input

Process & Event Alarms

PC Interface with 21 CFR Software

Features

- 128 X 64 STN Monochrome Graphic Display
- Universal Temperature Input
(Refer Table 1 for Input Types & Ranges)
- ON-OFF or Self Tune PID Control Loop
- 'Heat Only', 'Cool Only' & 'Heat + Cool' Control
- 4 SSR Outputs : Heater Control, Compressor Control, Process Alarm & Event Alarm
- RS485, MODBUS Serial Communication Port

Applications

- Lab Oven / Furnace
- Ageing Test Oven
- Muffle Furnace
- BOD Incubator
- General Purpose Water Bath
- Refrigerated Water Bath
- Recirculating Chiller

Specifications

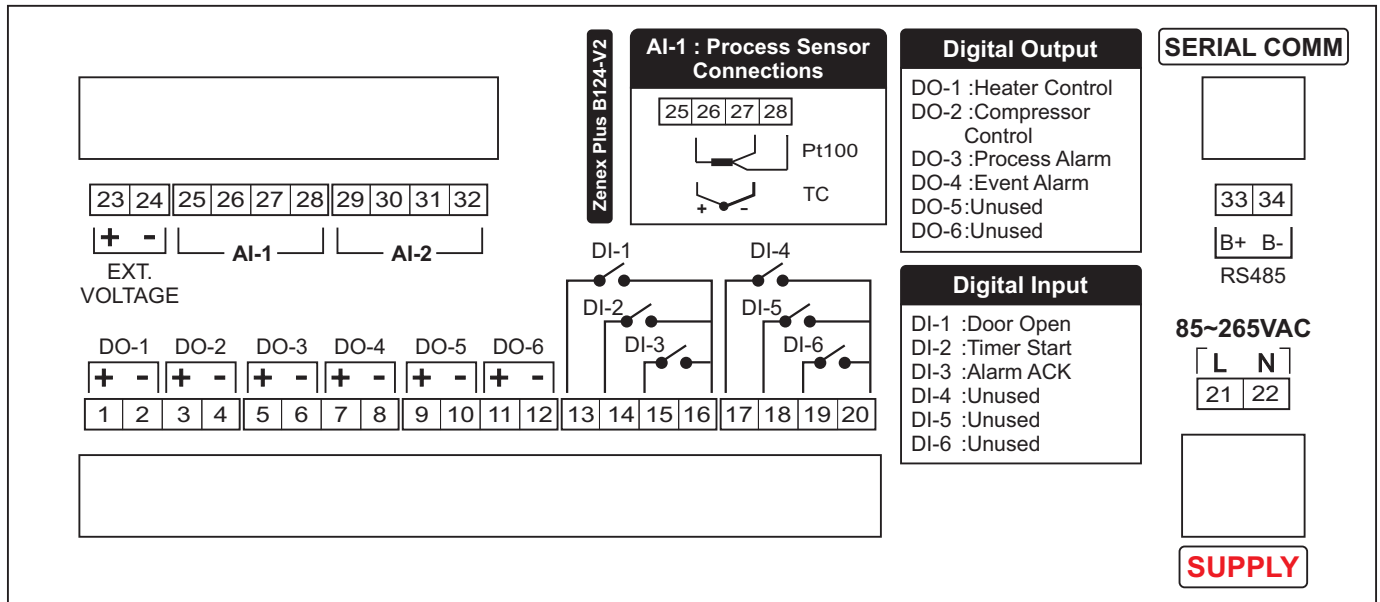
Display	
Graphic LCD	128 X 64 STN Monochrome
Keys	
Type	6 Tactile Switches
Functions	SCROLL UP PAGE DOWN ALARM ACK ENTER
Sensor Input	
Type (User Programmable)	RTD Pt100, 3 wire Thermocouple : J, K, T, R, S, B, N
Accuracy	± 0.25% of reading ± 1°C
Corrections	<ul style="list-style-type: none"> In-built Cold-Junction Compensation for Thermocouples In-built Lead Resistance Compensation for RTD (Upto 22 Ohms in each lead)
Display Range	Refer Table 1
Display Resolution	RTD Pt100 : 0.1°C Fixed Thermocouples : 1°C Fixed
Zero Offset	User Adjustable over Full Range
ADC	16 Bit (±32,768 Counts), Sigma-Delta (ΣΔ)
Sampling Time	250mS (4 Samples per Second)
Common Mode Rejection	> 100dB at 50/60 Hz
Input Resistance	> 8 MOhm
Signal Conditioning	R-C Analog Filter with Programmable Digital Low-Pass Filter
Programmable Timer	
Operation Mode	Free Running or Soak at Setpoint with Hold Band
Range	5 Seconds to 999 Hours
Power-fail Recovery	Resume, Reset, Abort
Door Status Monitoring	
Input	Digital Input (Potential-free Contacts) from Door Switch
Function	Alarm Alert on Door Opening for Longer than Set Time
Alarm System	
Process Alarm	Independent High/Low Deviation Process Alarms
Door Open Alarm	Alarm on Equipment Door Remaining Open for More than Set Time Period (Alarm can be disabled if not desired)
Timer-End Alarm	Alarm on End-of-Time (Timer Function) (Alarm can be disabled if not desired)
Audio Alert	In-Built Buzzer (Beeper)
Outputs	Separate SSR Outputs for Process Alarm (High / Low Deviation) & Event Alarm (Door Open / Timer End)
Alarm Acknowledge	<ul style="list-style-type: none"> Rear Panel Digital Input for Connecting Remote Alarm Acknowledge (Mute) Button Front Panel Alarm Acknowledge (Mute) Key

