I. Overview

As a kind of intelligent 3 5/6 digital multimeter with automatic identification, steady performance and high reliability, this meter is equipped with LCD display device with the text height of 33mm which features clear reading, direct-viewing display and convenient operation. It can be used to measure DC voltage, AC voltage, DC current, AC current, resistance, capacitance, frequency, diode and continuity test; meanwhile, it is available for unit symbol display, data retention, the measurement of maximum and minimum value, automatic/manual range switching, automatic power off and alarm function. The complete machine takes a switching integrated circuit which can directly drive LCD microprocessor and double-integrating A/D and a digital display drive offering high resolution and high precision. Since the meter features complete functions, high measurement accuracy and convenient operation, it is the ideal tool in laboratory and factory as well as for radio fans and family.

II. Open-package Inspection

Open the package box and take out the meter, check carefully if the following accessories are absent or damaged. If there is any absence or damage, please contact the distributor immediately.

Digital multimeter	1 set
Instruction Manual	1 copy
Testleads	1 pair
6F22 Battery 9V	1 pc
Alligator clip	1 set

III. Safety Considerations

In accordance with IEC1010 clause (the safety standard issued by International Electrotechnical Commission), This product is designed and produced according to the safety requirements of pollution level Ⅱ.

⚠ Warning:

In order to avoid endangering the operator's safety, prior to the operation of the instrument, please read the

instruction manual carefully, and conform to the safety warning information and operation instruction strictly to use the instrument.

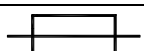
1. When voltage above 30V, current above 10mA, AC power line with inductive load or AC power line during electric fluctuation measuring, please beware of electric shock.
2. Prior to measurement, check if the measurement function is in conformity with the LCD display, and if the pushbutton switch is at the trigger position. Check if the testlead is contacted reliably, connected correctly, and grounded well and etc. in order to avoid electric shock.
3. The meter can only be used with the matched testlead which you can see in the box, if the testlead is damaged, it is necessary to replace another one of the same model or the same electrical specification.
4. Don't use other unconfirmed or disapproved fuses. Only the same model or same specification fuses as we provide can be used. Before the replacement, the testlead must leave the measuring point and ensure there is no any signal at the input terminal.
5. Don't use other unconfirmed or disapproved battery. Only the same model or same specification battery as we provide can be used. Before the replacement, the testlead must leave the measuring point and ensure there is no any signal at the input terminal.
6. During electrical measurement, never let your body get in touch with the ground directly, and don't touch uncovered metal terminal, output port, lead clamp and etc. where earth potential may exist. Dry clothes, rubber shoes, rubber cushion and other insulating material are usually used to keep your body

insulated against the ground.

7. Don't store and use it in the high-temperature, high-humidity, inflammable and strong magnetic field environment.
8. It may damage the meter and endanger the operator's safety if the voltage value beyond the permitted ultimate voltage value is measured. The ultimate voltage value permitted for measurement is marked on the instrument panel, and never measure the value exceeding the standard. Don't input the ultimate value out of regulation in order to avoid electric shock and the damage to the meter.
9. When the testlead is inserted into the current socket, don't measure any voltage for fear that the meter should be damaged and the operator's safety be endangered.
10. Don't try calibrating or repairing the meter. When it is indeed necessary for that, only the qualified professional personnel who have had special training or gained approval can make it.
11. During measurement, the requirement of measurement function must be in accordance with LCD display. Please be sure to disconnect the line of the testlead with the measured object first and ensure there is no any input signal. It is forbidden to switch the function/range selection switch during measurement
12. When "  " is shown on LCD display, please replace battery immediately to ensure the measurement precision.
13. It is not allowed to insert the testlead into the current terminal to measure voltage!

14. Please don't change the circuits of the meter freely for fear that the meter will be damaged and the safety be endangered.

