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Software



**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 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

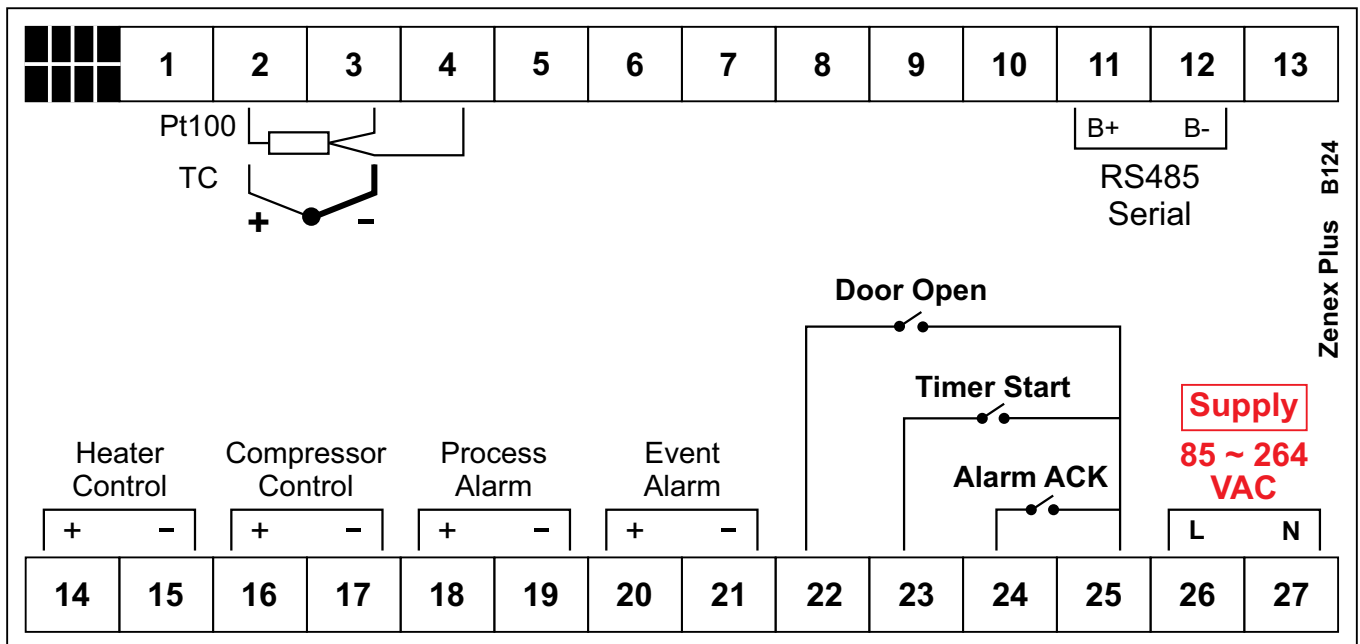
<b>Display</b>	
Graphic LCD	128 X 64 STN Monochrome
<b>Keys</b>	
Type	6 Tactile Switches
Functions	SCROLL UP                      PAGE DOWN                      ALARM ACK ENTER
<b>Sensor Input</b>	
Type (User Programmable)	RTD Pt100, 3 wire Thermocouple : J, K, T, R, S, B, N
Accuracy	± 0.25% of reading ± 1°C
Corrections	<ul style="list-style-type: none"><li>• In-built Cold-Junction Compensation for Thermocouples</li><li>• In-built Lead Resistance Compensation for RTD (Upto 22 Ohms in each lead)</li></ul>
Display Range	Refer Table
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
<b>Programmable Timer</b>	
Operation Mode	Free Running or Soak at Setpoint with Hold Band
Range	5 Seconds to 999 Hours
Power-fail Recovery	Resume, Reset, Abort
<b>Door Status Monitoring</b>	
Input	Digital Input (Potential-free Contacts) from Door Switch
Function	Alarm Alert on Door Opening for Longer than Set Time
<b>Alarm System</b>	
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"><li>• Rear Panel Digital Input for Connecting Remote Alarm Acknowledge (Mute) Button</li><li>• Front Panel Alarm Acknowledge (Mute) Key</li></ul>

<b>Temperature Control Loop</b>	
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
<b>Compressor Control</b>	
Type	On-Off with Programmable Time Delay & Hysteresis
Control Strategy (Programmable)	<ol style="list-style-type: none"> <li>1. Can be Switched ON-OFF Manually.</li> <li>2. Based on Programmable Temperature SP Threshold. Compressor is ON for Temperature SP Below Threshold &amp; OFF Above.</li> <li>3. Cool Control. Switches ON-OFF Based on Temperature PV &amp; SP</li> </ol>
Output	SSR Drive Voltage
<b>Serial Communication</b>	
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
<b>Power Supply</b>	
Type	Switch Mode (SMPS)
Line Voltage	85 to 264 VAC, 50/60Hz
Consumption	5VA Max
<b>Physical</b>	
Mounting	Plug-in with Panel Mounting Clamps
Overall Dimensions	80 (H) X 160 (W) X 105 (D), mm
Panel Cutout	76 (H) X 152 (W), mm
Terminals	Screw Type
<b>Environmental</b>	
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 : 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"> <li>• Windows Vista</li> <li>• 32 bit / 64 bit Windows 8</li> <li>• Windows 7</li> <li>• 32 bit / 64 bit Pentium Dual Core</li> </ul>
Minimum PC Configuration Requirements	<ul style="list-style-type: none"> <li>• 2.8 GHz Clock Speed</li> <li>• 40 GB Hard Disk</li> <li>• 2 GB RAM</li> </ul>
PC Software Features (USFDA 21 CFR Part 11 Compliant)	<ul style="list-style-type: none"> <li>• Supports Multiple Equipment on Single Installation</li> <li>• Auto Start-up on PC Power-up</li> <li>• Online Display of Process Values &amp; Stored Records in Graphical &amp; Tabular Forms with Alarm Indications</li> <li>• SMS and/or Email Alerts on Alarm Conditions</li> <li>• Access Control According to Authority Level</li> <li>• User Actions with Signing &amp; Authorization</li> <li>• Automatic Password Expiry</li> <li>• Manual &amp; Auto Back-up Facility with Archiving</li> <li>• Data Log Reports with User Configurable Title, Footer &amp; Header</li> <li>• Data Log Report, Alarm Log Report, History Graph &amp; Audit Trail Report in PDF &amp; EXCEL formats</li> <li>• Audit Trail History of Critical Events &amp; User Actions</li> </ul>

