

# A Quick Start Guide to the Model 18i / 14i / 12i Cryogenic Temperature Monitor



## BASIC FRONT PANEL OPERATION

Pressing the **Power** (■) key for two seconds will toggle the monitor's power on and off.

Several formats of the home screen are available to display different information. Scroll through these formats by pressing the **Right Arrow** (▶) key.

Setup and configuration functions are performed by working with the monitor's menu tree. To access this tree from the Home display, press the **Enter** (■) key.

Navigation through all menus is performed by pressing the **INC** (▲) or **DEC** (▼) keys. A cursor will scroll up or down to show additional lines. Moving up the tree is done by pressing the **Right** (▶) key. The Home display is at the top of the tree.

The left most character on each line of a menu is the cursor. These indicate as follows:

- is a selectable line. Pressing the **Enter** (■) key will select the function described on the menu line.
- + is an enumeration field. Pressing the **Enter** (■) key will cause the cursor to flash. Then, pressing the **INC** (▲) or **DEC** (▼) keys will sequence through the allowed choices for the line. To make a selection, press the **Enter** (■) key again. To abort the selection process, press the **Right** (▶) key.
- # Indicates a numeric entry field. To change the value displayed, press the **Enter** (■) key and the cursor will flash. Then, press the **INC** ▲ key to increment the number or the **DEC** ▼ key to decrement the number. When the desired value is shown, press the **Enter** (■) key.

Key	Description
■ Enter	1) From Home screen, go to the top level setup menu. 2) Within a setup menu, enter data or select a field (cursor display will indicate function). 3) Press and hold this key for two seconds to toggle power.
▲ INC	1) Scroll display up. 2) When in a field selection mode, abort entry and return to scroll mode. 3) In a numeric field, increment.
▼ DEC	1) Scroll display down. 2) When in a field selection mode, abort entry and return to scroll mode. 3) In a numeric field, decrement.
▶ Right	1) Move up the menu tree one level eventually returning to the Home Status display. 2) In selection mode, scroll to next selection.

## TEMPERATURE DISPLAYS

A sensor fault condition is identified by a temperature display of seven dash (-) characters as shown here. The sensor is open, disconnected or shorted.

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If a temperature reading is within the measurement range of the instrument but is not within the specified Sensor Calibration Curve, a display of seven dot (.) characters is shown.

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## LED INDICATORS

There are three LED indicators below the display. They indicate the following:

- Alarm** (Red) – An enabled alarm condition is asserted.
- Relay 1** (Green) and **Relay 2** (Green) - Relay asserted.

Latched alarms and relays are cleared by pressing the **Enter** (■) key.

## CRYOCON SOFTWARE CD

The software CD contains the Cryo-con Utility software program, user's manuals, data sheets, sensor calibration curves and application notes. Most of the functions previously done by the Utility program are now performed by the embedded web server.

## ETHERNET COMMUNICATION

An Ethernet connection can be established by using a standard RJ-45 patch cable. The monitor automatically negotiates the cross-over, baud rate and duplex modes.

The monitor acts as a server with a default IP and subnet mask is **192.168.1.4** and **255.255.255.0**. The user can change this from the front panel via a menu or from a web browser. Before attempting to communicate, ensure that your computer is on the same network stub.

To view the embedded web page, open a web browser and type the default IP of 192.168.1.4 in the address bar.

The default port for the TCP server is 5000. The UDP server is at TCP+1.

