SECTION 8. INPUT TYPE (INPT)

Refer to Table 25-1 for a summary list of menu configuration.

To select your appropriate input type signal follow these steps:

1. Press the **MENU** button until the meter shows **"INPT"** .

2. Press the ▶/**DEV** button. The meter shows one of the following:

   * J.TC - Iron vs. Constantan (NIST)
   * K.TC - Nickel-Chromium vs. Nickel-Aluminum (NIST)
   * DJ.TC - Iron vs. Copper (DIN)
   * T.TC - Copper vs. Copper-Nickel

3. Press the ▲/**MAX** button to scroll through available choices.

4. Press the **MENU** button to store your choices. The meter momentarily shows "STRD", followed by "DEC.P" (Decimal point).

17

SECTION 9. DECIMAL POINT POSITION (DEC.P)

Refer to Table 25-1 for a summary list of menu configuration follow these steps:

To select a decimal point display position follow these steps:

1. Press the **MENU** button until the meter shows **"DEC.P"**.

2. Press the ▶/**DEV** button. The meter shows one of the following:
   * FFFF.
   * FFF.F

3. Press the ▲/**MAX** button to scroll between choices.

4. Press the **MENU** button to store your choices. The meter momentarily shows "STRD", followed by "RD.CF" (Reading Configuration).

When you change the decimal position the meter adjusts setpoints, deadbands, proportional band, and manual reset values. These adjustments are made according to the new decimal point. If one or more of these values overflow, the meter flashes "ER2" when you store a new decimal point position value.

AUTOMATIC DECIMAL POINT ADJUST

If you select 0.1 degree resolution the decimal point automatically adjusts itself to 1 degree if the temperature reading is above 999.9 or below -199.9.

18

SECTION 10. READING CONFIGURATION ("RD.CF")

Refer to Table 25-1 for a summary list of menu configuration follow these steps:

To determine if your meter shows in °F (Fahrenheit) or °C (Celsius).

1. Press the **MENU** button until the meter shows "RD.CF" .

2. Press the ▶/**DEV** button. The meter shows one of the following:
   * "R.1=F" (°F)
   * R.1=C (°C)

3. Press the ▲/**MAX** button to toggle between choices.

4. Press the **MENU** button to store your selection. The meter momentarily shows "STRD", followed by "S1.CF" (Setpoint 1 Configuration).

19

SECTION 11. COLOR CONFIGURATION (COLR) [NEW]

Refer to Table 25-1 for a summary list of menu configuration.

Selecting Display Color is not active unless your meter is a Version "B".

To select a display color, follow these steps:

1. Press the **MENU** button until the meter shows "COLR".

2. Press the ▶/**DEV** button. The meter shows one of the following:

   * "GRN"
   * "REd"
   * "AMbR"

3. Press the ▲/**MAX** button to scroll between available choices.

4. Press the **MENU** button to store your choice. The meter momentarily shows "StRd", followed by the next menu "S1.CF" (Setpoint 1 Configuration). Or you can press the **RESET** button to abort and go back to the "Rd.CF" menu.

20

SECTION 16. OUTPUT CONFIGURATION (OT.CF)

Note Refer to Table 25-1 for a summary list of menu configuration.

Output Configuration is not active unless your meter has analog output capabilities. The menu will display whether analog output is present or not. Use Output Configuration (OT.CF) to select the following:
* To enable or disable the analog output
* To determine if the analog output is current or voltage
* To determine if the analog output is proportional to the display or to the error (the difference between reading and setpoint value)

16.1 To Enable or Disable The Analog Output

1. Press the MENU button until the meter shows "OT.CF".

2. Press the ▶/DEV button. The meter shows one of the following:
   * "O.1=D" (Analog output disabled)
   * "O.1=E" (Analog output enabled)

3. Press the ▲/MAX button to toggle between choices.

4. Press the ▶/DEV button to select analog output as current/voltage or press the MENU button to store your choice. The meter momentarily shows "STRD", followed by "OT.S.O" (Output Scale and Offset - refer to Section 19).

16.2 To Select Analog Output as Current or Voltage

1. Press the ▶/DEV button. The meter shows one of the following:
   * "O.2=V" (Analog output = voltage)
   * "O.2=C" (Analog output = current)

2. Press the ▲/MAX button to toggle between choices.

3. Press the ▶/DEV button to select analog output/proportional or press the MENU button to store your choice. The meter momentarily shows "STRD", followed by "OT.S.O" (Output Scale and Offset - refer to Section 18) or "P.BND" (Proportional Band - refer to Section 17).

25

16.3 To Select Analog Output or Proportional Control

To determine if the meter is to transmit an analog signal out (proportional to your display), or serve as a proportional controller (proportional to the error = display - setpoint 1).

1. Press the ▶/DEV button. The meter shows one of the following:
   * "O.3=A" (Analog output is retransmission of temperature)
   * "O.3=P" (Analog output is proportional)

Note Only shows up if relay and analog output purchased.

