

REED

Model R5008 Autoranging Multimeter



Instruction Manual

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Safety

The following safety information must be observed to insure maximum personal safety during the operation of this meter:

- Do not use the meter if the meter or test leads look damaged, or if you suspect that the meter is not operating properly
- Never ground yourself when taking electrical measurements. Do not touch exposed metal pipes, outlets, fixtures, or anything which might be a grounding potential
- Keep your body from grounding by wearing dry clothing, using rubber shoes, rubber mats, or any other approved insulating material
- Ensure that you isolate the circuit and that there is no electrical current running through it before you cut, unsolder, or break it. Small amounts of current can be dangerous
- Use caution when working above 60V DC or 30V AC RMS. Such voltages are a shock hazard
- When using the probes, keep your fingers behind the finger guards
- Measuring voltage which exceeds the limits of the Multimeter may damage the meter and expose the operator dangerous currents of electricity. Always recognize the meter's voltage limits as stated on the front of the meter.

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

Input Limits

Function	Maximum Input
V DC or V AC	600V DC, 600V AC
mA DC/AC	400mA DC/AC
A DC/AC	10A DC/AC (30 second max every 15 minutes)
Frequency, Resistance, Capacitance, Duty Cycle, Diode Test, Continuity	250V DC/AC
Temperature	250V DC/AC

Safety Symbols



This symbol adjacent to another symbol, terminal, or operating device, indicates that the operator must refer to an explanation in the Instruction Manual to avoid personal injury or damage to the meter.

WARNING

This WARNING symbol indicates a potentially hazardous situation, which if not avoided, could result in serious injury or death.

CAUTION

This CAUTION symbol indicates a potentially hazardous situation, which if not avoided, may result damage to the product.



This symbol advises the user that the terminal(s), marked as so, must not be connected to a circuit point at which the voltage, with respect to grounding, exceeds the stated amount of Volts (in this case 500 VAC or VDC).



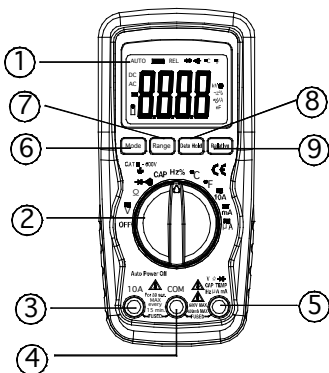
This symbol, adjacent to one or more terminals, identifies them as being associated with ranges that may, in normal use, be subjected to particularly hazardous voltages. For maximum safety, the meter and its test leads should not be handled when these terminals are energized.

Features



- Class 2, double insulation
- CAT. III 600V and UL approved
- 4000-digit LCD display with function indication
- Automatic, (-) negative polarity indication
- “OL” Overrange indication
- Low battery indication
- Measurement rate of 2 times per second
- Auto power off after approx. 15 minutes of inactivity

Instrument Description

1. 4000 count LCD
2. Function switch
3. 10A (Positive) input jack for 10A DC or AC measurements
4. COM (Negative) input jack
5. Positive input jack
6. MODE button
7. RANGE button
8. DATA HOLD button
9. RELATIVE button



Display Symbol Descriptions

	Continuity
BAT	Low Battery
	Diode
DATA HOLD	Data Hold
AUTO	Auto Ranging
AC	Alternating Current or Voltage
DC	Direct Current or Voltage

Specifications

Technical

Safety Rating:	Complies with EN61010-1, Cat. III 600V
Insulation:	Class 2, Double insulation
Display:	4000 digit LCD
Polarity:	Automatic, (-) negative polarity indication
Overrange:	"OL" mark indication
Low Battery Indication:	The "BAT" is displayed when the battery voltage drops below the operating level
Measurement Rate:	2 times per second, nominal
Auto Power Off:	Meter automatically shuts down after approx. 15 minutes of inactivity
Operating Environment:	0 to 50°C (32 to 122°F) at < 70 % RH
Storage Temperature:	-20 to 60°C (-4 to 140°F) at < 80 % RH
Maximum Height:	2000m
Pollution Degree:	2
Power Supply:	One 9V battery , NEDA 1604, IEC 6F22
Dimensions:	150 (H) x 70 (W) x 48 (D) mm
Weight:	Approx. 255g