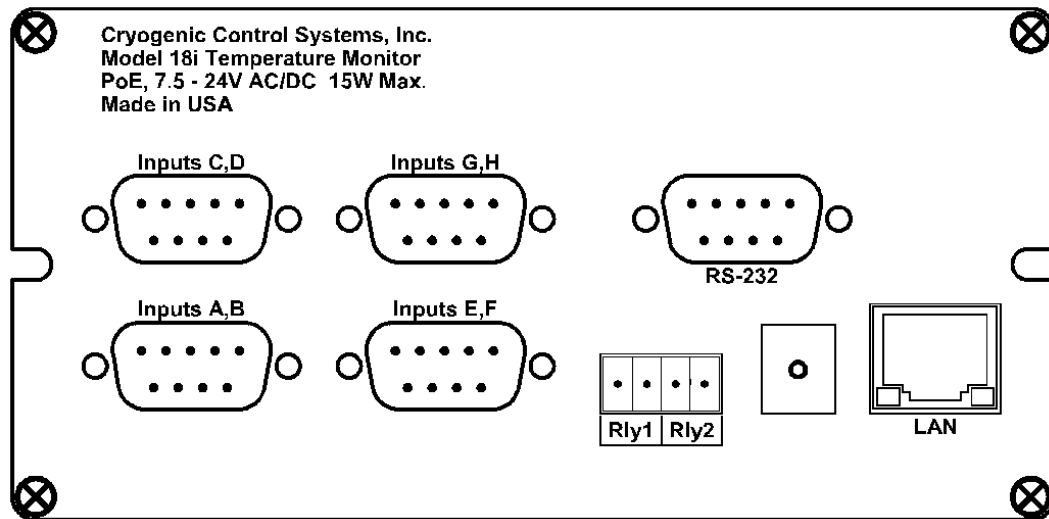
Power-over-Ethernet requires an IEEE-802.3af compatible powered hub. Establishing an Ethernet connection to a powered hub will automatically provide power to the instrument.

## WEB SERVER FUNCTIONS

**Note:** The embedded web server's default user name is **admin** and default password is **cryocon**.

This secure server provides most of the functions required to view and configure the instrument including the downloading of user-defined sensors, real-time strip-charts, data-logging and firmware updates.

## Rear Panel Connections



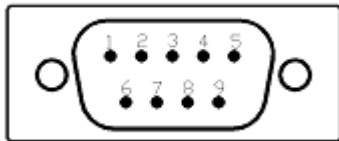
### INPUT POWER CONNECTION

The external power supply provided with the monitor accepts 100 – 240VAC @ 50 – 60Hz and outputs 12VDC @ 1.0A. This may be plugged directly into the monitor's power jack. Alternatively, any supply from 7.5 to 48V, AC or DC with a capacity of greater than 10VA may be used.

Power-Over-Ethernet is also supported. An IEEE-802.3AT Power-Over-Ethernet hub or injector is required. Plug the cable from this device into the Ethernet input of the monitor. In this case, the power jack should not be used.

### SENSOR CONNECTIONS

Temperature sensors are connected by using the DB9 connectors provided. There are two four-wire inputs on each connector.



Ch	Pin	Function	Cable Color
A	8	Excitation Current(+)	White
A	9	Excitation Current(-)	Green
A	4	Voltage Sense(+)	Red
A	5	Voltage Sense(-)	Black
B	6	Excitation Current(+)	White
B	7	Excitation Current(-)	Green
B	1	Voltage Sense(+)	Red
B	2	Voltage Sense(-)	Black
	3	Option power, 5VDC	

Dual Sensor Cables (Cryo-con part number 4034-038) are provided for each input channel. Cable color codes are shown in the table above. Note that the shields of this cable are connected to the monitor's chassis ground.

**IMPORTANT:** The monitor requires that an Earth Ground reference connection is made at the rear panel. Failure to provide this connection will result in erratic measurements and can even damage input circuits.



The sensor cables provided connect their shields to the monitor's chassis; Therefore, the required Earth Ground can be made by connecting the shield wire at the opposite end to a ground reference point. This is usually done by connecting it to the back-shell of the cryostat connector.

### RELAY CONNECTION

Relay connections are made on the rear panel using the 3.5mm, 4-pin detachable terminal block provided.

Pin	Function
1	Relay #1 N.O.
2	Relay #1 Common.
3	Relay #2 N.O.
4	Relay #2 Common.

Terminal block contacts are rated at 10.0A. Relay contact ratings are 10A@125 VAC, 5A@250VAC or 5A@30VDC.

### RS-232 COMMUNICATION

The monitor uses a DB-9 dual female null modem cable for RS-232 serial communication. The pin-out of the connector is as follows:

Pin	Function	Pin	Function
1	NC	6	NC
2	RXD, Receive data	7	NC
3	TXD, Transmit data	8	NC
4	NC	9	NC
5	Ground		