2. Press the ▲/MAX button to toggle between choices.

3a. If you select O.3 to equal A, press the MENU button to store your choice. The meter momentarily shows "STRD", followed by "OT.S.O" (Output Scale and Offset- refer to Section 19).

3b. If you select O.3 to equal P, press the ▶/DEV button. The meter shows one of the following:
   * "O.4=D" (Proportional analog output is DIRECT ACTING)
   * "O.4=R" (Proportional analog output is REVERSE ACTING).

4. Press the ▲/MAX button to toggle between choices.

5. Press the MENU button to store your choice. The meter momentarily shows "STRD", followed by "P.BND" (Proportional Band).

   Additionally, if you select O.2 to equal V (Analog output to be voltage), press the ▶/DEV button. The meter shows one of the following:
   * "O.5=F" (Proportional 0-10 V analog output)
   * "O.5=H" (Proportional 0-5 V analog output)

6. Press the ▲/MAX button to toggle between choices.

7. Press the MENU button to store your choice(s). The meter momentarily shows "STRD", followed by "P.BND" (Proportional Band).

26

SECTION 17. PROPORTIONAL BAND (P.BND)

Note Refer to Table 25-1 for a summary list of menu configuration.

17.1 SELECTING PROPORTIONAL BAND (P.BND)

Proportional Band (P.BND) is not active unless your meter has analog output and relay capabilities. The menu will display whether analog output is present or not.
* A proportional controller's output is linearly proportional to the change of the error signal, whenever the signal is within 2 prescribed values (Proportional Band).
* There are three (3) points of interest on the proportional controller transfer curve.
* The first is the magnitude of the error signal that drives the controller to "full on" (e.g. 20 mA out for 4-20 mA).
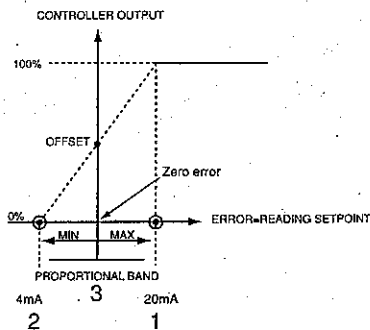

Figure 17-1. PROPORTIONAL BAND

* The second point of interest is the magnitude of the error signal that drives the controller output to "full off" (e.g. 4 mA out on 4-20 mA). These two (2) points need not be equally spaced on either side of the zero error point.
* The third is the factor "Offset" and it is the output value of the controller which causes zero error.

The above example illustrates the parameters for the 4-20mA analog out, likewise, analog voltage output will have these (3) points of interest.

27

SECTION 17. PROPORTIONAL BAND (P.BND) (Continued)

If A is the controller gain the,

$$\text{Proportional Band} = \frac{\text{Max. out - Min. out}}{A}$$

$$\text{CONTROLLER OUT} = A^* \text{ ERROR} + \text{OFFSET}$$

To select the proportional band for your proportional controller, follow these steps:

1. Press the MENU button until the meter shows "P.BND".

2. Press the ▶/DEV button. The meter shows the last previously stored 4- digit number (0000 through 9999) with flashing 4th digit.

3. Press the ▲/MAX button to change the value of the flashing digit.
   If you continue to press the ▲/MAX button, the flashing digit's value continues to change.

4. Press the ▶/DEV button to scroll to the next digit.

5. Press the MENU button to store your selection. The meter momentarily shows "STRD", followed by "M.RST" (Manual Reset).

Note "P.BND" displays only if you select analog output as proportional.

28

SECTION 21. LOCK OUT CONFIGURATION (LK.CF)

Note *Refer to Table 25-1 for a summary list of menu configuration.*

Use Lock Out Configuration (LK.CF) for the following:

* To enable or disable the RESET button in the run mode.
* To enable or disable setpoint changes

21.1 To Enable or Disable the RESET button in the Run Mode

1. Press the MENU button until the meter shows "LK.CF" after ("C.J.OF").
2. Press the ►/DEV button until the meter shows "*RS.=E*" *(Default)*.
3. Press the ▲/MAX button to toggle between:

   "*RS.=E*" *To enable the RESET button in the run mode (Default).*

   "RS.=D" To disable the RESET button in the run mode.

4. Once desired mode shows, press the MENU button to store the change. The meter returns to the run mode.

21.2 To Enable or Disable Setpoint Changes

1. Press the MENU button until the meter shows "LK.CF" (after "C.J.OF").
2. Press the ►/DEV button until the meter shows "*SP.=E*"*(Default)*.
3. Press the ▲/MAX button to toggle between:

   "*SP.=E*" *To enable setpoint changes (Default).*

   "SP.=D" To disable setpoint changes

4. Once desired mode shows, press the MENU button to store the change.

SECTION 21. LOCK OUT CONFIGURATION (LK.CF) (Continued)

21.3 To Enable Display's Program Version:

1. Press the MENU button until the meter shows "LK.CF" (after "C.J.OF").
2. Press the ►/DEV button until the meter shows one of the following:

   * "L.3=0" "SETPTS" button will display setpoint values.

