

User Manual



## RHT52

Psychrometer + IR Thermometer



## ***Introduction***

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Congratulations on your purchase of the Triplet RHT52 Psychrometer + IR Thermometer. This handheld meter measures and displays Air Temperature, Relative Humidity, Dew Point, Wet Bulb and also Surface Temperature using the built-in IR thermometer.

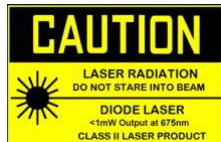
## ***Safety***

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Use extreme caution when the laser pointer beam is on

Do not point the beam toward anyone's eye  
or allow the beam to strike the eye from a  
reflective surface

Do not use the laser near explosive  
gases or in other potentially explosive  
areas

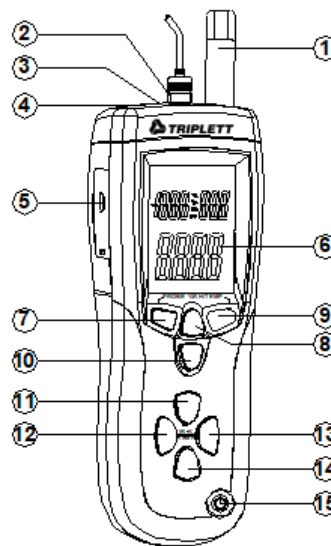


## ***Description***

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### **METER DESCRIPTION**

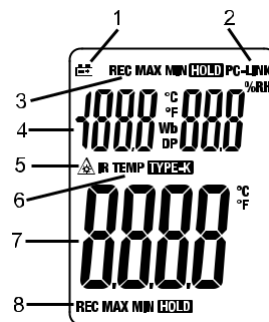
1. Humidity & Air Temperature Sensor
2. Type K Thermocouple input jack
3. Laser pointer beam
4. IR temperature sensor
5. USB Interface
6. LCD Display
7. Upper display HOLD button
8. Upper display Temp./Wet Bulb/Dew Point button
9. Upper display record Max/Min button
10. IR Measurement button
11. °F/°C units button
12. Lower display HOLD button
13. Lower display record Max/Min button
14. Backlight button
15. Power button



NOTE: Battery Compartment, Tilt Stand and Tripod Mount are located on the reverse side of the meter

## LCD DISPLAY


1. Low Battery icon
2. PC communication icon
3. Upper display function icons
4. Upper display
5. Laser pointer icon
6. Lower display function icons
7. Lower display
8. Lower display function icons



## Operation



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### Basic Measurements

3. Press the  button to turn power on.
4. The upper display will indicate Air Temperature, Wet Bulb Temperature or Dew Point Temperature and % Relative Humidity.  
Press the **WB/DP** button to toggle between Air, WB or DP.
5. The lower display will indicate Type K temperature or IR Temperature. Press and hold the **IRT** button to select the IR Thermometer.  
The TYPE-K function will display "-----" if a type k probe is not inserted into the meter.
6. Press the **°C/°F** button to change the temperature units from °C or °F.

### Non-contact IR Surface Temperature Measurements

The built-in IR sensor can remotely measure the temperature of most surfaces. The Laser pointer allows the user to aim accurately when taking non-contact measurements.

1. Turn ON the meter using the  button.
2. The IR sensor and laser pointer are located at the top of the meter.
3. Point the sensor toward the surface to be measured.
4. Press and hold the **IRT** button to begin measuring the surface temperature of a desired target. **IR TEMP** and  will appear on the display. The laser pointer will switch on to help aim the meter.
5. The measured IR surface temperature will appear on the lower display.
6. When the IRT button is released, the laser pointer will switch off and the reading will freeze (data hold) on the display for approximately 7 seconds.
7. After the 7 second hold time the meter returns to the type k mode.

