

# REED

## Model R2020

IR Video Thermometer  
& Data Logger  
Instruction  
Manual



[www.reedinstruments.com](http://www.reedinstruments.com)

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For service on this or any other REED product or information on other REED products, contact REED Instruments at [info@reedinstruments.com](mailto:info@reedinstruments.com)

## Features

- Measures air temperature, RH % dewpoint, and wet bulb
- High temperature range up to 2200°C (3992°F)
- Captures images (JPEG) and videos (3GP)
- 2.2" TFT LCD display
- 640 x 480 pixels (30 million pixels)
- 72MB internal memory
- Micro SD memory card slot
- Datalog intervals 1 to 3600 seconds
- °C and °F adjustable
- Dual laser targeting
- Type-K thermocouple probe
- Adjustable emissivity
- Auto Data Hold
- Max/Min and Average/Differential modes
- High and Low Alarms
- Continuous Measurement mode
- Adjustable sleep mode and auto power off

## Specifications

Display:	2.2" 320 x 240 color LCD with backlight
Sleep mode:	Adjustable to 30 sec, 1 min, 2 min, & disabled
Auto power off:	Adjustable to 3 min, 15 min, 60 min, & disabled
Operating temp.:	0 to 50°C (32 to 122°F)
Storage temp.:	-10 to 60°C (14 to 140°F)
Storage humidity:	10 to 90% RH non-condensing
Power supply:	Rechargeable battery
Battery life:	Approx. 4 hours continuous use
Battery charge time:	Approx. 2 hours

*continued ...*

Dimensions:	205 x 62 x 155mm (8.07 x 2.4 6.1")
Weight:	410g (14.46oz)
Includes:	One mini-tripod, type-k thermocouple probe, AC adapter, USB adapter, and hard carrying case

### *IR Temperature*

Temp. range:	-50 to 2200°C (-58 to 3992°F)
Accuracy:	20 to 500°C (68 to 932°F): $\pm 1\% \pm 1.0^\circ\text{C}$ (1.8°F); 500 to 1000°C (932 to 1832°F): $\pm 1.5\%$ ; 1000 to 2200°C (1832 to 3992°F): $\pm 2.0\%$ ; -50 to 20°C (-58 to 68°F): $\pm 3.5^\circ\text{C}$ (6.3°F)
Response time:	150mS
Emissivity:	Digitally adjustable from 0.10 to 1.00
Field of view:	Approx. 50:1 distance to spot ratio with 90% encircled energy at focal point
Spectral response:	8 ~ 14 $\mu\text{m}$
Display resolution:	<1000: 0.1°C (0.1 F); >1000: 1°C (1°F)
Repeatability:	-50 to 20°C (-58 to 68°F): $\pm 1.5^\circ\text{C}$ (2.7°F); 20 to 1000°C (68 to 1832°F): $\pm 0.5\%$ or $\pm 0.5^\circ\text{C}$ (0.9°F); 1000 to 2200°C (1832 to 3992°F): $\pm 1.0\%$

### *Type-K Temperature*

Temp. range:	-50 to 1370°C (-58 to 2498°F)
Accuracy:	0 to 1370°C (32 to 2498°F): $\pm 0.5\% \pm 1.5^\circ\text{C}$ (2.7°F); -50 to 0°C (-58 to 32°F): $\pm 2.5^\circ\text{C}$ (4.5°F)

### *Air Temperature and Relative Humidity*

Air temp. range:	0 to 50°C (32to 122°F)
Dewpoint and Wet Bulb temp. range:	0 to 50°C (32 to 122°F)
Relative humidity range:	0 to 100% RH

*continued ...*

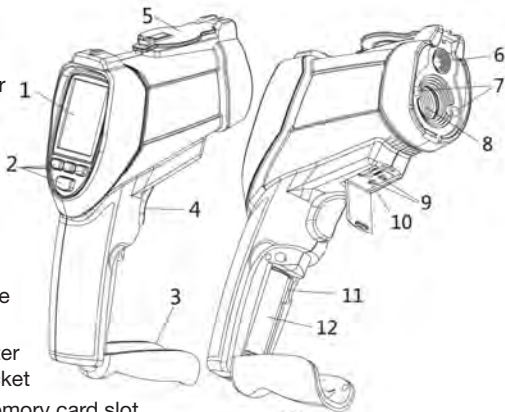
Air temp. accuracy:  $\pm 0.5^{\circ}\text{C}$  ( $0.9^{\circ}\text{F}$ ): 10 to  $40^{\circ}\text{C}$ ;  
 $\pm 1.0^{\circ}\text{C}$  ( $1.8^{\circ}\text{F}$ ):  $>40^{\circ}\text{C}$

Dewpoint and Wet Bulb temp. accuracy:  
 $\pm 0.5^{\circ}\text{C}$  ( $0.9^{\circ}\text{F}$ ): 10 to  $40^{\circ}\text{C}$ ;  
 $\pm 1.0^{\circ}\text{C}$  ( $1.8^{\circ}\text{F}$ ):  $>40^{\circ}\text{C}$

Relative humidity accuracy:  $\pm 3\%$  RH: 40% to 60%;  
 $\pm 3.5\%$  RH: 0% to 40% and 60% to 80%;  
 $\pm 5\%$  RH: 0% to 20% and 80% to 100%

## Instrument Description

1. LCD Display
2. Front panel
3. Battery cover
4. Trigger
5. Lens Cover
6. Camera
7. Laser
8. IR sensor
9. Type-k thermocouple socket
10. USB computer interface socket
11. Micro SD memory card slot
12. Battery



### Front panel description

1. Up/Picture button
2. Power/ESC button
3. Down/Video button
4. Enter button



# Operating Instructions

To turn the meter on or off, press and hold the Power button. The meter will beep indicating that it has been turned on or off.