   * "L.3=1" "SETPTS" button will display the meter's firmware version.

3. Press the ▲/MAX button to toggle between the choices above.
4. Press the MENU button to store the changes.

Note *If your meter does not have the relay option, setpoint menu items above will not be available and SETPTS button will always display the meter's software version. These units will have +OL (overload) or +OPEN memory indicated by Alarm 1 & 2 LED displays. LEDs can be reset by pressing MENU then RESET button or by power OFF then ON. These units can not use analog output proportional to error from setpoint 1. under menu OT.CF, 0.3=P.*

SECTION 22. BRIGHTNESS CONFIGURATION [NEW]

Note *Refer to Table 25-1 for a summary list of menu configuration.*

Changing Display Brightness is not active unless meter is a Version "B".

1. Press the MENU button until the meter shows "bRit" (after "LK.CF").
2. Press the ►/DEV button from "bRit". The meter shows one of the following:

   * "M.brt"   Medium Brightness
   * "L.brt"   Low Brightness
   * "H.brt"   *High Brightness* (Default)

3. Press the ▲/MAX button to toggle between available choices.
4. Press the MENU button to store your selection. The meter momentarily shows "StRd" followed by "StRd", "RSt", "t_C", then measured value.

SECTION 23. TUNING PROPORTIONAL CONTROLLER

The Proportional Controller is not active unless your meter has analog output and relay capabilities. The menu will display whether analog output is present or not. This function allows you to tune your controller provided you have analog output capabilities. Select proportional on Output Configuration (refer to Section 16-3) prior to tuning your controller. Include the meter in the process loop and turn on the meter. Allow enough time for the system to settle, then do the following.

1. Press the ►/DEV button. The meter momentarily shows "DEV" followed by a blinking value. This value is the deviation (error) between Reading and Setpoint 1 values. If there is no error (error is zero), your controller is tuned. If a value other than zero shows, proceed with step 2.

2. Press RESET button. The meter shows "TUNE", tuning your controller and canceling any error. Once tuned, the meter shows "RST" and returns to the run mode.

Note *Allow enough time for process to settle before proceeding with "TUNE" procedure. If any error happens during this procedure, meter will flash "ER 4" and abort the tuning. You have to restart the procedure.*

Note *"TUNE" will be active if your meter has analog output capabilities.*

3. Press the ►/DEV button. Verify that blinking value is zero. If blinking value is not zero, repeat step 2.

Table 25-2. Run Mode Displays

DISPLAY	▶/DEV	▲/MAX	RESET	DESCRIPTION
PEAK Peak Reading		Displays the peak reading and must be pressed again to return to the normal operating mode without resetting.	Reset the peak reading when in this mode.	Peak Reading Displays the highest reading since last reset.
DEV	Press to activate		Tare proportional controller or exit deviation mode	Shows deviation value.
SP.RS				LATCHED RESET Press RESET button to reset your setpoints. WARNING! This resets your tare if you are using this mode.

41

Table 26-1. Setpoint Configuration Displays

MENU	▶/DEV	▲/MAX	DESCRIPTION
SP 1 Setpoint 1	Press to scroll to the next digit to the right	Press to change the value of the flashing digit	SETPOINT 1 Select from -1999 through 9999
SP 2 Setpoint 2	Scroll right one digit	Press to change the value of the flashing digit	SETPOINT 2 Select from -1999 through 9999

42

SECTION 27. SPECIFICATIONS

SIGNAL INPUT

Thermocouple Types	J - Iron vs. Constantan (NIST)
Temperature Ranges	-210° through 760°C (-346° through 1400°F)
	K - Chromel vs. Alumel (NIST) -270° through 1372°C (-454° through 2500°F)
	DIN J - Iron vs. Constantan (DIN) -200° through 900°C (-328° through 1652°F)
	T - Copper vs. Copper-Nickel -270° through 400°C (-454° through 752°F)
Isolation	Dielectric strength to 2500V transient per 3mm spacing based on EN 61010 for 260Vrms or dc working voltage NMR- 60 dB CMR- 120 dB
"Big" Display:	4-digit, three color programmable 9-segment LED 21 mm (0.83")
Symbol:	8.8.8.8 (-1.9.9.9 ~ 9.9.9.9)
Standard Display:	4-digit, 14-segment LED, 13.8 mm (0.54")
Symbol:	8.8.8.8 (-1.9.9.9. ~ 9.9.9.9.)

