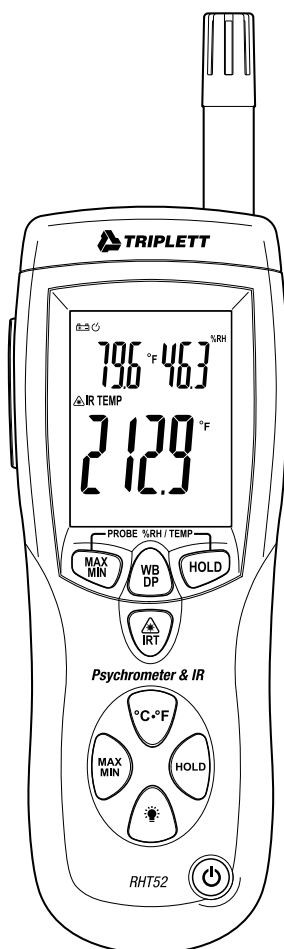


RHT52

Psychrometer + IR Thermometer



INTRODUCTION

Thank you for choosing the Triplet Psychrometer + IR Thermometer. We appreciate your purchase and are confident this versatile instrument will provide fast, reliable environmental measurements for HVAC, building inspection, water restoration, greenhouses, warehouses, offices, storage areas, and other maintenance and troubleshooting applications. The RHT52 simultaneously displays Humidity and Air Temperature, Wet Bulb, or Dew Point along with Type K or Infrared (IR) Temperature, helping you gather multiple critical readings at once for greater efficiency. Its 30:1 field of view with built-in laser pointer and fixed 0.95 emissivity also allows for accurate non-contact IR surface temperature measurements from a safe distance.

We appreciate your trust in Triplet and are confident the RHT52 will deliver the performance you need. Please read this manual carefully before operation to ensure safe use and optimal performance.

What's in the box: • RHT52 Meter • Type K Temperature bead probe • USB cable • Software (online) • 9V battery • User Manual • Hard carrying case	Stay updated: For the most recent version of this user manual, visit www.triplett.com and search for "RHT52". You can also find the latest specifications, FAQs, and product datasheets on our website.
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SAFETY

 Use the meter only as specified in this manual; otherwise, the protection provided by the meter and its warranty may be voided.

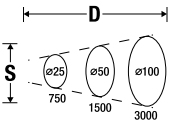
CAUTION: Use extreme caution when the laser pointer beam is on. Do not point the beam toward anyone's eye or allow the beam to strike the eye from a reflective surface.

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

**AVOID EXPOSURE**
LASER RADIATION IS EMITTED FROM THIS APERTURE

**CAUTION**

LASER RADIATION
AVOID DIRECT EYE EXPOSURE
MAXIMUM OUTPUT <1mW
WAVELENGTH 630-670nm
CLASS 2 LASER PRODUCT
EN 60825-1:2014



D:S = 30:1

Operating Environmental Conditions

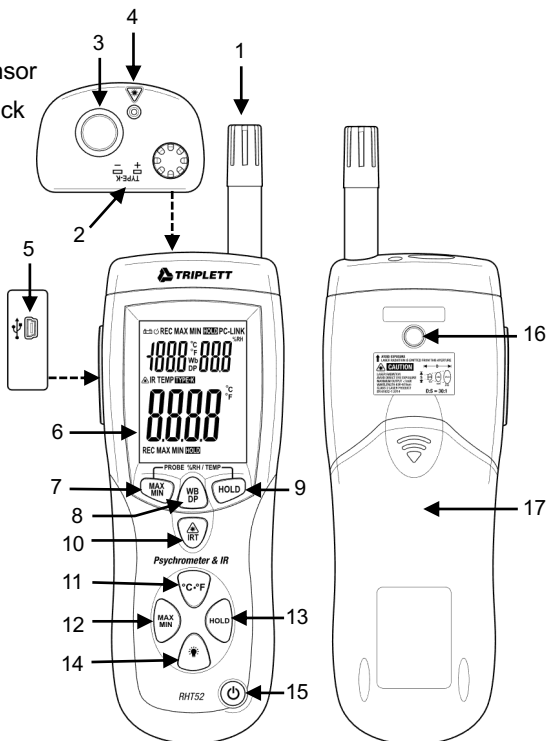
- Altitude: ≤2000 meters
- Relative Humidity: 90%RH max
- Operating Temperature: 32 to 104°F (0 to 40°C)

Maintenance and Cleaning

- Servicing not covered in this manual should be performed only by qualified personnel. Visit www.triplett.com/support for support.
- Periodically wipe the housing with a dry cloth. Do not use abrasives or solvents.

