AX-174

INSTRUCTION

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1. GENERAL INSTRUCTIONS

This instrument complies with IEC 61010-1:2001, CAT III 1000V and CAT IV 600V overvoltage standards. See Specifications. To get the best service from this instrument, read carefully this user's manual and respect the detailed safety precautions. International symbols used on the Meter in this manual are explained in chapter 1.2.

1.1. Precautions safety measure

1.1.1. Preliminary

*As the possibilities of high transient overvoltages occurred in today's power system increase, more stringent safety standards are set for the electrical test equipment. Transients on electrical system (power grid, feeder or branch circuits) will trigger a series of incidents that may result in serious personal injury. To protect you against transient, safety must built into the test equipment.

Overvoltage category	In brief	Examples
CAT I	Electronic	• Protected electronic equipment • Equipment connected to (source) circuits In chich measures are taken to limit transient overvoltages to an appropriately low level. • Any high-voltage, low-energy source derived from a highwinding resistance transformer, such as the high-voltage section of a copier
CAT II	Single-phase receptacle connected loads	• Applience, portale tools, and Rother household and similar loads. • Outlet and long branch circuits. • Outlets At more than 10 meters (30feet) from CAT III • Outlets At more that 20 meters (60 feet) from CAT IV source
CAT III	Three-phase distribution, including single-phase commercial lighting	• Equipment in fixed installations, such as switchgear and polyphase motors. • Bus and Fedder in industrial plants • Feeders and short branch circuits, distributions panel devices. • Lighting system in Langer buildings. • Appliance outlets with short connections to service entrance
CAT IV	Three-phase at utility connection, any outdoor conductros	• Refers to the „origin of installation"; ie., where low-voltage connection is made to utility power. • Electricity meters, primary overcurrent protection equipment • Outsider and service entrance, service drop from pole to building, run between meter and panel. • Overhead line to detached building, underground line to well pump.

*When using this multimeter, the user must observe all normal safety rules concerning:
- protection against the dangers of electric current

-protection of the Multimeter aginst misuse.
*For your own safety, only use the test probes supplied with the instrument. Before use, check that they are in good condition

1.1.2. During Use

*If the meter is used near noise generating equipment, be aware that display may become unstable or indicate large errors.
*Do not use the meter or test leads if they look damaged.
*Use the meter only as specified in this manual; otherwise, the protection provided by the meter may be impaired
*Use extreme caution when working around bare conductors or bus bars
*Do not operate the meter around explosive gas, vapor or dust.
*Verify a meter's operation by measuring a known voltage. Do not use the Meter if it operates abnormally. Protection may be impaired. When in doubt, have the Meter serviced.
*Uses the proper terminals, function and range for your measurements.
*When the range of the value to be measured is unknown, check that the range initially set on the multimeter is the highest possible or, wherever possible, choose the autoranging mode.
*To avoid damages to the instrument, do not exceed the maximum limits of the input values shown in the technical specifications tables.
*When the multimeter is linked to measurement circuits, do not touch unused terminals.
*Caution when working with voltages above 60Vdc or 30Vac rms. Such voltages pose a shock hazard.
*When using probes, keep your fingers behind the finger guards.
* When making connections, connect the common test lead before connecting the live test lead; when disconnecting, disconnect the live test lead before disconnecting the common test lead.
*Before changing functions, disconnect the test leads from the circuit under test.
*For all dc functions, including manual or auto-ranging, to avoid the risk of shock due to possible improper reading, verify the presence of any ac voltages by first using the ac function. Then select a dc voltage range equal to or greater than the ac range.
*Disconnect circuits power and discharge all high-voltage capacitors before testing resistance, continuity, diodes or capacitance.
*Never perform resistance or continuity measurements on live circuits.
*Before measuring current, check the meter's fuse and turn off power to the circuit before connecting the meter to the circuit.
*In TV repair work or when carrying out measurements on power switching circuits, remember that high amplitude voltage pulses at the test points can damage the multimeter. Use of a TV filter will attenuate any such pulses.
*Use just one 6F22 battery, properly installed in the Meter's battery case, to power the Meter.
*Replace the battery as soon as the battery indicator () appears. With a low battery, the Meter might produce false readings that can lead to electric shock and personal injury.
*Do not measure voltages above 1000V in Category III, or 600V in Category IV installations.
*Do not operate the Meter with the case(or part of the case) removed.