ANALOG TO DIGITAL

Technique	Dual slope
Internal Resolution	15 bits
Read Rate	3/sec Polarity Automatic

43

SECTION 27. SPECIFICATIONS (Continued)

ACCURACY AT 25°C ±0.5°C

Temperature Stability	0.05°C/°C
Step Response Time	1-2 seconds
Warm Up to Rated Accuracy	30 min

ANALOG OUTPUT (if applicable)

Signal type	Current or voltage
Signal Level Current	10 V max compliance at 20 mA output
Signal Level Voltage	20 mA max for 0-10 V output
Function	May be assigned to a display range or proportional control output with setpoint #1 when used as a control output.
Linearity	0.2%
Step Response Time	2-3 seconds to 99% of the final value

ISOLATED ANALOG OUTPUT (if applicable)

Same as non-isolated analog output except isolated to 1000 Vdc.

Signal type	Current or voltage
Signal Level	
Current	10 V max compliance at 20 mA output
Voltage	20 mA max for 0-10 V output
Function	May be assigned to a display range or proportional control output with setpoint #1 when used as a control output.
Linearity	0.2%
Step Response Time	2 - 3 seconds to 99% of the final value

Only one analog output is available on each unit and it must be factory installed.

44

SECTION 12. SETPOINT 1 CONFIGURATION (S1.CF)

Setpoint 1 is not active unless your meter has dual relay output capabilities. The LED's will display whether the (S1.CF) is active or not. You may use Setpoint 1 Configuration (S1.CF) for the following:

* To set the setpoint's active band above or below your chosen value

* To select whether the setpoint operation is latched or unlatched

1. Press the MENU button until the meter shows "S1.CF".

2. Press the ▶/DEV button. The meter shows one of the following:

   * "S.1=A"   (Active above the setpoint)
   * "S.1=B"   (Active below the setpoint)

3. Press the ▲/MAX button to toggle between choices.

4. Press the ▶/DEV button again. The meter shows one of the following:

   * "S.2=L"   Setpoint 1 to be latched
   * "S.2=U"   Setpoint 1 to be unlatched

5. Press the ▲/MAX button to toggle between choices.

6. Press the MENU button to store your choices(s). The meter momentarily shows "STRD", followed by "S2.CF" (Setpoint 2 Configuration).

SECTION 13. SETPOINT 2 CONFIGURATION (S2.CF)

Setpoint 2 is not active unless your meter has dual relay output capabilities. The LED's will display whether the (S2.CF) is active or not. You may use Setpoint 2 Configuration (S2.CF) for the following:

* To set the setpoint's active band above or below your chosen value
* To select whether the setpoint operation is latched or unlatched

1. Press the ▶/DEV button until the meter shows "S2.CF".

2. Press the ▶/DEV button. The meter shows one of the following:
   * "S.1=A" (Active above the setpoint)
   * "S.1=B" (Active below the setpoint)

3. Press the ▲/MAX button to toggle between choices.

4. Press the ▶/DEV button again. The meter shows one of the following:
   * "S.2=L"   Setpoint 1 to be latched
   * "S.2=U"   Setpoint 1 to be unlatched

5. Press the ▲/MAX button to toggle between choices.

6. Press the MENU button to store your choices(s). The meter momentarily shows "STRD", followed by "S1.DB" (Setpoint 1 Deadband).

SECTION 14. SETPOINT 1 DEADBAND (S1.DB)

Setpoint 1 Deadband (S1.DB) is not active unless your meter has dual relay output capabilities. The LED's will display whether the (S1.DB) is active or not. To set the deadband (hysteresis) of Setpoint 1, follow these steps:

1. Press the MENU button until the meter shows "S1.DB".

2. Press the ▶/DEV button. The meter shows the last previously stored 4-digit number (0000 through 9999) with flashing 4th digit.

3. Press the ▲/MAX button to change the value of the flashing digit. If you continue to press the ▲/MAX button, the flashing digit's value continues to change.

4. Press the ▶/DEV button to scroll to the next digit.

5. Press the MENU button to store value. The meter momentarily shows "STRD", followed by "S2.DB" (Setpoint 2 Deadband)

SECTION 15. SETPOINT 2 DEADBAND (S2.DB)

1. Press the MENU button until the meter shows "S2.DB".

2. Press the ▶/DEV button. The meter shows the last previously stored 4-digit number (0000 through 9999) with flashing 4th digit.

3. Press the ▲/MAX button to change the value of the flashing digit. If you continue to press the ▲/MAX button, the flashing digit's value continues to change.

4. Press the ▶/DEV button to scroll to the next digit.

5. Press the MENU button to store your selection. "STRD" momentarily displays, followed by cold junction offset if you have a standard meter (refer to Section 20) or "OT.CF" (Output Configuration) if you have analog output capabilities (refer to Section 16).

SECTION 18. MANUAL RESET (M.RST)

Manual Reset (M.RST) is not active unless your meter has analog output capabilities. The menu will display whether analog output is present or not. This feature allows you to offset the error that may occur within your setpoint. In order to determine the amount of error, you must compare your display value to the setpoint 1 value. The difference between these two values is the amount of error that you may want to enter into Manual Reset (M.RST).

1. Press the MENU button until the meter shows "M.RST".

2. Press the ▶/DEV button. The meter shows last previously stored 4-digit number (-1999 through 9999) with flashing 4th digit.