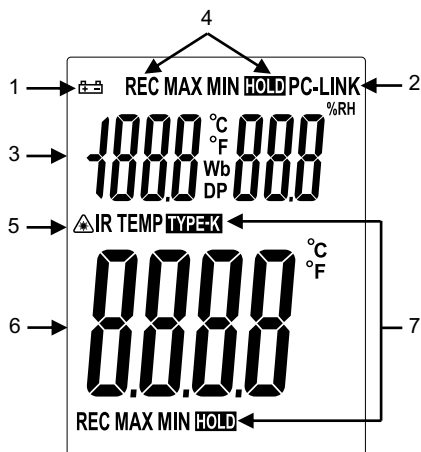
METER DESCRIPTION

1. Humidity/Air Temperature Sensor
2. Type K Thermocouple input jack
3. IR Temperature Sensor
4. Laser Pointer Beam
5. USB Interface
6. LCD Display
7. MAX/MIN (Upper display)
8. Air Temperature/Wet Bulb/
Dew Point (Upper display)
9. HOLD (Upper display)
10. IR Measurement/Laser
11. °C/°F Unit
12. MAX/MIN (Lower display)
13. HOLD (Lower display)
14. - Backlit Display
15. - Power On/Off
16. Tripod Mount
17. Battery Cover



Display View

1. - Low Battery icon
2. PC-LINK - PC Communication icon
3. Upper Display
4. REC MAX, MIN, **HOLD** - Upper Display icons
5. - Laser Pointer On icon
6. Lower Display
7. IR TEMP, **TYPE-K**, RECMAX, MIN, **HOLD** - Lower Display icons



SETUP

Battery Installation

The meter is powered by one 9V battery. Slide the rear battery cover off and install the 9V battery and replace the cover back on securely. See Battery Replacement & Disposal section of the manual if replacing the battery.

OPERATIONS

Air Temperature, Wet Bulb, Dew Point and Humidity Measurements

Readings and function icons will appear on the upper display.

1. Press the  button to power the meter ON
2. The upper display will indicate Air, Wet Bulb (Wb), or Dew Point (DP) Temperature and Relative Humidity (%RH)
3. Press the WB/DP button to toggle between Air, Wb or DP Temperature

Type K Temperature Measurements

Readings and function icons will appear on the lower display.

1. Press the  button to power the meter ON
2. The **TYPE-K** function will display “- - -” if a Type K probe is not connected
3. Connect a Type K thermocouple to the input labeled TYPE K on top of the meter
4. The temperature reading will appear on the lower display

Non-Contact Infrared (IR) Surface Temperature Measurements

Readings and function icons will appear on the lower display.

 **WARNING:** Do not look directly into the laser beam or point the laser at anyone's eyes. Low-power visible lasers are not normally hazardous; however, direct or prolonged exposure to the beam may cause eye injury.

1. Press the  button to power the meter ON
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 will appear on the display. The laser pointer will switch on to pinpoint the target to be measured.
5. The IR surface temperature reading 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 ~7 seconds, then return to the Type K mode.

BUTTON FUNCTIONS

Power Button

Press the button to turn the unit ON or OFF.

MAX/MIN Buttons

There are two **MAX/MIN** buttons. One for controlling the Upper Display and another for the Lower Display.

In the REC MAX/MIN mode the meter will display and hold either the maximum or minimum reading. The display will update only when the measured value exceeds the value presently on the display.

1. Press the **MAX/MIN** button and the REC MAX icon will appear on the display. The reading displayed is the highest value since entering the REC MAX mode.
2. Press the **MAX/MIN** button again. The REC MIN icon will appear on the display. The reading displayed is the lowest value since entering the REC MIN mode.
3. Press the **MAX/MIN** button again to exit the REC MAX/MIN screen.