1.2. Symbols

Symbols used in this manual and on the instrument:

Caution: refer to the instruction manual. Incorrect use may result in damage to the device or its components.

AC (Alternating Current)

DC(Direct Current)
AC or DC

Earth Grodnu

Double insulated

Fuse

Conforms to European Union directives

1.3. Instructions

*Remove test leads from the Meter before opening the Meter case or battery cover.
*When servicing the Meter, use only specified replacement parts.
*Before opening up the instrument, always disconnect from all source of electric current and make sure you are not charged with static electricity, which may destroy internal components.
*Any adjustment, maintenance or repair work carried out on the meter while it is live should be carried out only by appropriately qualified personnel, after having taken into account the instructions in this present manual.
*A " qualified person" is someone who is familiar with the installation, construction and operation of the equipment and the hazards involved. He is trained and authorize4s to energize and de-energize circuits and equipment in accordance with established practices.
*When the instrument is opened up, remember that some internal capacitors can retain a dangerous potential even after the instrument is switched off.
*If any faults or abnormalities are observed, take the instrument out of service and ensure that ir cannot be used until it has been checked out.
*If the meter is not going to be used for a long time, take out the battery and do not store the meter in high temperature or high humidity environment.

2. DESCRIPTION

2.1. Instrument familiarization

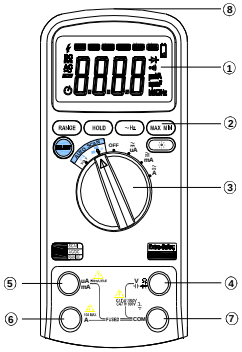


Figure 2-1

The front panel is shown as in Figure 2-1, explanation being as follows:

1. LCD display

Used for displaying the measuring results and various symbols.

2. Keypad

Measurement function keys.

3. Rotary switch

Used for selecting measurement functions.

4. VΩ⊣◆⊢

Terminal receiving the red test lead for voltage, resistance, capacitance, diode and continuity measurements.

5. uA/mA

Terminal receiving the red test lead for μA, mA measurements

6. A

Terminal receiving the red test lead for 6A, 10A measurements.

7. COM

Terminal receiving the black test lead as a common reference.

8. EF-detection area

2.2. LCD Display

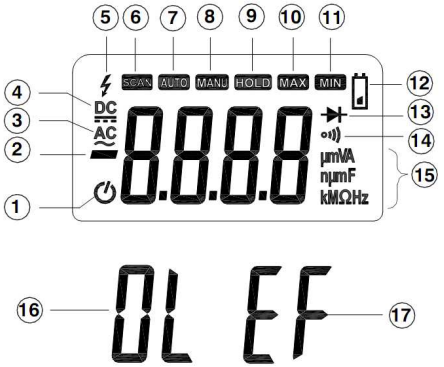


Figure 2-2

LCD screen is shown as in Figure 2-2, with its every symbol's meaning shown as in the Table 1

	Symbol	Meaning
1		Indicator for auto power off
2		Indicates negative readings
3	AC	Indicator for AC voltage or current
4	DC	Indicator for DC voltage or current
5		Unsafe voltage, voltage ≥30V, or voltage overload (OL)
6	**SCAN**	When auto scan mode is selected
7	**AUTO**	The meter is in the Autorange mode in which the meter automatically selects the range with the best resolution.
8	**MANU**	The meter is in the Manual Range mode in which the user selects the range.
9	**HOLD**	When HOLD functon is enabled. When delay-hold is selected, the HOLD symbol will be blinking for 6 seconds.
10	**MAX**	Display maximum data.
11	**MIN**	Display minimum data
12		Low battery indication (Note: When this symbol appears, it means that the battery needs to be replaced)
13		The meter is in Diode Test mode
14		The meter is in Continuity Check mode.
15	**µmVA, nµmF, KMΩHz**	Measurement units
16	OL	This symbol means that the input is too large for the selected range
17	**EF**	This meter is non-contact electric field detector mode