3. Press the ▲/MAX button to change the value of the flashing digit. If you continue to press the ▲/MAX button, the flashing digit's value continues to change.

4. Press the ▶/DEV button to scroll to the next digit.

5. Press the MENU button to store your selection. The meter momentarily shows "STRD", followed also momentarily by "RST" (Reset). Then "CJ.OF" (Cold Junction Offset) displays (refer to Section 20).

"M.RST" displays only if you select analog output as proportional.
Always choose the value of "M.RST" less than "P.BND/2".
Meter will not accept larger values and displays with flashing "ER 4".

SECTION 19. OUTPUT SCALE AND OFFSET (OT.S.O)

Output Scale and Offset (OT.S.O) is not active unless your meter has analog output capabilities. The menu will display whether analog output is present or not. Output Scale and Offset (OT.S.O) scales your analog output to be equal to the meter's display and/or any engineering units you require. You may scale the output for direct (4-20 mA, 0-10 V, etc) or reverse acting (20-4 mA, 10-0 V, etc).

"OT.S.O" only shows if you select analog output as a retransmission of temperature.

1. Press the MENU button until the meter shows "OT.S.O".

2. Press the ▶/DEV button. The meter shows "RD 1" (Read 1).

    This is your first point of display reading.

3. Press the ▶/DEV button again. The meter shows the last previously stored 4-digit number (-1999 through 9999) with flashing 4th digit.

4. Press the ▲/MAX button to change the value of Read 1.

5. Press the ▶/DEV button to scroll to the next digit.

6. Press the MENU button to store your selection. The meter shows "OUT.1" (Output 1).

    This starting analog signal corresponds to your Read 1 display.

7. Press the ▶/DEV button. The meter shows selected output.

    If you select "O.2=V" for voltage, the maximum signal you may select is 10.00 for an 0-10 V dc signal output. If you select "O.2=C" for current, the maximum signal you may select is 19.99 for a 0-20 or 4-20 mA dc signal output.

8. Press the ▲/MAX button to enter the output 1 signal selection. If you continue to press the ▲/MAX button, the flashing digit's value continues to change.

SECTION 19. OUTPUT SCALE AND OFFSET (OT.S.O) (Continued)

9. Press the ▶/DEV button to scroll to the next digit.

10. Press the MENU button to store your selection. The display shows "RD 2" (Read 2).

    This is your second point of display reading.

11. Press the ▶/DEV button. The last previously stored 4-digit number (-1999 through 9999) displays with flashing 4th digit.

12. Press the ▲/MAX button to change the value of the flashing digit. If you continue to press the ▲/MAX button, the flashing digit's value continues to change.

13. Press the ▶/DEV button to scroll to the next digit.

14. Press the MENU button to store your selection. "OUT.2" (Output 2) displays.

    This analog signal should correspond to your Read 2 display.

15. Press the ▶/DEV button. Selected output displays.

    If you select "O.2=V" for voltage, the maximum signal you may select is 10.00 for an 0-10 V dc signal output. If you select "O.2=C" for current, the maximum signal you may select is 19.99 for a 0-20 or 4-20 mA dc signal output.

16. Press the ▲/MAX button to change the value of the flashing digit. If you continue to press the ▲/MAX button, the flashing digit's value continues to change.

17. Press the ▶/DEV button to scroll to the next digit.

18. Press the MENU button to store your selection. The meter momentarily shows "STRD", followed also momentarily by "RST" (Hard Reset). "CJ.OF" (Cold Junction Offset) then displays.

> ⚠ **WARNING:** If the meter displays all flashing values on any item, the value has overflowed. Press the ▲/MAX button to start new values.

SECTION 20. COLD JUNCTION OFFSET CALIBRATION (C.J.OF)

The cold junction offset equals the actual temperature minus the reading temperature. You may compensate for any error due to cold junction on the TC input. You may perform this compensation in any temperature from 0°C to 40°C (or 32°F to 104°F), however we recommend you perform this compensation at 0°C (32°F) for best result. To do this, immerse the thermocouple hot junctions into a mixture of ice and water. Check the Reading Configuration bit R.1 of the "RD.CF" menu setting for the proper temperature units.

TO PERFORM THIS COMPENSATION, FOLLOW THESE STEPS:

1. Connect the thermocouple wire to the +S and -S input.

2. Press the MENU button until meter displays "CJ.OF".

3. Press the ▶/DEV button. the meter displays the previous offset value with flashing 4th digit.

4. Press the ▶/DEV button again. The reading temperature will be displayed (with no digit flashing).

5A. If the value is okay, then press the MENU button. The display will show "STRD" and 0 value will be entered at the offset.

B. If the value is not okay, then enter the actual temperature using the ▶/DEV and ▲/MAX buttons. Once you enter the accurate temperature, press the MENU button. The meter displays "STRD" and stores the offset value.

    1. Temperature unit is either celsius or fahrenheit and will always be displayed at 0.1 degree resolution. The meter flashes corresponding LED.

