

REED

Model R5005

True RMS
Multimeter,
Data Logger



**Instruction
Manual**

www reed instruments com

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Safety

- Never apply voltage or current to the meter that exceeds the specified maximum:

VDC or VA: 1000V DC/AC RMS

mA AC/DC: 500mA 1,000V fast acting fuse

A AC/DC: 10A 1000V fast acting fuse

Frequency, Resistance, Capacitance, Duty, Diode, Continuity:
1000V DC/AC RMS

Surge Protection: 8kV peak per IEC 61010

- Use extreme caution when working with high voltages
- Don't measure voltage with the COM input jack that exceeds 1,000V
- You can damage the meter if you connect the test leads to a voltage source when the function switch is set to current, resistance, or diode mode
- Always discharge and disconnect the power before taking a resistance or diode test
- Always turn off the meter and disconnect the test leads before replacing the batteries

Features

- AC and DC voltage and current, resistance, capacitance, frequency and duty cycle measurements
- 10MHz frequency counter
- Temperature measurement capability
- True RMS AC voltage and current measurements
- Mix/Max/Avg and Peak Hold functions
- Auto power off function
- Store up to 10,000 recorded events
- Real time clock for automatic time stamping of readings
- Log multiple sessions or log data continuously for over 200 hours
- 50,000-count graphical LCD with backlight displays multiple sets of measurement data simultaneously
- Bluetooth interface
- IP67 rated waterproof

Specifications

Display:	50000 count 320 x 240 TFT color LCD display
AC/DC Voltage Range:	50, 500mV, 5, 50, 500, 1000V
AC/DC Voltage Resolution:	0.001, 0.01mV, 0.0001, 0.001, 0.01, 0.1V
AC/DC Voltage Accuracy:	AC: $\pm(0.3\% \text{ rdg.} + 25 \text{ dgt.})$ (50/60Hz); DC: $\pm(0.025\% \text{ rdg.} + 5 \text{ dgt.})$
AC/DC Current Range:	500, 5000 μ A, 50, 500mA, 10A
AC/DC Current Resolution:	0.01, 0.1 μ A, 0.001, 0.01mA, 0.001A
AC/DC Current Accuracy:	AC: $\pm(0.6\% \text{ rdg.} + 25 \text{ dgt.})$ (50/60Hz); DC: $\pm(0.15\% \text{ rdg.} + 20 \text{ dgt.})$
Resistance Range:	50, 500 Ω , 5, 50, 500k Ω , 5, 50M Ω
Resistance Resolution:	0.001, 0.01 Ω , 0.0001, 0.001, 0.01k Ω , 0.01, 0.001M Ω

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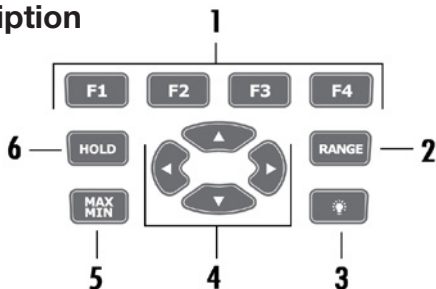


