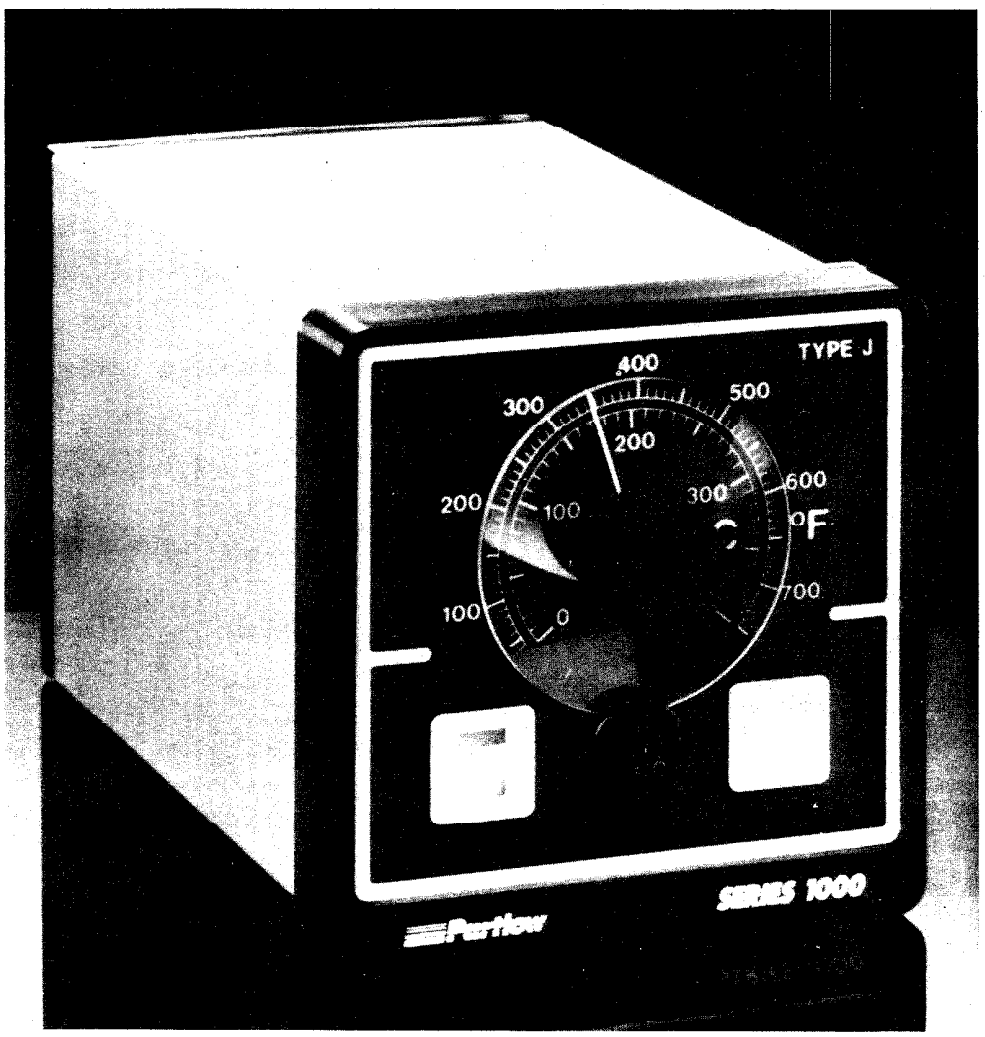
Form 2853 • Price $3.50
Edition 4 • © March 1991
Updated May 1992
ISO 9002 Registered

SERIES 1000

Installation, Wiring, Operation Manual



Partlow
The Partlow Corporation • Two Campion Rd. • New Hartford, NY 13413 USA • 315-797-2222 • FAX 315-797-0403

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Information in this installation, wiring, and operation manual is subject to change without notice. One manual is provided with each instrument at the time of shipment. Extra copies are available at the price published on the front cover.

This is the Fourth Edition of the Series 1000 Manual. It was written and produced entirely on a desk-top-publishing system. Disk versions are available by written request to the Partlow Advertising and Publications Department.

We are glad you decided to open this manual. It is written so that you can take full advantage of the features of your new Series 1000 controller.