IV. Description of Safety Symbols

	**Warning!**		**AC/DC**
	**High Voltage! Danger!**		**In accordance with the instructions of European Trade Union**
	**Ground**		**Fuse**
	**Double Insulation**		**Low battery**

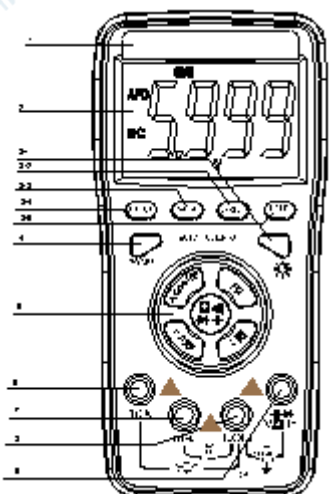
V. Description of Instrument Panel and Pushbutton Functions

1. Instrument model.

2. LCD display area.
3. Function button: Used to select various measurement functions.

   3-1 Backlight selection switch, trigger it once to turn on the backlight, and trigger it once more to turn off the backlight.

   3-2 It is automatic identification when start-up. Press SELECT to enter automatic measurement, MAX/MIN: the maximum value and minimum value. Press the function button and enter MAX mode, in which the maximum value is held; press the button again to enter MIN mode, in which the minimum value is held. After the MAX/MIN mode is entered, the display device indicates the current value. Press down MAX/MIN button for 2 seconds, and then exit from MAX or MIN test.



   3-3 Manual range selection switch. It is automatic identification when start-up. Press SELECT to enter automatic measurement. Trigger “RANGE” button, automatic/manual range switch. In the mode of manual range, trigger “RANGE” button, when you press the button, the range change to a higher one, when it goes to the highest range, it goes back to the lowest

range when the button is pressed again. The procedure repeats again and again like this in the same order. Press down the button for more than 2seconds, then exit from manual range and enter the state of automatic range measurement.

3-4 SELECT: Button switch, it is used to select various measurement functions.

3-5 HOLD: Hold readings. Press the button to lock the displayed value, and press it again to unlock it.

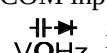
4. Power function switch.

5. Function selection button.

6. 10A current input jack: Measure the positive input terminal of 10A shift AC/DC current, and insert red testlead.

7. mA input port: Measure the positive input terminal of AC/DC.

8. COM input port: Measure the negative input terminal, and insert black testlead.

9. 

input port: Measure the positive input terminal of voltage, frequency, resistance, capacitance, diode as well as continuity test, and insert red testlead.

VI. Other Functions

1. Automatic power off

   After the meter is stopped for 10 min, it will cut off power automatically (power off), and then enter the dormant (power off) state. Within one minute before power off, the built-in buzzer will send out warning tone for 3 times. After one minute, it beeps for several seconds and enters the dormant (power off) state. If you want to restart power (power on), it is available to press “SELECT”, “RANGE ”“MAX/MIN” or “HOLD” key, or press the power switch to make it. If you want to cancel automatic power-off, press “SELECT” at the same time when you press down the power switch, then automatic power-off will be cancelled after power on, and “APO” symbol will be also turned off.

VII. Features

1. General features

1－1 Display mode: LCD

1－2. Maximum display: 5999, 3 5/6 display automatic polarity display and unit display.

1－3. Measurement mode: dual integration A/D conversion

1－4. Sampling rate: About 3 time/s.

1－5. Over rang:　Display “OL”

1－6. Low voltage display: the symbc  displayed.

1－7. When it is over 30V AC/DC voltage, the symbol “  ” is displayed

1－8. Working temperature: 0～40℃, relative humidity <80%

1－9. Storage temperature: -10～50℃, relative humidity <80%

1－10. Power: 6F22　9V battery

1－11. Volume (Dimensions): 185mm×91mm×49mm（Length, width and height）

1－12. Weight: About 408g (including battery)

2．Technical features.

2-1. Accuracy: ±（a% reading + d digits）, the ambient temperature for ensuring accuracy: 23±5℃, relative humidity <75%.

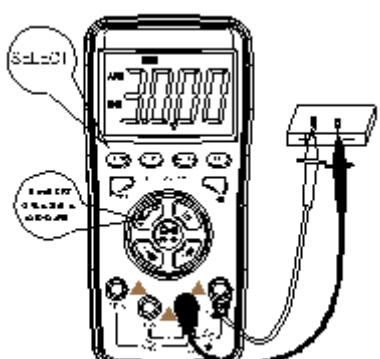
2-2．The warranty period of calibration is one year from ex-factory date.

VIII.　DC Voltage (DCV)

1．Trigger “AC/DC/EF”, at this time it is at the AC/DC voltage automatic identification mode, and

respectively plug in the red and black testleads into the holes of "VΩHz"and"COM", as shown in the following diagram.