## *Main Menu*

When you turn the meter on you will enter the main menu screen. There are six functions in the main menu to choose from. Press the UP or DOWN button to highlight the function and press the Enter button to select it.

## *IR Camera*

In the main menu, highlight and select IR CAM. The IR Camera function measures IR temperature, air temperature, relative humidity, dewpoint temperature, and wet bulb temperature while the video camera is on. Press and hold the trigger to take a measurement. This mode can also take pictures and videos.

## *Taking Pictures*

When in IR Camera mode, press the Picture button to take a picture of current readings and what is currently being displayed on the screen. The picture will stay on the screen, and you can either save the picture by pressing the Up button or delete the picture by pressing the Down button.

## *Taking a Video*

When in IR Camera mode, press the Video button to enter Video Mode. To begin recording press the Video button again. The meter will record video while taking a continuous reading. Press the Video button to stop recording. Press the ESC button to exit Video Mode.

## *IR Measurement*

In the main menu, highlight and select IR MEASURE. The IR Measurement function measures IR temperature, air temperature, relative humidity, dewpoint temperature, and wet bulb temperature. Press and hold the trigger to take a measurement. This function is best for quick measurements.

## *Dewpoint Measurement*

In the main menu, highlight and select the DEWPOINT function. The Dewpoint function measures IR temperature, air temperature, relative humidity, dewpoint temperature, and wet bulb temperature. The bottom gradient bar displays the current temperature/dewpoint ratio percentage. Press and hold the trigger to take a measurement.

## *Datalogging*

In the main menu, highlight and select DATALOG. You will enter the Datalog setup screen where you can adjust the datalogging parameters. To adjust the parameters highlight the parameter with the Up and Down buttons and select it with the Enter button. You can adjust the temperature by small increments by pressing the Up and Down buttons and by large increments by pressing and holding the Up or Down buttons. Adjust the measurement timing increments and the bar-graph colour by pressing the up and down buttons when they are selected. Press Enter on the Measure Set parameter to adjust the measuring mode, such as dewpoint, ambient temperature/RH%, or Type-K thermocouple probe. After you have set all of the parameters press the trigger to begin datalogging. The meter will continuously take measurements while in Datalog mode. To save and exit Datalog mode press the ESC button.

## *Saved Data*

In the main menu, highlight and select DATA MEMORY to enter the Saved Data menu. Highlight and select Picture, Video, or Logs to view the saved data.

## *Browsing Pictures*

Press the Up and Down buttons to scroll through the picture thumbnails, and press the Enter button to see the picture full screen. You can scroll through the full screen pictures by pressing the Up and Down buttons. To delete a picture, view it full screen and press the Enter button. Confirm by pressing the Up button and cancel by pressing the Down button. Exit full screen and the Picture Browsing screen by pressing the ESC button.

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### *Browsing Videos*

Press the Up and Down buttons to scroll through the video thumbnails, and press the Enter button to play the video. To exit video playback press the ESC button. To delete a video press the Enter button during playback and press Up to delete or Down to cancel.

### *Browsing Logs*

Press the Up and Down buttons to scroll through the saved datalog files. Press the Enter button to display the log in graph form. Press the Up and Down buttons to scroll through the results. To delete a log press the Enter button in graph view and press Up to delete or Down to cancel.

### *Downloading Saved Data*

You can save data directly on to the meter or on to a micro SD card. To transfer the information to a computer you can do so by the included USB cable or you can insert the optional micro SD card into a computer. No software is necessary to view the saved data, simply click and drag your data from the device on to your desktop.

## *System Settings*

In the main menu, highlight and select SETTINGS. You will enter the System Settings menu where you can change the date, time, language, and more. Highlight and select the settings you wish to change. Make adjustments by pressing the Up, Down, and Enter buttons. Press the ESC button to save your changes and to go back to the System Settings menu. Please note that if you revert the meter back to the Factory Settings it will NOT delete any of the saved data. If you have accidentally changed the language, enter the last function off the main menu and select the third option in the Settings screen. Select the desired language and press the ECS button.



## Measurement Settings

While taking a measurement, press the Enter button to open the Measurements Settings menu. In this screen you can adjust the Emissivity, High and Low Alarm, and more. Highlight and select the settings you wish to change. Make adjustments by pressing the Up, Down, and Enter buttons. Press the ESC button to save your changes and to go back to the Measurement Settings menu. Please note that these settings apply to all measurement functions.

## Battery Replacement

This meter comes with a rechargeable battery. You can charge the battery by plugging the USB cable into the AC adapter or by plugging the USB cable directly into a computer. If you are experiencing any issues with the meter or any other REED Instrument please contact REED Instruments at [info@reedinstruments.com](mailto:info@reedinstruments.com).

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