NOTE

It is strongly recommended that Partlow equipped applications incorporate a high or low limit protective device which will shut down the equipment at a preset process condition in order to preclude possible damage to property or products.

Table of Contents

FIGURES

Description 1.1

The instrument operates in response to a signal from a thermocouple sensor. On/Off, High or Low limit ouputs are incorporated in this 1/4 DIN instrument.

Installation 1.2

1.2.1. LOCATION

Avoid excessive moisture, vibration, oil and dust. Locate in ambient temperature of 0 to 55 degrees C (32 to 131 degrees F). The minimum practical center distance between instruments in panel mounting is 100 mm.

Although the instrument mainframe does not have to be removed from its housing for installation, it is easily managed by loosening the screw lock on the face of the instrument. The controller pulls straight out. When re-installing, be sure that the vertically mounted circuit boards are inserted in the correct grooves in the top and bottom of the control housing; also make certain the lock screw is sufficiently tight.

1.2.2. PANEL MOUNT

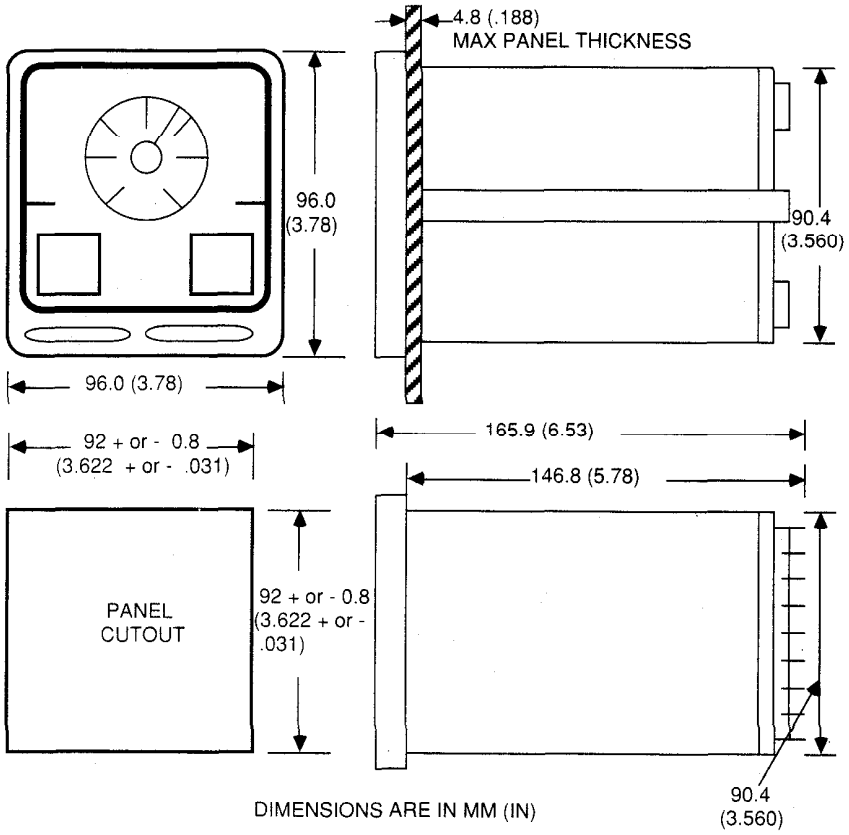
The drawings in Figure 1-1 illustrate the various dimensions of the instrument and explain the proper panel mount procedure.

1. Cut panel hole to dimensions shown in Figure 1-1 (page 5).

2. The bracket and two screws (in plastic bag) for mounting are packed with the instrument.

3. If the rear of the panel is accessible for wiring after installation, mount the controller in the panel; otherwise refer to the Wiring section of this manual, then install the controller. Insert the controller housing in the panel cutout and replace the mounting bracket. Insert mounting screws at the back of the housing and tighten until the instrument is rigidly mounted. **Do not overtighten.**

FIGURE 1-1



Thermocouple Sensing Probe Installation 1.3

Locate the probe in the process medium so that the sensing portion is placed at the measuring point and in the most agitated portion of the medium. It should be rigidly secured in this position. If the probe will be subjected to corrosive or scouring conditions, it should be protected by a thermowell, protective sheath or similar device. In addition, make sure it is protected from mechanical injury and that the maximum operating temperature of the application is well within the temperature limits of the sensing probe.