    2. MAX/MIN offset value will be ±25.0 °C or 45.0 °F. If offset the limit, the meter will flash "ER 3" and previous offset will not be changed.

SECTION 24. DISPLAY MESSAGES

Table 24-1. Display Messages

MESSAGE	DESCRIPTION
RST	Hard (power on) Reset
INPT	Input Type
DEC.P	Decimal Point
RD.CF	Reading Configuration
COLR	Display Color
S1.CF	Setpoint 1 Configuration
S2.CF	Setpoint 2 Configuration
S1.DB	Setpoint 1 Deadband
S2.DB	Setpoint 2 Deadband
OT.CF	Output Configuration
P.BND	Proportional Band
M.RST	Manual Reset
OT.S.O	Output Scale and Offset
C.J.OF	Cold Junction Offset
ER3	Cold Junction Offset Error
LK.CF	Lock Out Configuration
bRit	Display Brightness
+OL	+ Overload Signal
-OL	- Overload Signal
TUNE	Tuning Proportional Controller
ER4	Tuning Proportional Error
OPN	Sensor Breaker or Temperature Outside the Range
+999	Value Overflow in Setpoint/Menu Peak Deviation Routine
-1999	Value Overflow in Setpoint/Menu Peak Deviation Routine
ER1	2 Coordinate Format Programming Error
PEAK	Peak Value
PK.RS	Peak Reset
SP.RS	Reset Setpoints
SP1	Setpoint 1 Value
SP2	Setpoint 2 Value
ER2	One or more the following items have overflowed because of decimal point change: setpoint values, setpoint deadbands, proportional bands or manual reset.
v.-8.8	Firmware version (where 8 is 0 ~ 9)

SECTION 25. MENU CONFIGURATION

Not all menu items display on standard meters.

Table 25-1. Configuration Menu

(Defaults in Bold and Italics)

MENU	►/DEV	▲/MAX
INPT Input Type	Shows input choices:	J.TC Iron vs. Constantan (NIST) **K.TC Chromel vs. Alumel (NIST)** DJ.TC Iron vs. Copper (DIN) T.TC Copper vs. Copper-Nickel
DEC.P Decimal Point	Shows decimal point position	**FFFF** FFF.F
RD.CF Reading Configuration	R.1	C: Celsius **F: Fahrenheit**
COLR Display Color Selection	Shows input choices:	GRN (Green) RED (Red) AMBR (Amber)
S1.CF Setpoint 1 Configuration	S.1 S.2	**A: Active above** B: Active below **U: Unlatched** L: Latched
S2.CF Setpoint 2 Configuration	S.1 S.2	**A: Active above** B: Active below **U: Unlatched** L: Latched
S1.DB Setpoint 1 Deadband	Press to scroll to the next digit to the right	Press to change the value of the flashing digit
S2.DB Setpoint 2 Deadband	Press to scroll to the next digit to the right	Press to change the value of the flashing digit

SECTION 25. MENU CONFIGURATION (Continued)

**Table 25-1. Configuration Menu (Continued)**

(Defaults in Bold and Italics)

MENU	►/DEV	▲/MAX
OT.CF Output Configuration Analog Output	0.1	D: Disabled **E: Enabled**
	0.2	V: Voltage analog out **C: Current analog out**
	0.3	**A: Retransmission of temperature** P: Proportional to error
	0.4	D: Proportional analog output is direct reading R: Proportional analog output is reverse acting
	0.5	F: 0-10 V proportional H: 0-5 V proportional
	*If you select 0.2=V, you may select your analog output to be 0-10 V or 0-5V by accessing sub-menu 0.5=F or 0.5=H. *If 0.3=P, you may select your proportional output analog to be direct 0.4=D (4-20 mA, 0-5 V, 0-10 v) or reverse acting 0.4=R (20-4 mA, 5-0 V, 10-0 V).	
P.BND Proportional Band shown if 0.3 = P	Shows prior value entered. Scrolls to the next digit to the right	Changes the value of the flashing digit
M.RST Manual Reset shown if 0.3 = P	Shows prior value entered. Scrolls to the next digit to the right	Changes the value of the flashing digit

SECTION 25. MENU CONFIGURATION (Continued)

Table 25-1. Configuration Menu (Continued)

(Defaults in Bold and Italics)

