Contents

TITLE		*PAGE*
1. GENERAL INSTRUCTIONS	……..	1
1.1 Precaution safety measures	……..	1
1.1.1 Preliminary	……..	1
1.1.2 During use	……..	4
1.2 Symbols	……..	6
1.3 Instructions	……..	7
2. DESCRIPTION	……..	8
2.1 Instrument Familiarization	……..	8
2.2 LCD Display	……..	10
2.3 Key pad	……..	11
3. FUNCTION DESCRIPTION	……..	13
3.1 General Functions	……..	13
3.1.1 DATA HOLD mode	……..	13
3.1.2 Manual ranging and Autorange mode	……..	14
3.1.3 Battery saver	……..	15
3.1.4 Relative measurement mode	…….	15

TITLE ***PAGE***

3.1.5 True RMS measurement 15

3.2 Measurement Functions 16

3.2.1 AC and DC Voltage measurement 16

3.2.2 Resistance measurement 19

3.2.3 Capacitance measurement 21

3.2.4 Continuity Check 23

3.2.5 Diode Test 26

3.2.6 Frequency measurement 29

3.2.7 Temperature measurement 30

3.2.8 Current measurement 31

3.2.9 NCVhEF 33

3.2.10 PC Link 34

4. TECHNICAL SPECIFICATIONS 35

4.1 General specifications.. 35

4.2 Measurement specifications 36

4.2.1 Voltage 37

4.2.2 Frequency 38

4.2.3 Resistance 39

4.2.4 Diode Test 39

TITLE ***PAGE***

4.2.5 Continuity Check 39

4.2.6 Capacitance 40

4.2.7 Temperature 40

4.2.8 Current 40

5. MAINTENANCE 41

5.1 General maintenance 42

5.2 Fuse replacement 42

5.3 Battery replacement 43

6. ACCESSORIES 44

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 and in this manual are explained in chapter 1.2.

1.1 Precautions safety measures

1.1.1 Preliminary

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

Overvoltage category	In brief	Examples
CAT I	Electronic	• Protected electronic equipment. • Equipment connected to (source) circuits in which 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	• Appliance, portable tools, and other household and similar loads. • Outlet and long branch circuits. • Outlets at more than 10 meters (30 feet) from CAT III source. • Outlets at more that 20 meters (60 feet) from CAT IV source.
CAT III	Three-phase distribution , including single-phase	• Equipment in fixed installations, such as switchgear and polyphase motors. • Bus and feeder in industrial plants.

	commercial lighting	• Feeders and short branch circuits, distribution panel devices. • Lighting systems in larger buildings. • Appliance outlets with short connections to service entrance.
CAT IV	Three-phase at utility connection , any outdoor conductors	• Refers to the “origin of installation”; i.e., where low-voltage connection is made to utility power. • Electricity meters, primary overcurrent protection equipment. • Outside 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 against 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

specification 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 the 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.
* When in REL mode, the "**REL**" symbol is displayed. Caution must be used because hazardous voltage may be present.
* 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 ground

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 sources 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 authorized 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 it 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

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 V Ω ⊣⊢ Hz

Terminal receiving the red test lead for voltage, resistance, capacitance, frequency, Temperature, 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.

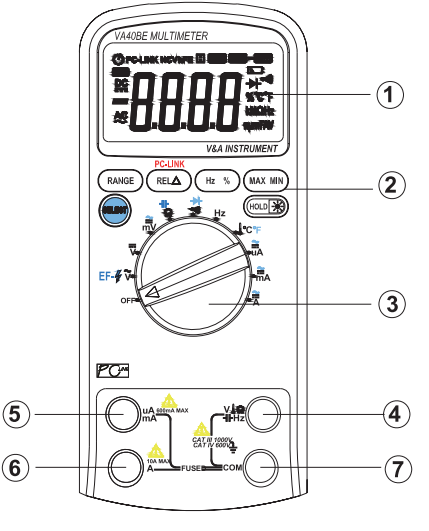


Figure 2-1

2.2 LCD Display

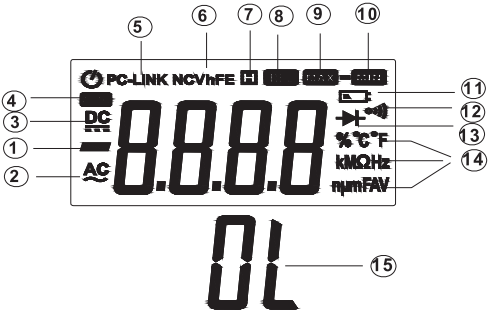


Figure 2-2

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

No.	Symbol	Meaning
1		Indicates negative readings
2	AC	Indicator for AC voltage or current
3	DC	Indicator for DC voltage or current