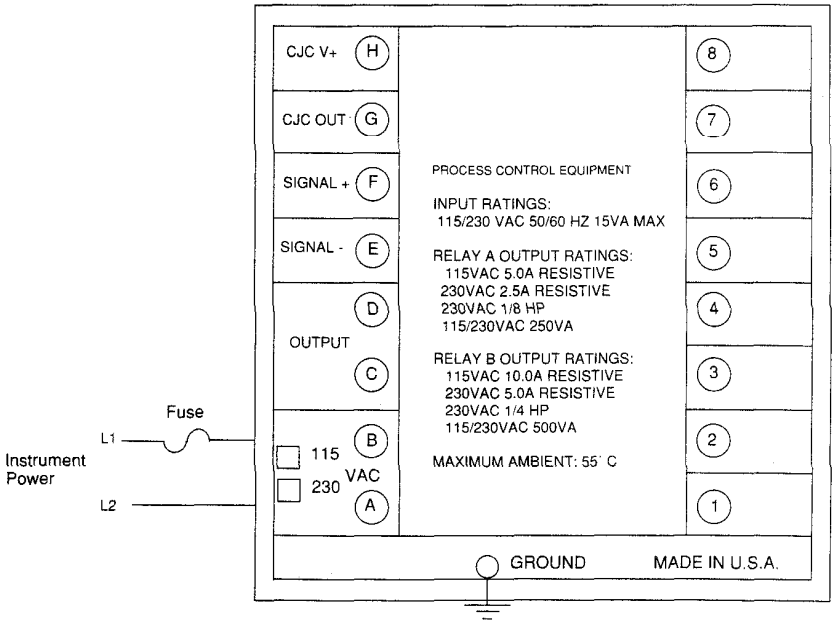
Wiring 2.1

Check applicable local electrical codes, ordinances and regulations regarding use of conduit, etc. If acceptable, make connections using short sections of flexible cable or conduit.

2.1.1 POWER WIRING

Power connections must be made using three conductors. Connect power supply specified to terminal A and B per Figure 2-1. Connect grounding wire under the ground screw.

FIGURE 2-1



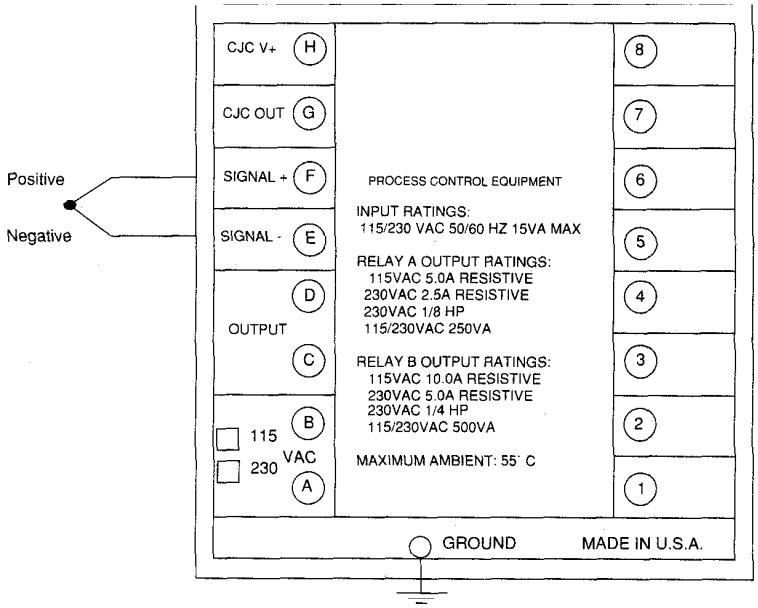
THERMOCOUPLE HOOKUP

The sensor leadwires should always be shielded cable, or run in conduit, **but never in the same conduit with other wiring**. If using shielded cable with ungrounded thermocouple, ground wire connects to ground screw. If using grounded thermocouple, grounded wire connects to thermocouple head.

