Model: Q 1073A

Auto Ranging True RMS Pro Digital Multimeter

Instruction Manual



Features

- True RMS AC measurement 6000 count reverse backlit LCD Autoranging
- Frequency counter to 10MHz Capacitance measurement Fused 10A input
- \bullet Temperature mode (°C/°F) \bullet Test socket LED lights \bullet Continuity and diode test
- Internal rechargeable lithium battery
 Range hold & relative mode
 Data hold
 - Wireless USB charging adaptor Cat III 1000V/Cat IV 600V

The Q1073A Digital Autoranging Multimeter is fully tested and calibrated before leaving the production lines.

In addition to the standard digital multimeter features, the meter also offer:

- Non-contact Voltage Detector for safely senses electrical sources;
- Live wire detection
- Input Jack Indicators to remind users to plug-in the correct jacks;
- Frequency Measurement; and
- Temperature Measurement.
- Vertical Alignment Display which provide large viewing angles, fast response, sharp contrast and easily read under strong light, and
- inductive charging which is environmental friendly and convenience to use.

With careful use, the Meter will provide years of reliable service.

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Read Before Use – Safety Information

Warning

To possible electrical shock, fire, personal injury and ensure safety operation and service of the equipment, please follow these guidelines:

- · Read the instruction before use and follow all safety instructions.
- Use the equipment only as specified in the instruction card; otherwise, the equipment's safety features may not protect you.
- · Do not use the equipment and/or the accessory if they look damaged and / or wet.
- · Do not use the Product if it operates incorrectly.
- Do not use the equipment just before, during or just after an electrical storm (electrical shock / high energy overvoltage!). Please make sure that your hands, your shoes, your clothing, the floor, switches and switching components are dry.
- Never use the equipment if it just brought from a place with great temperature difference.
- · Do not use the equipment around explosive gas or vapor.
- · Limit operation to the specified measurement category, voltage, or amperage ratings.
- Do not exceed the Measurement Category (CAT) rating of the lowest rated individual component of a Product, probe, or accessory
- Avoid to use the equipment in the environment with strong magnetic fields, strong electrostatic fields and strong RF fields.
- Comply with local and national safety codes. Use personal protective equipment (approved rubber gloves, face protection, and flame-resistant clothes) to prevent shock and arc blast injury where hazardous live conductors are exposed.
- Do not touch voltages > 30 V ac rms, 42 V ac peak, or 60 V dc.
- · Keep fingers behind the finger guards on the probes.
- · Use only current probes, test leads, and adapters supplied with the Product.
- Connect the common test lead before the live test lead and remove the live test lead before the common test lead.
- · Disable the Product if it is damaged.
- Only use probes, test leads, and accessories that have the same measurement category, voltage, and amperage ratings as the Product.
- The battery door must be closed and locked before you operate the Product.
- · Remove all probes, test leads, and accessories before the battery door is opened.
- Replace the batteries when the low battery indicator shows to prevent incorrect measurements.
- Do not apply more than the rated voltage, between the terminals or between each

terminal and earth ground.

- · Measure a known voltage first to make sure that the Product operates correctly.
- Use the correct terminals, function, and range for measurements.
- Do not use test leads if they are damaged. Examine the test leads for damaged insulation, exposed metal, or if the wear indicator shows. Check test lead continuity.
- Do not touch the probes to a voltage source when the test leads are connected to the current terminals.
- Do not use test leads if they are damaged. Examine the test leads for damaged insulation and measure a known voltage.
- Remove the batteries if the equipment planned to be stored for long period or if stored in temperatures above 50 °C. If the batteries are not removed, battery leakage can damage the Product.
- Personal injury or damage to the equipment can occur if you attempt to make a measurement with a lead in an incorrect terminal.
- A "A Warning" statement identifies hazardous conditions and actions that could cause bodily harm or death.
- A "<u>A</u> Caution" statement identifies conditions and actions that could damage the equipment or the object under test.