**WARNING: Do not directly view or direct the laser pointer at an eye. Low power visible lasers do not normally present a hazard, but may present some potential for hazard if viewed directly for extended periods of time.**




#### Data Hold

1. Press the **HOLD** buttons (one for upper display and one for lower display) to freeze the displayed value for the respective display. Press again to unlock the display.
2. The **HOLD** icon will appear on the display when the Data Hold mode is active.

#### MIN-MAX Recording Mode

4. Press the **MAX/MIN** button (one for upper display and one for lower display) to begin recording the Maximum and Minimum reading. The **REC MAX** icon will appear and only the maximum value measured will appear in the display. The display will update only if a value higher than the currently displayed value is measured.
5. Press the **MAX/MIN** button again to display the minimum values. The **REC MIN** icon will appear and only the minimum recorded value will appear in the display.
6. Press the **MAX/MIN** button again to display the currently measured values. The **REC** icon will appear in the display and the Max and Min values will be stored in memory.
7. Press and Hold the **MAX/MIN** button for >2 seconds to exit the mode.


#### Backlight

Press the  backlight button to turn the backlight ON or OFF.

Note: continuous use of the backlight function will reduce battery life.

#### Auto-Power Off

The meter will automatically turn off after 15 minutes of operation if no buttons are pressed during this period. Auto-power off can be disabled by:

1. Hold the **IRT** button and then press the  button to turn the power on. When "**disAPO**" appears in the display, release the **IRT** button and the APO is disabled.

#### Low Battery

When the battery reaches the minimum operating voltage the battery icon will appear in the display.  
Replace the 9V battery when this happens.

#### **Battery Replacement**

When the battery icon appears on the LCD, the 9V battery must be replaced.

1. The battery compartment is located on the rear of the meter.
2. Press in and down on the arrow located above the tilt stand hinge.
3. Replace the 9V battery
4. Replace the battery cover.



Never dispose of used batteries or rechargeable batteries in household waste. As consumers, users are legally required to take used batteries to appropriate collection sites, the retail store where the batteries were purchased, or wherever batteries are sold.

**Disposal:** Do not dispose of this instrument in household waste. The user is obligated to take end-of-life devices to a designated collection point for the disposal of electrical and electronic equipment.

#### **Other Battery Safety Reminders**

1. Never dispose of batteries in a fire.

Batteries may explode or leak. Never mix battery types. Always install new batteries of the same type

- 2.

#### **USB Interface and Software**

The RHT52 is equipped with a communication jack on its upper left side. The supplied communications cable connects to this jack and to a USB port on a PC. The supplied software allows the user to view and save readings to the PC. Instructions for use and features are detailed in the supplied software HELP utility.

## ***InfraRed Measurement Considerations***

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When taking IR measurements the meter automatically compensates for ambient temperature changes. Note that it may take up to 30 minutes to adjust to extremely wide ambient changes.

Low temperature measurements quickly followed by high temperature measurements may require several minutes to stabilize as a result of the IR sensor cooling process.

If the surface of the object under test is covered with frost, oil, grime, etc., clean before taking measurements.

If an object's surface is highly reflective apply masking tape or flat black paint before measuring. Steam, dust, smoke, etc. can obstruct measurements.

To find a hot spot, aim the meter outside the area of interest then scan across (in an up and down motion) until the hot spot is located.

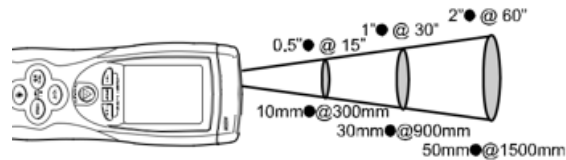
IR measurements cannot be made through glass.

### **IR Theory**

IR thermometers measure the surface temperature of an object. The meter's optics sense emitted, reflected, & transmitted energy that is collected and focused onto the meter's detector. The meter's circuitry translates this information into an LCD reading.

### **IR Field of View**

Ensure that the desired target is larger than the spot size. As the distance from an object increases, the spot size of the area measured by the meter becomes larger. The meter's field of view ratio is 30:1, meaning that if the meter is 30 inches (cm) from the target, the diameter (spot) of the object under test must be at least 1 inch (cm). Refer below to the field of view diagram.





