

192 thermometer with self-check function

Calibration Procedure (July.11, 2005)

Prepare:

- 1) Apply certain voltage to 192 thermometer and check if the display is complete.
- 2) Cool down after welding, and put on the shelf for 30 minutes.
- 3) You should put the else instruments to adjust 192 thermometers on shelf for 30 minutes, then you can use them to check 192 thermometers .
- 4) Write down the room temperature(T_{room})

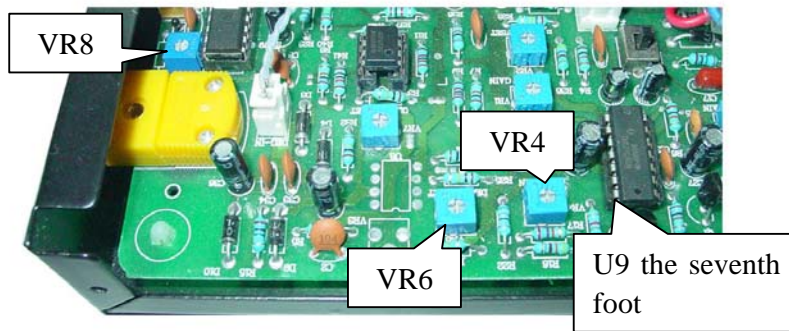
Adjust the temperature :

Switch on the instrument by moving switch to “on” position, and “C-F” to “C” position.

1. At first, dial the switch to “temperature” position. Input a voltage at the two terminals of the temperature input :
2. Adjust the potentiometer “VR6” to ensure to the best of your abilities that the voltage value of the seventh foot about U9 is 0mv .
3. When the input voltage = 0mv, “001+ T_{room} ” should be shown on the LCD screen. If the data is not “001+ T_{room} ”, please adjust the potentiometer “VR8” until the display shows “001+ T_{room} ”
4. When the input voltage = 24.905mv, “600+ T_{room} ” should be shown on the screen , please adjust the potentiometer “VR4” until the display

shows “ $600 + T_{\text{room}}$ ”.

- Input the voltage 4.096mv, 8.138mv, 12.209mv, 16.398mv, 20.664mv in turn , “ $100 + T_{\text{room}}$, $200 + T_{\text{room}}$, $300 + T_{\text{room}}$, $400 + T_{\text{room}}$, $500 + T_{\text{room}}$ ” should also be shown in turn on the LCD screen. If some data are out of the standard, please re-adjust the potentiometers”VR4” and “VR8” until the display shows the correct data.
- Switch thermometer “C-F” to “F” position.



Repeat the steps from “ 1)” to “3)” only with input voltage, the display will change . “ setting temperature($^{\circ}\text{F}$) + room temperature($^{\circ}\text{F}$) - 32($^{\circ}\text{F}$)” should be shown on the screen in turn.

- The details about “C” and “F” is followed:

The list about the transform between the value $^{\circ}\text{C}$ and the value $^{\circ}\text{F}$

$^{\circ}\text{C}$ 值	$^{\circ}\text{F}$ 值	$^{\circ}\text{C}$ 值	$^{\circ}\text{F}$ 值	$^{\circ}\text{C}$ 值	$^{\circ}\text{F}$ 值
1 $^{\circ}\text{C}$	33.8 $^{\circ}\text{F}$	2 $^{\circ}\text{C}$	35.6 $^{\circ}\text{F}$	3 $^{\circ}\text{C}$	37.4 $^{\circ}\text{F}$
4 $^{\circ}\text{C}$	39.2 $^{\circ}\text{F}$	5 $^{\circ}\text{C}$	41 $^{\circ}\text{F}$	6 $^{\circ}\text{C}$	42.8 $^{\circ}\text{F}$

7°C	44.6°F	8°C	46.4°F	9°C	48.2°F
10°C	50°F	11°C	51.8°F	12°C	53.6°F
13°C	55.4°F	14°C	57.2°F	15°C	59°F
16°C	60.8°F	17°C	62.6°F	18°C	64.4°F
19°C	66.2°F	20°C	68°F	21°C	69.8°F
22°C	71.6°F	23°C	73.4°F	24°C	75.2°F
25°C	77°F	26°C	78.8°F	27°C	80.6°F
28°C	82.4°F	29°C	84.2°F	30°C	86°F
31°C	87.8°F	32°C	89.6°F	33°C	91.4°F
34°C	93.2°F	35°C	95°F	36°C	96.8°F
37°C	98.6°F	38°C	100.4°F	39°C	102.2°F
40°C	104°F	41°C	105.8°F	42°C	107.6°F
43°C	109.4°F	44°C	111.2°F	45°C	113°F
50°C	122°F	100°C	212°F	200°C	392°F
300°C	572°F	400°C	752°F	450°C	842°F
500°C	932°F	600°C	1112°F	700°C	1292°F

Adjust the voltage:

Dial the switch to “mv” position and dial the switch “S1” on the PCB board to the “TEST” position (dial down the switch).