2. The initial state of the meter is the AC/DC voltage automatic identification mode and a symbol of "SCAN" is displayed; at this time, such buttons as "RANGE"."MAX/MIN"."HOLD" have no controlling functions, and only when "SELECT" button is pressed to select the non-automatic identification mode of the automatic range can such bottoms as "RANGE"."MAX/MIN"."HOLD" play their function controlling.
3. Touch the measuring point with the testlead and connect it in parallel to the circuit being tested, and the polarity of the red testlead wire and the tested voltage value are spontaneously displayed on the display.



Caution:

a） Voltages over DC1000V or AC750V cannot be tested.

b） When measuring high voltages, special precautions must be taken to avoid electrical shock. When measurement is completed, immediately disconnect the testlead and the measured circuit.

c） In case "OL" is displayed under manual range mode, it indicated the range has been exceeded and it is necessary to select higher range to complete this measurement.

Range	Accuracy	Resolution
600mV	±(0.5%+4d)	0.1mV
6V		1mV
60V		10mV
600V		100mV
1000V	±(1.0%+6d)	1V

Input impedance: 600mV range > 60MΩ，the others are 10MΩ.

Overload protection：DC 1000V or AC 750V peak value

IX. AC Voltage (ACV)

1. Trigger “AC/DC/EF”, at this time it is at the AC/DC voltage automatic identification mode, and respectively plug in the red and black testleads into the holes of “VΩHz”and“COM”, as shown in the following diagram.
2. The initial state of the meter is the AC/DC voltage automatic identification mode and a symbol of “SCAN” is displayed; at this time, such buttons as “RANGE”.“MAX/MIN”.“HOLD” have no controlling functions,

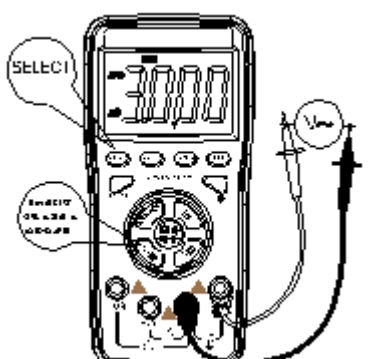
and only when select the non-automatic identification mode of the automatic range can let such bottons as “RANGE”.“MAX/MIN”.“HOLD” play their function controlling.

3. Touch the measuring point with the testleads and connect it in parallel to the circuit being tested, and the polarity of the red testlead wire and the tested voltage value are spontaneously displayed on the display.

⚠ **Caution:**

a) Voltages over DC1000V or AC750V cannot be tested. If the “OL” shows on the LCD under the manual range mode, it means the range has been exceeded and it is necessary to select higher range to complete this measurement.

b) At automatic identification measurement, the AC threshold voltage is 0.5V; in case the voltage to be measured is smaller than 0.5V, press the “SELECT” button to select automatic ACV measurement. In case the AC mV mode is used, please select the “RANGE” button.



Range	Accuracy	Resolution
600mV	±(1.6%+10d)	0.1mV
6V	±(0.8%+10d)	1mV
60V		10mV
600V		100mV
750V	±(1.0%+10d)	1V

Input impedance: 10MΩ. Overload protection：DC 1000V or AC 750V peak value

Display： Mean value response（calibrated with sine wave）.

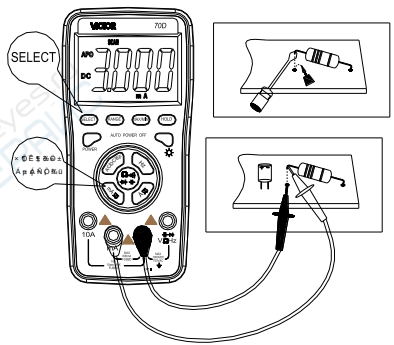
Frequency response： 600mV: (40-100)Hz. 6V-750V: (40－400)Hz

X. DC Current (DCA)

1. Put the black testlead into the “COM” terminal and the red testlead into the “mA” or “10A” terminal. Trigger the “ mA⎓≂“ button or “A⎓≂ “ button, select automatic identification ACA/DCA measurement, and at this time such buttons as “RANGE”.“MAX/MIN”.“HOLD” do not have the controlling functions, and only when the “SELECT” button is pressed again to select automatic range AC or DC current

measurement can let such buttons as “RANGE”, “MAX/MIN”, “HOLD” re-get function controlling.