2.3. Keypad
2.3.1. SELECT

1) When the meter is turned off and the rotary switch is not in position of OFF, press **SELECT** key for 2 seconds to turn on the meter and press the key once more >2 sec. To turn the power OFF.
2) At **EF/VOLT** position
Switches between Auto scan mode, AC and DC voltage, Non-contact electric field detector (EF mode)
3) At Ω position
Switches between Auto scan mode, Resistance measurement, Continuity checz, Diode Test and Capacitance measurement.
4) At **A mA μA** position
Switches between Auto scan mode, DC and AC current.
5) Power-up Option
Disables automatic power-off feature
2.3.2. RANGE
At ACV, DCV, Ω, ⊣⊢, A,mA and μA
1) Press RANGE to enter the manual ranging mode.
2) Pres RANGE to step through the ranges available for the selected function.
3) Press and hold RANGE for 2 seconds to return to autoranging.
2.3.3. HOLD
Press it to enter the Data Hold mode. Used to maintain the measurement data unchanging, by pressing the key again it will exit the Data Hold mode. Pressing this key and last for 2 seconds, the meter will delay for 6 seconds, than enters HOLD mode.
2.3.4. ~Hz
During the voltage or current measurement, by pressing ~Hz key the meter will enter the linear frequency measurement state. At this time what being measured is the frequency of voltage or current. By pressing this key again it will return the voltage or current measurement state.
2.3.5. MAX/MIN
This key is for measuring maximum value and minimum value.
1) press it to enter Max/Min mode and simultaneously display the maximum value.
2) Press it again; the LCD will display the Minimum Value
3) Press it again; the LCD will display the current Value
4) Press and hold it for two seconds, the meter will return to normal measurement state.

2.3.6.
Press the this key, backlighton, press it again, backlight off.

3. FUNCTION
3.1. General Functions
3.1.1. Auto scan mode

When the meter is turned on, it will be power-on reset to auto scan mode. The meter automatically selects the appropriate measurement mode and range according to the measured object. In Auto-Scan mode, press RANGR, HOLD, MAX MIN keys are valid, press SELECT key to exit Auto SCAN mode. In automatic scan mode, full automatic measurement shown as in the Table 2:

Measurement	Auto ranging
DC V	1,0 mV ~ 1 000 V
AC V	300,0 mV ~ 1 000 V (60 Hz)
Resistance	0 Ω ~ 6,000 MΩ
Capacitance	1,000 nF ~ 600,0 µF
DC µA	0,1 µA ~ 6000 µA
AC µA	30 µA ~ 6000 µA (60 Hz)
DC mA	0,01 mA ~ 600,0 mA
AC mA	3,00 mA ~ 600,0 mA (60 Hz)
DC A	0,01 A ~ 10 A
AC A	3,00 A ~ 10 A (60 Hz)

3.1.2. DATA HOLD mode

Data Hold mode makes the meter stop updating the display. Enabling Data Hold function in autorange mode makes the meter switch to Manual ranging mode, but the full-scale range remains the same. Data Hold function can be cancelled by changing the measurement mode, pressing RANGE key, or push HOLD key again.

To enter and exit the Data Hold mode:

1) Press HOLD key (short press). Fixes the display on the current value, HOLD is displayed.

2) A second short press returns the meter to normal mode.

3) Pressing HOLD key and last for 2 seconds, the HOLD symbol in LCD will be blinking and the meter will delay for 6 seconds, that enters HOLD mode.

3.1.3. Manual ranging and Auto range mode

The Meter has both manual ranging and auto range options.

*In the auto range mode, the Meter selects the best range for the input detected. This allows you to switch test points without having to reset the range.

*In the manual ranging mode, you select the range. This allows you to override auto range and lock the meter in a specific range.

*The Meter defaults to the auto range mode in measurement functions that have more than one range. When the Meter is in the auto range mode, AUTO is display.

To enter and exit the manual range mode:

1) Press RANGE key. The Meter enters the manual ranging mode. AUTO turns off. Each presses of RANGE key increments the range. When the highest range is reached, the Meter wraps to the lowest range.