Use only the proper type of extension wire for a given type of thermocouple. Also, avoid splicing extension. If splicing is necessary, use suitable thermocouple connector, or twist together and solder (using suitable non-corrosive flux).

Connect the thermocouple wire to the instrument terminals E and F per Figure 2-2 (page 7). Make sure positive wire is connected to therminal F (+) and negative wire (normally red wire) to therminal E (-).

FIGURE 2-2



Output Wiring 2.2

Refer to Model Code to verify type of output.

SPST Electromechanical Relay or SSR driver connections should be made across terminals C and D as shown in Figure 2-3 (below) and 2-4 (page 8).

FIGURE 2-3

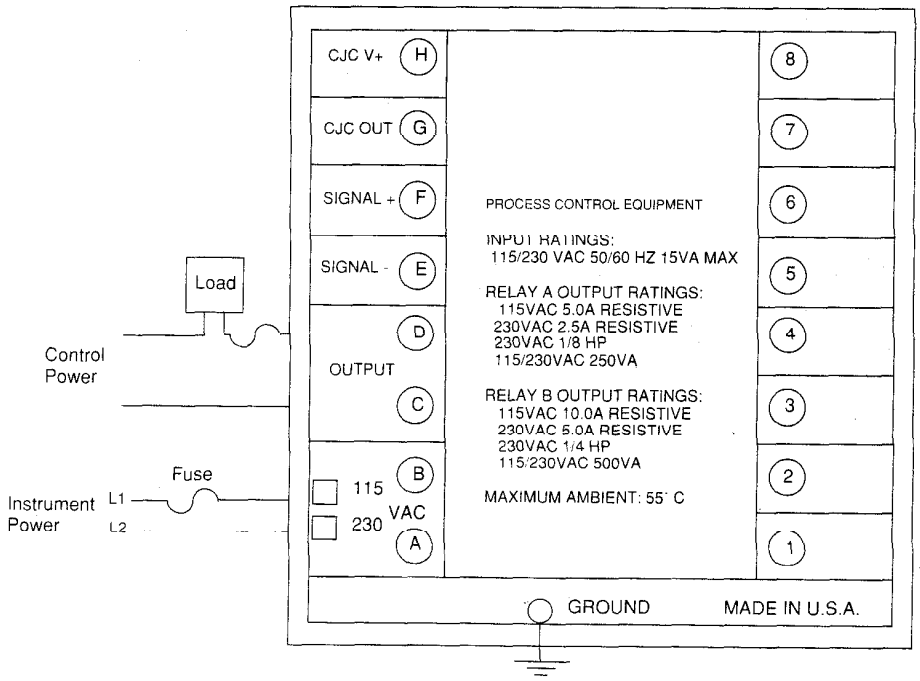
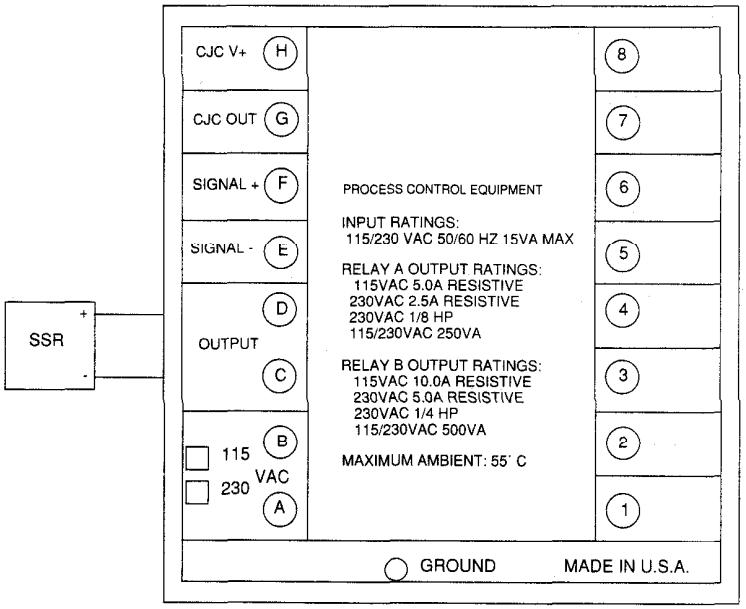
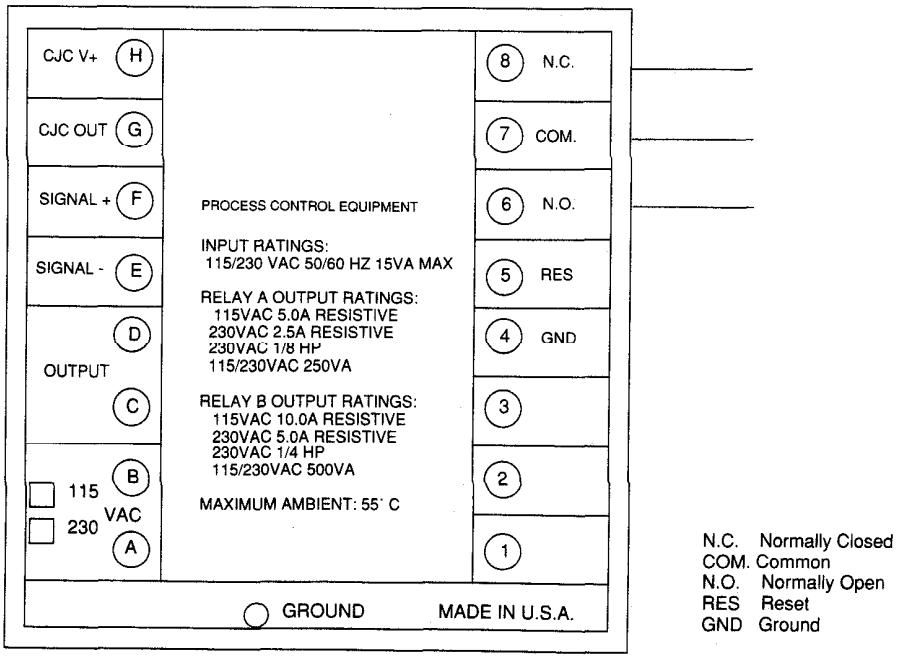