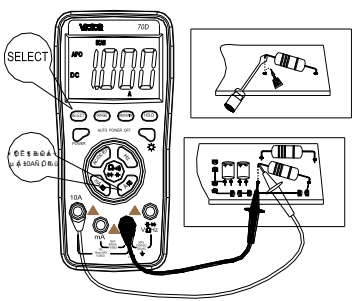
2. In case “OL” is displayed on the LCD, it indicates the current being measured has exceed the current range, and please select higher range for measurements.



Caution:

a）At the 10A range, current bigger than 10A cannot be measured, and at mA mode, the current bigger than 600 mA cannot be measured. Otherwise this will lead to the burning of the fuse or damage the instrument.

b) When the testleads plugged in the input terminal of the current, it is strictly prohibited to have the testlead connected in parallel on any circuits.



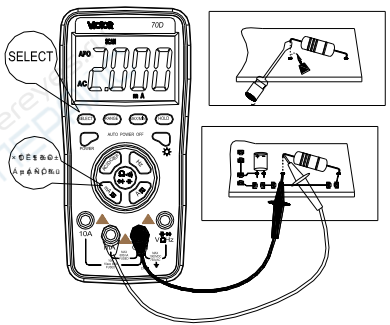
Range	Accuracy	Resolution
60mA	±(1.0%+10d)	10μA
600mA		100μA
10A		10mA

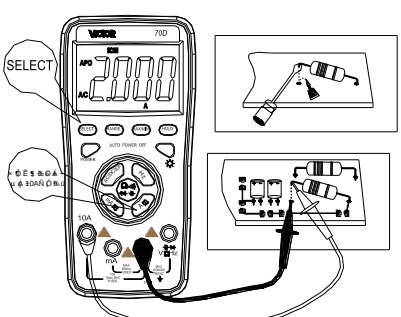
The maximum input current: 10A (not exceeding 15s))

Overload protection: 0.6A/250V fuse ; 10A/250V fuse

XI. AC Current (ACA)

1. Put the black testlead into the “COM” terminal and the red testlead into the “mA” or “10A” terminal. Trigger the “ mA≂ “ button or “ A≂ “ button, select automatic identification AC/DC measurement,, and if the current is lower than 10% of the full range, the automatic identification is lower than its threshold, measurements cannot be conducted. Please press “SELECT button to select automatic ACA range to test.
2. In case “OL” is displayed on the LCD, it indicates the current being measured has exceed the current range, and please select higher range for measurements.





Caution:

a) At the 10A range, current bigger than 10A cannot be measured, and at mA mode, the current bigger than 600 mA cannot be measured. Otherwise this will lead to the burning of the fuse or damage the instrument.

b) Under automatic identification mode, such buttons as

"RANGE"."MAX/MIN"."HOLD" do not play the controlling functions.

c) When the testleads plugged in the input terminal of the current, it is strictly prohibited to have the testlead connected in parallel on any circuits.

Range	Accuracy	Resolution
60mA	±(1.5%+10d)	10μA
600mA		100μA
10A	±(2.0%+15d)	10mA

Maximum input current: ： 10A（Not exceeding 15s）.

Overload protection: 0.6A/250Vfuse；10A/250V fuse

Frequency response:： 40～100Hz.

XII. Resistance

1. Trigger " Ω " button, and put the red and black testleads into the "VΩHz"and "COM "terminal.
2. After the instrument is started, triggering " Ω " button is the automatic identification measurement of resistance, diode, buzzer and capacitance. Under the mode of automatic identification such buttons as "RANGE"."MAX/MIN"."HOLD"do not play the controlling functions, and in case the measurement is bigger than 1MΩ, only when the "SELECT" button is triggered to choose the automatic range resistance

mode can continue to test, and at this time “RANGE”.“MAX/MIN” “HOLD” re-get the controlling

⚠Caution:

a） When measuring resistance, all the powers within the tested circuits must be disconnected and the capacitance should be sufficiently discharged.

