

- 1.0 This document specifies the procedure used for field change of thermocouple ranges and required calibration. This procedure assumes the unit is connected to a rear panel minus the extrusion, part # 100 841 01, to allow access to calibration adjustment pots.

- 2.0 The following equipment will be required to perform range change and calibration:
 - * Hand tools (screwdriver, allen wrench, etc.)
 - * Millivolt source capable of providing required voltage for input type per Fig. 4
 - * Millivolt source capable of + 770 mV
 - * Digital voltmeter capable of reading +/- 0.001 volts

- 3.0 DIAL SCALE CHANGE
 - 3.1 Check that new range module and dial scale match the desired range.
 - 3.2 Remove locking mechanism, if applicable, by removing allen screw.
 - 3.3 Rotate dial scale knob completely counterclockwise (C.C.W.) to stop.
 - 3.4 Loosen (2) allen screws holding setpoint knob and remove knob.
 - 3.5 Remove dial scale by pushing with flat screwdriver in slots behind front panel.
 - 3.6 Remove protective cover from back of new dial scale and carefully align and install it on front panel.
 - 3.7 Verify pot adjustment shaft is still completely C.C.W. Position setpoint knob on shaft aligning indicator with alignment mark located about 1/4" below lowest scale reading. See Fig. 1. Tighten knob allen screws.
 - 3.8 Rotate setpoint knob completely C.W. to stop. Indicator should be about 1/4" beyond end of dial scale. Return knob C.C.W. to stop and verify indicator is over alignment mark. If not, repeat Step 3.7.
 - 3.9 Install locking mechanism, if applicable. Do not tighten allen head screw completely.

- 4.0 RANGE MODULE CHANGE
 - 4.1 Remove range module from I.C. socket located near input connectors G and H. Ref. Fig. 2.
 - 4.2 Install new range module making certain that the notched end on range module is aligned with I.C. socket Pin 1.

5.0 UNIT CALIBRATION SET UP

- 5.1 Install unit (controller PWA, setpoint PWA and front panel with dial scale) into backpanel or test fixture.
- 5.2 Connect millivolt source capable of 770 millivolts to backpanel, positive lead to Pin G (CJC out) and negative lead to Pin E (signal minus).
Note: Do not have CJC assembly hooked up. This input simulates CJC.
- 5.3 Connect millivolt source, capable of providing required voltages per Fig. 4, with positive lead to backpanel Pin F (signal positive) and negative lead to Pin E (signal minus). This input simulates thermocouple input (T/C).

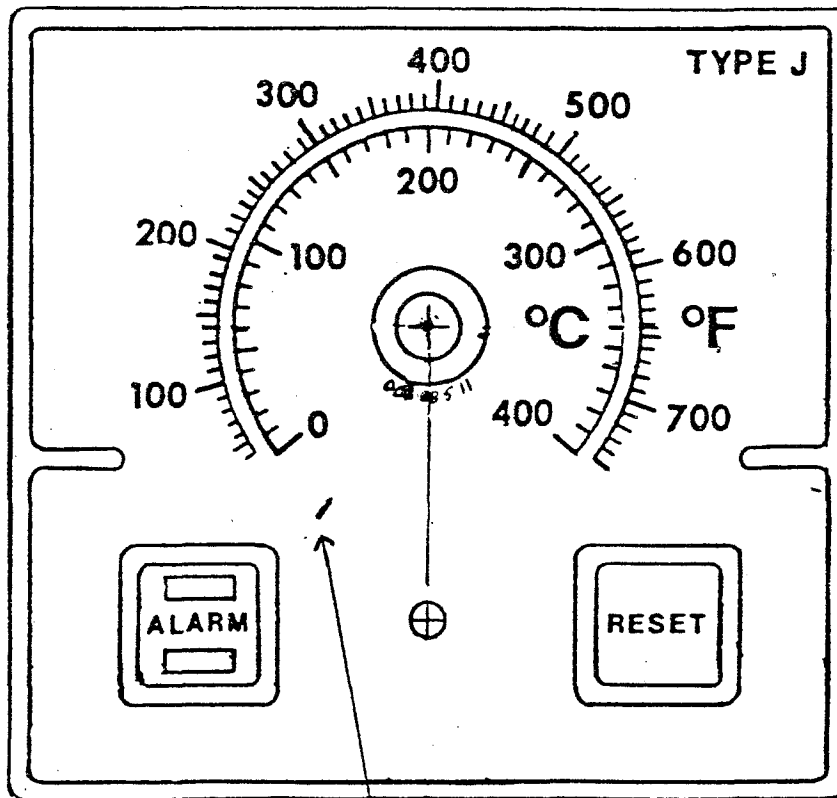
6.0 CALIBRATION

- 6.1 All readings should be verified with DVM, including input voltages.
- 6.2 Turn power on. Allow unit to warm up one minute prior to performing adjustments.
- 6.3 Adjust CJC millivolt source to 770 millivolts.
- 6.4 Position setpoint knob to 0% of scale position and adjust T/C input to "0% scale" millivolt setting, per Fig. 4.
- 6.5 Using DVM to monitor voltage at connector J3-Pin1, adjust R101 on controller PWA for a reading of 0.0 +/- .001 VDC. Ref. Fig. 2.
- 6.6 Connect DVM to J3-Pin2 and adjust R101 on setpoint PWA for a reading of 0.0 +/- .001 VDC. Ref. Fig. 3.
- 6.7 Position setpoint knob and adjust T/C input per "Upper Scale" values in Fig. 4.
- 6.8 Connect DVM to J3-Pin2 and adjust R102 on controller PWA for a reading of 0.0 +/- .001 VDC. Ref. Fig. 2.
- 6.9 Position setpoint knob and adjust T/C input per "Mid Scale" values in Fig. 4.
- 6.10 Connect DVM to J3-Pin2 and check reading is 0.0 +/- .038 VDC.