4	**AUTO**	The meter is in the Autorange mode in which the meter
5	**PC-LINK**	The Meter is in the data transmission mode.
6	**NCV**	No contact AC Voltage detect
7	**H**	The meter is in Data Hold mode.
8	**REL**	The meter is in Relative Measurement mode.
9	**MAX**	Display maximum data
10	**MIN**	Display minimum data
11		Low battery indication
12		The meter is in Continuity Check mode.
13		The meter is in Diode Test mode.
14	**%℃℉ KMΩHz nμmFAV**	Measurement units
15	**OL**	This symbol means that the input is too large for the selected range.

2.3 Keypad

2.3.1 **SELECT**

Change to the second function.

1. At **Ω** and position

   Switches between Resistance measurement, Diode Test and Continuity check.

2. At **A mA μA** position

   Switches between dc and ac current.

3. Power-up Option

   Disables automatic power-off feature. Keep press this key when power on.

2.3.2 HOLD

Press it to enter and exit the Data Hold mode. Press it and hold 2 seconds, backlight on; if press it and hold for 2 seconds again, backlight off.

2.3.3 **RANGE**

At V~, V⎓, Ω, A, mA and μA.

1. Press **RANGE** to enter the manual ranging mode.

2. Press **RANGE** to step through the ranges available for the selected function.

3. Press and hold **RANGE** for 2 seconds to return to autoranging.

2.3.4 **REL△**

1.Press **REL△** to enter and exit the Relative measurement mode. (Except Hz/Duty)

2. Keep press **REL△** more than 2 seconds to enter the the PCLINK mode.

2.3.5 **Hz %**

At V~, A, mA and μA.

1. Press it to start the frequency counter.
2. Press it again to enter duty (load factor) mode.
3. Press it again to exit the frequency counter mode.

2.3.6 **MAX/MIN**

This key is for measuring maximum value and minimum value.

1. Press it to enter Max/Min mode.
2. Press it again; the LCD will display the Maximum Value.
3. Press it again; the LCD will display the Minimum Value.
4. Press and hold it for two seconds, the meter will return to normal measurement state.

(Except Hz/Duty and Capacitance)

3. FUNCTION DESCRIPTION

3.1 General Functions

3.1.1 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, **H** is displayed.
2. A second short press returns the meter to normal mode.

3.1.2 Manual ranging and Autorange mode

The Meter has both manual ranging and autorange options.

* In the autorange 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 autorange and lock the meter in a specific range.

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

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 autorange mode and **AUTO** is displayed.

3.1.3 Battery Saver

The Meter enters the "sleep mode" and blanks the display if the Meter is on but not used for 15 minutes.

Press the HOLD key or rotate the rotary switch to wake the meter up.

To disable the Sleep mode, hold down the **SELECT** key while turning the meter on.

3.1.4 Relative measurement mode

The Meter will display relative measurement in all functions except frequency.

To enter and exit the relative measurement mode:

1. With the Meter in the desired function, touch the test leads to the circuit on which you want future measurement to be based.
2. Press **REL△** key to store the measured value and activate the relative measurement mode. The difference between the reference value and subsequent reading is displayed.
3. Press **REL△** key again return the Meter to normal operation.

3.1.5 TRUE RMS measurement

All the AC measurement values is the true RMS (true

root-mean-square) values.
Frequency range is up to 1KHz.

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 the common terminal and the earth ground.

The Meter's voltage ranges are 600.0mV, 6.000V, 60.00V, 600.0V and 1000V.