Resistance Accuracy:	$\pm(0.05\% \text{ rdg.} + 10 \text{ dgt.})$
Capacitance Range:	5, 50, 500nF, 5, 50, 500 μ F, 10mF
Capacitance Resolution:	0.001, 0.01, 0.1nF, 0.001, 0.01, 0.1 μ F, 0.01mF
Capacitance Accuracy:	$\pm(2\% \text{ rdg.} + 40 \text{ dgt.})$
Frequency Range:	50, 500Hz, 5, 50, 500kHz, 5, 10MHz
Frequency Resolution:	0.001, 0.01Hz, 0.0001, 0.001, 0.01kHz, 0.0001, 0.001MHz
Frequency Accuracy:	$\pm(0.01\% \text{ rdg.} + 10 \text{ dgt.})$
Temperature Range:	-50 to 1000°C (-58 to 1832°F)
Temperature Resolution:	0.1°C (0.1°F)
Temperature Accuracy:	$\pm(1.0\% \text{ rdg.} + 2.5^\circ\text{C} (4.5^\circ\text{F}))$
Peak Hold:	>mS
Battery:	6 hour Li-ion rechargeable
Dimensions:	8.7 x 3.8 x 2.36" (220 x 96 x 60mm)
Weight:	22oz (631g)
Includes:	Test leads, Type K temperature probe, software, and rechargeable battery
Optional Accessories:	AC Current Adapter (CP-09) Thermocouple Adapter (R2990) Type K Thermocouple Wire Probe (TP-01) Safety Test Lead Set, Double Insulated (R1000) Fused Test Lead Set (R1020) Surface Thermocouple Probe (R2920) Right Angle Thermocouple Surface Probe (R2930) Air/Gas Thermocouple Probe (R2940) Immersion Thermocouple Probe (R2950) Needle Tip Thermocouple Probe (R2960) Safety Alligator Clips (R1220) Soft Carrying Case (CA-05A) Hard Carrying Case (R8888)

Instrument Description

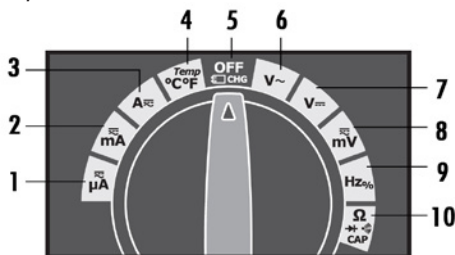
Button Description

1. Function buttons
2. Range button
3. Backlight button
4. Directional buttons
5. MAX/MIN button
6. Hold button



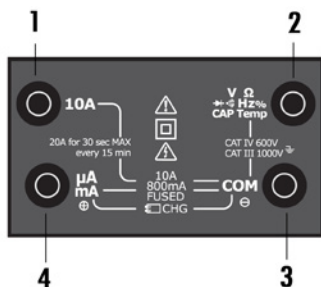
Function Switch Description

1. Microampere
2. Milliamps
3. Amps
4. Temperature
5. Off position
6. AC Voltage
7. AC/DC Voltage
8. AC/DC millivolts
9. Frequency
10. Resistance, Diode, Capacitance, and Continuity



Input Terminal Description

1. 0 to 10.00A Current
2. Voltage, Continuity, Resistance, Diode, Conductance, and Capacitance
3. Return terminal
4. 0 to 500mA Current

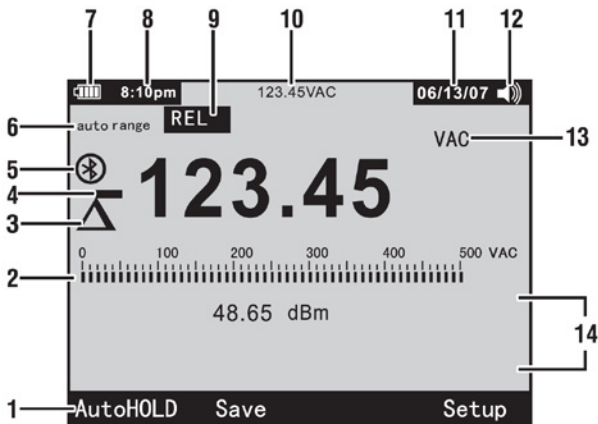


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Display Description



1. Function indicator
2. Analog bar-graph display
3. Relative indicator
4. Minus (negative) symbol
5. Wireless communication indicator
6. Range mode indicator
7. Battery level indicator
8. Internal Clock
9. Mode indicator
10. Measurement thumbnail
11. Internal Date
12. Sound indicator
13. Unit of measurement
14. Secondary Display

Operating Instructions

DC Voltage Measurement

1. Set the Function Switch to the AC/DC Voltage position
2. Insert the black test lead into the COM terminal and the red test lead into the positive V terminal
3. The Voltage reading will appear on the main display

AC Voltage Measurement

1. Set the Function Switch to the AC Voltage position
2. Insert the black test lead into the COM jack, and the red test lead into the positive V jack
3. The Voltage reading will appear on the main display

dB Measurement

This meter is capable of displaying voltage as an dB value, either relative to 1 milliwatt (dBm), a reference voltage of 1 volt (dBV) or a user selectable reference value.