WB/DP Button

When the meter is turned on, it defaults to reading Air Temperature. Press the WB/DP button to read Wet Bulb (Wb). Press again to display Dew Point (DP). Each time you press the button, it cycles from Air Temperature to Wet Bulb and to Dew Point.

HOLD Buttons

There are two **HOLD** buttons. One for controlling the Upper Display and another for the Lower Display.

Use the HOLD function to freeze a reading on display. It is helpful when measuring in an area that is difficult to view the display during time of measurement.

1. Press the **HOLD** button to “freeze” the current reading on the display
2. Press the button again to resume normal operation

IRT Button

1. Press and hold down the button to begin measuring the surface temperature of a desired target. The laser will also be on (read the warnings under the Operations section of the Infrared Temperature measurement).
2. Once the button is released the measurements stop and the laser is turned off.

°C/°F Button

Press the button to toggle between °C and °F.

LCD Backlighting Button

Use the display backlighting feature to improve screen visibility in low-light environments or enhance readability when the screen is exposed to bright daylight or direct sunlight.

1. Press the button to turn the LCD backlight ON or OFF
2. The backlight will remain on until the meter auto powers off from inactivity
3. If auto power off has been disabled and the backlighting is left on, it will not turn off until the user turns it off manually or the battery life runs out. To conserve battery life, turn off the feature if not needed.

AUTO POWER OFF (APO)

The meter is default with the auto-power-off feature. It will automatically shut off after ~15 minutes of inactivity.

1. To disable the auto-power-off feature, turn the meter OFF
2. Hold down the  IRT button and then press the  button to turn the meter on. When “**disAPO**” appears on the display, release the buttons. APO is disabled.
3. When the meter is turned OFF and then ON again, the APO feature will automatically be active again.

BATTERY REPLACEMENT & DISPOSAL

1. The  icon will appear on the display when the battery needs replacing
2. Press  to turn the meter OFF, and slide the rear battery cover off
3. Install the 9V battery and replace the cover back on

Battery Disposal



- Never dispose used or rechargeable batteries in household wastebin
- As consumers, users are legally required to take used batteries to a collection site or stores that sell batteries
- Never dispose of batteries in a fire. Batteries may explode or leak
- Never mix battery types. Always install the same type.

Meter Disposal

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

INFRARED MEASUREMENT CONSIDERATIONS

IR Measurement Tips

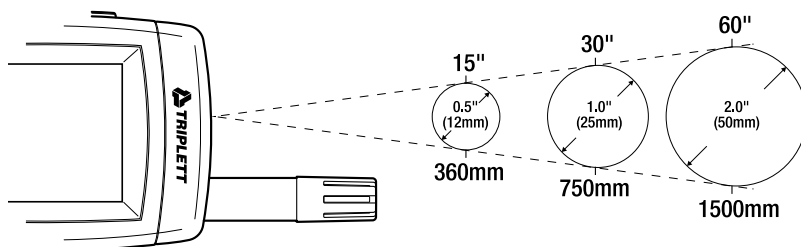
- When taking IR measurements, the meter automatically compensates for ambient temperature changes. Note that it may take up to 30 minutes to adjust to extremely wide ambient changes.
- Low temperature measurements quickly followed by high temperature measurements may require several minutes to stabilize because 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 instrument's optics sense emitted, reflected, and transmitted infrared energy, which is collected and focused onto a detector. The instrument's circuitry then converts this information into a temperature reading displayed on the LCD.