To measure ac or dc voltage (set up and connect the Meter as shown in Figure 3-1):

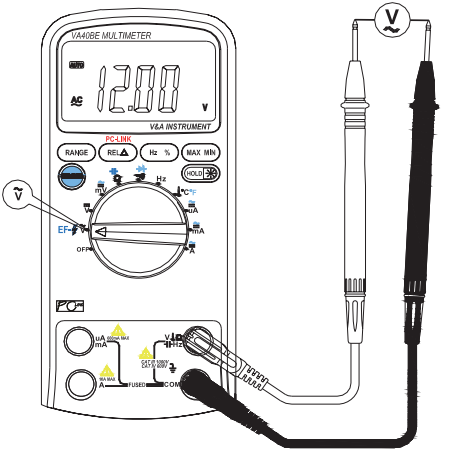
1. Set rotary switch to the DCV, ACV or AC/DCmV range.
2. Connect the black and red test leads to the COM and V terminals respectively.
3. Connect the test leads to the circuit being measured
4. Read the displayed value. The polarity of red test lead connection will be indicated when making a DCV measurement.

NOTE:

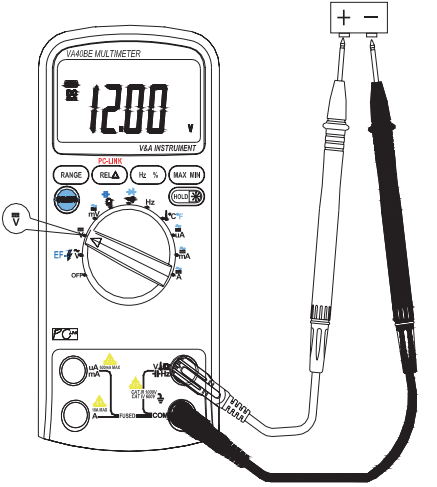
- Unstable display may occur especially at 600mV range,

even though you do not put test leads into input terminals

For better accuracy when measuring the dc offset of an ac voltage, measure the ac voltage first. Note the ac voltage range, then manually select a dc voltage range equal to or higher than the ac range. This improves the accuracy of the dc measurement by ensuring that the input protection circuits are not activated.



AC Voltage



DC Voltage

Figure3-1 Measuring AC and DC Voltage

3.2.2 Resistance measurement

> ⚠ ***To avoid electrical shock and/or damage to the instrument, disconnect circuit power and discharge all high-voltage capacitors before measuring resistance.***

The Meter's resistance ranges are 600.0Ω, 6.000kΩ, 60.00kΩ, 600.0kΩ, 6.000MΩ and 60.00MΩ.

To measure resistance (set up the Meter as shown in figure 3-2):

1. Set the rotary switch to Ω⊣⊢ range.
2. Connect the black and red test leads to the COM and VΩ terminals respectively.
3. Connect the test leads to the circuit being measured and read the displayed value.

Some tips for measuring resistance:

●The measured value of a resistor in a circuit is often different from the resistor's rated value. This is because the Meter's test current flows through all possible paths between the probe tips.

●In order to ensure the best accuracy in measurement of low resistance, short the test leads before measurement and memory the test probe resistance in mind. This necessary to subtract for the resistance of the test leads.

●The resistance function can produce enough voltage to forward-bias silicon diode or transistor junctions, causing them to conduct. To avoid this, do not use the 60MΩ range for in-circuit resistance measurements.

●On 60MΩ range, the meter may take a few seconds to stabilize reading. This is normal for high resistance measuring.

●When the input is not connected, i.e. at open circuit, the figure "OL" will be displayed for the overrange condition.

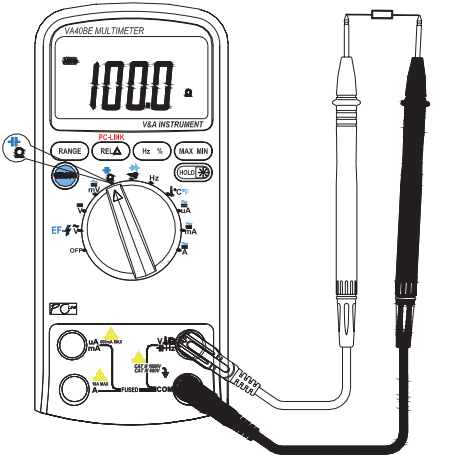


Figure 3-2 Measuring Resistance

3.2.3 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.***

The Meter's capacitance ranges are 6.000nF, 60.00nF, 600.0nF, 6.000μF, 60.00μF, 600.0μF, 6.000mF, 60.00mF.