Symbol	Meaning
	Direct Current
~	Alternating Current
<u> </u>	Earth ground
	Double insulated
C €	Conforms to European Union directives.
\land	Risk of Danger
•1))	Continuity test or continuity beeper tone
-	Diode
—(—	Capacitance

SYMBOLS

Symbol	Meaning
CAT III	IEC Overvoltage Category III
	CAT III equipment is designed to protect against
	transients in equipment in fixedequipment installations,
	such as distribution panels, feeders and short branch
	circuits, and lighting systems in large buildings.
CAT IV	IEC Overvoltage Category IV
	CAT IV equipment is designed to protect against
	transients from the primary supply level, such as an
	electricity meter or an overhead or underground utility
	service.

THE METER

METER STRUCTURE





- 1) NCV Sensor
- 2) Flashlight
- 3) Holster
- 4) Display
- 5) Charging Indicators
- 6) Push Buttons

- 7) Rotary Switch
- 8) Input Jacks
- 9) NCV indicators
- 10) Battery Compartmen
- 11) Inductive Charging Position

CHARGER STRUCTURE



- 1) USB port
- 2) Indicator Error is happened
- 3) Indicator Charging

DISPLAY



item	Symbol	Description			
1	0))	Meter is ready for continuity test			
2	NCV	Meter is ready for non-contact voltage detecting			
3		Meter is ready for diode test			
4	MIN	Minimum reading is displaying			
5		Measurement units			
	V	Volt (unit of voltage)			
	mV	Millivolt			
	A	Amperes (unit of current)			
	mA	Milliamp			
	μA	Microamp			
	Ω	Ohm (unit of resistance)			
	kΩ	Kilohm			
	MΩ	Megaohm			
	Hz	Hertz (unit of frequency)			
	kHz	Kilohertz			
	MHz	Megahertz			
	F	Farad (unit of capacitance)			
	nF	Nanofarad			
	μF	Microfarad			
	mF	Millifarad			
6	18888	ain display digits			
	Canel, Canel, Canel, Canel	□L - input is out of range			
		EF - Meter is ready for NCV detection			
		LiuE - Meter is for Live detection			
7		Temperature unit			
	°C	Degree Celsius			
	l°F	Degree Fahrenheit			
8	MAX	Maximum reading is displaying			
9	T-RMS	Meter is ready for measuring true RMS value			
10	AUTO	Meter is in auto-ranging mode			
11	REL	Meter is in relative mode (Meter is displaying th			
		present value minus the stored value)			
12	ĒÐ	Low battery power			

item	Symbol	Description			
13	H	Display Hold is active			
14	AC	Measuring AC			
15		Negative sign			
16	DC	Measuring DC			
17	4	Dangerous Voltages			

PUSH BUTTONS

Button	Mode	Function	Access	
SELECT Any		Selects alternate measurement functions on a rotary switch setting	Press once to select the next function	
		Switch on/off the flashlight	Hold down to switch on Holde down again to switch off	
REL	Any	Switch on/off the relative mode	Press once to enter the mode Press again to exit the relative mode	
		Remark: REL will be displayed whe The measured value will switch on Display of relative mode = Actual measuring value	en relative mode is on be stored when relative mode is e - stored value	
RANGE	At Auto ranging mode	Toggles between Auto and Manual Range modes.	Press once to switch to manual ranging.	
	At Manual	Select ranges manually	Press to switch to next range	
	ranging mode	Return to Auto ranging	Hold down to return to Auto ranging	
	AUTO will be di	splayed when Meter is in Auto ranging mode		
HOLD	Any	Display HOLD	Press to freeze the displayed value Press again to release the display	
		Switch on/off Display Backlight	Hold down to switch on Holde down again to switch off	

OPERATING THE METER

A Warning

To avoid electric shock, fire or personal injury:

- Connect the common testlead before the live testlead and remove the live test lead before the common testlead.
- Disconnect power and discharge all high-voltage capacitors before you
 measure resistance, continuity, capacitance, or a diode junction.
- Always disconnect the connection between the testing leads and the circuit under test and remove testing leads away from the input terminals of the Meter after measurement.

Tips : The Meter have input jack indicators to advise the connect input jack for the selected function.

A. MEASURING DC VOLTAGE

A Warning

- For safety, be sure to measure a known voltage befre using the instrument on an unknown circuit.
- To avoid electric shock, fire, personal injury or damages to the Meter from electric shock, please do not attempt to measure voltages higher than 1000V.



