

Digital Multimeter

Part No. EAAB0260E

Operational Manual



Operation Instructions:
Before operate the digital multimeter, please read this manual thoroughly and retain it for future reference.

Function	Range	Resolution	Remarks
Continuity	200Ω	0.1Ω	<ul style="list-style-type: none"> Open voltage: Approx. 0.4V The buzzer will turn on for resistance below approx. 100Ω

Function	Range	Resolution	Accuracy	Voltage Drop
μA	200μA	0.1μA	±(2.3%rdg+10dgt)	AC20mV
	2000μA	1μA		AC200mV
mA	20mA	0.01mA	±(2.3%rdg+10dgt)	AC20mV
	200mA	0.1mA		AC200mV
10A	2A	0.001A	±(2.3%rdg+10dgt)	AC20mV
	10A	0.01A		AC100mV

• The max. protective fuse for μA, mA is 0.5A/600V
 • The max. protective fuse for 10A is 10A/600V

Function	Range	Resolution	Accuracy	Voltage Drop
μA	200μA	0.1μA	±(2.3%rdg+10dgt)	DC20mV
	2000μA	1μA		DC200mV
mA	20mA	0.01mA	±(2.3%rdg+10dgt)	DC20mV
	200mA	0.1mA		DC200mV
10A	2A	0.001A	±(2.3%rdg+10dgt)	DC20mV
	10A	0.01A		DC100mV

• The max. protective fuse for μA, mA is 0.5A/600V
 • The max. protective fuse for 10A is 10A/600V

Function	Range	Resolution	Measuring Range
NPN	2000	1	The testing value of resistor hFE of NPN type is under 1000
PNP	2000	1	The testing value of resistor hFE of PNP type is under 1000
LED	Lights up if the LED is normal		

Safety Instruction

WARNING

To make sure that the meter is used safely, the user has to follow the instruction while using the instrument:

- Be sure to set to correct position or function before measurement.
- Be sure to disconnect the lead and measured object before switch to the different function.
- Never apply voltage or current to the meter that exceeds the specified maximum.
- Never use the meter if the meter or test leads are damaged or broken.
- Never use the meter with wet hands or in a damp environment.
- Use caution when working at voltages above DC 60V or AC 30V, such voltages pose a shock hazard.
- When using the probes, keep fingers behind the finger guards on the probes.
- When not in use, the knob should be placed in the "OFF" position. The battery should be removed if the instrument will not be using for a long period of time.

WARNING

- To avoid damage to instrument or electrical shock!
- The maximum input voltage level depends on the over-voltage categories specified by the safety standards.
- Category III (CAT III) is for measurements performed in the building installation.
- Category II (CAT II) is for measurement performed on circuits directly connected to the low voltage installation.

Over-voltage Category	CAT II	CAT III
Maximum Input Voltage	600V	300V

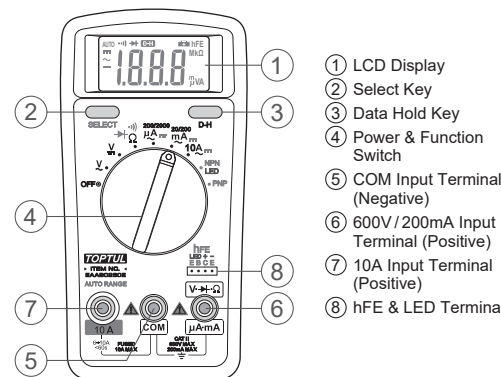
Product Specifications

LCD Display	3-1/2 digits 2000 counts
Polarity	Automatic, (-) negative polarity indication
Low Battery Indication	LCD display
Sampling Rate	Approx. 3 times / second
Auto Power Off	Approx. 15 minutes
Operating Environment	0~50°C (32~122°F) at < 80% R.H. (non-condensing)
Storage Environment	-10~60°C (14~140°F) at < 70% R.H. (non-condensing)
Power Supply	Battery 1.5V AAA x 2pcs (included)
Battery Life Time	Approx. 400 hours at DCV
Fuse Protection	F1: 0.5A/600V Ø5xL20 mm for the μA, mA F2: 10A/600V Ø6.35xL32 mm for the 10A
Testing Standard	IEC 61010-1 / IEC 61010-2-030 / IEC 61010-2-033
Measurement Category	CAT II 600V / CAT III 300V
Pollution Degree	2
Dimension	138(L) x 70(W) x 32(H) mm
Weight	Approx. 140g
Accessories	Operational Manual Battery (1.5V AAA) x 2pcs Test Lead (red+black)

Symbology

	Please read the operational manual carefully to avoid personal injury or damage to the meter		Double Insulated
	Grounding - Earth Terminal		Fuse

Main Product Feature



A. Power & Function Switch

OFF	Turn off the power
	AC voltage measurement
	DC voltage measurement
	Resistance measurement / Diode test / Continuity check
	AC/DC current measurement in micro-amperes
	AC/DC current measurement in milli-amperes
	AC/DC current measurement in 10 amperes
NPN	Transistor in NPN hFE measurement
LED	LED test
PNP	Transistor in PNP hFE measurement

B. Select Key

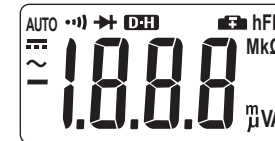
Press SELECT key to select the alternate functions as below:

	Resistance measurement / Diode test / Continuity check
	AC/DC measurement

C. Data Hold Key

Press D-H during the measurement, the **D-H** symbol will display on LCD and lock the reading values as well. To cancel this function, please press **D-H** once again.

