WARRANTY POLICY

Your digital multimeter has been tested and conforms to our rigid requirements on performance and durability. It is guaranteed to be free of defects in workmanship, materials and construction for a period of 2 years. If this product should fail during normal use within the first 3 months from the date of purchase, ELENCO® will repair or replace the unit at no cost. For the remainder of the warranty period, a nominal service charge is required to cover shipping and handling.

When returning merchandise for repair, please include proof of purchase, a brief letter of explanation of problem and sufficient packing material. Before returning any merchandise, please call our service department at (847) 541-3800 to obtain a return authorization number (RA).

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OPERATOR'S INSTRUCTION MANUAL

M-2625A

AUTO RANGING DIGITAL MULTIMETER

with Temperature Probe

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Table 12. Capacitance Detailed Accuracy Specifications

Range	Resolution	Accuracy	Note
40nF	10pF	±(3.5% rdg + 10)	Overload protection: 250V DC/AC rms
400nF	100pF	±(3.0% rdg + 5)	
4μF	1nF		
40μF	10nF		
400μF	100nF	±(20% rdg + 5)	
4000μF	1μF		

Table 13. Diode Detailed Accuracy Specifications

Range	Description	Note
	Display reads approximate forward voltage of diode	Test current: 1mA ±0.6mA Test voltage: approx. 2.8V

Overload protection: 250V DC/AC rms

Table 14. Frequency & Duty Cycle Detailed Accuracy Specifications

Range	Resolution	Accuracy	Sensitivity	Note
9.999Hz - 10MHz	0.001Hz - 10kHz	±(0.1% rdg + 5)	≤100kHz: 1.5V rms >100kHz: 5V rms	Overload protection: 250V rms
0.1% - 99.9%	0.1%	±(2.5% rdg + 5)	1.5V rms	Duty cycle: 10Hz-1kHz

Table 15. Temperature Detailed Accuracy Specifications

Range	Accuracy	Note
32°F - 104°F (0°C – 40°C)	±5°F; ±3°C (using built-in temperature sensor)	±5°F (room temperature)
–50°C – 200°C	±(1.5% rdg + 3)	
–58°F – 392°F	±(1.5% rdg + 5)	
200°C – 700°C	±(2.0% rdg + 3)	
392°F – 1292°F	±(2.0% rdg + 5)	

Overload protection: 250V DC/AC rms

Table 8. AC Voltage Detailed Accuracy Specifications

Range	Resolution	Accuracy	Note
400mV	0.1mV	±(1.5% rdg + 8)	Frequency response: 50Hz - 400Hz
4V	1mV	±(1.0% rdg + 5)	Input resistance: 10MΩ
40V	10mV		
400V	100mV		Overload protection: 600VDC or 600VAC rms
600V	1V	±(1.5% rdg + 5)	

Table 9. DC Current Detailed Accuracy Specifications

Range	Resolution	Accuracy	Note
400μA	0.1μA	±(2.0% rdg + 5)	Overload protection: Fast fuse 0.5A/250V and fast fuse 10A/250V. 10A for 15sec. maximum Input voltage drop: ≤0.4V
4000μA	1μA		
40mA	10μA	±(1.5% rdg + 5)	
400mA	100μA		
4A	1mA	±(2.0% rdg + 5)	
10A	10mA		

Table 10. AC Current Detailed Accuracy Specifications

Range	Resolution	Accuracy	Note
400μA	0.1μA	±(2.5% rdg + 3)	Overload protection: Fast fuse 0.5A/250V and fast fuse 10A/250V. 10A for 15sec. maximum Input voltage drop: ≤0.4V Frequency response: 50Hz - 400Hz
4000μA	1μA		
40mA	10μA	±(2.0% rdg + 5)	
400mA	100μA		
4A	1mA	±(2.5% rdg + 5)	
10A	10mA		

Table 11. Resistance Detailed Accuracy Specifications

Range	Resolution	Accuracy	Note
400Ω	100mΩ	±(1.0% rdg + 5)	Overload protection: 250V DC/AC rms
4kΩ	1Ω		
40kΩ	10Ω		
400kΩ	100Ω		
4MΩ	1kΩ	±(2.0% rdg + 5)	
40MΩ	10kΩ		

1. Introduction

This series LCD auto ranging and auto power-off digital multimeter is a portable, compact, 3¾ digit multimeter. It is ideally suited for field, lab, shop, car, and home.

CAUTION: Read, understand and follow all Safety Rules and Operating Instructions in this manual before using this product.

2. Safety Information

Use the meter only as specified in this manual. Otherwise, the protection provided by the meter may be impaired. Refer to safety information in Table 1.

Table 1. Safety Information

⚠ Warning

To avoid possible electric shock or personal injury, follow these guidelines:

- Do not use the meter if it is damaged. Before you use the meter, inspect the case. Look for cracks or missing plastic. Pay particular attention to the insulation surrounding the connectors.
- Inspect the test leads for damaged insulation or exposed metal. Check the test leads for continuity. Replace damaged test leads before you use the meter.
- The RESPONSIBLE BODY shall be made aware that, if the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- Do not use the meter if it operates abnormally. Protection may be impaired. When in doubt, have the meter serviced.
- Do not operate the meter around explosive gas, vapor, or dust.
- Do not apply more than the rated voltage, as marked on the meter, between terminals or between any terminal and earth ground.
- Before use, verify the meter's operation by measuring a known voltage.
- When measuring current, turn off circuit power before connecting the meter in the circuit. Remember to place the meter in series with the circuit.

