

DIGITAL TEMPERATURE CALIBRATOR – THERMOMETER QUICK START GUIDE



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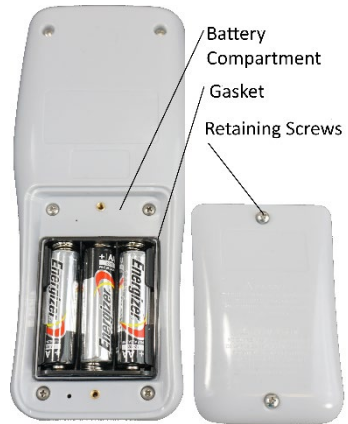
Battery Installation and Replacement

Three (3) AA 1.5 V batteries are supplied with the instrument, but not installed. Read the following battery replacement instructions before attempting to install or remove the batteries.

To install or replace batteries:

Required Tools: Phillips Head Screwdriver

1. Identify the battery compartment located on the back of the instrument;
2. Remove the two (2) battery compartment retaining screws;
3. Remove the battery compartment cover;
4. If present, carefully remove old batteries being careful to not damage the battery contacts;
5. Observing proper polarity, install three (3) new, AA alkaline (IEC LR6, ANSI 15) batteries;
6. Re-install the battery cover and two (2) retaining screws;
7. At initial power on after battery replacement, allow approximately 30 seconds for instrument to stabilize.






Battery Installation

Initial Power ON

8. The instrument will initially display every segment on the LCD for 2 seconds as a test. An internal hardware, memory and battery self-test is performed during this time.
9. Upon completing the internal tests, the instrument will immediately display the Source and Read mode last user settings and battery indicator.
10. Set the desired measurement parameters as follows:
 - a. Enter the Setup Menu by pressing **SET**, hold the key down for approximately 1.5 seconds, and then release it; Key designators followed by (1.5s), e.g. (1.5s), indicate that the key should be pressed and held for 1.5 seconds, then released to access the desired function.

- b. The active thermocouple type is flashing on the display. Use or to select the desired thermocouple type;
- c. Momentarily (do not hold) press to save your selection and move to the next parameter;
- d. The active temperature unit is flashing on the display. Use to select the desired temperature unit (°C, °F, or mV);
- e. Momentarily press to save your selection and move to the next parameter;
- f. Read Channel offset value is flashing on the display. If the temperature probe's offset value is known, press to set the Channel 2 probe offset to the probe's offset value.
- g. Momentarily press to save your selection and move to Open Lead Detection, press to toggle on/off;
- h. Momentarily press to save your selection and move to Source on/off; See "SETUP MENU CHOICES FOR °C AND °F" and/or "SETUP MENU CHOICES FOR mV" in the table below.
- i. To save the current parameter value and exit the Setup Menu, press ;
- j. To disregard changes made to the current parameter value and exit the Setup Menu, press .
- k. If parameter 2, "Temperature and Voltage Units" is set as either "°C" or "°F", the remaining parameter choices available are in the table below under "Setup Choices for °C and °F". If parameter 2 is set to "mV", the remaining parameter choices available are in the table below under "Setup Choices for mV".

SETUP MENU CHOICES FOR °C AND °F	
PARAMETER	AVAILABLE VALUES
Thermocouple Type	K, J, T, E ¹
Temperature and voltage Units	°C, °F, mV
Probe Offset	±0.1 ° increments
Open Lead detection (old)	On / Off
Source (SourC)	On / Off
If on – Set Span	Set 100% Level
	Set 0% Level
If on – Set Mode	Manual blinking " _ _ _ _ _ "
	Fast Ramp 
	Slow Ramp 
	Step 
	Transfer Transfer
SETUP MENU CHOICES FOR mV	
PARAMETER	AVAILABLE VALUES
Thermocouple Type	K, J, T, E ¹ Although still selectable, TC type is not visible on LCD while mV is the active unit
Temperature and voltage Units	°C, °F, mV
Probe Offset	±0.1mV increments
Open Lead detection (old)	On / Off
Source (SourC)	On / Off
If on – Set Span	Set 100% Level
	Set 0% Level
Range (rAnGE)	Range Hi mV (default) [-15mV to +85mV]
	Range Lo mV (mV flashing) ² [-15mV to +35mV]
¹ The 945A includes K,J,T,E,B,N,R,S,G,C,D,P,L,U	
² Low range is for calibration verification only.	