D. LCD Display



Symbol & Unit	Instruction
	Lit when in DC mode measurement
	Lit when in AC mode measurement
	Negative polarity indicator - lit when the polarity is negative
AUTO	Auto range indicator
	Lit when in continuity check
	Lit when in diode test
D-H	Data hold indication
	Lit when the battery is low
MΩ, kΩ, Ω	Unit for resistance measurement
mV, V	Unit for voltage measurement
1888	Numeral data display
hFE	Lit when in transistor hFE check
μA, mA, A	Unit for current measurement

Electrical Specifications

- Accuracy is given at 23±5°C at < 80% R.H.
- Accuracy: ±(%reading digits+decimal digits)

Function	Range	Resolution	Accuracy	Input Impedance
	2V	0.001V	±(2.3%rdg+5dgt)	Approx. 11MΩ
	20V	0.01V		
	200V	0.1V		
	600V	1V		

• Accuracy in the case of sine wave
 • Frequency range 40~500Hz

Function	Range	Resolution	Accuracy	Input Impedance
	200mV	0.1mV	±(0.7%rdg+3dgt)	≥ 100MΩ
	2V	0.001V		
	20V	0.01V		
	200V	0.1V		

• Accuracy in the case of sine wave
 • Frequency range 40~500Hz

Function	Range	Resolution	Accuracy
	200Ω	0.1Ω	±(2%rdg+5dgt)
	2kΩ	0.001kΩ	
	20kΩ	0.01kΩ	
	200kΩ	0.1kΩ	
	2MΩ	0.001MΩ	

• Accuracy in the case of sine wave
 • Frequency range 40~500Hz

- Open voltage: Approx. 0.4V
- The measuring current changes in accordance with the resistance measured

Function	Range	Resolution	Accuracy
	1V	0.001V	±(10%rdg+5dgt)

• Open voltage: Approx. 1.5V

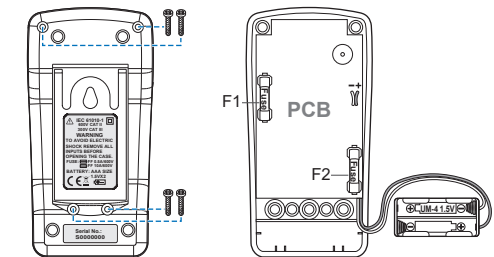
Battery Installation & Replacement

If symbol appears, the battery falls below the normal operating voltage. Please replace the battery with new one.

WARNING

To avoid electrical shock! Be sure to disconnect the multimeter from the circuit under test before replacing the battery. Please be sure to position the battery with the correct polarity.

- Remove the screws on the back of case and open the case.
- Remove the battery holder from the top cover.
- Install the new batteries (2pcs).
- Return the battery holder to the battery slot on the top cover.
- Assembly the cover and case and fasten the screws.



Fuse Replacement

- The protection fuse may blow if a current greater than the rated value flows the multimeter in the current measurement function. If happened, replace the fuse.
- The multimeter contains the following two types of fuses:
Type F1: 0.5A/600V position of μA, mA
Type F2: 10A/600V position of 10A

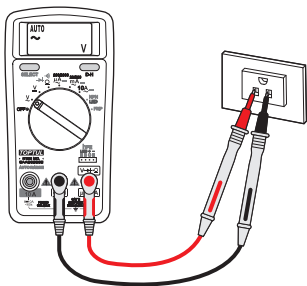
AC Voltage Measurement

WARNING

- The polarity is irrelevant to this measurement.
- To prevent the injury of operator, please make sure the input signals will not exceed the maximum rating input value 600V before forwarding the measurement.

Range 2V~600V (4 ranges - Auto Ranging)

- Set the function switch to the \underline{V} position.
- Insert the black test lead plug into the **(COM)** Input Terminal (Negative) and the red test lead plug into the **(V- \rightarrow - Ω)** Input Terminal (Positive).
- Touch the test probe tips to the AC circuit under test.
- Read the value when it stabilizes.
- When finished, set the function switch to the **OFF** position and turn off the multimeter.



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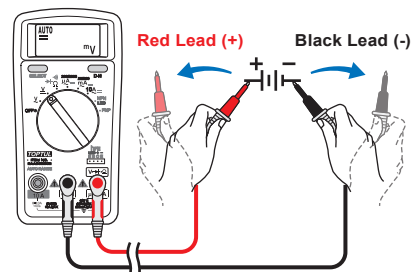
DC Voltage Measurement

WARNING

- Be sure the connection with the circuit under measurement comes with the correct polarity.
- To prevent the injury of operator, please make sure the input signals will not exceed the maximum rating input value 600V before forwarding the measurement.