Note: If you manually change the measurement range after entering the Data Hold modes, the Meter exits this mode.

2) To exit the manual ranging mode, press and hold down RANGE key for two seconds. The Meter returns to the auto range mode and AUTO is displayed.

3.1.4. TRUE RMS measurement

All the measurement values of the true RMS meter on the AC voltage and AC current are true root-mean-square values. The basic meter can only measure the AC average value.

3.1.5. Auto power off setting

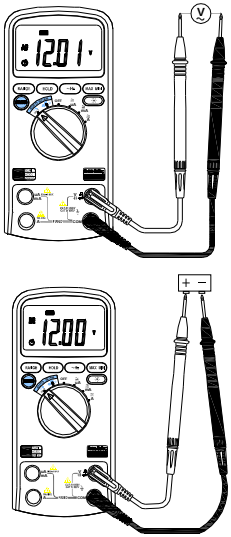
When the meter is powered on, it is under auto power off mode. The meter will power itself off after 10 minutes if there is not any operation. Press SELECT for 2 seconds to wake the meter up. You can also rotate the rotary switch to the position of OFF and then restart the meter.
To disable the auto power off function, hold down the SELECT key while turning the meter on, then the icon will disappear.

3.2. Measurement Functions

3.2.1. AC and DC Voltage measurement

⚠ To avoid electrical shock and/or damage to the instrument, do not attempt to take any voltage measurement that might exceeds 1000Vdc or 1000Vac rms.
To avoid electrical shock and/or damage to the instrument, do not apply more than 1000Vdc or 1000Vac rms between that common terminal and the earth ground

Voltage is the difference in electrical potential between two points.
The polarity of ac (alternating current) voltage varies over time;
the polarity of dc (direct current) voltage is constant.
To measure ac or dc voltage (set up and connect the Meter as shown in Figure 3-1)
1) Set the rotary switch to the position of EF/VOLT.
2) Select auto scan mode or press SELECT key to select between AC and DC voltage mode.
3) Connect the black and red test leads to the COM and V terminals respectively.
4) Connect the test leads to the circuit being measured.
5) Read and displayed value. AC Voltage

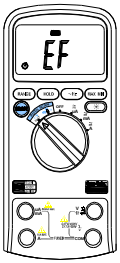


DC Voltage
Figure 3-1 Measuring AC and DC Voltage

Note:
In a case of probe hanging in the air, the voltage inducated by the test leads may cause unstable readings on the display screen, but that will not affect the accuracy of measurement

3.2.2. Non-contact electric field detector (EF mode)

⚠ It should be a long-distance In measuring high-voltage. Pay attention to safety



Electric field is a special substance exist in the charge and the variable ambient magnetic field.
To detector Non-contact electric field (set up and connect the Meter as shown in Figure 3-2):
1) Set the rotary switch to the position of EF/VOLT.
2) Press SELECT key to select non-contact electric field detector mode. When no or less electric field is detected, the LCD shows “EF”
3) Make the detector in the top of the meter approach to the wire. If the detector senses electric field, the strength will be showed on LCD by “-“ not digits type. And the buzzer will sound. Level 1 (weak) is “-“ and the level 4 (strong) is “----“. The buzzer frequency depends on the strength of electric field also. The faster beeper means the stronger electric field (ac voltage) is sensed.

Note:
Detection Sensibility: >36V ac rms
Detection distance: <10cm, It’s related to the source value.

Figure 3 - Non-contact electric field detector

3.2.3. Resistance measurement

⚠ To avoid electrical shock and/or damage to the instrument, disconnect 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. Because this current flows through all possible path between the probes, an in-circuit resistance reading represents the total resistance of all paths between the probes.
To measure resistance (set up the Meter as shown in figure 3-3):
1) Set the rotary switch to Ω range
2) Select auto scan or press SELECT key to select resistance measuring mode.
3) Connect the black and red leads to the COM and VΩ terminals respectively.
4) Connect the test leads to the circuit being measured.
5) Read the displayed value.