Keypad Functions

The instrument keypad is a twelve (12) key, sealed membrane keypad. Each key provides audible and tactile user feedback when pressed. Key functions are described in the table below.

		Power instrument ON or OFF
		Disable auto-power OFF
		Enter instrument Setup Menu
		While in Setup Menu, save current value and step to next parameter
		Toggle display backlight
		Disable backlight 30-second timeout
		While in Setup Menu, discard all unsaved changes and exit menu
		Delete all saved measurement data and reset all statistics currently stored in memory, MIN/MIX/AVG/RNG/STDEV
	While in PRST selection mode with PRST flashing, erases current preset number contents	
	Displays in order: MIN, MAX, AVG, RNG, STDEV	
	While in Setup Menu, save changes and exit menu	
	The 10%/90% key toggles between 10% and 90% of span. The first press of the key goes to 10%.	
	The 0%/+25% key manually increments the output by 25% of the defined span for the selected TC. Once the output reaches 100% the next press of the key will wrap around to 0%.	
	Once in Preset, single press saves and exits leaving the selected preset number active	
	Enters the Preset selection mode	
	Up and Down Buttons: Increment/Decrement currently selected Source digit by 1.	
	Left and Right Buttons: Move active Source digit indicator by 1 place left or right.	

Keypad Button Functional Description

The , , , and keys have multiple functions which can be accessed by momentarily pressing the key, or alternatively, by pressing and holding the key for approximately 1.5 seconds. Throughout this Operation Manual, the press and hold sequence is indicated by the key designator followed by the subscript (1.5s). For instance, (1.5s)

indicates that the key should be pressed and held for 1.5 seconds, then released to access the desired function.

Operating Modes

The instrument has five (5) operating modes including manual operation. The operating modes are Manual, Fast ramp, slow ramp, step and transfer.

OPERATING MODE	DISPLAY INDICATOR	DESCRIPTION
Manual	blinking " _ _ _ _ _ "	Instrument operates by outputting a voltage that corresponds to the set temperature or millivoltage.
Fast Ramp		Instrument Ramps the output temperature or millivoltage from 0% of span to 100% of span and back to 0% of span in 50 units per second. This repeats until stopped. Any other key press will stop the output at the existing value (temperature or millivoltage) and clear the fast ramp setting.
Slow Ramp		Instrument Ramps the output temperature or millivoltage from 0% of span to 100% of span and back to 0% of span in 5 units per second. This repeats until stopped. Any other key press will stop the output at the existing value (temperature or millivoltage) and clear the slow ramp setting.
Step		Instrument Ramps the output temperature or millivoltage from 0% of span to 100% of span and back to 0% of span stepping at 10% increments, dwelling 5 seconds at each step. This repeats until stopped. Any other key press will stop the output at the existing value (temperature or millivoltage) and clear the Step ramp setting.
Transfer	Transfer	Instrument sets the source output (temperature or millivoltage) equal to the value on the "Read" channel, (channel 2). This is an offset corrected value. SOURCE output = READ voltage + CJC voltage. This mode would be used for troubleshooting systems and readouts. The "Transfer" icon will blink and illuminate if selected.

Presets: Save, Recall and Erase





There are 20 presets in the instrument numbered 0 – 19. The presets allow the user to save the parameters chosen during setup. There are 3 preset actions. The user can save, recall or erase.

When a preset is saved, the current operating options are stored in one of the 20 selected presets. The operating options include:






- Thermocouple Type
- Units

- Offset
- Open Lead Detection Status
- 100% and 0% Span Settings
- Operating Mode: Fast Ramp, Slow Ramp, Step or Transfer

To save a preset



Press the  (1.5s). The preset number will start flashing. Use the   to move to the preset number location you want to use to store the current operating options. Press the . The current operating options are now saved in the chosen preset location and the flashing stops.

To recall a preset

Press the  button. "PRST" will begin to flash. Use the   to move to the desired saved preset, 0-19. When the desired preset is reached, press the preset button again to exit. The instrument will only display the numbers where presets are stored. For example: If there are presets stored in 3 and 10 and all others are empty, in this case the   would only toggle between and display 3 and 10.

To erase a preset

To erase a preset it must first be recalled by following the "To recall a preset" steps above.

Once the desired preset is recalled, press the  (1.5s). The preset number should now be flashing. While the preset number is flashing, press  (1.5s). "CLEAR" will appear on the LCD momentarily. The location is now empty and will not appear with any of the saved presets when trying to recall a preset.

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