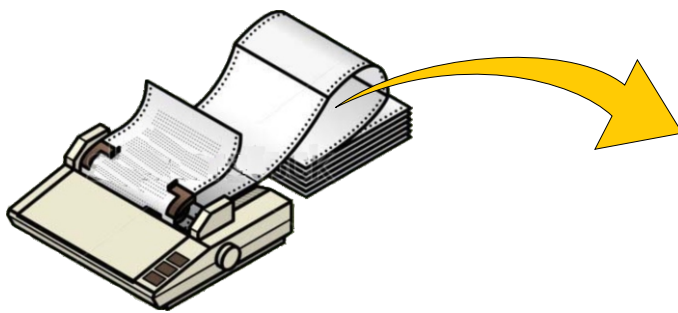
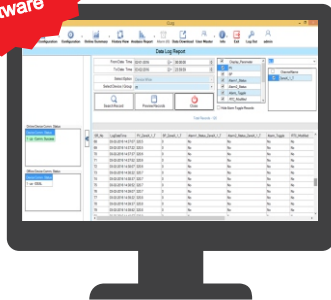


**Licence - Free  
Data Logging  
Software**



PPI MULTI-PURPOSE TEMPERATURE CONTROL SYSTEM				
Document: Temperature Monitoring Record.				
MODEL NO:		SERIAL NO:		
Date	Time	EVENTS	TEMPERATURE (°C)	
DD/MM/YY	HH:MM:SS		PV	SP
03/01/00	01:56:02		0.0	25.0
03/01/00	01:57:11		0.0	25.0
03/01/00	01:58:11		0.0	25.0
03/01/00	01:59:11		0.0	25.0
03/01/00	02:01:39	FULLP	0.0	25.0
03/01/00	02:02:33		0.0	25.0
03/01/00	02:03:33		0.0	25.0
03/01/00	02:04:33		0.0	25.0
03/01/00	02:05:33		0.0	25.0
03/01/00	02:06:33		0.0	25.0
03/01/00	02:07:33		0.0	25.0
03/01/00	02:08:33		0.0	25.0
03/01/00	02:09:33		0.0	25.0
03/01/00	02:10:33		0.0	25.0
03/01/00	02:11:33		0.0	25.0
03/01/00	02:12:33		0.0	25.0

### In-built Recording

### PC Interface with 21 CFR Software

### Dot-Matrix Printer Interface

### GSM Module for SMS Alerts

#### Features

- 160 X 80 STN Monochrome Graphic LCD
- Up to 5 Temperature Channels (1 Control + 4 Mapping) with User Programmable Inputs : Thermocouples / RTD Pt100 / mA/ Volts
- Settable ON-OFF or self tune PID Control Loop
- Settable Heat, Cool & Heat+Cool Control
- PV or SP based Compressor Control strategy
- In-built Programmable Time Delay for Compressor switching
- In-built Programmable Timer
- 3 SSR Outputs : Heater, Compressor & Alarm
- PV, Alarm & Event Data Recording with Date / Time Stamping
- Door Open Detection, Alarm and Logging
- Mains Failure Detection, Alarm and Logging
- RS485 Serial Port for PC Connectivity
- Optional Printer Interface Module for Direct On/Off-Line Printing
- PC Configurable Header/Footer for Printing
- Available Versions :
  - ✓ Controller + RS485 MODBUS (+ Optional GSM)
  - ✓ Controller + Recorder + PC Software (+ Optional GSM)
  - ✓ Controller + Recorder + Printer
  - ✓ Controller + Recorder + Mapping + PC Software (+ Optional GSM)
  - ✓ Controller + Recorder + Mapping + Printer