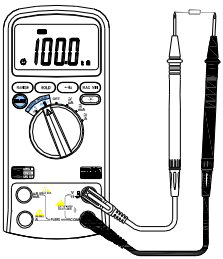


Figure 3-3
Measuring Resistance

Note:
In case of performing resistance test on circuit board, it is necessary firstly to turn off power of the circuit board and then perform the measurement. As there may be other parallel circuits, so the displayed value of test is not surely the actual value of the resistor.

3.2.4. Continuity Check

⚠ To avoid electrical Shock and/or damage to the instrument, disconnect circuit Power and discharge all high-voltage capacitors before testing for Continuity.

Continuity is a complete path for current flow. The beeper sounds if a circuit is complete. These brief contacts cause the Meter to emit a short beep.
To test continuity (set up the Meter as shown in Figure 3-4):

1) Set the rotary switch to Ω range.
2) Select auto scan mode or press the SELECT key to activate Continuity Check.
3) Connect the black and red test leads to the COM and Ω terminals respectively.
4) Connect the test leads to the resistance in the circuit being measured.
5) When the test lead to the circuit is below 30Ω, a continuous beeping will indicate it.

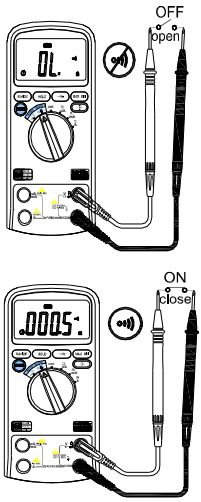


Figure 3-4
Checking the Continuity

3.2.5. Diode Test

⚠ To avoid electrical shock and/or damage to the instrument, disconnect circuit Power and discharge all high-voltage capacitors before testing diodes.

Use the diode test to check diodes, transistors, and other semiconductor devices. The diode test sends a current through the semiconductor junction, then measures the voltage drop across the junction, a good silicon junction drops between 0.5V and 0.8V.
To test a diode out of a circuit (set up the Meter as shown in Figure 3-5):

1) Set the rotary switch to Ω mode.
2) Select the auto scan mode or press the SELECT key to activate Diode Test.
3) Connect the black and red test leads to the COM and VΩ terminals respectively.
4) For forward-bias readings on any semiconductor component, place the red test lead on the component's anode and place the black test lead on the component's cathode.
5) The meter will show the approx. forward voltage of the diode.

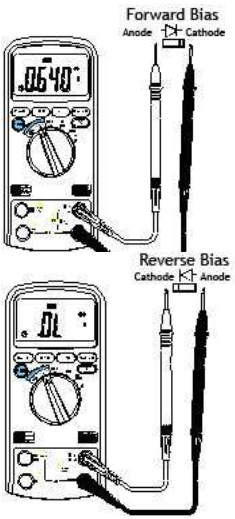


Figure 3-5 Testing a Diode

In a circuit, a good diode (Si) should still produce 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.

3.2.6. Capacitance measurement

⚠ To avoid electrical shock and/or damage to the instrument, disconnect circuit Power and discharge all high-voltage capacitors before measuring capacitance. Use the dc voltage function to confirm that the capacitor is 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 to microfarad range. The meter measures capacitance by charging the capacitor with a known current for a known period of time, measuring the resulting voltage, then calculating the capacitance.
The measurement takes about 1 second per range.
To measure capacitance (set up the Meter as shown in Figure 3-6):
1) Set the rotary switch to Ω range.

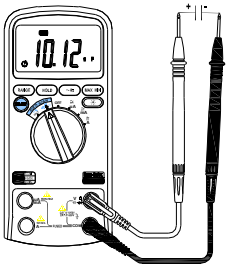


Figure 3-6 Measuring Capacitance

2) Select the auto scan mode or press the SELECT key to activate capacitance measuring mode.
3) Connect the black and red test leads to the COM and terminals respectively.
4) Connect the test leads to the capacitor being measured and read the displayed value.
Note:
The meter may take a few seconds to stabilize reading when measurement on 600uF~60mF.
To improve the accuracy of measurement less than 600nF, subtract the residual capacitance of the Meter and leads.