IR Field of View

Ensure that the target is larger than the spot size. As the distance from the object increases, the spot size of the area measured by the meter also increases. The meter's field-of-view ratio is 30:1, meaning that at a distance of 30 inches (750mm), the diameter (spot size) of the target must be at least 1 inch (25mm). Refer 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	Material	Emissivity
Asphalt	0.90 to 0.98	Marble	0.94	Rubber (black)	0.94
Concrete	0.94	Plaster	0.80 to 0.90	Plastic	0.85 to 0.95
Cement	0.96	Mortar	0.89 to 0.91	Timber	0.90
Sand	0.90	Brick	0.93 to 0.96	Paper	0.70 to 0.94
Earth	0.92 to 0.96	Cloth (black)	0.98	Chromium oxides	0.81
Water	0.67	Human skin	0.98	Copper Oxides	0.78
Ice	0.96 to 0.98	Leather	0.75 to 0.80	Iron Oxides	0.78 to 0.82
Snow	0.83	Charcoal (powder)	0.96	Textiles	0.90
Glass	0.85 to 1.00	Lacquer	0.80 to 0.95		
Ceramic	0.90 to 0.94	Lacquer (matt)	0.97		

SPECIFICATIONS

Functions/Features	Range	Accuracy
Relative Humidity	10 to 90%RH	±2%RH
Air Temperature	-4 to 140°F (-20 to 60°C)	±(2% + 2°F/1°C)
Type K Temperature	-148 to 2501°F (-100 to 1372°C)	±(3% + 4°F/2°C)
Infrared Temperature	-58 to 932°F (-50 to 500°C)	±2% or 4°F/2°C
Wet Bulb	-6.88 to 140°F (-21.6 to 60°C)	
Dew Point	-90.4 to 140°F (-68 to 60°C)	
Resolution	0.1°F/°C; 0.1%RH	
Sampling Rate	1 second per reading	
Sensor Type	Relative Humidity: Capacitance/ Air Temperature: Thermistor	
IR Ratio D:S	30:1 Distance to Spot Ratio	
IR Spectral Response	6 to 14µm	
IR Emissivity	Fixed: 0.95	
PC Interface	USB communication with online software and supplied cable for data acquisition	
Operating conditions	32 to 104°F (0 to 40°C); 10% to 90%RH	
Storage conditions	14 to 140°F (-10 to 60°C); 10% to 75%RH	
Power/Auto Power Off	9V battery/ Powers off after approx. 15 minutes of inactivity with disable	
Dimensions/ Weight	10.1 x 3 x 2" (257 x 76 x 53mm)/ 12.5oz (355g)	

SOFTWARE

Triplett's Psychrometer + IR Thermometer Software is a program for livestreaming and capturing readings directly from the meter to your PC/laptop/notebook when they are connected using the USB cable.

The software allows you to process the data as a graphic or text style interface. It is easy to use via the graphical user interface. The key functions are displayed as icons on the main software window, eliminating the need to search through menus.

System Requirements

- Operating System: Windows® XP, 7 or above
- Minimum Hardware requirements:
 - PC or laptop computer with microprocessor $\geq 90\text{MHz}$
 - 32MB RAM
 - 5MB hard disk free space for the software
 - Resolution of at least 800×600 and 16-bit color display

Software Installation

Go to www.triplett.com/software/ and locate RHT52. Download the software file. Click the downloaded zip file to access the RHT52 Setup.exe file. Follow the instructions below.

PC to Meter Communication

1. Connect the meter to the PC using the supplied USB cable
2. Turn the meter ON and press the SETUP button
3. Launch the application by clicking on the Triplett Psychrometer + IR Thermometer Shortcut on your desktop
4. Select the COM port that has the CP210X driver installed
5. Data will appear on the PC screen when communication is established

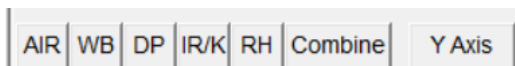
Main Screen



- File | Open: Retrieve files previously stored on the PC
- Save: Save the data to a file on the PC
- Export: Export data in Excel format
- Real Time Data | Run: Begin collecting real-time data
- Stop: Stop collecting real-time data

Tool Bar

The tool bar allows for turning ON and OFF real-time data channels streaming to the graph and adjusting parameters for Y-Axis extension.