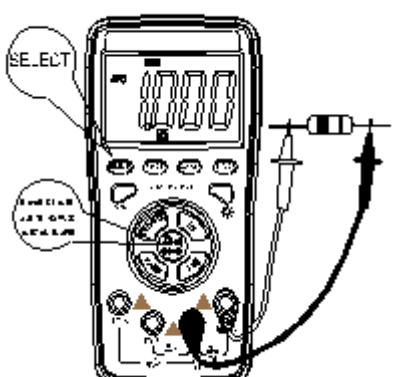
b） When measuring the resistance, any occurrence of voltage may lead to inaccurate readings, and if the 250V protection voltage is exceeded, it may damage the meter or threaten the safety of the user.

c） When using the range of 600Ω, first to short-circuit the testleads and measure the resistance of the lead wire and then deduct it in the actual measurement.

Range	Accuracy	Resolution
600Ω	±(0.8%+5d)	0.1Ω
6kΩ	±(0.8%+4d)	1Ω
60kΩ		10Ω
600kΩ		100Ω
6MΩ		1kΩ
60MΩ	±(1.2%+10d)	10kΩ

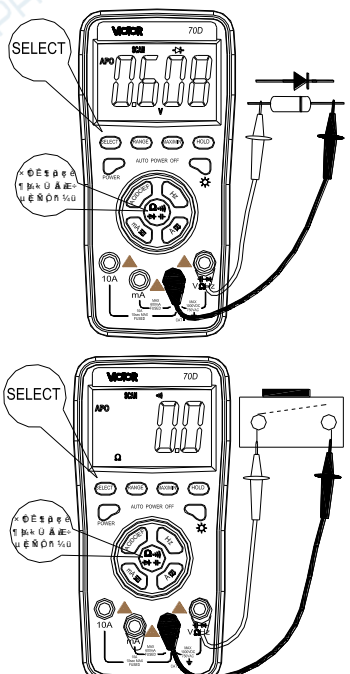
Open circuit voltage: 600mV.

Overload protection: DC 250V or AC peak value.



XIII．Diode and Continuity Test

1. Press “ Ω ” button and respectively put the red and black testlead into “VΩHz”and“COM” terminal.
2. After the instrument is started, triggering “ Ω ” button is the automatic identification measurement of resistance, diode, buzzer and capacitance. Under the mode of automatic identification such buttons of “RANGE”.“MAX/MIN”.“HOLD”do not play the controlling functions, trigger “SELECT” to select the diode or buzzer measurement, at this time such buttons as “MAX/MIN”. “HOLD” re-get the controlling functions.
3. Connect the red testlead to the positive of the diode, the black testlead to the negative of the diode.



Caution:

a）In case the diode is open circuit or the polarities are connected reversely, “OL” will display.

b）When checking the diode, all the powers within the tested circuits must be disconnected and the capacitance should be sufficiently discharged.

c) When the measurement is completed, immediately disconnect the testlead and the measured circuit.

Range	Display value	Measurement condition
	Diode forward voltage drop	Forward DC current is about 1.0mA, and backward voltage is about 3.0V.
	30Ω Buzzer sounds for a long time and the resistance of the two points is measured as 30Ω	Open circuit voltage is about 1.2V

Overload protection: 250V DC or AC peak value.

XIV. Capacitance（C）

1．Press “ “ button and respectively put the red and black testleads into “VΩHz”and“COM”.

2．After the instrument is turned on, triggering the“  “ button is the automatic identification measurement

of resistance, diode, buzzer and capacitance. Under the mode of automatic identification, such bottons as “RANGE”.“MAX/MIN”.“HOLD” do not play the controlling functions. In case the capacitance being measured is smaller than 0.5nF and bigger than 600uF, please trigger the “SELECT” button to choose the non-automatic identification automatic capacitance measurement mode, and at this time, such buttons as “MAX/MIN”“HOLD”“RANGE” play the functions. (When the electric supply 220V is mistakenly fed into the capacitance mode, the circuit may have automatic protection and it will not damage the meter.)

Caution:

a）When measuring the capacitance, all the powers within the tested circuits must be disconnected and the capacitance should be sufficiently discharged, when measuring big capacitance, it takes a longer time.