Temperature Control Loop	
Type	User Settable : Self Tune PID or ON-OFF
Control Parameters	PID : Proportional Band, Integral Time, Derivative Time, Cycle Time ON-OFF : Hysteresis
Output	SSR Drive Voltage
Compressor Control	
Type	On-Off with Programmable Time Delay & Hysteresis
Control Strategy (Programmable)	1) Can be Switched ON-OFF Manually. 2) Based on Programmable Temperature SP Threshold. Compressor is ON for Temperature SP Below Threshold & OFF Above. 3) Cool Control. Switches ON-OFF Based on Temperature PV & SP
Output	SSR Drive Voltage
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 Metres
Power Supply	
Type	Switch Mode (SMPS)
Line Voltage	85 to 264 VAC, 50/60Hz
Consumption	5VA Max
Physical	
Mounting	Plug-in with Panel Mounting Clamps
Overall Dimensions	80 (H) X 160 (W) X 68.2 (D), mm
Panel Cutout	75 (H) X 150 (W), mm
Terminals	3.5 mm Pitch, Pluggable Terminal Blocks
Environmental	
Operating Ambient	0~55°C & 5~90%RH Non-condensing
Storage Temperature	-10 to +70 °C
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.

Table 1 : Temperature Ranges for Thermocouples & RTD

Input Type	Range (Min. to Max.)
Type J Thermocouple (Fe-K)	0 to +960°C
Type K Thermocouple (Cr-Al)	-200 to +1376°C
Type T Thermocouple (Cu-Con)	-200 to +385°C
Type R Thermocouple (Pt/Pt-Rh13%)	0 to +1770°C
Type S Thermocouple (Pt/Pt-Rh10%)	0 to +1765°C
Type B Thermocouple	0 to +1825°C
Type N Thermocouple	0 to +1300°C
3-wire, RTD Pt100	-99.9 to 600.0

Back Panel Terminations



PC Interface with 21 CFR Compliant Software

Supported Operating Systems (OS)	<ul style="list-style-type: none"> • Windows Vista • 32 bit / 64 bit Windows 8 • Windows 7 • 32 bit / 64 bit Pentium Dual Core
Minimum PC Configuration Requirements	<ul style="list-style-type: none"> • 2.8 GHz Clock Speed • 40 GB Hard Disk • 2 GB RAM
PC Software Features (USFDA 21 CFR Part 11 Compliant)	<ul style="list-style-type: none"> • Supports Multiple Equipment on Single Installation • Auto Start-up on PC Power-up • Online Display of Process Values & Stored Records in Graphical & Tabular Forms with Alarm Indications • SMS and/or Email Alerts on Alarm Conditions • Access Control According to Authority Level • User Actions with Signing & Authorization • Automatic Password Expiry • Manual & Auto Back-up Facility with Archiving • Data Log Reports with User Configurable Title, Footer & Header • Data Log Report, Alarm Log Report, History Graph & Audit Trail Report in PDF & EXCEL formats • Audit Trail History of Critical Events & User Actions