Accuracy

Accuracy is given at 18 to 28°C (65 to 83°F), less than 70% RH

DC Voltage (Auto-ranging)

Range	Resolution	Accuracy
400.0mV	0.1mV	±0.5% of rdg ±2 dgts
4.000V	1mV	±1.2% of rdg ±2 dgts
40.00V	10mV	
400.0V	100mV	
600V	1V	±1.5% of rdg ±2 dgts

Input Impedance: 7.8MΩ

Maximum Input: 600V DC or 600V AC RMS

AC Voltage (Auto-ranging except 400mV)

Range	Resolution	Accuracy
400.0mV	0.1mV	$\pm 1.5\%$ of rdg ± 15 dgts
4.000V	1mV	$\pm 1.2\%$ of rdg ± 3 dgts
40.00V	10mV	$\pm 1.5\%$ of rdg ± 3 dgts
400.0V	100mV	
600V	1V	$\pm 2.0\%$ of rdg ± 4 dgts

Input Impedance: 7.8M Ω

Frequency Range: 50 to 400Hz

Maximum Input: 600V DC or 600V AC RMS

DC Current (Auto-ranging for μ A and mA)

Range	Resolution	Accuracy
400.0 μ A	0.1 μ A	$\pm 1.0\%$ of rdg ± 3 dgts
4000 μ A	1 μ A	$\pm 1.5\%$ of rdg ± 3 dgts
40.00mA	10 μ A	
400.0mA	100 μ A	
10A	10mA	$\pm 2.5\%$ of rdg ± 5 dgts

Overload Protection: 0.5A / 250V and 10A / 250V Fuse

Maximum Input: 400mA DC or 400mA AC RMS on μ A / mA ranges,
10A DC or AC RMS on 10A range

AC Current (Auto-ranging for μA and mA)

Range	Resolution	Accuracy
400.0 μA	0.1 μA	$\pm 1.5\%$ of rdg ± 5 dgts
4000 μA	1 μA	$\pm 1.8\%$ of rdg ± 5 dgts
40.00 mA	10 μA	
400.0 mA	100 μA	
10A	10 mA	$\pm 3.0\%$ of rdg ± 7 dgts

Overload Protection: 0.5A / 250V and 10A / 250V Fuse

Frequency Range: 50 to 400 Hz

Maximum Input: 400 mA DC or 400 mA AC RMS on μA / mA ranges,
10A DC or AC RMS on 10A range

Resistance (Auto-ranging)

Range	Resolution	Accuracy
400.0 Ω	0.1 Ω	$\pm 1.2\%$ of rdg ± 4 dgts
4.000 $\text{k}\Omega$	1 Ω	$\pm 1.0\%$ of rdg ± 2 dgts
40.00 $\text{k}\Omega$	10 Ω	$\pm 1.2\%$ of rdg ± 2 dgts
400.0 $\text{k}\Omega$	100 Ω	
4.000 $\text{M}\Omega$	1 $\text{k}\Omega$	
40.00 $\text{M}\Omega$	10 $\text{k}\Omega$	$\pm 2.0\%$ of rdg ± 3 dgts

Input Protection: 250V DC or 250V AC RMS

Capacitance (Auto-ranging)

Range	Resolution	Accuracy
4.000 nF	1 pF	$\pm 5.0\%$ of rdg ± 50 dgts
40.00 nF	10 pF	$\pm 5.0\%$ of rdg ± 7 dgts
400.0 nF	0.1 nF	$\pm 3.0\%$ of rdg ± 5 dgts
4.000 μF	1 nF	
40.00 μF	10 nF	
200.0 μF	0.1 μF	$\pm 5.0\%$ of rdg ± 5 dgts

Input Protection: 250V DC or 250V AC RMS

Frequency (Auto-ranging)

Range	Resolution	Accuracy
9.999Hz	0.001Hz	±1.5% of rdg ±5 dgts
99.99Hz	0.01Hz	
999.9Hz	0.1Hz	
9.999kHz	1Hz	±1.2% of rdg ±3 dgts
99.99kHz	10Hz	
999.9kHz	100Hz	
9.999MHz	1kHz	±1.5% of rdg ±4 dgts