Table 1. Safety Information (continued)

Warning

- When servicing the meter, use only specified replacement parts.
- Use caution when working above 30VAC rms, 42V peak, or 60VDC. Such voltages pose a shock hazard.
- The finger or any part of your body shall not extend beyond the barrier of the test probe when measuring.
- Avoid working alone.
- When using the probes, keep your fingers behind the finger guards on the probes.
- Connect the common test lead before you connect the live test lead. When you disconnect test leads, disconnect the live test lead first.
- Remove test leads from the meter with the battery door or portions of the cover removed or loosened.
- To avoid false readings which could lead to possible electric shock or personal injury, replace the batteries as soon as the low battery indicator ( ) appears.
- Use only two "AA" batteries (NEDA 1604, IEC 6F22, or equivalent), properly installed in the meter case, to power the meter.
- To avoid the potential for fire or electrical shock, do not connect the thermocouples to electrically live circuits.

Caution

To avoid possible damage to the meter or to the equipment under test, follow these guidelines:

- Disconnect circuit power and discharge all high-voltage capacitors before testing resistance, continuity, diodes, or capacitance.
- Use the proper terminals, function, and range for your measurements.
- Before measuring current, check the meter's fuses and turn power OFF to the circuit before connecting the meter to the circuit.

10. General Specifications

Display: 3¾ digit LCD with a maximum reading of 4000.

Range Control: Auto range or manual range control.

Polarity: Automatic negative polarity indication.

Zero Adjustment: Automatic

Overrange Indication: Only the "OL" display.

Low Battery: The symbol " " is displayed when the battery voltage is below approximately 2.4V.

Auto Power Off: 10 minutes after stopping the switch or no key-input, the meter automatically enters the power off mode.

Safety Standards: ETL / CE EMC/LVD. The meter is up to the standards of IEC1010 Pollution Degree 2; overvoltage category III

Operating Environment: Temperature 32° to 104°F (0° to 40°C), humidity <80% RH.

Storage Environment: Temperature –4° to 140°F (–20° to 60°C), humidity <90% RH.

Power: Two 1.5V "AA" batteries.

Dimensions: 6 1/2" [165mm] (H) x 3 17/64" [83mm] (W) x 1 29/64" [37mm] (D)

Weight: Approximately 9.2oz. / 260g. (including batteries)

11. Detailed Accuracy Specifications

Accuracies are ± (% of reading + number in last digit) at 73°F ±41°F/23°C ±5°C, <75% RH.

The detailed accuracy specifications are shown in Tables 7 to 18.

Table 7. DC Voltage Detailed Accuracy Specifications

Range	Resolution	Accuracy	Note
400mV	0.1mV	±(0.5% rdg + 5)	Input resistance: 10MΩ Overload protection: 600VDC or 600VAC rms.
4V	1mV		
40V	10mV		
400V	100mV		
600V	1V	±(0.8% rdg + 5)	

Replacing the Fuses

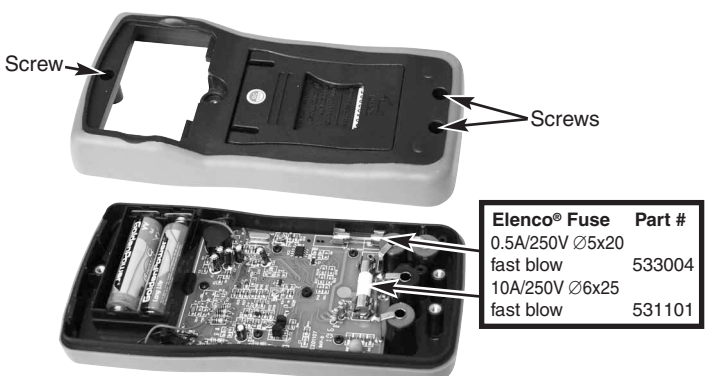
⚠ Warning

To avoid electrical shock or damage to the meter, only use replacement fuses ∅5x20 0.5A/250V FAST or ∅6x25 10A/250V FAST.

1. Turn the Function Rotary Switch to the **OFF** position and remove the test leads from the terminals. Remove the battery cover as shown in Figure 18. Referring to Figure 19, examine or replace the meter's fuses as follows:
2. Using a screwdriver, unscrew the three screws on the back case. Remove it by lifting it up from the bottom and carefully separating the top part from the two mounting tabs.
3. Remove either fuse by gently prying one end loose, then sliding the fuse out of its bracket.
4. Install ONLY the specified replacement fuses with the amperage, voltage, and speed ratings:

∅5x20 0.5A/250V FAST or ∅6x25 10A/250V FAST.

5. Reinstall the back case. Secure the back case by turning the screws clockwise.



Elenco® Fuse	Part #
0.5A/250V ∅5x20 fast blow	533004
10A/250V ∅6x25 fast blow	531101

Figure 19. Fuse Replacement

3. Safety Symbols

Symbols used on the meter and in this manual are explained in Table 2.