1. Set the Function Switch to the AC Voltage position
2. Press the function button under "MENU"
3. Use the directional buttons to select the dBm option
4. Press the function button under "SAVE"
5. Insert the black test lead into the COM jack, and the red test lead into the positive V jack
6. The Voltage reading will appear on the main display and the dBm will appear on the secondary display

Adjust Reference Value

To select a different reference value, press the function button under "REF" and press the up and down buttons to scroll through the 9 reference options: 4, 8, 16, 25, 32, 50, 75, 600, and 1000.

Low Pass Filter

This meter is equipped with an AC Low Pass Filter. When measuring AC Voltage press the function button under "MENU" and press the function button under "LO" to toggle Low Pass Filter mode On or Off.

mV Voltage Measurement

1. Set the Function Switch to the mV position
2. Press the function button under "MENU"
3. Press the function button under "mVDC (mVAC)"
4. Insert the black test lead into the COM jack, and the red test lead into the positive V jack
5. The Voltage reading will appear on the main display

Temperature Measurement

1. Set the Function Switch to the Temperature position
2. Insert the Temperature Probe into the COM and Temperature terminals, with the negative plug going into the COM terminal
3. The Temperature reading will appear on the main display

Temperature Offset

To input a temperature offset value, while taking a temperature measurement, press the function button under "OFFSET". Use the left and right buttons to select the digit to adjust, and press the up and down buttons to adjust the selected digit or polarity sign. Press the function button under "OK" to save.

Frequency Measurement

1. Set the Function Switch to the Hz% position
2. Insert the black test lead into the COM terminal and the red test lead into the V terminal
3. The Frequency reading will appear on the main display

Resistance Measurement

1. Set the Function Switch to the Resistance position
2. Insert the black test lead into the COM terminal and the red test lead into the Ω terminal
3. The Resistance reading will appear on the main display

Continuity Check

1. Set the Function Switch to the Continuity position
2. Press the function button under "MENU" and press the button under "Beeper"
3. Insert the black test lead into the COM terminal and the red test lead into the positive terminal
4. The meter will beep if the resistance is less than approximately 25Ω
5. The meter is display "OL" if the circuit is open

Diode Test

1. Set the Function Switch to the Diode position
2. Press the function button under "MENU" and press the button under "Diode"
3. Insert the black test lead into the COM terminal and the red test lead into the V terminal
4. Forward voltage will typically be 0.400 to 3.200V, and reverse voltage will be indicated by "OL"
5. Shorted devices will indicate near over voltage and an open device will indicate "OL" in both polarities

Capacitance Measurement

1. Set the Function Switch to the Capacitance position
2. Press the function button under "MENU" and press the button under "Cap"
3. Insert the black test lead into the COM terminal and the red test lead into the V terminal
4. The Capacitance reading will appear on the main display

DC Current Measurement

Do not take 20A current measurements for longer than 30 seconds as it may cause damage to the test leads and/or the meter.

1. For current measurements up to 5000 μ A DC, insert the red test lead into the μ A/mA terminal and set the function switch to the μ A position
2. For current measurements up to 500mA DC, insert the red test lead into the μ A/mA terminal and set the function switch to the mA position
3. For current measurements up to 20A DC, insert the red test lead into the 10A terminal and set the function switch to the 10A position
4. Insert the black test lead into the COM terminal
5. Press the function button under "MODE" to indicate "DC" on the display
6. The Current reading will appear on the main display

AC Current Measurement

Do not take 20A current measurements for longer than 30 seconds as it may cause damage to the test leads and/or the meter.