FIGURE 2-4



SPDT Electromechanical Relay connections should be made across terminals 6, 7 and 8 as shown in Figure 2-5.

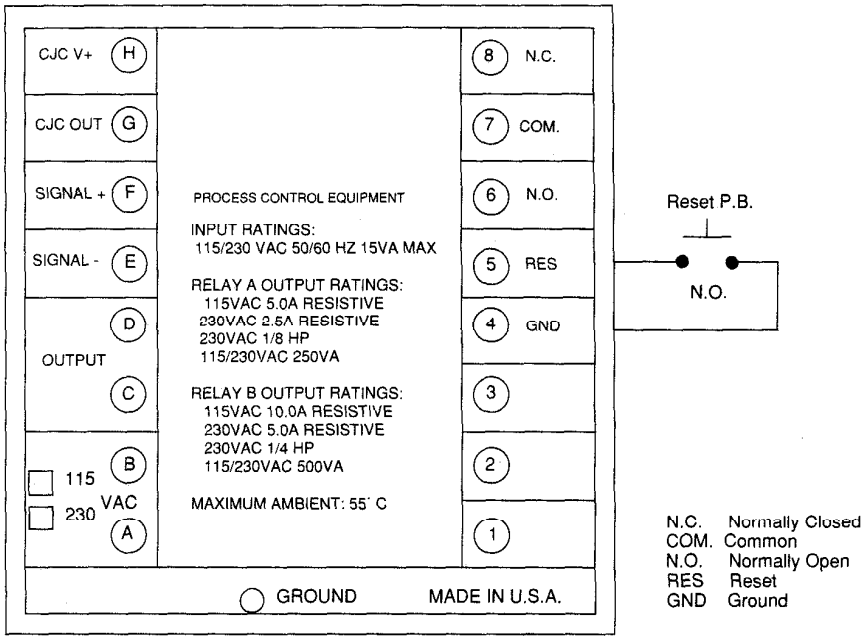
FIGURE 2-5



Remote Reset Input 2.3

If the Remote Reset has been specified, attach a dry contact closure device to terminals 4 and 5 as shown in Figure 2-6.

FIGURE 2-6



Jumper Selections 3.1

Jumper configuration of the instrument is factory placed per the Order Matrix number specified. The jumper features include Upscale/Downscale thermocouple break protection, Reverse/Direct acting LED indicator, Reverse/Direct acting output, and Controller Hysteresis.