To measure capacitance (set up the Meter as shown in Figure 3-5):

1. Set the rotary switch to Ω⊣⊢ range.
2. Press the **SELECT** key to select capacitance Test
3. Connect the black and red test leads to the COM and ⊣⊢ terminals respectively (or you can use capacitor test lead).
4. Connect the test leads to the capacitor being measured and read the displayed value.

Some tips for measuring capacitance:

●The meter may take a few seconds(>30 seconds in 600.0uF range) to stabilize reading. This is normal for high capacitance measuring.

●To improve the accuracy of measurements less than 6nF, subtract the residual capacitance of the Meter and leads.

●Below 100pF, the accuracy of measurements is unspecified.

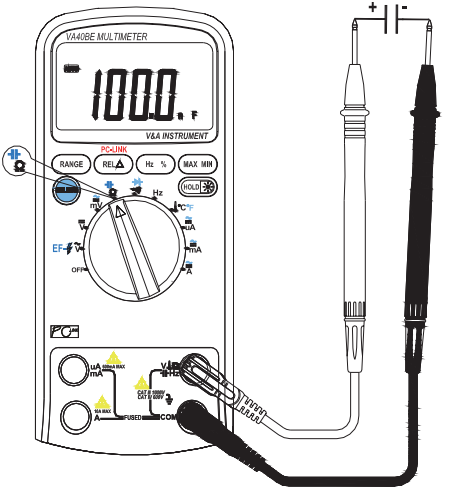


Figure 3-3 Measuring Capacitance

3.2.4 Continuity Check

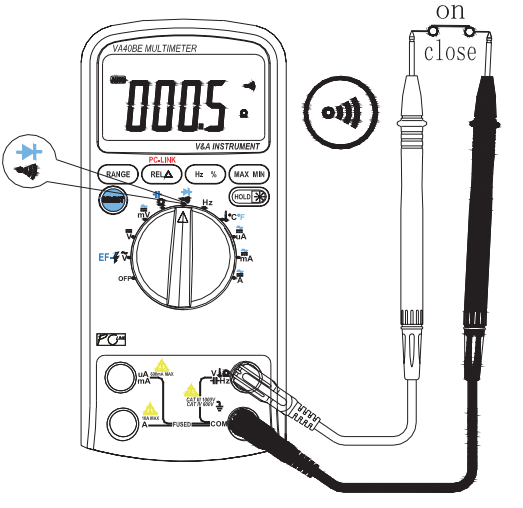
> ⚠ ***To avoid electrical shock and/or damage to the instrument, disconnect circuit power and discharge all high-voltage capacitors before testing for Continuity.***

To test for continuity (set up the Meter as shown in Figure 3-4):

1. Set the rotary switch to range.
2. Connect the black and red test leads to the COM and Ω terminals respectively.
3. Connect the test leads to the resistance in the circuit being measured.
4. When the test lead to the circuit is below 50Ω, a continuous beeping will indicate it.

NOTE:

●Continuity test is available to check open/short of the circuit.


on
close
VA40BE MULTIMETER
000.5
V&A INSTRUMENT
PC-LINK
RANGE
REL
Hz %
MAX MIN
HOLD
Hz
mV
V
EF
OFF
µA
mA
A
uA mA
10A MAX
A
FUSED
V Ω
Hz
CAT III 1000V
CAT IV 600V
COM