Table 2. International Electrical and Relative Symbols

~	AC (Alternating Current)	⚠	Important Information
⎓	DC (Direct Current)	⚡	Caution, risk of electric shock
CE	European Safety Standard	⏚	Earth Ground
⧈	Double Insulated	+ −	Low Battery Indicator
	The symbol indicating separate collection for electrical and electronic equipment.	c ETL US	U.S. Safety Standard

4. Front Plate of Meter

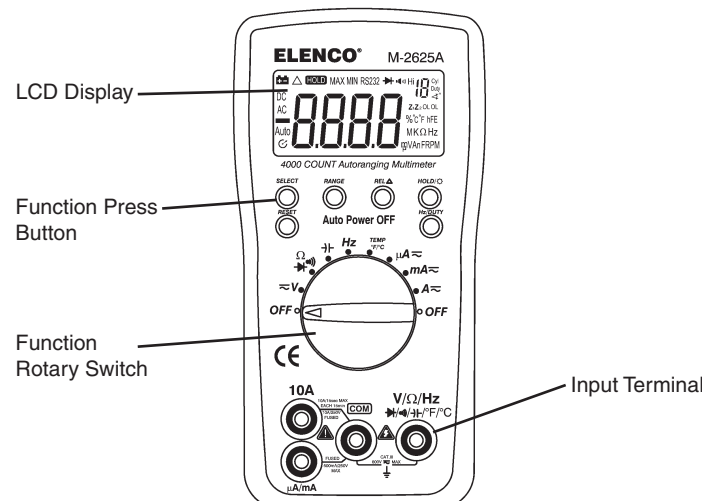


Figure 1. Front plate of the meter

Input Terminal

About terminal function refer to Table 3 and Figure 2.

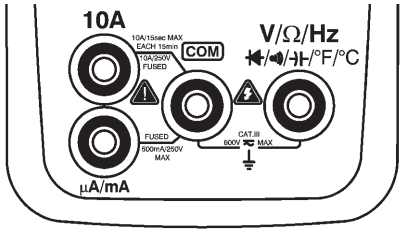


Figure 2. Input Terminal

Table 3. Input Terminal

Terminal	Function Description
V/Ω/Hz °F/°C	Volts, ohm, diode, frequency, DUTY, temperature and capacitance measurement, and testing for continuity terminal
μA/mA	Microampere current, milliampere current measurement terminal
COM	Common terminal for all measurements
10A	Ampere current measurement terminal

9. Maintenance

General Maintenance

Periodically wipe the case with a damp cloth and mild detergent. Do not use abrasives or solvents. Dirt or moisture in the terminals can affect readings. Clean the terminals as follows:

1. Turn the meter off and remove all test leads.
2. Shake out any dirt that may be in the terminals.
3. Soak a new swab with alcohol. Work the swab around each terminal.

Replacing the Batteries

Replace the batteries with two “AA” batteries (R6P) or equivalent.

⚠Warning

To avoid false readings, which could lead to possible electric shock or personal injury, replace the batteries as soon as the low battery indicator (+ −) appears.

Replace the batteries as follows (refer to Figure 18):

1. Turn the Function Rotary Switch to the **OFF** position and remove the test leads from the terminals.
2. Remove the battery cover by using a screwdriver to turn the battery door screw counterclockwise.
3. Replace the batteries. Turn the screw clockwise to secure the cover.

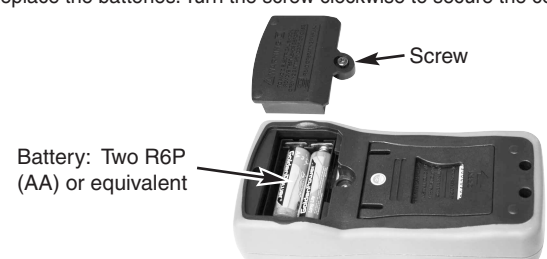


Figure 18. Battery Replacement

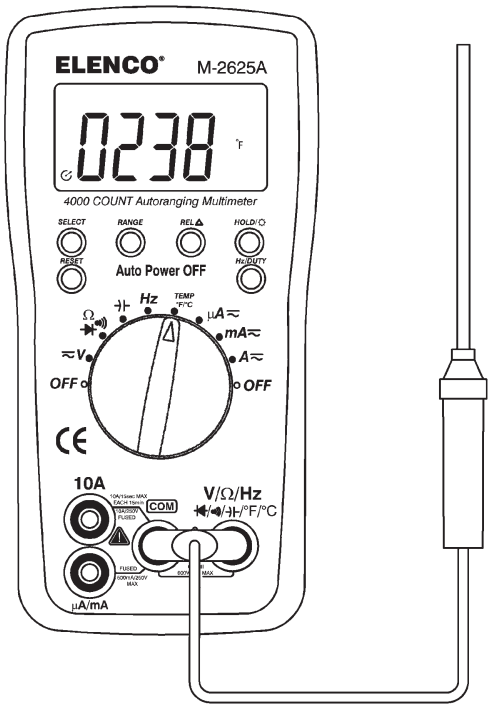


Figure 17. Temperature Measurement

Function Rotary Switch

About function rotary switch refer to Table 4 and Figure 3.

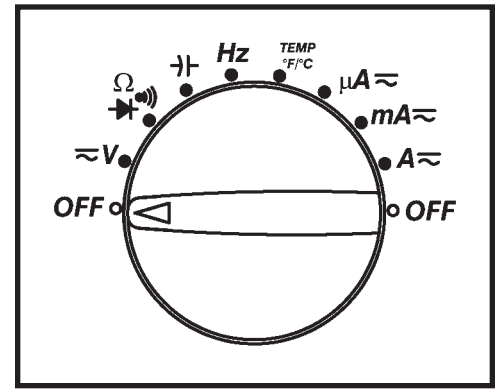


Figure 3. Function Rotary Switch

Position of Switch	Function
≂V	DC/AC voltage measurement
Ω	Resistance measurement, diode test, testing for continuity
⊣⊢	Capacitance measurement
Hz	Frequency measurement / Duty cycle measurement

Table 4. Function Rotary Switch Symbols

Table 4. Function Rotary Switch Symbols (continued)

Position of Switch	Function
°F/°C	Temperature measurement
μA≂	DC/AC microampere current measurement
mA≂	DC/AC milliampere current measurement
A≂	DC/AC ampere current measurement
OFF	Power off position

Function Press Button

About press function button refer to Figure 4.