3.2.7. Current Measurement

⚠ To avoid damage to the Meter or injury if the fuse blows, never attempt an In-circuit current measurement where the open-circuit potential to earth is greater than 1000V.
To avoid damage to the meter, check the meter's fuse before proceeding. Use the proper terminals, function, and range for your measurement. Never place the probes in parallel with a circuit or component when the leads are plugged into the current terminals.

Current is the flow of electrons through a conductor.
To measure current (set up the Meter as shown in Figure 3-7):
1) Turn off power to the circuit. Discharge all high voltage capacitors.
2) Set the rotary switch to the μA, mA or A range.
3) Select the auto scan mode or press the SELECT key to select DCA or ACA measuring mode.

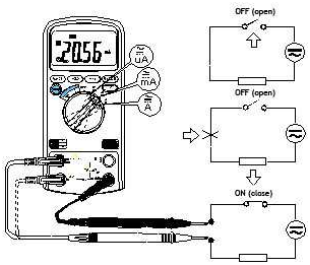


Figure 3-7 Measuring Current

4) Connect the black test lead to the COM terminal and the red test leads to the μA/mA terminal for a maximum of 600mA. For a maximum of 10A, move the red test lead to the A terminal.
5) Break the circuit path to be tested. Touch the black probe to the more negative side of the break; touch the red probe to the more positive side of the break. (Reversing the leads will give a negative reading, but will not damage the Meter.
6) Turn on power to the circuit; then read the display. Be sure to the note the measurement units at the right side of the display (μA, mA or A). When only the figure "OL" displayed, it indicates overrange situation and the higher range has to be selected.
7) Turn off power to the circuit and discharge all high voltage capacitors. Remove the Meter and restore the circuit to normal operation.

4. TECHNICAL SPECIFICATIONS

4.1. General Specifications

Environment conditions:	1000V CAT III and 600V CAT IV
Pollution degree:	2
Altitude:	<2000m
Operating temperature:	0~40°C, 32°F~122°F(<80%RH, <10°C non-condensing)
Storage temperature:	-10~60°C,14°F~140°F(<70% RH, battery removed)
Temperature Coefficient:	0.1x(specified accuracy)/°C(<18°C or >28°C)
MAX Voltage between terminals and earth ground:	1000V AC rms or 1000V DC.
Fuse Protection:	μA and mA: F 0.63A/1000VØ10.3x38;A:F 10A/1000VØ10.3x38
Sample Rate:	3 times/sec for digital data
Display:	3 5/6 digits LCD display. Automatic indication of functions and symbols.
Range selection:	automatic and manual
Over Range indication:	LCD will display "OL"
Low battery indication:	The is displayed when the battery is under the proper operation range.
Polarity indication:	"-" displayed automatically
Power source:	9V ⎓
Battery type:	6F22
Dimension:	190(L)x90(W)x40(H) mm
Weight:	500g.Approx. (battery included).

4.2. Measurement specification

Accuracy is specified for one year after calibration, at operating temperatures of 18°C to 28°C, with relative humidity at less than 80%.
Accuracy specification take the from of: ± (% of Reading + Number of Least Significant Digits)

4.2.1. AC Voltage

ACV:

Range	Resolution	Accuracy	
		60Hz	40Hz~400Hz
600mV	0,1mV	±(1,0% +3)	
6V	1mV		±(1,0% +3)
60V	10mV		±(1,0% +3)
600V	100mV		±(1,0% +3)
1000V	1V		±(1,5% +5)
Above accuracies can be guaranteed within 5%~100% of the full range. The true RMS meter has residual value within 10 counts when the test leads are shorten, but that will not affect the accuracy of measurement.			