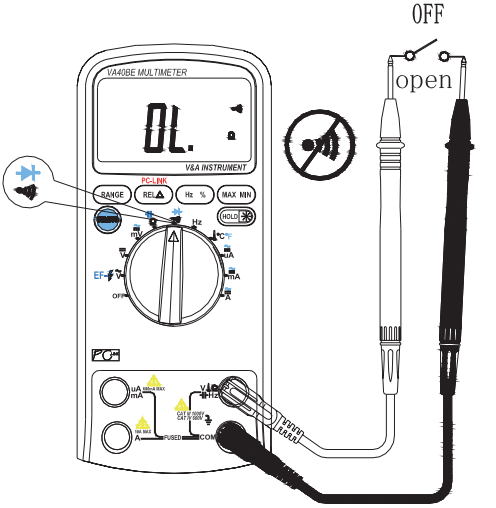


Figure 3-4 Checking the Continuity

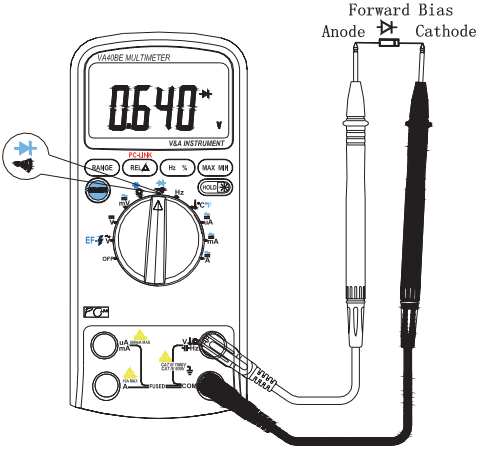
3.2.5 Diode Test

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

To test a diode out of a circuit (set up the Meter as shown in Figure 3-3):

1. Set the rotary switch to range.
2. Press the **SELECT** key to select 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.

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.


Forward Bias
Anode
Cathode
VA40BE MULTIMETER
0640
V
V&A INSTRUMENT
PC-LINK
RANGE
REL
Hz %
MAX MIN
HOLD
Hz
EF
OFF
mA
A
COM

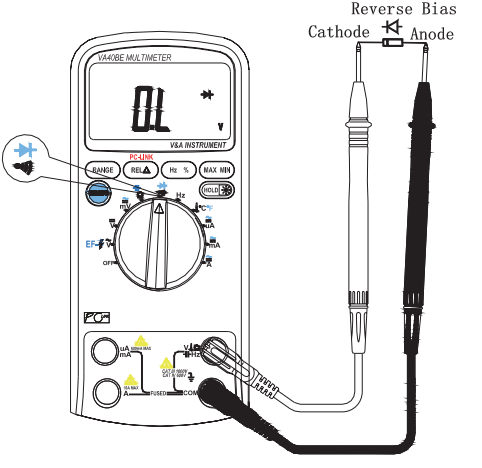


Figure 3-5 Measuring Capacitance

3.2.6 Frequency and Duty Cycle measurement

⚠ ***Do not measure Frequency on high voltage (>1000V) to avoid electrical shock hazard and/or damage to the instrument.***

The Meter can measure Frequency or Duty Cycle while making either an AC Voltage or AC Current measurement.

To measure frequency or Duty Cycle:

1. With the meter in the desired function (AC Voltage or AC Current), press the Hz % key.
2. Read the frequency of the AC signal on the display.
3. To make a duty cycle measurement, press the Hz % key again.
4. Read the percent of duty cycle on the display.
5. Set the rotary switch to the Hz range.
6. Insert the black and red test leads into the COM and Hz input terminals.
7. Connect the test leads tip in parallel with the circuit to be measured. And don't touch any electrical conductors.
8. At frequency measuring status, press Hz % one time then meter enters duty cycle measuring status, press it again then return to frequency measuring status.
9. Read the result directly from the display.

NOTE:

In noisy environment, it is preferable to use shield cable for measuring small signal

3.2.7 Temperature measurement

⚠ ***To avoid electrical shock and/or damage to the instrument, do not apply more than 250Vdc or 220Vac rms between the °C terminal and the COM terminal.***

To avoid electrical shock, do not use this instrument when voltages at the measurement surface exceed 60v dc or 24v rms. Ac.

To avoid damage or burns. Do not make temperature measurement in microwave ovens.

To measure temperature:

1. Set the rotary switch to ℃ range and the LCD will show the current environment temperature.
2. Insert 'K' type thermocouples into the COM terminal and ℃ terminal (or you can insert it by using Multi Function Socket)，Takings care to observe the correct polarity.
3. Touch the object with the thermocouple probe for measurement.
4. Read the stable reading from LCD.

3.2.8 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.

The Meter's current ranges are 600.0μA, 6000μA, 60.00mA, 600.0mA, 6.000A and 10.00A.

