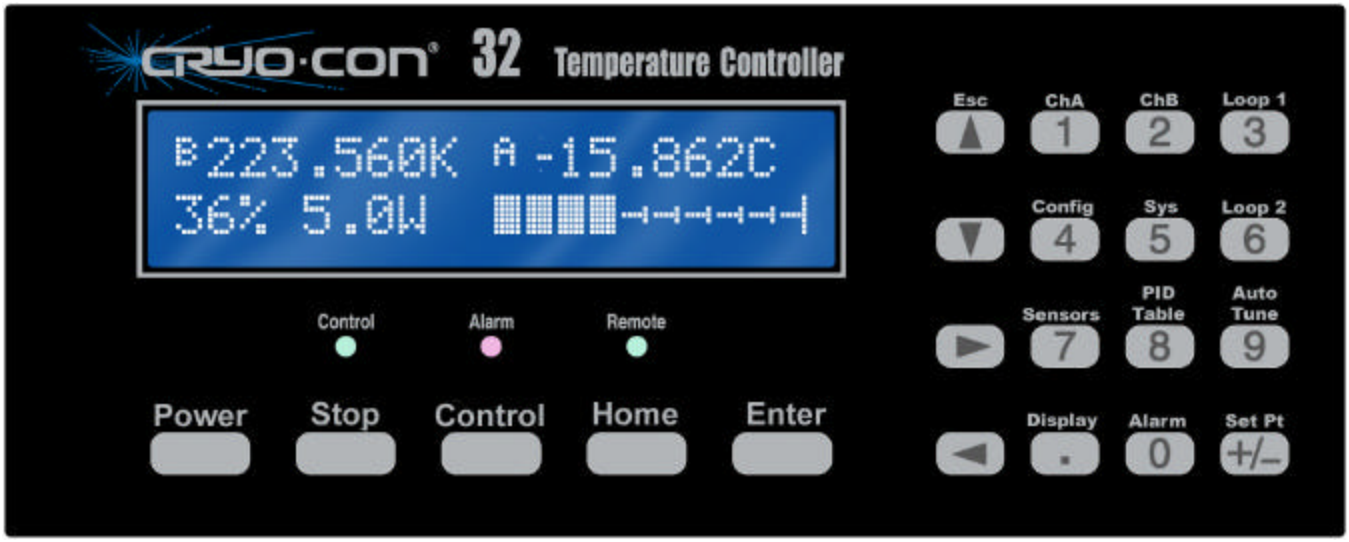
A Quick Start Guide to the Model 32 / 32B



BASIC FRONT PANEL OPERATION
Pressing the **Power** key will toggle the controller's AC power on and off. This key must be pressed and held for two seconds.

Pressing the **Stop** key will immediately disengage both control loops. Pressing the **Control** key will engage them.

Pressing the **Home** key will return the screen to the Home display from anywhere in the sub-menus. The Home display is the primary display for instrument status and can be configured by pressing the **Display** key.

CONTROL LOOP SETPOINTS
To access the setpoint for the control loops, press the **Set Pt** key and then use the ▲ and ▼ keys to select Loop #1 or Loop #2. Use the keypad to enter the desired setpoint and press the **Enter** key to set it and return to the Home display.

CLEARING A LATCHED ALARM
During an alarm condition, the Alarm LED on the front panel will light and an audio alarm will optionally sound. To view the status of all alarms, press the **Alarm** key. To reset a latched alarm, press the **Alarm** key and then the **Home** key.

DISPLAY OPTIONS
The display time constant and display resolution fields may be accessed by pressing the **Sys** key.

The *SYS-Display TC* field is used to smooth temperature data with filters from 0.5 to 64 seconds. This is useful in noisy environments to provide stable readings.

```
SYS-Display TC=0.5S
```

The display resolution field, *SYS-Display-RS* is used to set the number of significant digits shown in temperature displays. Settings 1, 2 ,3 or Full.

CONFIGURING A TEMPERATURE SENSOR
To configure an input channel for a specific temperature sensor, press the **ChA** key for input A, or the **ChB** key for input B.

The first line of this menu is used to change the sensor units. An example is shown here. Change the sensor units by using the right and left arrow keys (▶ or ◀). When the desired units are shown, press the **Enter** key to make the selection. The current temperature is continuously displayed.

```
A 77.123  K
```

Next, go to the sensor selection field by pressing the down arrow (▼) key. Use the right and left arrow keys (▶ and ◀) to scroll through the available sensors. When the desired sensor is shown, press the **Enter** key to make the selection.

```
ASen:Pt100 385
```

Sensor	Description
None	Disable input channel.
Cryo-con S700	Cryo-con S700 series Silicon Diode.
LS DT-670	Lakeshore DT-670 series diode.
LS DT-470	Lakeshore DT-470 series diode.
CD-12A Diode	Cryo Industries CD-12A Silicon Diode.
SI 410 Diode	SI-410 Silicon Diode Curve.
Pt100 385	DIN43760 standard 100Ω Platinum RTD.
Pt1K 385	1000Ω Platinum RTD.
Pt10K 385	10KΩ Platinum RTD.
RhFe 27, 1mA	Rhodium-Iron, 27Ω, 1mA excitation
RO-105 DC 10uA	SI RO-105 RuOx sensor.
RO-600 AC	SI RO-600 RuOx sensor, AC excitation.
TC type K **TC type E** **TC type T**	Thermocouples type K, E and T, Direct input to the controller. Visible only on units with the Thermocouple option installed.
User Sensor 0	User supplied sensor #0.
User Sensor 1	User supplied sensor #1.
User Sensor 2	User supplied sensor #2.
User Sensor 3	User supplied sensor #3.