MENU	►/DEV	▲/MAX
OT.S.O Output Scale & Offset	Show "RD 1" & prior value	Change flashing digit's value
Enter new value & show "OUT1"	Scroll right one digit Show prior value	Change flashing digit's value
Enter new value & show "RD 2"	Scroll right one digit Show prior value	Change flashing digit's value
Enter new value & show "OUT2"	Scroll right one digit Show prior value	Change flashing digit's value
C.J.OF Cold Junction Offset	Show actual or prior value	Change flashing digit's value (°C only)
LK.CF Lock Out Configuration	RS=	E (Enable RESET button in run mode) D (Disable RESET button in run mode)
	SP=	E (Enable setpoint changes) D (Disable setpoint changes)
	L3=	0 (SETPTS button display setpoint values) 1 (SETPTS button display firmware version v.-8.8 where 8 is 0~9)
bRit Brightness Configuration		M.brt (Medium Brightness) L.brt (Low Brightness) **H.brt (High Brightness)**
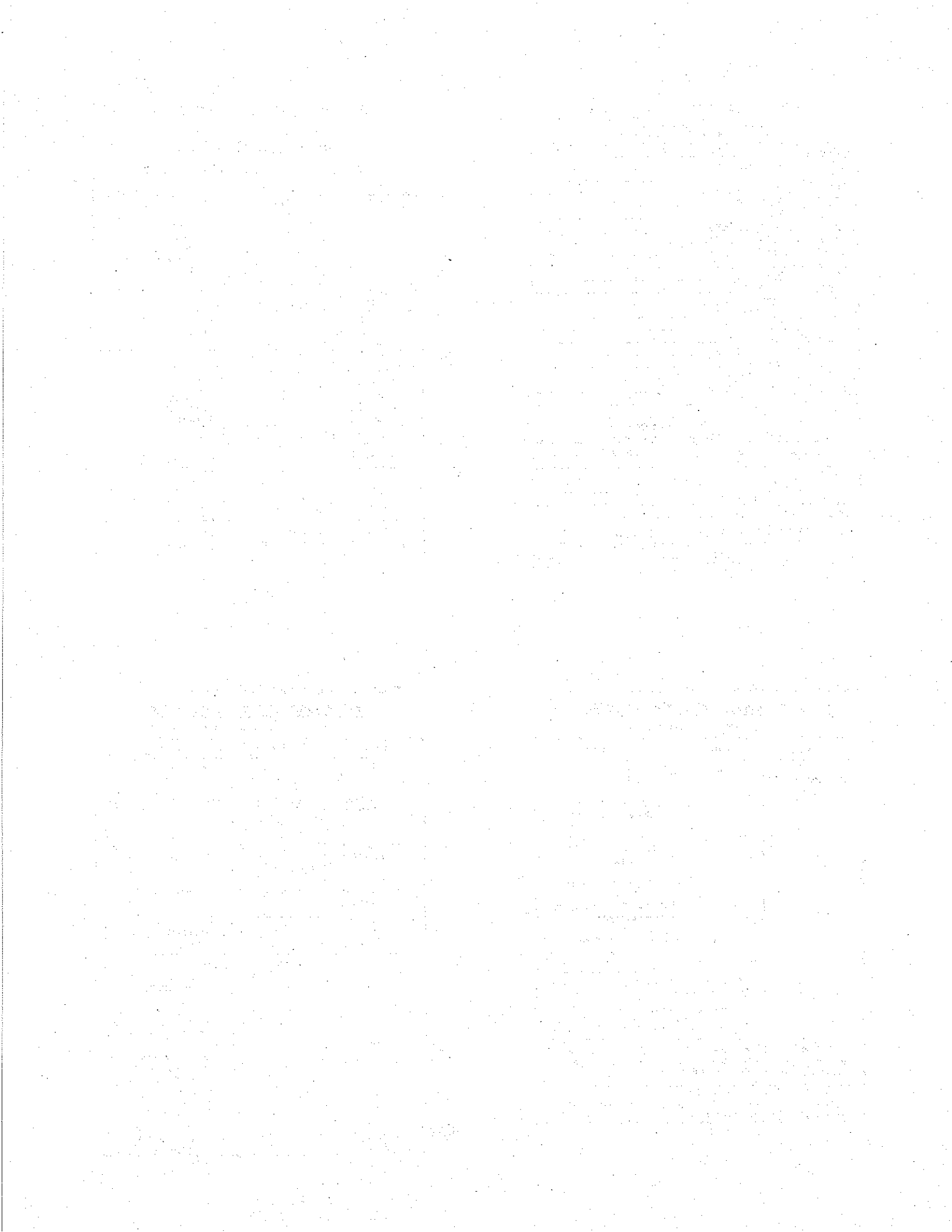
INPUT POWER INFORMATION

⏦ AC units   115/230 V~(AC) ±10%, 50/60 Hz
                      7 W max, power consumption (Non-Isolated Analog Output)
                      8 W max, power consumption (Isolated Analog Output)

⎓ DC units   10-32 Vdc or 26-56 Vdc
                      6 W max, power consumption (Non-Isolated Analog Output)
                      7 W max, power consumption (Isolated Analog Output)

External Fuse Required:

IEC 127-2/III

Power	Fuse
115 V	125 mA @ 250 (T)
230 V	63 mA @ 250 (T)

UL 248-14 (Listed Fuse)