Sensitivity: >0.5V RMS while ≤1MHz; >3V RMS while >1MHz

Overload Protection: 250V DC or AC RMS

Duty Cycle

Range	Resolution	Accuracy
0.1%~99.9%	0.1%	±1.2% of rdg ±2 dgts

Pulse Width: >100us, <100ms;

Frequency Width: 5Hz – 150kHz

Sensitivity: >0.5V RMS

Overload Protection: 250V DC or AC RMS

Temperature

Range	Resolution	Accuracy
-20 ~+760°C	1°C	±3% of rdg ±5°C/9°F
-4 ~+1400°F	1°F	

Sensor: Type K Thermocouple

Overload Protection: 250V DC or AC RMS

Diode Test

Test current	Resolution	Accuracy
0.3mA typical	1 mV	$\pm 10\%$ of rdg ± 5 dgts

Open Circuit Voltage: 1.5V DC typical

Overload Protection: 250V DC or AC RMS

Audible Continuity

Audible Threshold: Less than 150 Ω ; Test current: <0.3mA

Overload Protection: 250V DC or AC RMS

Operating Instructions

WARNING: Risk Of Electrocutation!

High-voltage circuits, both AC and DC, are very dangerous and should be measured with great care.

1. Always turn the function switch to the OFF position when the meter is not in use. This meter has Auto OFF that automatically shuts the meter OFF if 15 minutes has elapsed between uses.
2. If "OL" appears in the display during a measurement, the measured value exceeds the range you have selected. Change to a higher range.

NOTE: On some low AC and DC voltage ranges, with the test leads not connected, the display may show a random, changing reading. This is normal and is caused by the high-input sensitivity. The reading will stabilize and give a proper measurement when connected to a circuit.

MODE Button

Press the MODE button to switch between Diode/Continuity, DC/AC and Hz/%Duty for the respected function

RANGE Button

When the meter is first turned on, it automatically goes into AutoRanging. This automatically selects the best range for the measurements being made, and is generally the best mode for most measurements. For measurement situations requiring that a range be manually selected, perform the following:

1. Press the RANGE button. The “AUTO” display indicator will turn off.
2. Press the RANGE button to step through the available ranges until you select the range you want.

Press and hold the RANGE button for 2 seconds to exit the ManualRanging mode and return to AutoRanging

DATA HOLD Button

Press the DATA HOLD button to pause the reading on the indicator. HOLD will appear on the display to indicate the function. Press the DATA HOLD button to return to normal operation.

RELATIVE Button

The relative measurement feature allows you to make measurements relative to a stored reference value. A reference value (Voltage, Current, etc.) can be stored and measurements can be made in comparison to that value. The displayed value is the difference between the reference value and the measured value.

1. Perform any measurement as described in the operating instructions.
2. Press the RELATIVE button to store the reading that is on the screen. The “REL” indicator will appear on the display.
3. The display will now indicate the difference between the stored value and the measured value.
4. Press the RELATIVE button to return to normal operation.

DC Voltage Measurement

CAUTION: Do not measure DC voltages if a motor on the circuit is being switched ON or OFF. Large voltage surges may occur that can damage the meter.

1. Set the function switch to the V DC position (“mV” will appear in the display).
2. Insert the black test lead banana plug into the negative (COM) jack and the red test lead banana plug into the positive (V) jack.
3. Touch the test probe tips to the circuit under test. Be sure to observe the correct polarity (red lead to positive, black lead to negative).
4. Read the voltage in the display. The display will indicate the proper decimal point and value. If the polarity is reversed, the display will show (-) minus before the value.

AC Voltage Measurement

WARNING: Risk of Electrocution. The probe tips may not be long enough to contact the live parts inside some 240V outlets for appliances because the contacts are recessed deep in the outlets. As a result, the reading may show 0 volts when the outlet actually has voltage on it. Make sure the probe tips are touching the metal contacts inside the outlet before assuming that no voltage is present.

CAUTION: Do not measure AC voltages if a motor on the circuit is being switched ON or OFF. Large voltage surges may occur that can damage the meter.

1. Set the function switch to the V AC position.
2. Insert the black test lead banana plug into the negative (COM) jack and the red test lead banana plug into the positive (V) jack.
3. Touch the test probe tips to the circuit under test.
4. Read the voltage in the display. The display will indicate the proper decimal point, value and symbol (AC, V, etc.).