Set up to measure DC Voltage

- 1) Insert the testleads as showing in the above figure;
- 2) Turn the rotary switch to the Volt or millivolt range;
- 3) Connect the testleads across with the object being measured;
- 4) The measured value shows on the display;
- If needed, press must be switch to manual ranging, press again to change the range selected. Hold down the same button to return to auto ranging.

B. MEASURING AC VOLTAGE

- For safety, be sure to measure a known voltage befre using the instrument on an unknown circuit.
- To avoid electric shock, fire, personal injury or damages to the Meter from electric shock, please do not attempt to measure voltages higher than 1000V.
- 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.



- 1) Insert the testleads as showing in the above figure;
- 2) Turn the rotary switch to the Volt or millivolt range;
- Press to switch to AC mode;
- 4) Connect the testleads across with the object being measured;
- 5) The measured value shows on the display;
- If needed, press again to switch to manual ranging, press again to change the range selected. Hold down the same button to return to auto ranging.

C. MEASURING DC CURRENT

- If the fuse burns out during measurement, the Meter may be damaged or the operator himsel f may be hurt. To avoid possible damage to the Meter or to the equipment under test, check the Meter's fuses before measuring current. Use proper terminals, function, and range for the measurement. Never place the testing leads in parallel with any circuit or component when the leads are plugged into the current terminals.
- When the measured current is between 5A-10A, continuous measurement 10 seconds and interval more than 15 minutes.



- Turn off power to the circuit being test. Discharge all high voltage capacitors;
- 2) Insert the testleads as showing in the above figure;
- 3) Turn the rotary switch to the Ampere, Milliamp or MIcroamp range;
- Open the circuit path to be tested and connect the testleads to the break of the circuit;
- 5) The measured value shows on the display;
- If needed, press read to switch to manual ranging, press again to change the range selected. Hold down the same button to return to auto ranging.

D. MEASURING AC CURRENT

- If the fuse burns out during measurement, the Meter may be damaged or the operator himsel f may be hurt. To avoid possible damage to the Meter or to the equipment under test, check the Meter's fuses before measuring current. Use proper terminals, function, and range for the measurement. Never place the testing leads in parallel with any circuit or component when the leads are plugged into the current terminals.
- When the measured current is between 5A-10A, continuous measurement 10 seconds and interval more than 15 minutes.



- Turn off power to the circuit being test. Discharge all high voltage capacitors;
- 2) Insert the testleads as showing in the above figure;
- 3) Turn the rotary switch to the Ampere, Milliamp or MIcroamp range;
- 4) Press **we** to switch to AC mode;
- Open the circuit path to be tested and connect the testleads to the break of the circuit;
- 6) The measured value shows on the display
- If needed, press need to switch to manual ranging, press again to change the range selected. Hold down the same button to return to auto ranging.

E. MEASURING RESISTANCE

A Warning

 To avoid electric shock, do not test on circuits or devices with 60V DC or 30V rms AC.



- 1) Insert the testleads as showing in the above figure;
- 2) Turn the rotary switch to the Ω range;
- 3) Connect the testleads across with the object being measured;
- 4) The measured value shows on the display
- If needed, press must be switch to manual ranging, press again to change the range selected. Hold down the same button to return to auto ranging.

Note :

- The testleads can add 0.1Ω to 0.3Ω 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 use the relative (REL) mode to automatically subtract this value.
- The measured value of a resistor in a circuit is often different from the resistor's rated value.
- The resistance function can produce enough voltage to forward-bias silicon diode or transistor junctions, causing them to conduct. If this is suspected, press rate to apply a lower current in the next higher range. If the value is higher, use the higher value.

F. CONTINUITY TEST

A Warning

 To avoid electric shock, do not test on circuits or devices with 60V DC or 30V rms AC.



Set up to check Continuity

- 1) Insert the testleads as showing in the above figure;
- 2) Turn the rotary switch to the $\Omega \rightarrow \leftarrow \bullet i$ range;
- 3) Press witch to continuity mode;
- 4) Connect the testleads across with the object being measured;
- 5) The measured value shows on the display.

G. DIODE TEST

- To avoid electric shock, do not test on circuits or devices with 60V DC or 30V rms AC.
- Use the diode test to check diodes, transistors, and other semiconductor devices. The diode test sends a current through the semicondutor junction, then measure the voltage drop across the junction. A good silicon junction drops between 0.5V and 0.8V.