1. For current measurements up to 5000 μ A AC, insert the red test lead into the μ A/mA terminal and set the function switch to the μ A position
2. For current measurements up to 500mA AC, insert the red test lead into the μ A/mA terminal and set the function switch to the mA position
3. For current measurements up to 20A AC, insert the red test lead into the 10A terminal and set the function switch to the 10A position
4. Insert the black test lead into the COM terminal
5. Press the function button under "MENU" and use the left and right buttons to select "AC" on the display
6. Press the function button under "AC"
7. The Current reading will appear on the main display

Measuring AC and DC Signals

This meter is capable of displaying both AC and DC signal components (voltage or current) as two separate readings or one AC+DC (RMS) combined value.

The meter displays AC and DC combinations two different ways:

- DC displayed over AC (DC, AC)
- AC combined with DC (AC + DC)

To select the mode to use:

1. With the Function Switch set to either V, mV, A, mA, or μ A, press the function button under "MENU"
2. Use the directional buttons to select "AC+DC"
3. Press the function button under either "AC+DC" or "DC, AC"

Note: While in AC + DC mode you cannot use peak measurement, frequency, duty cycle, relative %, period measurements, or Min/Max and Relative readings.

General Functions

Maximum, Minimum, and Average Readings

The Max/Min Function captures the minimum, average, and maximum input values while displaying the elapsed time. The meter will beep when the input value goes below the recorded max or min value.

1. Press the Max/Min button while taking a measurement
2. The current measurement will continue to show on the main display while the Min, Average, and Max readings with their time stamps are shown on the secondary display
3. To stop recording data press the function button under "Stop"
4. Press the function button under "Restart" to discard the current recording and start a new session
5. Press the function button under "SAVE" to Save the current values
6. Press the function button under "CLOSE" to leave Max/Min Record Function without saving

Peak Value Function

The Peak Value Function operates similarly to the Max/Min Function.

1. Press the function button under "MENU"
2. Use the directional buttons to select either "CP" or "Peak"
3. Press the function button under "Peak" to start the Peak Value recording session
4. The current measurement will continue to show on the main display while the Min Peak, Average, and Max Peak readings with their time stamps are shown on the secondary display
5. To stop recording data press the function button under "Stop"
6. Press the function button under "Restart" to discard the current recording and start a new session
7. Press the function button under "SAVE" to Save the recorded values
8. Press the function button under "CLOSE" to leave Peak Value Function without saving

Relative Values

1. Press the function button under "MENU"
2. Use the directional buttons to select either "REL" or "Peak"
3. Press the function button under "REL" to start the recording session

AutoHold and Hold

Press the function button under "AutoHold" to activate the AutoHold function. AutoHold monitors the input signal and beeps when a new stable measurement is detected. A stable measurement is a user adjustable percentage that lasts for at least a second, that is selectable by pressing the function button under "SETUP". The AutoHold function filters out open lead conditions so the test leads can be moved between test points without triggering a display update. To freeze the display during any function, press the Hold button.

Help Function

The Help Function provides on-screen information about a button, menu, or selected function. While operating the meter, press the function button under "HELP" to open an information window that lists topics covering the functions and modifiers that are available. Press the Function Buttons under "Next" and "Prev" to scroll through topics. Press the function button under "More" or press the up and down buttons to scroll through the information a screen at a time.

Recording Data

Saving Single Records

Save a single record by pressing the function button under "SAVE", and then press the directional buttons to select the "Save" function. This can be done during any measurement function.

Saving Timed Records

The Record Saving function can collect data over a user-specified duration of time. The recording session will continue until the allocated memory is used, the batteries run out, the function switch is moved, or by pressing the function button under "STOP".