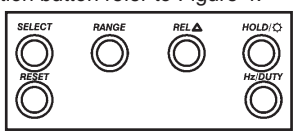


Figure 4. Function Press Button

1. **SELECT** (state choice)
There are several functions at one rotary switch position; press the **SELECT** button to select the desired function: **≂V**, Ω, ⊣◄, Hz, TEMP °F/°C, **μA≂**, **mA≂**, **A≂** range for AC or DC voltage, AC or DC current, resistance, diode, or audible continuity measurement.

2. **RANGE** (range selection)
With the power on and the meter on the auto range mode, press the **RANGE** button to select the desired measurement range manually. The range goes from minimum to maximum by pressing the **RANGE** button multiple times, and returns to minimum after reaching the maximum range. Pressing and holding the **RANGE** button for over two seconds returns the meter to auto range. This button does not affect the frequency, capacitance, diode or continuity range.

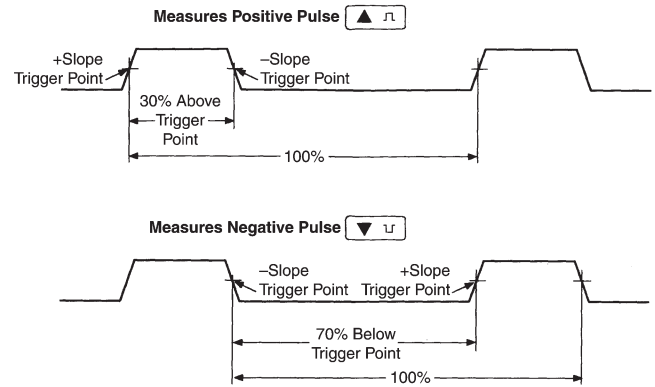


Figure 16. Duty Cycle Measurement

Measuring Temperature

⚠ Warning

To avoid the potential of fire or electrical shock, do not connect the thermocouples to electrically live circuits.

To measure temperature, proceed as follows:

1. Turn on the meter, then set up the meter as shown in Figure 17.
2. Set the Function Rotary Switch to the TEMP °F/°C position (then, the "°F" and "↻" symbols are indicated on the display).
3. Plug the positive leg (+) of the type K thermocouples into the V/Ω/Hz terminal and the negative leg (–) into the **COM** terminal and read the value on the display. The range of the TP-03 thermocouples is –58°F~+1292°F.
4. Unplugging the thermocouples will display the ambient temperature at the meter terminals.

Measuring Duty Cycle

Duty cycle (or duty factor) is the percentage of time a signal is above or below a trigger level during one cycle (Figure 16).

To measure duty cycle, proceed as follows:

1. Turn on the meter, then set up the meter as shown in Figure 15.
2. Insert the black test lead into the **COM** terminal and the red test lead into the V/Ω/Hz terminal.
3. Set the Function Rotary Switch to the **Hz** position. Then press **Hz/DUTY** once to select DUTY Cycle measurement (then, a "%" symbol is indicated on the display).
4. Connect the test leads to the circuit under test. The measured value is shown on the display.

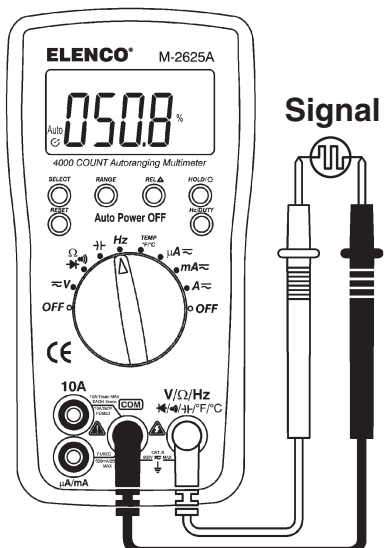


Figure 15. Duty Cycle Measurement

3. **REL Δ** (relative measurement)
Press the **REL Δ** button to use the relative measuring function and a "Δ" symbol appears on the LCD. The result of the relative measurement is the difference between the measuring value and the reference value. The reference value is produced the same as the momentary value by press the **REL Δ** button. Press the **REL Δ** button again to exit this function and the "Δ" symbol disappears from the display. This button does not affect the frequency, duty cycle, diode and continuity test functions.

4. **HOLD/☼** (data hold / backlight)
Press this button for less than 2 seconds and the meter will enter the data hold mode and the "**HOLD**" symbol will appear on the LCD. The value shown on the display will stay at its current reading while this function is active. Pressing the button again will exit the HOLD mode and the "**HOLD**" symbol will disappear. As a data hold function, this button does not button does not have any effect on the diode and continuity test functions.

The secondary function of this button is to enable the LCD backlight feature. If you press the button for more than two seconds, the backlight will illuminate. If you press the button again for more than two seconds, the backlight will turn off. The backlight will turn off automatically after eight seconds have elapsed.

5. **Hz/DUTY** (frequency and duty cycle measurement switch button)
When you make a Frequency and Duty Cycle measurement, AC voltage, or AC current measurement, press this button to switch between the Hz or duty cycle test mode.