To measure current (set up the Meter as shown in Figure 3-6):

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. Press the **SELECT** key to select DCA or ACA measuring mode.
4. Connect the black test lead to the COM terminal and the red test leads to the 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 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.

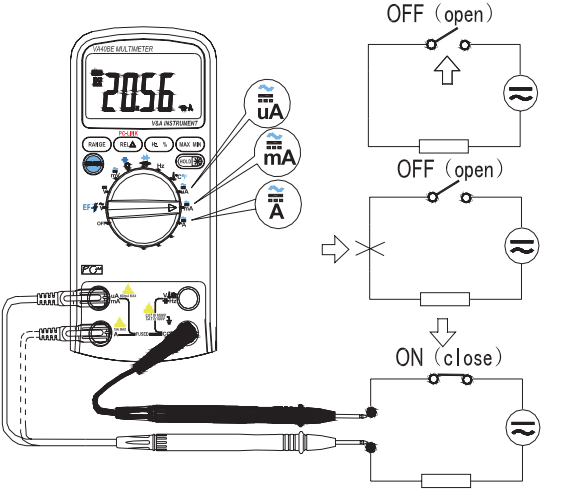


Figure 3-6 Measuring Current

3.2.9 NCV (Non-Contact Voltage detect)

Set rotary switch to the ACV / EF range, Press the **SELECT** key to go **NCV** detect mode. Put the EF-DETECT AREA close to the AC power cable or the power socket, if AC electrical voltage is present, the Buzzer warning will sound,

and the symbol bar "**-**" will be displayed on the LCD.
The lowest detect voltage is around 50V 50/60Hz.
The LCD display EF, when detect the AC voltage signal, the LCD display ' - '/' -- '/' --- '/' ---- ' from weak to strong.
This function is depending model.

3.2.10 PC Link

The meter has serial data output function. It can be connected with PC by USB interface, so the measured data can be recorded, analyzed, processed and printed by PC. Before use this function, you need install the PC-Link software and USB driver in your PC.
Keep press **REL△** more than 2 seconds and the meter enter PC-Link mode, the symbol "PC-LINK" will appear on LCD, and the serial data output function is active.
Auto power off function is disable when PCLINK function active.

PC-LINK SOFT OPERATING MANUAL

1. Make sure the two **Install USB driver** and **Install software/RUN** files in the attached CD successfully installed before any measurement.
2. Connect the meter's OPTICAL PORT and computer USB port with the USB cable.
3. Run the **PC-LINK** software, click the **Start** button.
4. Keep press **REL△** key more than 2 seconds on the meter, the symbol "**PC-LINK**" will appear on the LCD if the serial data output function is active.

As for check the USB cable success recognized, we can

view it in the Device Manager by following these steps:

- Right-click the **My Computer** icon on the Windows desktop, and then click **Properties**.
- Click the **Hardware** tab and then click **Device Manager**.
- Scroll through the list of installed devices till you locate the **Ports (Com and LPT)** entry. Click the **plus (+)** beside this entry to view the installed ports, If no errors occur, the USB to Serial COM Port (COM x) will appear, COM x is just the proper port, here x is a specific number.

5. Now the PC-LINK SOFT view the synchronic data or graph in the software interface.

6. To disable the PCLINK function, Keep press **REL△** key more than 2 seconds.

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℃, 32℉~104℉(<80% RH, <10℃ non-condensing)

Storage temperature: -10~60 ℃, 14℉~140℉(<80% RH, battery removed)

Temperature Coefficient: 0.1×(specified accuracy) / ℃ (<18℃ or >28℃)
MAX. Voltage between terminals and earth ground: 1000V AC rms or 1000V DC.
Fuse Protection: μA and mA: F 0.63A/1000V ∅10.3×38; A: F 10A/1000V ∅10.3×38.
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.
Dimensions: 190(L)×90(W)×40(H) mm.
Weight: 500g. Approx. (battery included).

4.2 Measurement specifications

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

4.2.1 Voltage

DCV:

Range	Resolution	Accuracy
600mV	0.1mV	±(0.5% of rdg +5 digits)
6V	1mV	±(0.8% of rdg +5 digits)
60V	10mV	
600V	100mV	
1000V	1V	±(1.0% of rdg +2 digits)

ACV:

Range	Resolution	Accuracy
600mV	0.1mV	±(1.0% of rdg + 5 digits)
6V	1mV	
60V	10mV	
600V	100mV	
1000V	1V	±(1.5% of rdg + 5 digits)

Above accuracies can be guaranteed within 5%~100% of the full range.

