R5077

REED INSTRUMENTS

True RMS Digital Multimeter

WARRANTY 1 YEAR WARRANTY

Instruction Manual

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Introduction

Thank you for purchasing your REED R5077 True RMS Digital Multimeter. Please read the following instructions carefully before using your instrument. By following the steps outlined in this manual your meter will provide years of reliable service.

Product Quality

This product has been manufactured in an ISO9001 facility and has been calibrated during the manufacturing process to meet stated product specifications. If a certificate of calibration is required please contact the nearest authorized REED distributor or authorized Service Center. Please note an additional fee for this service will apply.

Safety

- Never attempt to repair or modify your instrument. Dismantling your product, other than for the purpose of replacing batteries, may cause damage that will not be covered under the manufacturer's warranty.
- Servicing should only be provided by an authorized service center.
- Do not use the meter or test leads if they look damaged.
- Do not use the meter around explosive gas, vapor, or in damp or wet environments.
- Do not switch the function dial while taking a measurement.
- Use the meter only as specified in this manual; otherwise, the protection provided by the meter may be impaired.
- Use caution when working near voltages above 60V DC or 30V ACrms, as such voltages pose a shock hazard.
- Use extreme caution when working with high voltages.
- Always discharge filter capacitors in power supplies and disconnect the power when making resistance, continuity or diode tests.
- Always turn off the power before opening the cover to replace the batteries.
- Always turn the function switch to the OFF position when the meter is not in use.
- Never operate the meter unless the battery cover is in place and fastened securely.

Safety Symbols:

	Caution		Alternating current
	Dangerous voltages.		Direct Current
	Double insulated		Warning
	Conform to EU directive		
	Conform to UL STD 61010-1, 61010-2-033, certified by CSA STD C22.2 No. 61010-1, 61010-2-033		
CAT III	Measurement category III is applicable to test and measure circuits connected to the distribution part of the building's low-voltage MAINS installation.		
UKCA	United Kingdom conformity Assessment		

Features

- Measures AC/DC voltage and current, frequency, resistance, capacitance and temperature
- Built-in non-contact voltage detector and rugged double molded plastic housing
- Diode check and continuity functions
- Relative and data hold functions
- Backlit LCD and low battery indicator

Included

- True RMS Digital Multimeter
- Test Leads
- Thermocouple Wire Probe (Type K)
- Batteries

Specifications

AC/DC Voltage

Range:	AC/DC: 9.999mV, 99.99mV, 999.9mV, 9.999V, 99.99V, 999.9V
Accuracy:	AC: 9.999mV, 99.99mV ±(1% rdg. + 3 dgt.) 999.9mV, 9.999V, 99.99V, 999.9V ±(0.8% rdg. + 3 dgt.) DC: 9.999mV, 99.99mV ±(0.7% rdg. + 8 dgt.) 999.9mV, 9.999V, 99.99V, 999.9V ±(0.5% rdg. + 3 dgt.)"
Resolution:	AC/DC: 0.001mV, 0.01mV, 0.1mV, 0.001V, 0.01V, 0.1V

AC/DC Current

Range:	AC/DC: 999.9µA, 999.9mA, 9.999A
Accuracy:	AC: 999.9µA ±(1.0% rdg. + 3 dgt.)
	999.9mA, 9.999A ±(1.2% rdg. + 3 dgt.)
	DC: 999.9µA ±(0.8% rdg. + 3 dgt.)
	999.9mA, 9.999A ±(1.0% rdg. + 3 dgt.)
Resolution:	AC/DC: 0.1µA, 0.1mA, 0.001A

Resistance

Range:	999.9Ω, 9.999KΩ, 99.99KΩ, 999.9KΩ, 9.999MΩ, 99.99MΩ
Accuracy:	999.9Ω, 9.999KΩ, 99.99KΩ, 999.9KΩ: ±(0.8% rdg. + 2 dgt.) 9.999MΩ: ±(1.5% rdg. + 3 dgt.) 99.99MΩ: ±(2.0% rdg. + 5 dgt.)"
Resolution:	0.1Ω, 0.001KΩ, 0.01KΩ, 0.1KΩ, 0.001MΩ, 0.01MΩ