## Specifications

<b>Display</b>			
Graphic LCD	160 X 80 STN Monochrome		
<b>Keys</b>			
Type	6 Tactile Switches		
Functions	SCROLL UP	PAGE DOWN	ALARM ACK ENTER
<b>Analog Inputs</b>			
1 Temperature Control 4 Temperature Mapping (User Programmable)	Thermocouples : J, K, T, R, S, B, N RTD Pt100, 3 wire DC Linear : 0-20 mA, 4-20 mA 0-5 V, 0-10 V, 1-5 V		
Accuracy	For Thermocouples & RTD : $\pm 0.25\%$ of reading $\pm 1^\circ\text{C}$ DC Volts/Current : $\pm 0.25\%$ of reading $\pm 1$ LSD		
Display Range	Refer Table 1 for Thermocouples & RTD Inputs Adjustable from -199.9 to 999.9 Counts for DC Linear mA/mV/V		
Display Resolution	For Thermocouples : $1^\circ\text{C}$ For RTD Pt100 : $0.1^\circ\text{C}$ DC Linear Volts / Current : 0.1 Counts		
Zero Offset	User Adjustable over Full Range (Independent for Each Input)		
ADC	16 Bit ( $\pm 32,768$ Counts), Sigma-Delta ( $\Sigma\Delta$ )		
Sampling Time	250mS (4 Samples per Second)		
Common Mode Rejection	> 100dB at 50/60 Hz		
Signal Conditioning	R-C Analog Filter on Each Input		
<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>Mains Power Fail Monitoring</b>			
Input	Digital Input (Potential-free Contacts) from Power Source Switching Gadget (like Relay)		
Function	Alarm Alert & Automatic Cut-off of Air Heater & Compressor during Mains Power Fail		
<b>Alarm System</b>			
Process Alarm	Independent High/Low Deviation Process Alarms		
Door Open Alarm (Optional)	Alarm on Equipment Door Remaining Open for More than Set Time Period		
Mains Fail Alarm (Optional)	Alarm on Change-over from Mains Power to Alternate Power Source (Battery, Inverter, etc.)		
Audio Alert	In-Built Buzzer (Beeper)		
Output	SSR Output for Remote Switching of Audio/Visual Gadget on Alarms		
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>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>Data Recording</b>	
Storage Device	In-built Micro SD Card (2 GB)
Record Capacity	38,00,000
Recording Interval	User Programmable
Recording Data (Date/Time Stamped)	<ul style="list-style-type: none"> <li>• <b>Process Values</b> Measured Control &amp; Mapping Temperatures</li> <li>• <b>Events</b> Power-up Process Value Alarm Toggle Change in Control SP Change in Date/Time Settings Change in Recording Interval Equipment Door Open/Close Mains Power Fail/Resumption</li> </ul>
<b>Power Supply</b>	
Type	Switch Mode (SMPS)
Line Voltage	18 ~ 32 VDC (nominal 24 VDC @ 1A max.)
Consumption	5VA Max
<b>Physical</b>	
Mounting	Plug-in with Panel Mounting Clamps
Overall Dimensions	80 (H) X 160 (W) X 144 (D), mm
Panel Cutout	78 (H) X 154 (W), mm
Terminals	3.5 mm Pitch, Pluggable Terminal Blocks