1. Dial the switch “TEST” on the faceplate to the “ground” position

and hold this action, adjust the potentiometer “VR2” in order to ensure the showing data is not “0mv” but it is the least when adjusting the potentiometer “VR9” in the whole adjusting range.

2. Adjust the potentiometer “VR9” until the display is not only the least but also not “0mv”.

3. Adjust the potentiometer “VR2” until the display shows “0”.

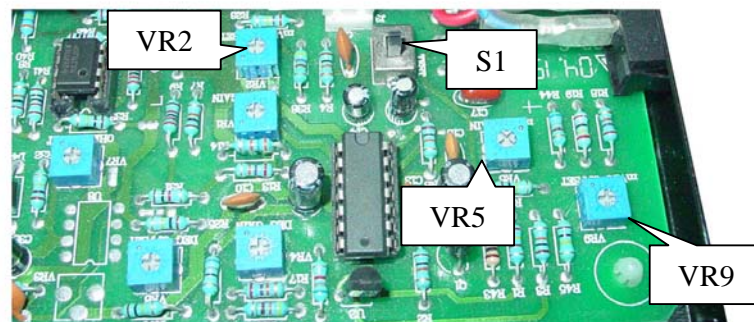
4. Let go hold of the switch “TEST” on the faceplate.

5. Input voltage (d.c.) = 0mv, write the data of the display as “Vx”.

6. Input voltage (d.c.) = 90mv, adjust the potentiometer “VR5” until the display shows “90.0mv + Vx”.(Vx is the voltage value of the testing line from instrument for power to test terminals.)

7. Dial the switch “S1” on the PCB board to the “AC” position (dial up the switch).

★ Input voltage (d.c.) = 90 mV、70 mV、50 mV、20 mV、10 mV, the tolerance is $(\text{Input voltage} + V_x) \pm 3\% \pm 0.2\text{mv}$. If it is not in the tolerance range, please re-adjust “VR2” and “VR5”.



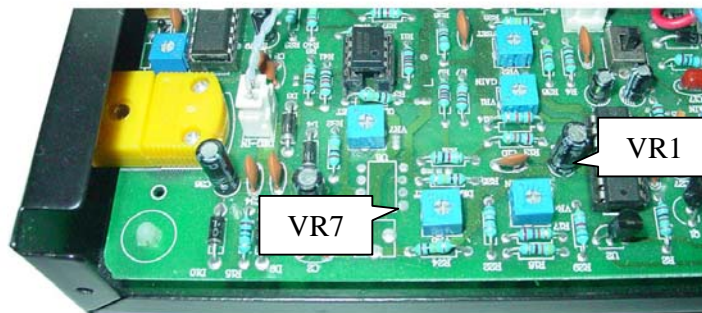
8. Dial S1 up, and input a signal (f = 55hz , voltage value = 10, 20, 30, 40, 50, 60, 70, 80, 90), the display will show the corresponding data.

If it is not correct, please repeat step 1, 2, 3 to check the calibration process.

Adjust the resistance:

1. Dial the switch to “OHM” position. Dial the switch “TEST” on the faceplate to the “ground” position and hold this action, adjust the potentiometer “VR7” until the display shows “0”.
2. Let go hold of the switch “TEST” on the faceplate. Put the pin of testing line in the ground jack, the another nips at the testing armor plate foot, write down the data of the display as “Rx”.
3. Input the standard resistance “90 Ω ”, adjust the potentiometer “VR1” until the display shows “90 Ω + Rx”.(Rx is the resistance value of testing line)

★ Input the standard resistance “10, 20, 30, 40, 50, 60, 70, 80, 90” Ω , re-adjust the potentiometers “VR7、VR1”, until the data is accord with standard. The tolerance is (Input resistance + Rx) $\pm 1\% \pm 0.2\Omega$.



NOTE:

If in case, you need to make checking on many thermometers, put them on shelf for 30 minutes and then check if the display shows ambient

temperature.

You should put the else instruments to adjust 192 thermometers on shelf for 30 minutes, then you can use them to check 192 thermometers .

If you don't remember the standard of 192 thermometer , please look for details like using explanation.

Some process must re-adjust for many times so that to avoid the influence from the testing line. Please try your best.