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Capacitance

Range:	9.999nF, 99.99nF, 999.9nF 9.999µF, 99.99µF, 999.9µF, 9.999mF
Accuracy:	"9.999nF: (±4%+10 dgt.) 99.99nF, 999.9nF, 9.999µF, 99.99µF, 999.9µF: ±(4.0% rdg. + 5 dgt.) 9.999mF: ±(10% rdg.)"
Resolution:	0.001nF, 0.01nF, 0.1nF, 0.001µF, 0.01µF, 0.1µF, 0.001mF

Frequency

Range:	99.99Hz to 9.999MHz
Accuracy:	±(0.1% rdg. + 5 dgt.)
Resolution:	0.01Hz to 0.001MHz

Temperature

Range:	-40 to 1832°F (-40 to 1000°C)
Accuracy:	±(2.5% rdg. + 5 dgt.)°F ±(2.0% rdg. +5 dgt.)°C
Resolution:	1°F, 1°C

General Specifications

Range Selection:	Autoranging
True RMS:	Yes
Display:	9,999 count LCD Display
Display Hold:	Yes
Relative Mode:	Yes
Diode Test:	Yes
Backlit Display:	Yes
Continuity Check:	Audible signal if resistance ≤30Ω
Duty Cycle:	Yes (0.1 - 99.9%)
Non-Contact Voltage Detector:	Yes
Magnetic Hanging Strap Compatible:	Yes (R5900 sold separately)

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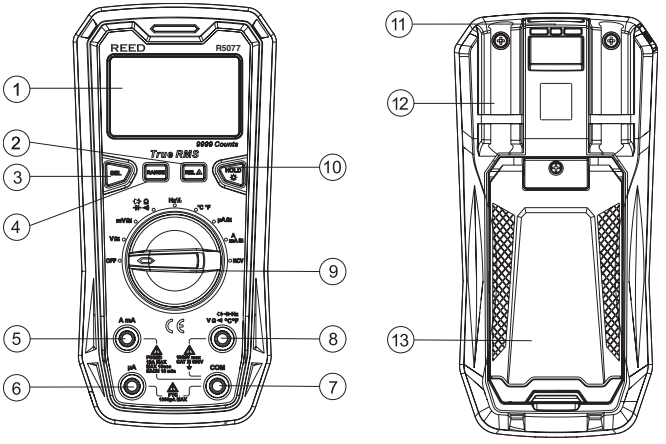
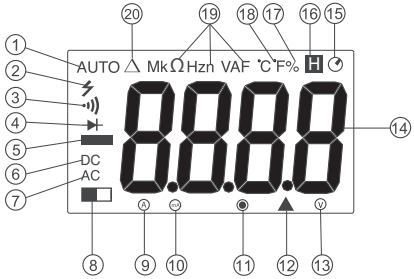
Kick Stand:	Yes
Auto Power Off:	Yes (after 15 minutes)
Power Supply:	3x AAA Batteries
Low Battery Indicator:	Yes
Fuse Protection:	Yes
Replaceable Test Leads:	Yes
Overvoltage Category:	CAT. III 600V
Product Certifications:	CE, UKCA, ETL
Operating Temperature:	32 to 104°F (0 to 40°C)
Storage Temperature:	14 to 122°F (-10 to 50°C)
Dimensions:	7.4 x 3.5 x 2.2" (187 x 88 x 56mm)
Weight:	14oz (400g)

Instrument Description



1. LCD Display
2. REL button
3. SEL button
4. RANGE button
5. mA/10A Input Terminal
6. uA Input Terminal
7. COM Input Terminal
8. All other Input Terminals
9. Function Dial
10. HOLD/Backlight Button
11. Hanging Strap Bracket
12. Probe Holder
13. Kickstand

Display Description



1. Automatic Range Indicator
2. Hazardous Voltage Indicator
3. Continuity Measurement Indicator
4. Diode Measurement Indicator
5. Polarity Indicator
6. DC Measurement Indicator
7. AC Measurement Indicator
8. Battery Status Indicator
9. Current Measurement Indicator (A)
10. Current Measurement Indicator (uA)
11. Connection Status Indicator
12. Warning Indicator
13. Voltage Measurement Indicator
14. Measured Value
15. Auto Power OFF Indicator
16. Hold Indicator
17. Percentage Indicator
18. Temperature Measurement Indicator
19. Measurement Mode Indicators
20. Relative Mode Indicator

Operating Instructions

Power ON/OFF

1. Rotate the function dial to any position to power on the meter. If the meter does not turn on, check the batteries. For details on battery and fuse replacement, refer to sections ''Battery replacement'' and ''Fuse replacement'' for details.
2. To power off the meter, turn the function switch to the OFF position.