The limit devices are FM approved and are shipped from the factory to be either a High Limit with upscale thermocouple break protection or a Low Limit with downscale thermocouple break protection. A High Limit device cannot be changed to a Low Limit device. This is the only way that they may be ordered and must not be changed in the field.

It will usually not be necessary to change these jumpers after shipment from the factory. If changes are required, disconnect AC power from the instrument and remove it from the housing. Locate the appropriate circuit board and the jumper locations.

Reverse/Direct action of LED indicator is located on the setpoint board. The setpoint board is attached to the bezel of the instrument and contains the location of jumpers and their positioning as shown in Figure 3-1.

Jumpers for Upscale/Downscale break, Reverse/Direct Output and Hysteresis are located on the Controller Board. The controller board has the transformer mounted on it. This board, jumper JU1 (Upscale/Downscale T/C break protection), JU2 (Reverse/Direct Acting Ouput), JU3 (Hysteresis), and jumper positioning is shown in Figure 3-2 (page 11).

FIGURE 3-1

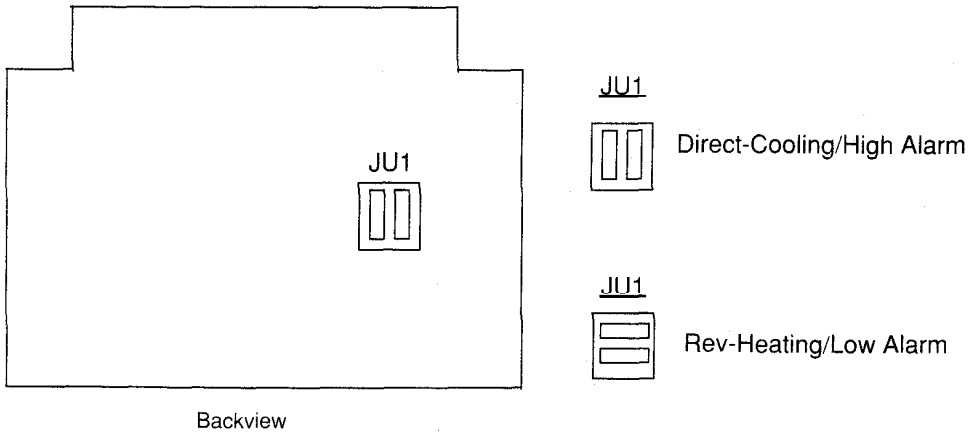
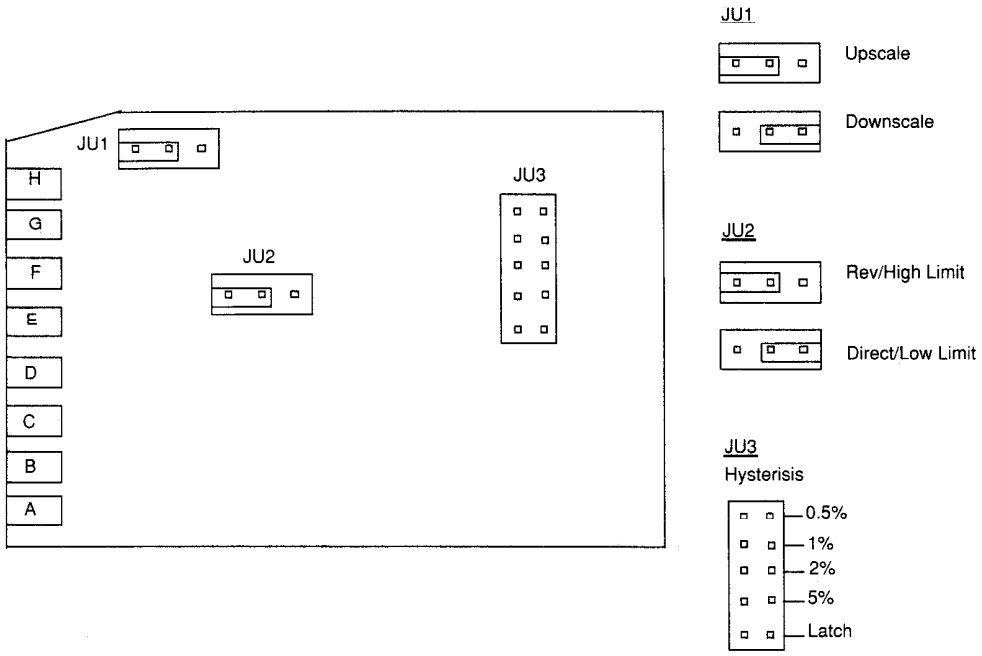
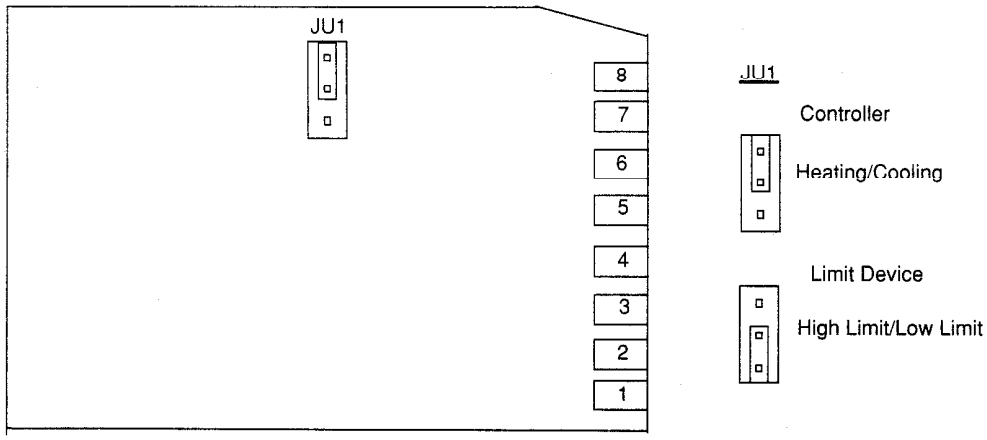