6. **RESET** (reset button)
Press this button to clear all values and to restart the meter.

LCD Display

About function rotary switch refer to Table 5 and Figure 5.

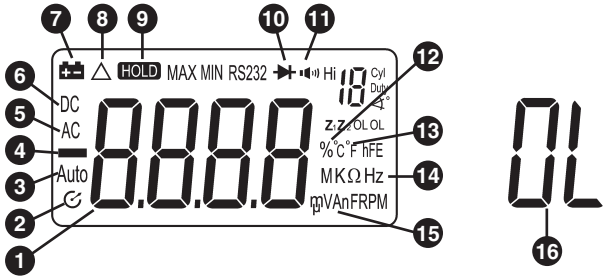


Figure 5. LCD Display

Table 5. LCD Display Symbols

Sequ. No.	Symbol	Description
1	**8.8.8.8**	The display digit group
2		Auto power off indicator
3	**Auto**	Auto range indicator
4	**–**	Negative symbol
5	**AC**	AC (Alternating Current) indicator
6	**DC**	DC (Direct Current) indicator
7		Battery power is weakening
8		Relative measurement
9	HOLD	Data hold
10		Diode symbol
11		Audible continuity function indicator
12	**%**	Percent symbol
13	**°C °F**	Temperature measurement

Measuring Frequency

Frequency is the number of cycles a signal completes each second. The meter measures the frequency of a voltage or current signal by counting the number of times the signal crosses a threshold level each second.

To measure frequency, proceed as follows:

1. Turn on the meter, then set up the meter as shown in Figure 14.
2. Insert the black test lead into the **COM** terminal and the red test lead into the **V/Ω/Hz** terminal.
3. Set the Function Rotary Switch to the **Hz** position (then, the "Hz" is shown on the display).
4. Connect the test leads to the circuit under test. The meter auto ranges to one of the frequency ranges, then the measured value is shown on the display.

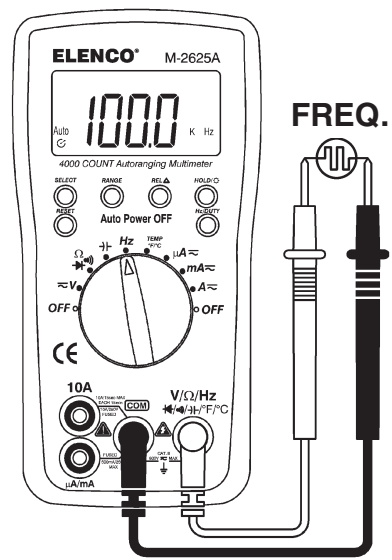


Figure 14. Frequency Measurement

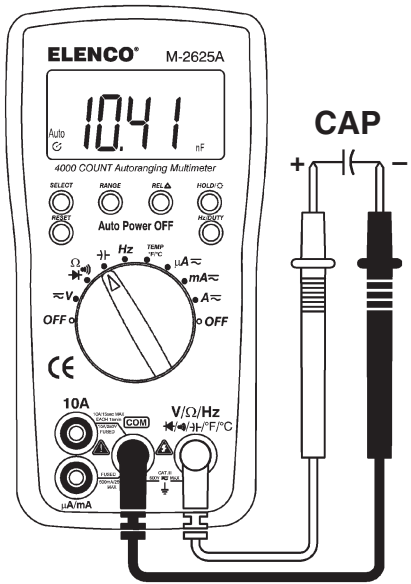


Figure 13. Capacitance Measurement

Table 5. LCD Display Symbols (continued)

Sequ. No.	Symbol	Description
14	**Ω / KΩ / MΩ** **Hz / KHz / MHz**	Resistance units Frequency units
15	**mV / V** **nF / μF** **μA / mA / A**	Voltage units Capacitance units Current units
16	OL	Overload

5. Power On Option

To turn off the Auto Power Off function, press and hold any button (except RESET) while turning the selector knob to any range position. The Auto Power Off indicator will disappear.

6. Auto Power Off

When the meter has been on for 10 minutes without any action from the user, the meter will automatically turn off. To restore power to the meter, turn the rotary switch to a different position, push any button, or restart the meter.

7. Measurement Range

A measurement range determines the maximum measurement value. Most of the functions of the meter have more than one range.

1. **It is important to select the correct range**
   - If the range is too small, "OL" shows on the display for overload.
   - If the range is too large, the value of the reading will be very small with less resolution.

2. **Auto range and manual range options**
   - In the auto range mode, the meter automatically selects the best range for the input detected.
   - In the auto range mode, press the **RANGE** button to enter the manual range and select the desired range.

- To return to the auto range setting, press and hold the **RANGE** button for 2 seconds. The **Auto** icon will appear on the display. You may also rotate the selector dial to another position and back again to return to auto range.

3. **Enter or exit manual range mode**
   - Press the **RANGE** button to select the manual range mode and the **Auto** icon disappears. Each press of the **RANGE** button increases the range. When the maximum range is reached, the meter reverts to the lowest range.
   - Press and hold the **RANGE** button for more than two seconds to return to the autorange mode and the **Auto** icon will appear on the display.

8. Making Measurements

Preparation

Checking the Battery Voltage

Rotate the Function Rotary Switch to any position away from the OFF position. The battery voltage is adequate when the indication is clear and the " " symbol is not on the display.

If the " " symbol appears on the display, or nothing shows on the display at all, follow the battery replacement procedure shown in related items in this manual and replace with new batteries specified.