- **AIR** displays the graph of Air Temperature
- **WB** displays the graph of Wet Bulb
- **DP** displays the graph of Dew Point
- **IR/K** displays the graph of Infrared or Type K Temperature
- **RH** displays the graph of Relative Humidity
- **Combine** combines the five graphs
- **Y Axis** changes the Y-Axis extension

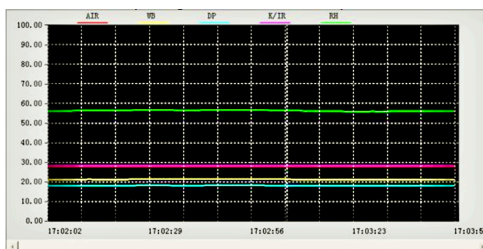
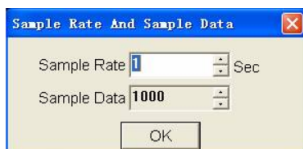
TUTORIAL – QUICK START

Starting Communication

1. Power ON the meter and connect it to the PC USB port with the cable provided
2. Click on the Triplet Psychrometer + IR Thermometer icon to open the software
3. If the connection is successful, the panel will show the same value as the meter
4. If the connection fails, the software will display "OFFLINE" on the panel window
5. If connection fails, check the cable first, then close all other applications and choose other serial ports from the menu until the connection is successful. Wait a few seconds after a new COM port is selected to see if communication is successful. When successful, the COM port selections will turn gray (become inactive) and the readings on the meter will match the software user interface.

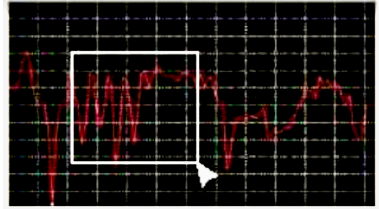
Plotting Data

1. If connection is successful, click  and the Sample Rate dialog box will pop up.
2. Enter a number (1 or greater) in the Sample Rate/Sec box to set the rate and click the Sample Data up/down arrow to set the number of data, then click "OK"
3. The data will start plotting on the Real Time Graph Window



Zooming

1. Press the left mouse button and drag a rectangle around the area to zoom in
2. Release the mouse button
3. Use the scrollbar to scroll through all the data
4. To zoom out, click $\ominus$ icon



Alarm Limit Setting



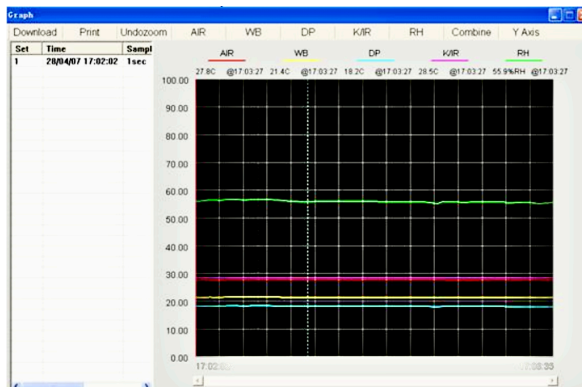
Click the up/down button to set the high and low limit values. If the data is below the low limit or above the high limit, the square besides the right of "Alarm Low " or "Alarm Hi" will turn red.

Save the Recorded Real-Time Data to a File

1. Click the  icon to open the file "Save As" dialog box
2. Name the file and save it with the default extension. The file will be saved with the ".REC5040" extension to be reopened in the serial software and as a ".XLS" file to be opened in spreadsheet program.

Opening a saved data file

1. Click the folder  icon to open a saved file
2. The opened graph supports Opening files, Printing, Zooming, Y-Axis Setting, and graph channel selection
3. The left bar will list files that were opened and have detailed information (Time, Sampling Rate, Data numbers of the file). Click on any file to change the graph.



CERTIFICATIONS



This product complies with applicable CE requirements, is RoHS compliant, and has been tested to applicable IEC standards.

WARRANTY

Triplett offers warranty to the original purchaser of its products. We guarantee that our products will be free from defects in workmanship and materials for two (2) years from the purchase date.

This warranty does not cover:

- Products purchased from unauthorized distributors.
- Items that have been repaired or altered by unauthorized individuals.
- Damage from misuse, abuse, misapplication, negligence, or accidents.
- Products with altered, defaced, or removed serial numbers.
- Accessories, including batteries.

For product support, registration, FAQs, or to request calibration or repair services, visit www.triplett.com/support.

Imagery is for reference and may be enhanced for clarity. Actual product appearance and screen content may vary slightly. Specifications are subject to change without notice. For the latest information, visit www.triplett.com.