### Emissivity

Most organic materials and painted or oxidized surfaces have an emissivity of 0.95. Inaccurate readings will result when measuring shiny or polished surfaces. To compensate, cover the surface under test with masking tape or flat black paint. Allow time for the tape to reach the same temperature as the material underneath then measure the temperature of the tape or the painted surface.

**Thermal Emissivity Table for Common Materials**

Material	Emissivity	Material	Emissivity
Asphalt	0.90 to 0.98	Cloth (black)	0.98
Concrete	0.94	Human skin	0.98
Cement	0.96	Leather	0.75 to 0.80
Sand	0.90	Charcoal (powder)	0.96
Earth	0.92 to 0.96	Lacquer	0.80 to 0.95
Water	0.67	Lacquer (matt)	0.97
Ice	0.96 to 0.98	Rubber (black)	0.94
Snow	0.83	Plastic	0.85 to 0.95
Glass	0.85 to 1.00	Timber	0.90
Ceramic	0.90 to 0.94	Paper	0.70 to 0.94
Marble	0.94	Chromium oxides	0.81
Plaster	0.80 to 0.90	Copper Oxides	0.78
Mortar	0.89 to 0.91	Iron Oxides	0.78 to 0.82
Brick	0.93 to 0.96	Textiles	0.90

## ***Specifications***

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### **General Specifications**

Display counts	Dual Display Multi-function LCD with 9999
Data Hold	Freezes displayed reading
Sampling rate	1 reading per second
Sensors Thermistor	Relative Humidity: Capacitance, Air Temp:
IR Distance to Spot ratio	30:1
IR Spectral response	6 to 14 $\mu$ m
IR Emissivity	0.95 fixed
MIN-MAX	Record and Recall lowest and highest readings
Auto Power OFF (disabled)	Automatic shut off after 15 minutes (can be disabled)
PC Interface software and cable for data	USB PC Communication with supplied acquisition
Over range indication	Dashes appears on the LCD
Low battery indication	Battery symbol appears on the LCD
Power supply	9V Battery
Operating conditions	Meter: 0 to 50°C (32 to 122°F); 80% RH max.
Dimensions / Weight 2")	Main instrument: 257 x 76 x 53mm (10.1 x 3.0 x 2")
Weight	355g (12.5 oz.)

Function	Range	Resolution	Accuracy
Temp (type-K)	-148°F to -20°F	1°≥1000	(3.0% reading + 4°F)
	-20°F to 2501°F		(3.0% reading + 2°F)
	-100°C to -30°C	0.1°<1000	(3.0% reading + 2°C)
	-30°C to 1372°C		(3.0% reading + 1°C)
IR Temp	-58 to -4°F -50 to -20°C	0.1°F/°C	±9.0°F / 5.0°C
	-4 to 932°F -20 to 500°C	0.1°F/°C	±2% reading or ±4°F/2°C
Air Temp.	-4 to 140°F -20 to 60°C	0.	±(2% reading +
%RH	10% to 90%	0.	
	<10% and >90%	0.1%RH	±3% RH
Wet Bulb	-6.88 to 140°F -21.6 to 60°C	0.1°F/°C	calculated
Dew Point	-90.4 to 140°F -68 to 60°C	0.1°F/°C	calculated

## Warranty

Triplett / Jewell Instruments extends the following warranty to the original purchaser of these goods for use. Triplett warrants to the original purchaser for use that the products sold by it will be free from defects in workmanship and material for a period of (1) one year from the date of purchase. This warranty does not apply to any of our products which have been repaired or altered by unauthorized persons in any way or purchased from unauthorized distributors so as, in our sole judgment, to injure their stability or reliability, or which have been subject to misuse, abuse, misapplication, negligence, accident or which have had the serial numbers altered, defaced, or removed. Accessories, including batteries are not covered by this warranty

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