Measuring Voltage

Voltage is the difference in electrical potential between two points. The polarity of AC (alternating current) voltage varies over time, while the polarity of DC (direct current) voltage is constant.

⚠ Danger ⚠

To avoid the danger of electric shock, never make measurements on a circuit over 600V AC/DC (electrical potential to ground 300V DC/AC). Do not operate the Function Rotary Switch during measurement. Do not make a measurement when opening the battery cover and the meter case.

Keep the following in mind while doing a continuity test:

- Even with the test leads shorted, the indicated value may not be "0". This is because of the resistance of the test leads and not a fault. If necessary, you can press the **REL△** button to automatically subtract its value, then "0" will be indicated.

Measuring Capacitance

Caution

To avoid possible damage to the meter or to the equipment under test, disconnect the circuit power and discharge all high-voltage capacitors before measuring capacitance. Use the DC voltage function to confirm that the capacitor is indeed discharged.

Capacitance is the ability of a component to store an electrical charge. The unit of capacitance is the farad (F). Most capacitors are in the nanofarad (nF) to microfarad (μF) range.

The meter measures capacitance by charging the capacitor with a known current for a known period of time according to the measuring capacitance:

Measuring capacitance <4μF..... Measuring time is about 2 seconds
Measuring capacitance <40μF..... Measuring time is about 7 seconds
Measuring capacitance <100μF..... Measuring time is about 30 seconds

To measure capacitance, proceed as follows:

1. Turn on the meter, then set up the meter as shown in Figure 13.
2. Insert the black test lead into the **COM** terminal and the red test lead into the V/Ω/Hz terminal.
3. Set the Function Rotary Switch to the ⊣⊢ position (then, "AUTO" and "nF" symbols are indicated on the display).
4. Connect the test leads to both ends of the capacitor under test, then the measured value is shown on the display. If the capacitor is polarized, connect the red test lead to the positive lead and the black test lead to the negative lead.

The following are some tips for measuring capacitance:

- To improve the measurement accuracy of small value capacitors, press the **REL△** button with the test leads open to subtract the residual capacitance of the meter and leads.

Note: Open-circuit voltage between measuring terminals is approximately 1.5V (measuring current approximately 1.5mA).

Testing for Continuity

> ## Caution
> **To avoid possible damage to the meter or to the equipment under test, disconnect the circuit power and discharge all high-voltage capacitors before testing for continuity.**

Continuity is the presence of a complete path for current flow. The continuity test features a beeper that sounds if a circuit is complete (the resistance less than 120Ω approx.). The beeper allows you to perform quick continuity tests without having to watch the display.

The continuity function detects intermittent opens and shorts lasting as little as 1 millisecond (0.001 second). These brief contacts cause the meter to emit a short beep. Refer to Figure 12 for continuity testing setup instructions.

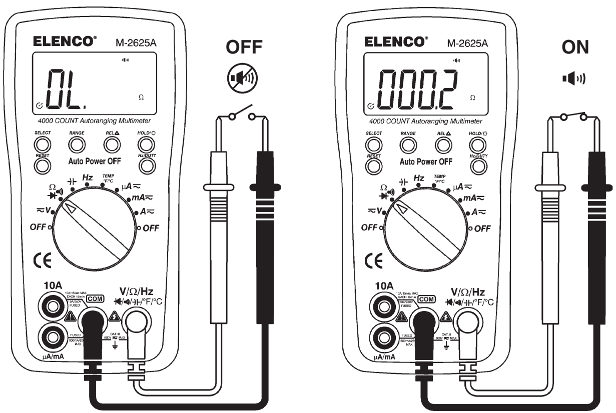


Figure 12. Continuity Test

Measuring DC Voltage

1. Turn on the meter, then set up the meter to measure DC volts as shown in Figure 6.
2. Insert the black test lead into the **COM** terminal and the red test lead into the V/Ω/Hz ⧏/◀))/⊣⊢/°F/°C terminal.
3. Set the Function Rotary Switch to the **≂V** position (then, “AUTO” and “mV” symbols are indicated on the display).
4. Connect the black test lead to the negative side of the circuit under test and the red test lead to the positive side of the circuit. The measured value is indicated on the display. If you connect the test leads to the opposite polarity, the “–” symbol appears on the display.

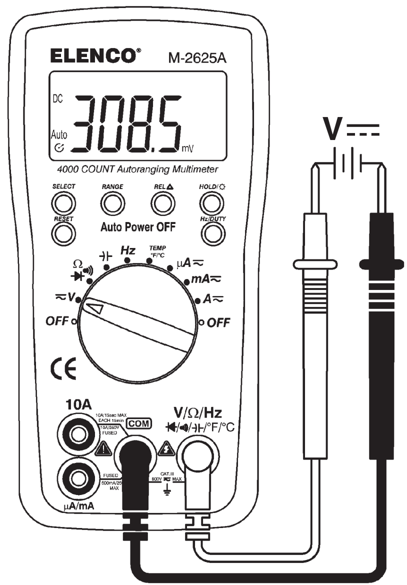


Figure 6. DC Voltage Measurement

Measuring AC Voltage

1. Turn on the meter, then set up the meter to measure AC volts as shown in Figure 7.
2. Insert the black test lead into the **COM** terminal and the red test lead into the $\frac{V/\Omega/Hz}{\text{⊣◀)⊣/°F/°C}}$ terminal.
3. Set the Function Rotary Switch to the **≈V** position and press **SELECT** to select the AC voltage measuring mode (then, "AUTO", "AC" and "V" symbols are indicated on the display).
4. Connect the test leads to the circuit under test, then the measured value is indicated on the display.
5. When measuring voltage less than 400mV, press the **RANGE** button to switch to manual range mode and select the AC 400mV range. Doing so will provide a better resolution for your measurement.
6. You can press the **Hz/DUTY** button to read the signal frequency or duty cycle under measurement from the display.