The RMS meter has residual value within 10 counts when the test leads are shorten, but that will not affect the accuracy of measurement.

1. Frequency Range for ACV: 40Hz~400Hz.

2. Response for ACV: RMS measure, calibrated in rms of sine wave.
3. Overload Protection: 1000V dc or 1000V ac rms.
4. Input Impedance (Nominal): DC voltage: >10MΩ; AC voltage: >10MΩ

4.2.2 Frequency

Logic frequency (1Hz-1MHz)

Range	Resolution	Accuracy
99.99Hz	0.01 Hz	±(0.1% of rdg+3digits)
999.9Hz	0.1 Hz	
9.999kHz	0.001kHz	
99.99kHz	0.01kHz	
999.9kHz	0.1kHz	

Linear frequency （6HZ~10KHZ）

Range	Resolution	Accuracy
99.99Hz	0.01 Hz	±(0.05% of rdg+8digits)
999.9Hz	0.1 Hz	
9.999kHz	0.001kHz	
Above accuracies can be guaranteed within 10%~100% of the full range.		

4.2.3 Resistance

Range	Resolution	Accuracy
600.0Ω	0.1Ω	±(0.5% of rdg+3 digits)
6.000kΩ	1Ω	±(0.5% of rdg+2 digits)
60.00kΩ	10Ω	
600.0kΩ	100Ω	
6.000MΩ	1kΩ	
60.00MΩ	10kΩ	±(1.5% of rdg+5 digits)

4.2.4 Diode Test

Range	Resolution	Test Condition
1 V	0.001V	Forward DC current approximately 1mA. Reversed DC voltage approximately 1.5V.

4.2.5 Continuity Check

Range	Resolution	Test Condition
600Ω	0.1Ω	Open circuit voltage: approx. 0.5V

Description: Continuity beeper≤50Ω

4.2.6 Capacitance

Range	Resolution	Accuracy
6nF	1pF	±(5.0% of rdg +20 digits)
60nF	10pF	±(3.0% of rdg +20 digits)
600nF	100pF	± (5.0% of rdg+10 digits)
6μF	1nF	
60μF	10nF	
600μF	100nF	
6mF	1μF	±(5.0% of rdg +20 digits)

4.2.7 Temperature

Range	Resolution	Accuracy
-200~0℃	1℃	±(5.0% of rdg + 4℃)
0~400℃		±(2.0% of rdg+ 3℃)
400~1200℃		±(2.0% of rdg+ 2℃)

Note: The specifications of temperature don't include thermocouple errors.

4.2.8 Current

DCA:

Range	Resolution	Accuracy
600μA	0.1μA	±(1.5% of rdg+3 digits)
6000μA	1μA	
60mA	0.01mA	±(1.5% of rdg+3 digits)
600mA	0.1mA	
6A	1mA	±(1.5% of rdg+5 digits)
10A	10mA	

ACA:

Range	Resolution	Accuracy
600μA	0.1μA	±(1.8% of rdg+5 digits)
6000μA	1μA	
60mA	0.01mA	±(1.8% of rdg+5 digits)
600mA	0.1mA	
6A	1mA	±(3.0% of rdg+8 digits)
10A	10mA	
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.		

1. Frequency Range for ACA: 40Hz-400Hz
2. Overload protection: F 10A/1000V fuse for 10A
   Overload protection: F 0.63A/1000V fuse for μA and mA ranges.
3. Maximum input current: 600mA dc or 600mA ac rms for μA and mA ranges, 10A dc or 10A ac rms for 10A ranges.
4. For measurements>6A, 15 seconds ON each 10 minutes; Above 10A unspecified.

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 leads and/or 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/1000V ∅10.3×38 and F 10A/1000V ∅10.3×38
7. Rejoin the rear cover and tighten the screws.

5.3 Battery replacement

⚠ ***To avoid false readings, 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
∞ "K" type Thermocouple	One piece
∞ USB cable	One piece
∞ PC-Link software CD	One piece

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