4.2.2. DC Voltage

DCV:

Range	Resolution	Accuracy
600mV	0,1mV	±(0,5% +5)
6V	1mV	±(0,8% +5)
60V	10mV	±(0,8% +5)
600V	100mV	±(0,8% +5)
1000V	1V	±(1,0% +2)

4.2.3. Resistance

Range	Resolution	Accuracy
600.0Ω	0.1Ω	±(1.2% +2)
6.000kΩ	1Ω	
60.00kΩ	10Ω	
600.0kΩ	100Ω	
6.000MΩ	1kΩ	
60.00MΩ	10kΩ	±(2% +5)

4.2.4. Continuity Check

Function	Range	Resolution
	600Ω	0.1Ω

Description: Continuity beeper ≤30Ω

4.2.5. Diode Test

Range	Resolution	Test Condition
2 V	0,001V	Forward DC Current: approx. 1mA Reversed DC Voltage: approx. 2.8V

Test Condition: Forward DC current approximately 1mA. Reversed DC voltage approximately 2.8V

4.2.6. Capacitance

Range	Resolution	Accuracy
6nF	1pF	±(5,0% +5)
60nF	10pF	±(3,0% +3)
600nF	100pF	
6μF	1nF	
60μF	10nF	±(5,0% +3)
600μF	100nF	
6mF	1μF	
60mF	10μF	uncertainty

4.2.7. Current

DCA:

Range	Resolution	Accuracy
600μA	0.1μA	±(1.0% +3)
6000μA	1μA	
60mA	0.01mA	±(1.5% +3)
600mA	0.1mA	
10A	10mA	±(1.8% +5)

ACA:

Range	Resolution	Accuracy
600μA	0.1μA	±(1.5% +5)
6000μA	1μA	
60mA	0.01mA	±(1.8% +8)
600mA	0.1mA	
10A	10mA	±(2% +8)
Above accuracies can be guaranteed within 5%~100% of the full range. The true RMS meter has residual value within 10 count when the test leads are shorten, but that will not affect the accuracy of measurement.		

Overload protection: F 10A/1000V fuse for 10A range

F 0.63A/1000V fuse for μA and mA ranges

Maximum input current: 600mA dc or 600mA ac rms for μA and mA ranges

10A dc or 10A ac rms for 10 A ranges.

For measurements >6A, 4 minutes maximum ON to measure 10 minutes OFF; above 10A unspecified.

4.2.8. Linear Frequency

Range	Resolution	Accuracy
6kHZ	0,001HZ	±(0,05% +8)
10KHZ	0,01HZ	
Above accuracies can be guaranteed withni 10%~100% of the full range.		

5. MAINTENANCE

This section provides basic maintenance information, including fuse and battery replacement instructions. Do not attempt to repair or service your Meter unless you are qualified to do so and have the relevant calibration, performance test, and service information.

5.1. General Maintenance

⚠To avoid electrical shock or damage to the meter, do not get water inside the case. Remove the test leads and any input signals before opening the case.

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.

To clean the terminals:

Turn the meter off and remove all test leads.

Shake out any dirt that may be in the terminals.

Soak a new swab with a cleaning and oiling agent (such as WD-40)

Work the swab around in each terminal. The oiling agent insulates the terminals from moisture-related contamination.

5.2. Fuse replacement

⚠Before replacing the fuse, disconnect test Leeds and/o any connectors from any circuit under test. To prevent damage or injury replace the fuse only with specified ratings.

1) Set rotary switch to the OFF position

2) Disconnect test leads and/or any connectors from the terminals.

3) Use a screwdriver to unlock the four screws on the rear cover

4) Take out the rear cover from the meter.

5) Remove the fuse by gently prying one end loose, then sliding the fuse out of its bracket.

6) Install the replacement fuses only with specified ratings: F 0.63A/1000VØ10.3x38 and F 10A/1000VØ10.3x3x38

7) Rejoin the rear cover and tighten the screws.

5.3. Battery replacement

⚠To avoid false Reading, which could lead to possible electric shock or personal injury, replace the battery as soon as the battery indicator () appears. Before replacing the battery, disconnect test leads and/or any connectors from any circuit under test, turn the meter off and remove test leads from the input terminals.

1) Set rotary switch to the OFF position.
2) Disconnect test leads and/or any connectors from the terminals.
3) Use a screwdriver to unlock the two screws on the battery cover.
4) Take out the battery cover from the meter.
5) Remove the used battery
6) Replace with one new 9V battery (6F22)
7) Rejoin the battery cover and tighten the screws.

6. ACCESSORIES

Delivered with the multimeter:
User's manual: one piece
Test leads: one piece

If there are some changes in accessories, please refer to the real product as standard.