- 1) Insert the testleads as showing in the above figure;
- 2) Turn the rotary switch to the $\Omega \rightarrow \bullet \bullet$ •••) range;
- 3) Press witch to continuity mode;
- 4) Connect the testleads across with the object being measured;
- 5) The measured value shows on the display.

H. MEASURING TEMPERATURE



Set up to measure temperature

- 1) Insert the testleads as showing in the above figure;
- 2) Turn the rotary switch to the $-(- \circ C \circ F range;$
- Press witch to select °C mode, press one more to switch to °F mode;
- 4) Connect the testleads across with the object being measured;
- 5) The measured value shows on the display.
- Note: The included temperature probe can only be used with temperature 250°C below.

I. MEASURING FREQUENCY

A Warning

 To avoid electric shock, do not test on circuits or devices with 60V DC or 30V rms AC.



Set up to measure Frequency

J. MEASURING CAPACITANCE

- To avoid electric shock, do not test on circuits or devices with 60V DC or 30V rms AC.
- Use the dc voltage function to confirm that the capacitor is discharged.
- To ensure accuracy, the Meter inside is discharged against the tested capacitor. This process will be quite slow.



- 1) Insert the testleads as showing in the above figure;
- 2) Turn the rotary switch to the --|(--range;
- 3) Connect the testleads across with the object being measured;
- 4) The measured value shows on the display.

K. LIVE WIRE DETECTION

A Warning

- · Always hold the Product behind the tactile barrier.
- Do not input voltage over 1000V.



Set up to find live wire

- 1) Insert the red testleads as showing in the above figure;
- 2) Turn the rotary switch to the NCV Live range;
- 3) Insert the red probe to the AC power socket;
- 4) "-", "---", "----" will be displayed which indicate power is present. More number of "-" means the power is more strong.

L. NON-CONTACT VOLTAGE DETECTION

- Test on a known live source within the rated AC voltage range of the product, both before and after use to ensure unit is in good working condition.
- Do not rely on the Tester to detect the presence or absence of voltage on a conductor for safety purposes.



Set up to detect Voltage (non-contact)

- 1) Turn the rotary switch to the NCV range;
- 2) EF is displayed;
- Place the NCV sensor tip close to the source of electrical energy being test;
- 4) If voltage is detected, the Meter will beep and "-" will appear on the display and the NCV indicator(s) will switch on. The beeping frequency will increase and the number of "-" will also increase when higher voltage is detected.

M. RELATIVE MODE

Selecting relative mode causes the Meter to zero the display and store the present reading as the reference for subsequent measurements. The Meter is locked into the range selected when you pressed etc. Press again to exit this mode.

In relative mode, the reading shown is always the difference between the present reading and the stored reference value. For example, if the stored reference value is 15.00V and the present reading is 12.10V, the display shows -2.90V.

N. FLASHLIGHT AND DISPLAY BACKLIGHT

Flashlight

Hold down the witch on the switch on the flashlight. Hold down the button again will switch off the flashlight.

Display Backlight

Hold down the we button to switch on the display backlight. Hold down the button again to switch off the display backlight.

O. INPUT JACK INDICATOR

Build-in LED indicators surrounding the input jacks corresponding to the function selected will be automatically switched on to advise users to plug in the testleads.

SLEEP MODE

The equipment will automatically switch off if there is no function or button press for 15 minutes.

While in Sleep mode, pressing any button could turn the Meter on.

To switch off the Sleep mode, hold down when switching on the Meter. The Sleep mode will be automatically switched off when the Meter is switch off.