FIGURE 3-2



The jumper for setting the proper action, if an SPDT relay has been specified, is found on the relay board. This board, the jumper JU1, and jumper positioning is shown in Figure 3-3.

FIGURE 3-3



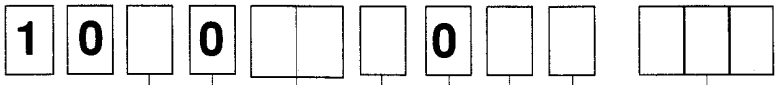
Instrument Operation 4.1

The setpoint is adjusted via a potentiometer which is fitted with a knob, clear skirt and indicating line. On High or Low Limit devices, a simple clamp arrangement provides a lock to inhibit setpoint changes.

High or low limit devices incorporate an alarm indication with green and red LED's. Green signifies that the instrument is functioning and the limit has not been exceeded. A manual reset button is supplied to allow resetting of the alarm condition **after** the temperature is within the limit.

On-Off controllers possess a red indicator that denotes the output relay is energized and a green indicator that denotes "AC power on."

Appendix A - Order Matrix



Type of Unit

0	Controller
1	High Limit
2	Low Limit

Fixed Character

Input

11	J T/C	0 to 400 C	32 to 750 F
12	J T/C	0 to 760 C	32 to 1400 F
13	J T/C	0 to 120 C	32 to 250 F
14	J T/C	0 to 550 C	30 to 1000 F
21	K T/C	0 to 1370 C	32 to 2500 F
31	T T/C	-100 to 200 C	(Celsius scale only)
32	T T/C	-100 to 200 C	-150 to 400 F
41	R T/C	200 to 1650 C	400 to 3000 F
51	B T/C	500 to 1800 C	900 to 3300 F
61*	S T/C	200 to 1650 C	400 to 3000 F

Output 1

1	Relay SPST N.O. Contact
2	SSR Driver
3	Relay SPDT N.O./N.C. Contacts

Fixed Character

Options

0	None
1	Remote Reset

Voltage

1	115VAC
2	230VAC

Standard Jumper Configuration

000	High Limit with Upscale Sensor Break
001	Low Limit with Downscale Sensor Break
101	On/Off Direct Controller (Cooling) with Downscale Break
200	On/Off Reverse Controller (Heating) with Upscale Sensor Break