For advanced information on sensor configuration, see the user's manual section titled "Configuring a Sensor".

CONFIGURING A USER SENSOR
User sensors may be entered from the front panel. However, it is much easier to enter them via one of the remote I/O ports. Please refer to the user's manual chapter titled "Cryo-con Utility Software". For details on front panel entry or edits, refer to "Configuring a Sensor".

CONFIGURING THE LOOP #1 OUTPUT

Before using the Loop #1 (main heater) control output, it is essential that the proper load resistance and output range be selected.

- ❑ Press the **Loop 1** key to go to the Control Loop Setup menu for Loop #1.
- ❑ Use the up arrow and down arrow keys (▲ and ▼) to scroll to the **Htr Resistance** field and then use the left and right arrow keys (▶ or ◀) to select between a 50 Ω and a 25 Ω heater and then press the **Enter** key.

```
1Htr Resistance:50W
```

- ❑ Use the up arrow and down arrow keys (▲ and ▼) to scroll to the Range field and then select Hi, Mid or Low.

Range	Max. Output Power	
	25W	50W
Hi	25 W	50 W
Mid	2.5W	5.0 W
Low	0.25 W	0.50 W

- ❑ Next, the control type (usually PID) should be set. This is done by scrolling to the **Type** field and selecting the desired loop control mode.

```
1Type: PID
```

For information on how to determine PID values for the control loop, please refer to the user's manual section titled "Autotuning" for automatic generation, or to "Appendix D: Tuning Control Loops".

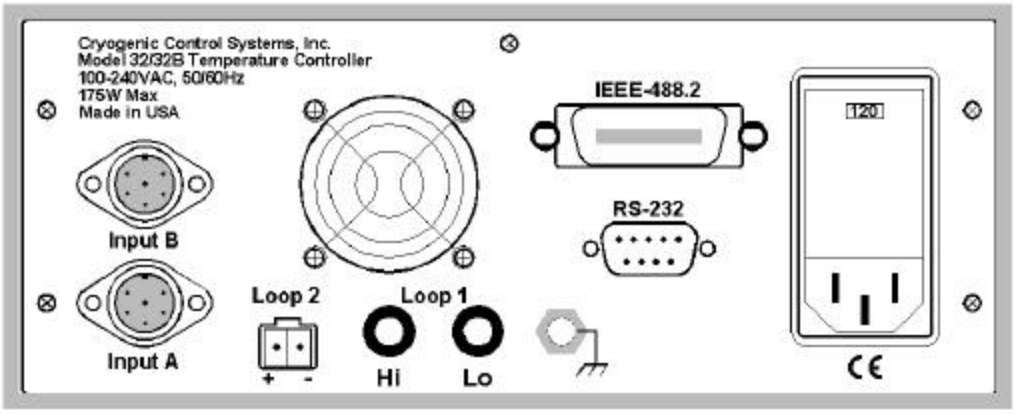
Type	Description
Off	Control loop is OFF.
Man	Manual control mode. A constant heater output power is applied. The **Pman** field selects the output power as a percentage of full-scale.
PID	Standard PID control. The **Pgain**, **Igain** and **Dgain** fields hold the PID values. **Igain** is in seconds and **Dgain** is in inverse seconds.
Table	PID control mode where the PID coefficients are generated from a stored, user supplied PID table.
RampP	Temperature ramp control.

CONFIGURING THE LOOP #2 OUTPUT

The second control loop of a Model 32B controller is a fixed 10-Watt output that is matched to a 50Ω resistive load. Therefore, there are no load resistance or range settings to configure.

On the standard Model 32, the second control loop is a zero to 10.0 Volt output that is intended to drive a booster supply or other voltage controlled device. It is not a heater output.

Rear Panel Connections



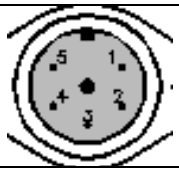
AC POWER CONNECTION

Before connecting AC power, check the input voltage setting through the window on the power entry module to ensure that it is set properly.

SENSOR CONNECTIONS

Silicon Diode and all resistor type sensors should be connected to the Model 32 using the four-wire method. It is strongly recommended that sensors be connected using shielded, twisted pair wire. Wires are connected as shown below and the shield should be connected to the metal backshell of the connector.

Pin	Function
1	Excitation (-), I-
2	Sense (-), V-
3	Do not connect
4	Sense (+), V+
5	Excitation (+), I+



☞ **Note:** The input connectors on the Model 32 will mate with either DIN-5 or DIN-6 plugs. Wiring is identical. If a DIN-6 plug is used, Pin 6 is not connected.

Thermocouple sensors use a special connector that is provided with the controller. Sensor connection is made at the screw terminals. Proper polarity of the sensor wires is required.

LOOP #1 CONNECTION

Primary Heater Output (Loop #1) connections are made using two-pin banana plugs. Pin One (HI) is the positive output and Pin Two (Lo) is the ground return. The shield of the output cable should be connected to the third pin of the banana plug.

Ensure that the heater is floating, as the Model 32 does not support grounded heaters.

For more information, refer to the user's manual section titled "Rear Panel Connections".

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