Testing Diodes

Caution

To avoid possible damage to the meter or to the equipment under test, disconnect the circuit power and discharge all high-voltage capacitors before testing diodes.

Use the diode test to check diodes, transistors, silicon controlled rectifiers (SCRs), and other semiconductor devices. The test sends a current through a semiconductor junction, then measures the junction's voltage drop. A typical junction drops 0.5V to 0.8V.

To test a diode out of a circuit, set up the meter as shown in Figure 11. In a circuit, a similar diode should still indicate a forward-bias reading of 0.5V to 0.8V; however, the reverse-bias reading can vary depending on the resistance of other pathways between the probe tips.

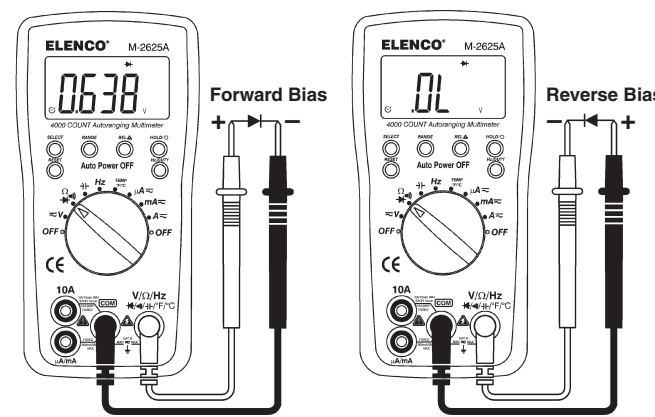


Figure 11. Diode Test

1. To measure resistance, turn on the meter, then set up the meter as shown in Figure 10.
2. Insert the black test lead into the **COM** terminal and the red test lead into the V/Ω/Hz terminal.
3. Set the Function Rotary Switch to the position (then, "AUTO", "", "OL", and "MΩ" symbols are indicated on the display).
4. Connect the test leads to both ends of the resistance under test, then the measured value is shown on the display.

Keep the following in mind when measuring resistance:

- Because the meter's test current flows through all possible paths between the probe tips, the measured value of a resistor in a circuit is often different from the resistor's rated value.
- The test leads can add 0.1Ω to 0.2Ω of error to resistance measurements. To test the leads, touch the probe tips together and read the resistance of the leads. If necessary, you can press the REL△ button to automatically subtract its value.

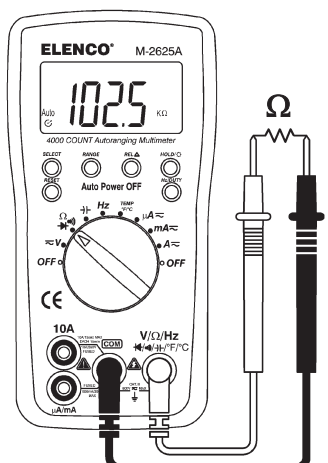


Figure 10. Resistance Measurement

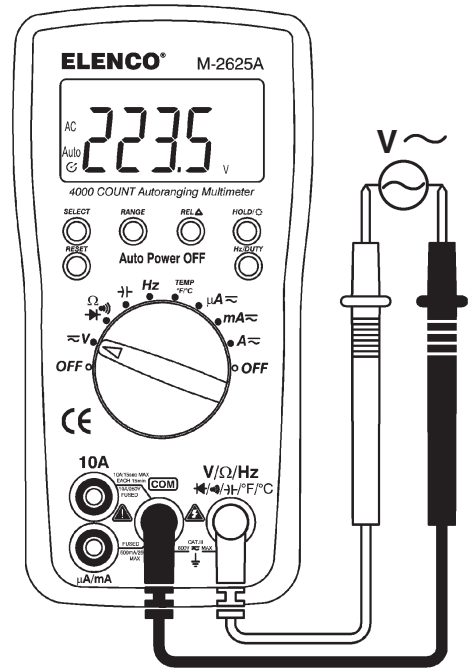


Figure 7. AC Voltage Measurement

Note: When taking a measurement of less than 20mV at the 400mV AC range, the measurement value cannot be indicated correctly. Even if shorted, the input line at the 4V AC range, 1 ~ 3 digits may remain indicated. In that case, by pressing the REL△ button, "0" will be indicated.

Measuring Current

⚠ Warning

Never attempt an in-circuit current measurement where the open-circuit potential to earth is greater than 300V. You may damage the meter or be injured if the fuse blows during such a measurement.

Caution

To avoid possible damage to the meter or to the equipment under test, check the meter's fuses before measuring current. Use the proper terminals, function, and range for your measurement. Never place the probes across (in parallel with) any circuit or component when the leads are plugged into the current terminals. Maximum measurement time allowed at the 10A current range function is 15 seconds. If you carry on making a measurement continuously over 15 seconds, it can cause an erroneous measurement and damage the meter.

⚠ Danger

Do not operate the Function Rotary Switch during measurement. Do not make a measurement when opening the battery cover or the meter case.

Current is the flow of electrons through a conductor. To measure current, you must open the circuit under test, then place the meter in series with the circuit.