AC /DC Voltage Measurements

1. Insert the black test lead banana plug into the negative (COM) input terminal and the red test lead banana plug into the positive (V/Ω) input terminal.
2. Turn the function dial to the V⁓ or the mV⁓ position.
3. Press the **SEL** button to select AC or DC mode.
4. The meter defaults to the Auto Range mode (Auto is displayed on LCD). Press the **RANGE** button to access the manual range mode.
5. Continuously press the **RANGE** button to toggle through the available ranges until the desired range is selected.
6. Press and hold the **RANGE** button to return to the Auto Range mode (Auto will be displayed on the LCD).
7. Measure the voltage by touching the test probe tips to the load in parallel.
8. Note the measured value.

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Warning: Do not input a voltage over 1000V, as this may damage the meter and pose a risk of electric shock.
If the voltage range is unknown, select the maximum range first, then adjust downward as needed. If "OL" appears on the LCD, this indicates the voltage is out of range.
The input impedance of the meter is 10MΩ. In high-impedance circuits, this may cause measurement errors. If the circuit impedance is 10kΩ or lower, the error is negligible (approximately 0.1%).
Exercise caution to avoid electric shock, particularly when measuring high voltages.
Before each use, verify the meter's functionality by measuring a known voltage.

AC/DC Current Measurements

1. Insert the black test lead into the COM input terminal and the red test lead into the A mA input terminal.
2. Turn the function dial to the uA or A mA position.
3. Press the **SEL** button to select AC or DC mode.
4. The meter defaults to the Auto Range mode (Auto is displayed on LCD). Press the **RANGE** button to access the manual range mode.
5. Continuously press the **RANGE** button to toggle through the available ranges until the desired range is selected.
6. Press and hold the **RANGE** button to return to the Auto Range mode (Auto will be displayed on the LCD).
7. Remove power from the circuit under test, then open up the circuit at the point where you wish to measure the current.
8. Touch the black test probe tip to the negative side of the circuit. Touch the red test probe tip to the positive side of the circuit.
9. Apply power to the circuit.
10. Note the measured value.

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Warning: Turn off the power supply to the circuit, confirm that the input terminals and dial positions are set correctly, then connect the meter to the circuit in series.
If the current range is unknown, start by selecting the maximum range and adjust downward as needed.
If the "mA/A" terminal becomes overloaded, the built-in fuse will blow and will need replacement.
Do not connect the test leads in parallel to any circuit while measuring current, as this may damage the meter and pose a risk to the user.
When measuring currents close to 10A, limit the measurement duration to less than 10 seconds, with an interval of at least 15 minutes between tests.

Resistance Measurements

1. Switch **OFF** the power to the device under test before taking any measurements.
2. Insert the black test lead banana plug into the negative (COM) input terminal and the red test lead banana plug into the positive (V/Ω) input terminal.
3. Turn the function dial to the Ω position.
4. Press the **SEL** Button to select Resistance as indicated by kΩ on the display. (without the audible continuity icon))) showing).
5. The meter defaults to the Auto Range mode (Auto is displayed on LCD). Press the **RANGE** button to access the manual range mode.
6. Continuously press the **RANGE** button to toggle through the available ranges until the desired range is selected.
7. Press and hold the **RANGE** button to return to the Auto Range mode (Auto will be displayed on the LCD).
8. Measure the resistance by touching the test probe tips to the load in parallel. It is best to disconnect one side of the part under test so the rest of the circuit will not interfere with the resistance reading.
9. Note the measured value. The display will indicate the proper decimal point and value. If the reading is out of range, the OL display icon will appear.

Continuity Measurements

1. Before testing, switch off the circuit's power supply and discharge all capacitors.
2. Insert the black test lead banana plug into the negative (COM) input terminal and the red test lead banana plug into the positive (V/Ω) input terminal.
3. Turn the function dial to the position.
4. Press the **SEL** button to select the Continuity as indicated by on the display.
5. Touch the test probe tips across the wire or circuit under test.
6. If the measured resistance exceeds 420Ω, the circuit is considered open, and the LCD will display “OL” with no sound from the buzzer. When the measured resistance is between 300Ω and 420Ω, the circuit has relatively high resistance. In this case, the buzzer remains silent, and a red LED indicator will illuminate. If the measured resistance is below 300Ω, the circuit is in good conductive status. The buzzer will beep continuously, accompanied by a green LED indicator.