*Available only on a High Limit

Appendix B - Specifications

ENVIRONMENTAL SPECIFICATIONS

Ambient Temperature	Operating: 0 to 55 degrees C Storage: -40 to 65 degrees C
Humidity	0 to 90% R.H. - Extreme 0 to 95% R.H. noncondensing
Vibration	.5 to 100 Hz @ .5g. FM tested 10 to 30 Hz @ .5g.
Shock	In shipping carton, meets motor freight Classification Rule 222 and ICC Uniform Freight Classification Rule 41.
ESD	The Device shall be capable of withstanding a 5000V static charge over the entire surface area without damage or affecting operation.

POWER REQUIREMENTS

Line Voltage	115VAC or 230VAC +/- 10%
Frequency	50-60 Hz
Power	15 VA Maximum
Mounting	1/4 DIN front panel (96 mm x 96 mm) and panel opening per DIN 43700. Front panel clamps, top and bottom, provided for mounting.
Depth	5.8 inches maximum
Weight	3 pounds maximum

INPUT SIGNALS

Process Variable	Thermocouple types J, K, T, R. Cold junction compensation and thermocouple break protection provided.

INPUT NOISE REJECTION

Process Variable	Normal Mode: 65 dB minimum at 60 Hz or greater 0.5 peak to peak maximum for no relay chatter with 1% hysteresis. Common Mode: 85 dB minimum at 60 Hz 115VAC maximum.

ACCURACY

Thermocouple Inputs	1% of span @ 25 C
Ambient Temperature Error	0.04% of span per degree C deviation from 25 C

INPUT RANGES

Thermocuple type and range is per a range module which consist of an eight pen plug containing four resistors.

OUTPUTS

Relay	SPST 115VAC: 5.0A Resistive, 250VA 230VAC: 2.5A Resistive, 1/8HP or 250VA SPDT 115VAC: 10.0A Resistive, 500VA 230VAC: 5.0A Resistive, 1/4HP, 500VA
SSR Driver	Open collector output Short circuit protected @ 40mA maximum Provides 5VDC at 23mA or 3VDC at 30mA.

AGENCY APPROVALS

UL and CSA listed for controller device,
FM listed for limit device.

Warranty and Return Statement

These products are sold by The Partlow Corporation (Partlow) under the warranties set forth in the following paragraphs. Such warranties are extended only with respect to a purchase of these products, as new merchandise, directly from Partlow or from a Partlow distributor, representative or reseller, and are extended only to the first buyer thereof who purchases them other than for the purpose of resale.

Warranty

These products are warranted to be free from functional defects in materials and workmanship at the time the products leave the Partlow factory and to conform at that time to the specifications set forth in the relevant Partlow instruction manual or manuals, sheet or sheets, for such products for a period of one year.

THERE ARE NO EXPRESSED OR IMPLIED WARRANTIES WHICH EXTEND BEYOND THE WARRANTIES HEREIN AND ABOVE SET FORTH. PARTLOW MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE PRODUCTS.

Limitations

Partlow shall not be liable for any incidental damages, consequential damages, special damages, or any other damages, costs or expenses excepting only the cost or expense of repair or replacement as described above.

Products must be installed and maintained in accordance with Partlow instructions. Users are responsible for the suitability of the products to their application. There is no warranty against damage resulting from corrosion, misapplication, improper specifications or other operating condition beyond our control. Claims against carriers for damage in transit must be filed by the buyer.

This warranty is void if the purchaser uses non-factory approved replacement parts and supplies or if the purchaser attempts to repair the product themselves or through a third party without Partlow authorization.

Returns

Partlow's sole and exclusive obligation and buyer's sole and exclusive remedy under the above warranty is limited to repairing or replacing (at Partlow's option), free of charge, the products which are reported in writing to Partlow at its main office indicated below.

Partlow is to be advised of return requests during normal business hours and such returns are to include a statement of the observed deficiency. The buyer shall pre-pay shipping charges for products returned and Partlow or its representative shall pay for the return of the products to the buyer.

Approved returns should be sent to:

PARTLOW CORPORATION
2 CAMPION ROAD
NEW HARTFORD, NY 13413 USA