To measure AC or DC current, proceed as follows:

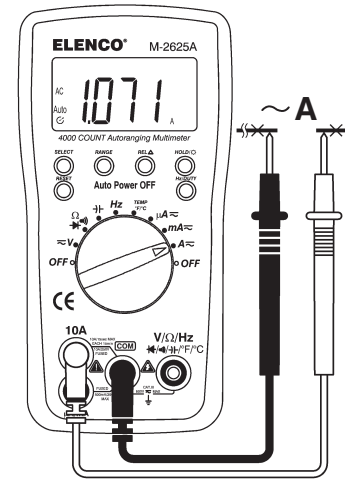


Figure 9. AC Current Measurement (continued)

Measuring Resistance

Caution

To avoid possible damage to the meter or to the equipment under test, disconnect the circuit power and discharge all high-voltage capacitors before measuring resistance.

Resistance is an opposition to current flow. The unit of resistance is the ohm (Ω). The meter measures resistance by sending a small current through the circuit.

Note: To avoid blowing the meter's 500mA fuse, use the **mA** terminal only if you are sure the current is less than 400mA.

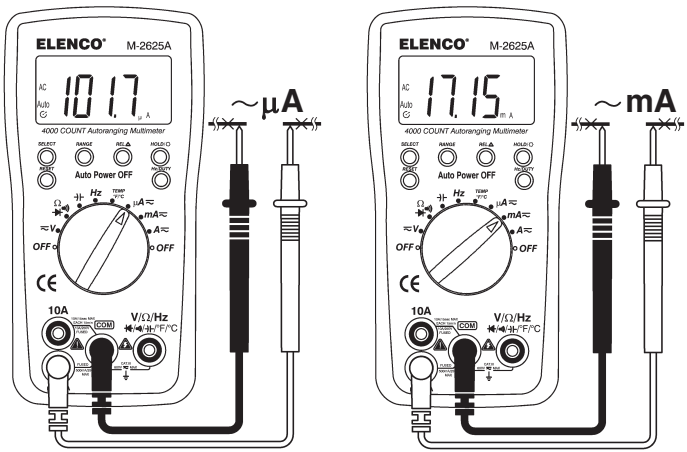


Figure 9. AC Current Measurement

Measuring DC Current

1. **Turn off power to the circuit. Discharge all high-voltage capacitors.**
2. Turn on the meter, then set up the meter to measure DC current as shown in Figure 8.
3. Insert the black test lead into the **COM** terminal and the red lead into an input appropriate for the measurement range as shown in Table 6.
4. Connect the black test lead to the negative side of the circuit under test and the red test lead to the positive side of the circuit so the meter is in series with the circuit.
5. Turn the on the power for the circuit under test.
6. The measured value is indicated on the display.

If you connect the test leads to the reverse polarities, a "–" symbol will be shown on the display.

Note: To avoid blowing the meter's 500mA fuse, use the **mA** terminal only if you are sure the current is less than 400mA.

Table 6. Current Measurement

Rotary Switch	Input	Ranges
μA≂	μA / mA	400μA / 4000μA
mA≂	μA / mA	40mA / 400mA
A≂	10A	4A / 10A

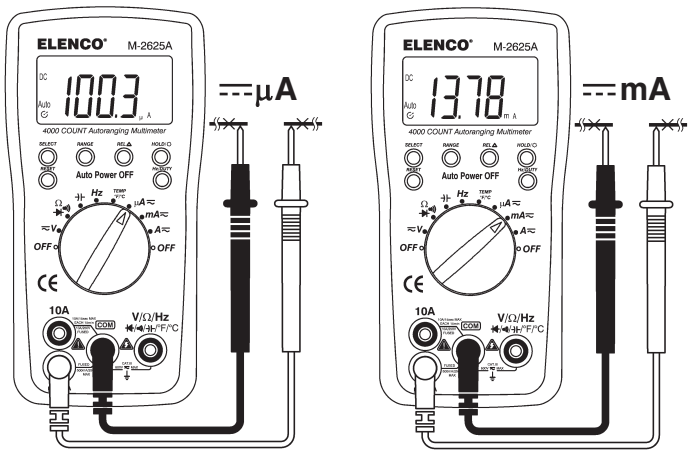


Figure 8. DC Current Measurement

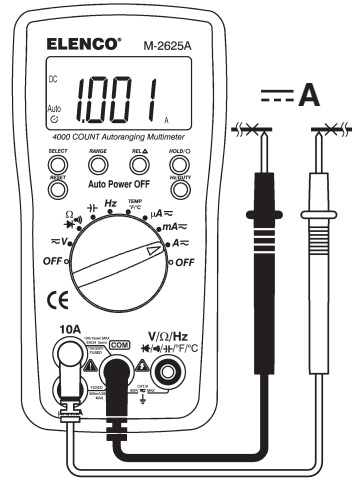


Figure 8. DC Current Measurement (continued)

Measuring AC Current

1. **Turn off power to the circuit. Discharge all high-voltage capacitors.**
2. Turn on the meter, then set up the meter to measure AC current as shown in Figure 9.
3. Insert the black test lead into the **COM** terminal and the red lead in an input appropriate for the measurement range as shown in Table 6.
4. Connect the test leads to the circuit under test so the meter is in series with the circuit.
5. Set the meter to AC mode by pressing the **SELECT** button (then, "AUTO" "AC" and "μA", "mA", or "A" symbols are indicated on the display).
6. Turn on the power to the circuit under test.
7. The measured value is shown on the display.