Range	Accuracy	Resolution
6nF	±(2.5%+20d)	1pF
60nF		10pF
600nF		100pF
6μF		1nF
60μF		10nF
600μF		100nF
6mF		1uF
60mF	±(5.0%+10d)	10uF

Overload protection: 250V DC or AC peak values

XV. Frequency (Hz)

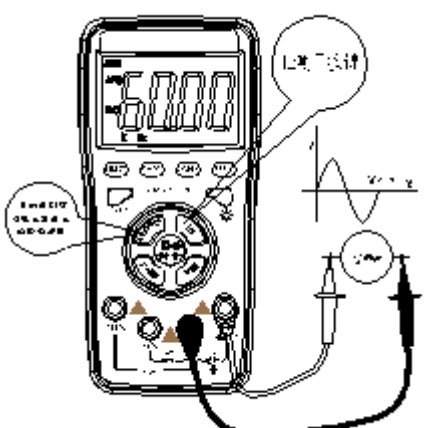
1. Trigger “AC/DC/EF”, and at this time it is at the AC/DC voltage automatic identification mode, and trigger “Hz” button to choose frequency measurement.
2. Respectively put the testlead into “VΩHz”and“COM”.
3. Have the testing end of the testlead connected in parallel with the signal source to be measured and read the results from the display.

Caution:

a）Do not input signals higher than 60V, otherwise it may damage the instrument and bring dangers to human safety.

b）After all the measurements are completed, it is necessary to disconnect the testlead and the tested circuit.

Range	Accuracy	Resolution
1000Hz	±(0.5%+8d)	1Hz
10kHz		10Hz
100kHz		100Hz



Input sensitivity: 3V RMS value

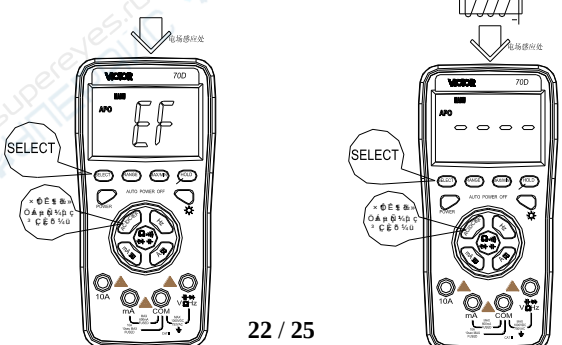
Overload protection: DC/AC 250V peak value.

XVI. Electric Field Measurement

1. After triggering the “AC/DC/EF” button, trigger “SELECT” button in cycle, until “EF” shows on the LCD, at this time, the meter enters the electric field measurement mode.
2. Put the area of the meter which the arrow indicated as below towards the measured object.
3. The strength of the electric field is judged by the quantity of “—” displayed on the LCD, and based on the strength of the electric field, the buzzer will show interval and continuous beeping sound.

Caution:

It is prohibited to input any voltage at any input ports.



XVII. Instrument Maintenance

This instrument is a sophisticated instrument and the user shall not change the electric circuit at will.

1. Please pay attention to waterproof, dustproof and fall proof.
2. Do not store or use the meter in high temperature, high humidity and inflammable and explosive and strong electromagnetic field.
3. Please use wet cloth and mild detergent to clean the exterior of the instrument and do not use such strong solvents as abrasives and alcohol.
4. If you will not use this meter for a long time, the battery should be removed to avoid the battery leakage from corroding the instrument.
5. Pay attention to the battery, and when the LCD shows a flashing "  " symbol, the battery should be replaced;

   The steps are as follows:

   1） Loosen the screw on the back cover that secures the battery door and exit the battery door.

   2）Remove the 9V battery and replace it with a new one. Although a 9V battery of any standard can be used, but in order to lengthen the service life, alkaline batteries is better.

3）Mount the battery door and tighten the screw.

4）Replacement of fuse: The steps are as the same as above. When replacing the fuse, please use the fuse of the same size and type.

Caution:

1.Do not connect DC or AC peak voltages higher than 1000V:

2.Don not measure voltage value under current mode, resistance mode, diode mode and buzzer mode.

3.When the battery has not been mounted properly or the back cover has not been tightened, please do not use this meter.

4.Before replace the battery or fuse, please disconnect the testlead to the measured part and turn off the meter.

This instruction is subjected to any alteration without any further notice.

The content of this instruction is considered correct, and in case readers find any errors and missing parts, please contact the manufacturer.

The company should not be held liable for any accidents and hazards resulted from the mal-operations by the user.

The function elaborated by this instruction should not be taken as the reasons for using the product for special purposes.

601E-070D-000A