7.0 NEW MODEL NUMBER LABEL

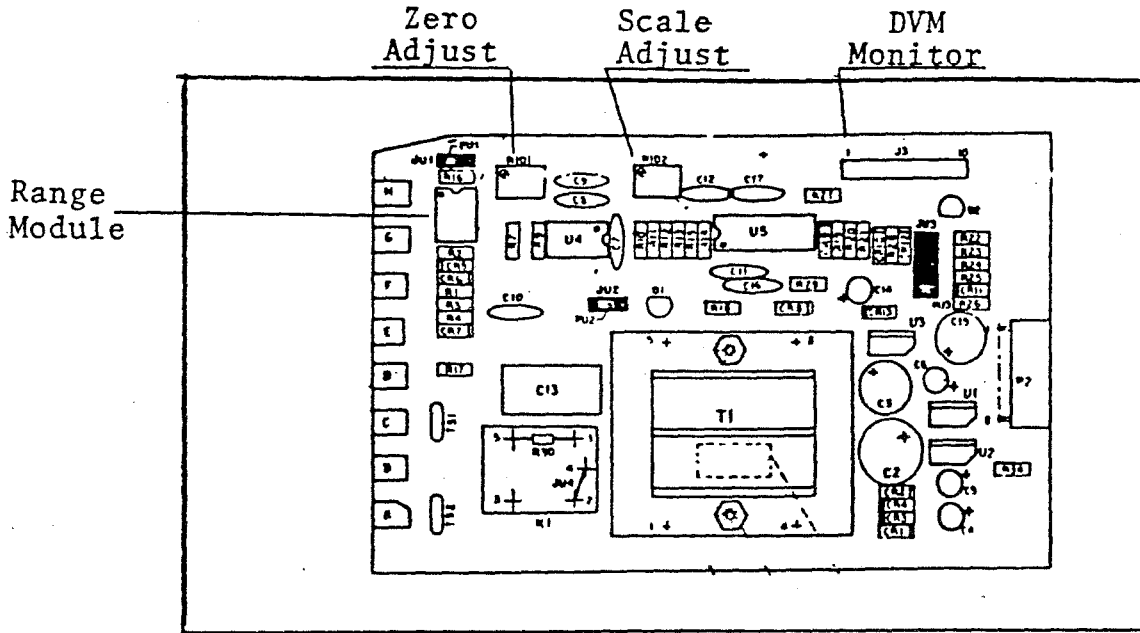
- 7.1 Locate blank model/serial number label.

FIG. 1



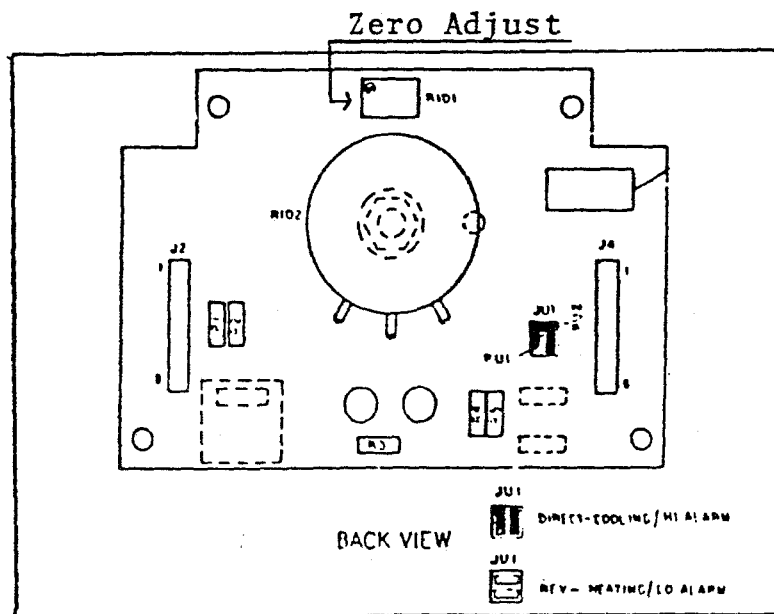
Alignment Mark

FIG. 2



Controller PWA

FIG. 3



Setpoint PWA

FIG. 4

Thermocouple Input
 Calibration List

Calibration with CJC input @ 25 degrees C / 77 degrees F = 770 MV
 All T/C inputs compensated for 25 degrees C.

Input T/C Type	0% Scale		Upper Scale		Mid scale		1%	+1%
	Set Pt.	MV	Set Pt.	MV	Set Pt.	MV	Set Pt.	Set Pt.
-11 J 0-400 C/ 0-750 F	0C	-1.277	350C	17.812	200C	9.500	196C	204C
-12 J 0-760 C/ 0-1400 F	0C	-1.277	700C	37.853	400C	20.569	392C	408C
-21 K 0-1270 C/ 60-2500 F	0C	-1.000	1100C	44.108	600C	23.902	587C	613C
-31 T -100-+200 C	-100C	-4.370	150C	5.710	50C	1.043	47C	53C