Capacitance Measurements

1. Before testing, switch off the circuit's power supply and discharge all capacitors.
2. Insert the black test lead banana plug into the negative (COM) input terminal and the red test lead banana plug into the positive (V/Ω) input terminal.
3. Turn the function dial to the position.
4. Press the **SEL** button to select Capacitance as indicated by an F on the display.
5. Measure the capacitance by touching the test probe tips to the load in parallel.
6. Note the measured value.

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Warning: If the capacitor is shorted or the capacitance exceeds the meter's maximum range, "OL" will appear on the LCD.
For high capacitance measurements, allow a few seconds for the reading to stabilize.
Before measuring, discharge all capacitors, particularly high-voltage ones, to prevent damage to the meter and reduce the risk of electric shock.

Frequency Measurement

1. Insert the black test lead banana plug into the negative (COM) input terminal and the red test lead banana plug into the positive (V/Ω) input terminal.
2. Turn the function dial to the Hz/% position.
3. Press the **SEL** button to select Frequency as indicated by Hz on the display.
4. Measure the frequency by touching the test probe tips to the load.
5. Note the measured value.

Warning: Ensure that the output signal of the measurement is less than 30V; otherwise, the accuracy of the measurement may be compromised.

Diode Test

1. Insert the black test lead banana plug into the negative (COM) input terminal and the red test lead banana plug into the positive (V/Ω) input terminal.
2. Turn the function dial to the ⊣▶ position.
3. Press the **SEL** button to select Diode as indicated by ⊣▶ on the display.
4. Place the probes in contact with the two endpoints of the PN junction.
5. Note the measured value.
6. If the diode is open or the polarity is reversed, the LCD will display "OL." For a silicon PN junction, the normal reading is generally between 500mV and 800mV (0.5V–0.8V).

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Warning: Switch off the circuit's power supply and discharge all capacitors before testing the PN junction.
The test voltage for this measurement is approximately 4.0V at 1.5mA.

Duty Cycle Measurement

1. Insert the black test lead banana plug into the negative (COM) input terminal and the red test lead banana plug into the positive (V/Ω) input terminal.
2. Turn the function dial to the Hz/% position.
3. Press the **SEL** button to select Duty Cycle as indicated by % on the display.
4. Connect the test leads in parallel to both ends of the signal source (measuring range is ≤10Hz).
5. Note the measured value.

Warning: Ensure the output signal of the measurement is 1Vp-p, as higher voltages may affect measurement accuracy.

Temperature Measurement

1. Insert the supplied temperature probe into the negative (COM) input terminal and the red test lead banana plug into the positive (V/Ω) input terminal.
2. Turn the function dial to the °C °F position.
3. Place the temperature probe tip in contact with the device under test or leave the probe in open air to measure the ambient temperature.
4. Note the measured value.

Non-Contact Voltage Detector

Warning: Ensure the output signal of the measurement is 1Vp-p, as higher voltages may affect measurement accuracy.

1. To detect the presence of AC voltage or an electric field, turn the function dial to the “NCV” position. The meter will default to “EFLo” mode; press **SEL** to switch to “EFHi” mode if needed.
2. In EFLo mode, bring the front end of the meter near a socket or insulated wire with a voltage of approximately 24V ± 6V. When an electric field is detected, the buzzer will beep, the LED will flash, and segments on the display will appear. As the intensity of the electric field increases, more segments (up to “----”) will be displayed, and the beeping frequency will rise.
3. In EFHi mode, bring the front end of the meter close to a socket or insulated wire. When an electric field is detected, the buzzer will beep, the LED will flash, and the display will show segments indicating the field’s intensity. As the electric field intensity grows, additional segments (up to “----”) will light up, and the buzzer will beep more rapidly.
4. A diagram on the display will show the segment progression, indicating the intensity of the detected electric field.

Note: The detector is designed with high sensitivity. Static electricity or other sources of energy may randomly trip the sensor. This is normal operation.