1. Press the function button under "SAVE"
2. Use the directional buttons to select the "RECORD" function
3. Press the function button under "RECORD"
4. To set the duration of time, select "Set Duration" with the directional buttons and press the function button under "EDIT"
5. Use the directional buttons to adjust the days, hours, and minutes
6. To set the intervals, select "Set Sample Interval" with the arrow buttons and press the function button under "EDIT"
7. Use the directional buttons to adjust the minutes and seconds
8. To begin the recording session, press the function button under "START"

Viewing Records

1. Press the function button under "SAVE"
2. Use the directional buttons to select the "View Measure" function
3. Press the function button under "VIEW"
4. Press the function button under "Next" or "Prev" to scroll through the records
5. Press the function button under "TREND" to display the recorded data in a trend-plot graph
6. Press the function button under "SUMMARY" to display the recorded data in summary mode
7. Press the function button under "DELETE" to delete the record
8. Press the function button under "CLOSE" to exit

Option Setup

To enter Option Setup, press the function button under "SETUP".

Restoring Settings to Factory Default

While in Option Setup, use the directional buttons to select "Reset". Press the function button under "RESET" and press "OK" to confirm.

Meter Info

While in Option Setup, use the directional buttons to select "Meter Info". This will list the serial number, model number, firmware version, calibration date, calibration counter, operator name, and company name.

Event Threshold Value

While in Option Setup, use the directional buttons to select "Instrument". Press the function button under "ENTER". Use the directional buttons to select "Event Threshold for Recording (AutoHOLD)" and press the function button under "Edit". Use the up and down buttons to adjust the event threshold values. Press the function button under "CLOSE" to save and exit.

Calibration

For service on this or any other REED product or information on other REED products, contact REED Instruments at info@reedinstruments.com.

Wireless Communication

While in Option Setup, use the directional buttons to select "Communicate" to initiate BlueTooth communication between the meter and your PC. You can wirelessly transfer all of the saved records this way.

Date and Time

The internal clock is used in the display as well for time stamping records.

1. While in Option Setup, use the directional buttons to select "Display"
2. Press the function button under "Date/Time"
3. Use the directional buttons to select either select "Set Date" or "Set Time" and press the function button under "EDIT"
4. Use the left and right buttons to select a digit to adjust, and press the up and down buttons to adjust the value
5. Press the function button under "OK" to save

Date and Time Format

You can adjust the format of the date and time which is displayed on the main display and on all records.

1. While in Option Setup, use the directional buttons to select "Display"
2. Press the function button under "Format"
3. Use the directional buttons to select "Numeric (Date/Time) Format"
4. Press the function button under "EDIT"
5. Select the decimal point, date format, and clock format

Auto Power Off

1. While in Option Setup, use the directional buttons to select "Display"
2. Use the directional buttons to select "Auto Power Off" and press the function button under "EDIT"
3. Use the up and down buttons to adjust the Auto Power Off delay, where zero disables the function
4. Press the function button under "OK" to save
5. Press the function button under "Close" to exit

Battery Replacement

1. Turn the meter off, remove the test leads, and place face down on a table
2. Remove the battery door assembly with a standard blade screwdriver
3. Replace the 7.4V battery, observing proper polarity
4. Reinstall the battery door assembly and screw

Fuse Replacement

1. Turn the meter off, remove the test leads, and place face down
2. Remove the battery door assembly with a standard blade screwdriver
3. Remove the battery and the battery seal to expose the back shell and the first fuse
4. Remove the back shell and the back shell seal to expose the two remaining fuses
5. Remove a fuse by gently prying one side out of its bracket
6. Be sure to only install the specified replacement fuse for this meter
7. Reinstall all of the parts, starting with the back shell seal, the back shell, the battery seal, the battery, and then the battery cover and screw
8. For assistance or if you have any questions please contact info@reedinstruments.com

For service on this or any other REED product or information on other REED products, contact REED Instruments at info@reedinstruments.com