SPECIFICATIONS

Maximum Display	5999
Measurement Rate	3 times / second
Temperature	Operating: 0°C ~ 40°C Storage: -10°C ~ 50°C
Relative Humidity	<90%
Battery	14500 x 1
Fuse(s)	1A, 1000V, ∮6x30mm 10A, 1000V, ∮10x38mm
Size	192 x 89 x 43mm
Weight	~380g (include battery)

Accuracy is specified for 1 year after calibration, at operating temperatures of $23^{\circ}C \pm 5^{\circ}C$, with relative humidity < 75%. Accuracy specifications take the form of: $\pm([\% \text{ of Reading}] + [Counts])$

Function	Range	Resolution	Accuracy ±([% of Reading] + [Counts])	Overload Protection
DC Voltage	600mV	0.1mV	±(0.8%+3)	1000V
	6V	0.001V	±(0.5%+5)	
	60V	0.01V		
	600V	0.1V		
	1000V	1V		
	Remarks: Input	Impedance 1	0MΩ	
AC Voltage	600mV	0.1mV	±(1.2%+5)	1000V
	6V	0.001V		
	60V	0.01V		
	600V	0.1V	±(1.5%+5)	
	1000V	1V		
	Remarks: Input Impedar Display true R Frequency Re	nce 10MΩ RMS value esponse		

Function	Range	Resolution	Accuracy ±([% of Reading] + [Counts])	Overload Protection
DC Current	600µA	0.1µA	±(1.2%+5)	1A, 1000V,
	6000μA	1μA		fuse
	60mA	0.01mA		
	600mA	0.1mA		
	10A	0.01A	±(2%+5)	10A, 1000V, fuse
AC Current	600µA	0.1µA	±(1.5%+5)	1A, 1000V,
	6000μA	1μA]	fuse
	60mA	0.01mA]	
	600mA	0.1mA		
	10A	0.01A	±(3%+5)	10A, 1000V, fuse
	Remarks: Display true R Frequency Re	MS value		
Resistance	600Ω	0.1Ω	±(0.8%+5)	1000V
	6kΩ	1Ω		
	60kΩ	10Ω		
	600kΩ	100Ω		
	6MΩ	1kΩ		
	60MΩ	10kΩ	±(1.5%+5)	1
	Remarks: Open	circuit voltag	e : approximate	
Continuity		0.1Ω	Beeps at < 50Ω Open circuit voltage : app. 2V	1000V
Diode		0.001V	Display : app. forward voltage drop : 0.5~0.8V Open circuit voltage : app. 2V	1000V
Temperature	-20°C~0°C	1°C	±(5%+4)	
	0°C~400°C	1°C	±(1%+3)	
	400°C~1000°C	1°C	±(2%+2)	
	-4°F~32°F	1°C	±(5%+6)	
	32°F~752°F	1°C	±(1%+5)	
	752°F~1832°F	1°C	±(2%+4)	

Function	Range	Resolution	Accuracy ±([% of Reading] + [Counts])	Overload Protection
Frequency	10Hz	0.01Hz	±(1.5%+5)	1000V
	100Hz	0.1Hz		
	1kHz	0.001kHz		
	10kHz	0.01kHz		
	100kHz	0.1kHz		
	1MHz	0.001MHz		
	10MHz	0.01MHz		
	Sensitivity:			
	< 1kHz : 200n	nVp-p		
	≥ 1kHz : 3Vp-	p		
Capacitance	6nF	0.001nF	±(5%+5)	1000V
	60nF	0.01nF	±(4%+5)	
	600nF	0.1nF		
	6μF	0.001μF	-	
	60µF	0.01µF		
	600μF	0.1µF		
	6mF	0.001mF	±(5%+5)	
	60mF	0.01mF		

MAINTENANCE

A Warning

To avoid false readings, which could lead to possible electric shock or personal injury, charge the unit as soon as possible after the battery indicator $\stackrel{\frown}{\Longrightarrow}$ is on.

CHARGING

≜ Caution

Users are allowed to charge the batteries of the unit only. To protect the user and the equipment, remove all connections before charging. Never connect the meter during charging.

Please charge the Meters immediately by using the charger provided and connect as following figure if the battery indicator 🖽 is on.



REPLACE FUSES

A Warning

To avoid electrical shock or arc blast, or personal injury or damage to the Meter, use specified fuses ONLY in accordance with the following procedures.

- Remove the screws, open the case and replace the fuse(s) as showing in the figure;
- 2) Rejoin the case bottom and case top, and install the screws back



CLEANING

A Caution

To avoid damaging the equipment, NEVER submerge them in water. DO NOT use abrasive cleaners, they will damage the case.

Wipe the case with a damp cloth and mild detergent. Do not use abrasives or solvents. Dirt or moisture in the jacks can affect the measurement.