Relative Mode

This function applies only to Voltage, Current, Temperature and Capacitance modes. In Relative mode a reference reading can be stored with which to compare subsequent readings. Press the **REL** button to store the displayed reading in memory, this becomes the reference. The symbol will be displayed when the Relative mode is active. Subsequent readings will now be compared to the stored reference (Displayed Reading = Measurement minus Reference). Press the **REL** button again to exit the Relative mode; the Relative symbol will switch off.

Data Hold

1. While taking a measurement, press the **HOLD** button to freeze the current reading on the LCD display.
2. While in this mode an "H" symbol will appear.
3. Press the **HOLD** button again to resume normal operation.

Auto Power Off

To preserve battery life, the meter is programmed to turn itself off after 15 minutes of inactivity. Press any button to delay the auto power-off function and resume normal operation. To disable the auto-off function, turn the dial to the OFF position. Then, press and hold the **SEL** button for more than 2 seconds as you turn the meter on.

Backlight

Press and hold the backlight button for 2 seconds to manually turn on the backlight. The backlight will automatically turn off after 30 seconds. To turn off the backlight manually before the 30-second timer elapses, press and hold the backlight button again.

Battery Replacement

1. Turn the function dial to the "OFF" position, disconnect the test leads from the input terminals, and remove the battery cover.
2. Use a small Phillips head screwdriver to remove the battery cover located on the back of the meter.
3. Replace the 3 x "AAA" batteries.
4. Secure the battery cover back and tighten the screw.

Fuse Replacement

1. Turn the function dial to the "OFF" position, disconnect the test leads from the input terminals, and remove the battery cover.
2. Use a small Phillips head screwdriver to remove the battery cover located on the back of the meter.
3. Replace the blown fuse with a new one (specifications: 10A/1000V, 6.35 x 32mm ceramic tube).
4. Secure the battery cover back and tighten the screw.

Applications

- Troubleshooting electrical systems in residential, commercial, and industrial settings
- Performing routine maintenance checks on electrical equipment
- Testing and diagnosing issues in various types of machinery and appliances
- Verifying electrical connections and installations for safety compliance
- Conducting repairs and maintenance on HVAC and automotive systems
- Supporting educational and laboratory environments for electronics training and experiments
- Assisting in general DIY electrical projects and repairs around the home
- R1000 Safety Test Lead Set
- CA-05A Medium Soft Carrying Case

Accessories and Replacement Parts

- R5400 Line Splitter
- R5900 Magnetic Meter Strap
- R2990 Thermocouple Adapter
- R2920 Surface Thermocouple Probe
- R2930 Right Angle Thermocouple Surface Probe
- R2940 Air/Gas Thermocouple Probe
- R2950 Immersion Thermocouple Probe
- R2960 Needle Tip Thermocouple Probe
- R1020 Fused Test Lead Set

Product Care

To keep your instrument in good working order we recommend the following:

- Store your product in a clean, dry place.
- Change the battery as needed.
- If your instrument isn't being used for a period of one month or longer please remove the battery.
- Clean your product and accessories with biodegradable cleaner. Do not spray the cleaner directly on the instrument. Use on external parts only.

Product Warranty

REED Instruments guarantees this instrument to be free of defects in material or workmanship for a period of one (1) year from date of shipment. During the warranty period, REED Instruments will repair or replace, at no charge, products or parts of a product that proves to be defective because of improper material or workmanship, under normal use and maintenance. REED Instruments total liability is limited to repair or replacement of the product. REED Instruments shall not be liable for damages to goods, property, or persons due to improper use or through attempts to utilize the instrument under conditions which exceed the designed capabilities. In order to begin the warranty service process, please contact us by phone at 1-877-849-2127 or by email at info@reedinstruments.com to discuss the claim and determine the appropriate steps to process the warranty.

Product Disposal and Recycling

Please follow local laws and regulations when disposing or recycling your instrument. Your product contains electronic components and must be disposed of separately from standard waste products.

Product Support

If you have any questions on your product, please contact your authorized REED distributor or REED Instruments Customer Service by phone at 1-877-849-2127 or by email at info@reedinstruments.com.

Please visit **www.REEDInstruments.com** for the most up-to-date manuals, datasheets, product guides and software.

REED INSTRUMENTS

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