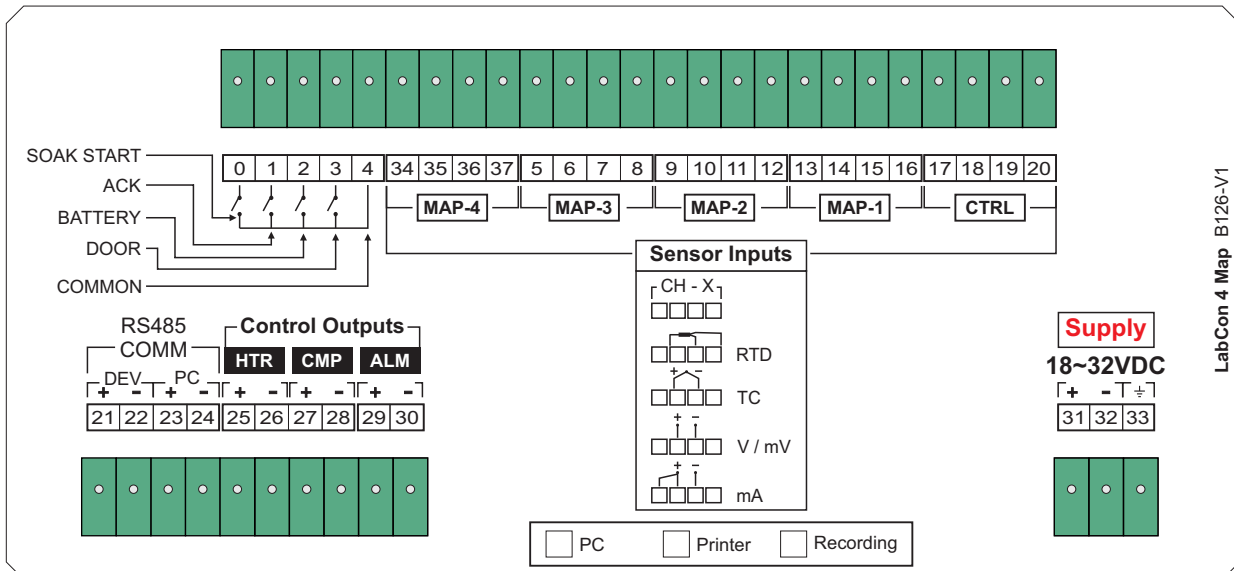
Environmental	
Operating Ambient	0~55°C & 5~90%RH Non-condensing
Storage Temperature	-10 to +70 °C
EMC Standards	EN50081-2 & EN 50082-2 Generic Stds for Industrial Environment
Safety Standards	Meets EN61010, Installation Catagory II
Atmospheres	Not Suitable for use in Corrosive or Explosive Atmospheres.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

**Table 1 : Temperature Ranges for Thermocouples & RTD**

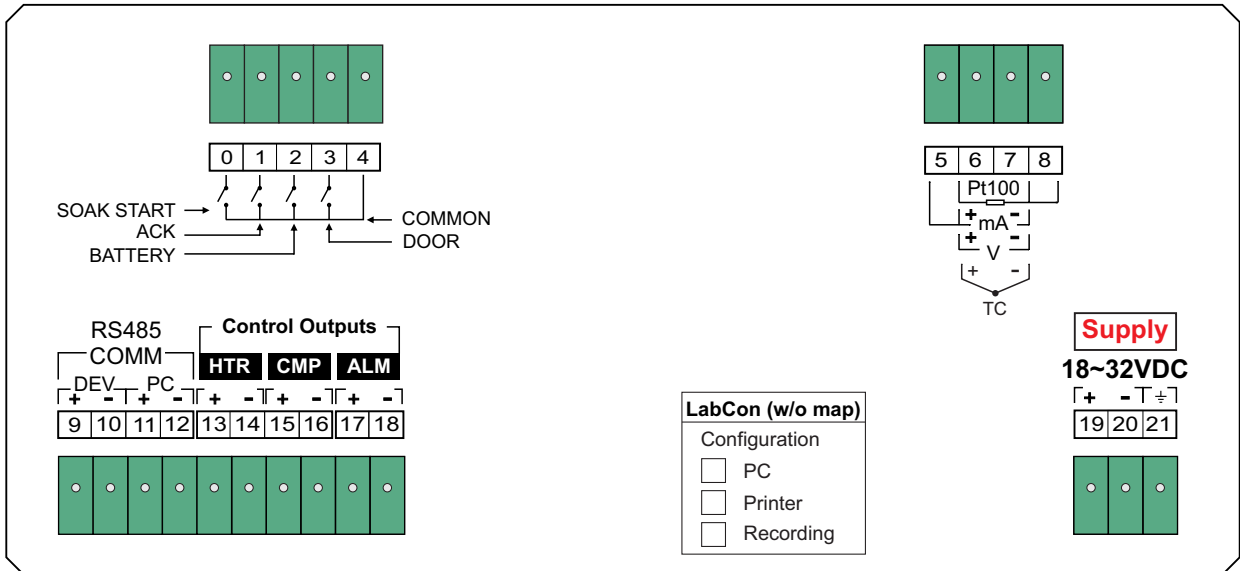
Input Type	Range (Min. to Max.)
Type J Thermocouple (Fe-K)	0 to +960°C
Type K Thermocouple (Cr-Al)	-200 to +1376°C
Type T Thermocouple (Cu-Con)	-200 to +385°C
Type R Thermocouple (Pt/Pt-Rh13%)	0 to +1770°C
Type S Thermocouple (Pt/Pt-Rh10%)	0 to +1765°C
Type B Thermocouple	0 to +1825°C
Type N Thermocouple	0 to +1300°C
3-wire, RTD Pt100	-199.9 to 600.0°C