Power	Fuse
115 V	175 mA @ 250 V Slow-Blow
230 V	80 mA @ 250 V Slow-Blow

ENVIRONMENT

Operating Temperature   0° to 50°C (32° to 122°F)
Storage Temperature   -40° to 85°C (-40° to 185°F)
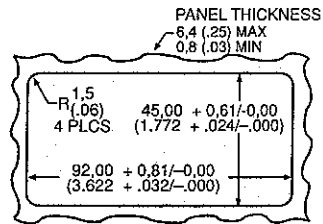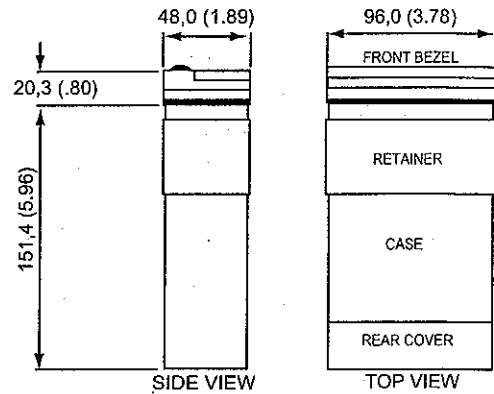Relative Humidity   90% at 40°C (non-condensing)

MECHANICAL

Panel Cutout   1/8 DIN 3.62 x 1.77" (92 x 45mm)
Weight   1.27 lb (574 g)
Case Material   Polycarbonate, 94 V-O UL rated
Protection: NEMA 4/Type 4 Front Bezel

ALARM OUTPUTS (if applicable)

                      2 Form "C" on/off relays. Configurable for latched and
                      unlatched by software.
Max Current   5 AMPS, Resistive Load
Max Voltage   250 V ac or 30 V dc

45

NOTE: Dimensions in Millimeters (Inches)

Figure 27-1 Meter Dimensions

46

SECTION 28. FACTORY PRESET VALUES

Table 28-1. Factory Preset Values

MENU ITEM	FACTORY PRESET VALUES
INPT	Input Type: K.TC (Type K T/C)
DEC.P	Decimal Point Position: FFFF.
RD.CF	Reading Configuration: R.1=F (Fahrenheit)
COLR 🖩	Normal Color Display: REd or GRN (Note: Depending how it was ordered)
S1.CF	Setpoint 1 Configuration: S.1=A (Setpoint is active above) S.2=U (Setpoint is unlatched)
S2.CF	Setpoint 2 Configuration: S.1=A (Setpoint is active above) S.2=U (Setpoint is unlatched)
S1.DB	Setpoint 1 Deadband: 0003
S2.DB	Setpoint 2 Deadband: 0003
OT.CF	Output Configuration: O.1=E (Analog output is enabled) O.2=C (Analog output is current) O.3=A (Analog output follows the display value)
OT.S.O	Output Scale and Offset: 0-1000 = 4-20 mA dc
LK.CF	Lock Out Configuration RS=E (Enable the RESET button in the run mode) SP=E (Enable setpoint changes) L3=0 (SETPTS button display setpoint values)
bRit 🖩	H.brt (Brightness Level)
SP1	Setpoint 1 Value: 0000
SP2	Setpoint 2 Value: 0000

47

CE APPROVALS INFORMATION

C€ This product conforms to the EMC directive 89/336/EEC amended by
      93/68/EEC, and with the European Low Voltage Directive 72/23/EEC.

Electrical Safety EN61010-1:2001
Safety requirements for electrical equipment for measurement, control and laboratory.
Double Insulation
Pollution Degree 2
Dielectric withstand Test per 1 min
- Power to Input/Output: 2300 Vac (3250 Vdc)
- Power to Input/Output: 500 Vac (720 Vdc)
  (Low Voltage dc Power Option*)
- Power to Relays Output: 2300 Vac (3250 Vdc)
- Relay 1 to Relay 2:   2300 Vac (3250 Vdc)
- Isolated Analog to Inputs: 1000 Vac (1420 Vdc)
- Analog to Inputs: No Isolation

Measurement Category I
    Category I are measurements performed on circuits not directly connected to the Mains Supply (power). Maximum Line-to-Neutral working voltage is 50 Vac/dc. This unit should not be used in Measurement Categories II, III, IV.

Transients Overvoltage Surge (1.2 / 50uS pulse)
- Input Power: 2500 V
- Input Power: 500 V
  (Low Voltage dc Power Option*)
- Isolated Analog: 500 V
- Input/Output Signals: 500 V
  Note: *Units configured for external low power dc voltage, 10-32 Vdc (Basic Insulation)*

EMC EN61326:1997 + and A1:1998 + A2:2001
Immunity and Emissions requirements for electrical equipment for measurement, control and laboratory.
- EMC Emissions Table 4, Class B of EN61326
- EMC Immunity** Table 1 of EN61326
  Note: **I/O signal and control lines require shielded cables and these cables must be located on conductive cable trays or in conduits. Furthermore, the length of these cables should not exceed 30 meters

⚠ Refer to the EMC and Safety installation considerations (Guidelines) of this manual for additional information.

48