### Back Panel Terminations

#### LabCon with Mapping

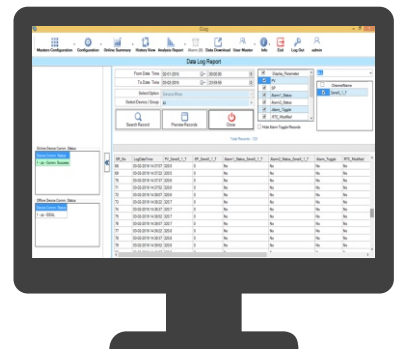


## LabCon without Mapping



## PC Interface with 21 CFR Compliant Software

Supported Operating Systems (OS)	<ul style="list-style-type: none"> <li>• Windows Vista</li> <li>• Windows 7</li> <li>• 32 bit / 64 bit Windows 8</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>• 2 GB RAM</li> <li>• 40 GB Hard Disk</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>• Mean Kinetic Temperature (MKT) Computation</li> <li>• Automatic Periodic Downloading of Records Stored in Controller</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>



## Printer Interface (Optional Add-on Device)

Controller Interface Port	RS485 Serial
Printer Interface Port	Centronix (Parallel Interface)
Printer Support	80/132 Column Dot-Matrix (EPSON LX-300-II or Equivalent)
Print Data	Well-Formatted, Date-Time Stamped Process value & Event Records (PC Tool for user Programmable Header & Footer)
Supply Voltage	10~30 VDC (24 VDC Nominal)



PPI MULTIPURPOSE TEMPERATURE CONTROL SYSTEM					
Document: Temperature Monitoring Record.					SERIAL NO:
MODEL NO:	Date DD/MM/YY	Time HH:MM:SS	EVENTS	TEMPERATURE (°C) PV	SP
	03/01/00	01:56:02		0.0	25.0
	03/01/00	01:57:11		0.0	25.0
	03/01/00	01:58:11		0.0	25.0
	03/01/00	01:59:11		0.0	25.0
	03/01/00	02:01:39		0.0	25.0
	03/01/00	02:02:33	FMUP	0.0	25.0
	03/01/00	02:03:33		0.0	25.0
	03/01/00	02:04:33		0.0	25.0
	03/01/00	02:05:33		0.0	25.0
	03/01/00	02:06:33		0.0	25.0
	03/01/00	02:07:33		0.0	25.0
	03/01/00	02:08:33		0.0	25.0
	03/01/00	02:09:33		0.0	25.0
	03/01/00	02:10:33		0.0	25.0
	03/01/00	02:11:33		0.0	25.0
	03/01/00	02:12:33		0.0	25.0

## GSM Interface (Optional Add-on Device)

Controller Interface Port	RS485 Serial
Frequency Band	Quad (850/900/1800/1900 MHz)
SMS Alert Events	<ul style="list-style-type: none"> <li>High/Low Temperature Alarms (Control &amp; Mapping)</li> <li>Door Open Alarm</li> <li>Mains Failure Alarm</li> </ul>
Information on Request through SMS	Process Values & Process Status
Recipients	Up to 10; User Programmable through SMS by Secured Access
Supply Voltage	10~30 VDC (24 VDC Nominal)