Range 200mV~600V (5 ranges - Auto Ranging)

- Set the function switch to the \underline{V} position.
- Insert the black test lead plug into the **(COM)** Input Terminal (Negative) and the red test lead plug into the **(V- \rightarrow - Ω)** Input Terminal (Positive). Be sure to observe the correct polarity.
- Touch the test probe tips to the DC circuit under test.
- Read the value when it stabilizes.
- When finished, set the function switch to the **OFF** position and turn off the multimeter.



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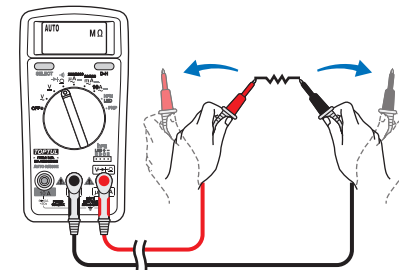
Resistance Measurement

WARNING

- The polarity is irrelevant to this measurement.
- To prevent the reading error, please do not touch the probes of test lead during measurement.

Range 200 Ω ~20M Ω (6 ranges - Auto Ranging)

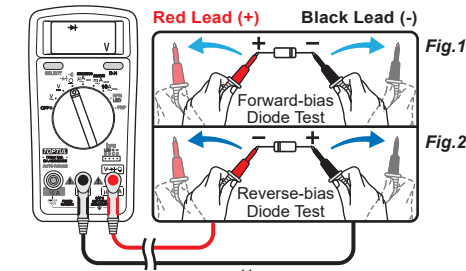
- Set the function switch to the Ω / \rightarrow / Ω position and M Ω unit display on LCD.
- Insert the black test lead plug into the **(COM)** Input Terminal (Negative) and the red test lead plug into the **(V- \rightarrow - Ω)** Input Terminal (Positive).
- Touch the test probe tips to the object under test.
- Read the value when it stabilizes.
- When finished, set the function switch to the **OFF** position and turn off the multimeter.



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Diode Test

- Set the function switch to the Ω / \rightarrow / Ω position. Press **SELECT** key and \rightarrow symbol display on LCD.
- Insert the black test lead plug into the **(COM)** Input Terminal (Negative) and the red test lead plug into the **(V- \rightarrow - Ω)** Input Terminal (Positive).
- Touch the test probe tips to the diode under test. Reverse the probe polarity by switching probe position. Be sure to observe the correct polarity.
- (A) Forward-bias Diode Test (Fig.1)**
Connect the black test probe tip to the diode negative and red test probe tip to the diode positive. Silicon diodes reading is approximately 0.5~0.7V. GE diodes reading is approximately 0.2~0.3V. In case the reading value is near to "0", it means short circuit. If LCD display "OL", it means open circuit.
- (B) Reverse-bias Diode Test (Fig.2)**
Connect the black test probe tip to the diode positive and red test probe tip to the diode negative. Normally the LCD display "OL" indicating that the diode is good. The diode is defective if the display gives a certain voltage level.
- When finished, set the function switch to the **OFF** position and turn off the multimeter.



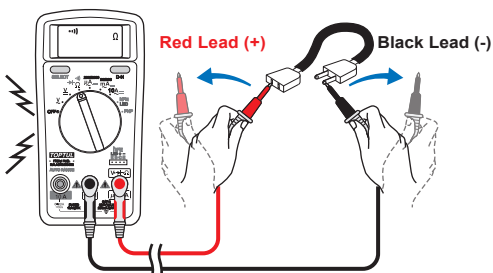
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Continuity Check

WARNING

To avoid damaging the multimeter:
Please shut down the power source applying the circuit under test before forwarding measurement. Otherwise, the high voltage or big current may damage the multimeter.

- Set the function switch to the Ω / \rightarrow / Ω position. Press **SELECT** key and \rightarrow symbol display on LCD.
- Insert the black test lead plug into the **(COM)** Input Terminal (Negative) and the red test lead plug into the **(V- \rightarrow - Ω)** Input Terminal (Positive).
- Touch the test probe tips to the circuit under test.
- If the resistance is less than approximately 100 Ω , the audible signal will sound. The display will also show the actual resistance.
- When finished, set the function switch to the **OFF** position and turn off the multimeter.



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Current Measurement (μ A, mA, A)

WARNING

- Do not make current measurements on the 6A to 10A scale for longer than 60 seconds. Exceeding 60 seconds may cause damage to the meter or the test leads.
- To avoid damaging the multimeter, before starting measurement, make sure the appropriate mode / function switch is set up.
- Select a proper range for exact measurement after receiving a rough value by setting the range knob at the top level if current range is unknown. Otherwise, the meter may be damaged by this improper operation.

- Set the function switch to the \approx 200/2000 μ A, \approx 20/200mA, \approx 10A position, each position needs to work with the current from correct input terminal.
- Press **SELECT** key to choose AC or DC mode, the \sim or \approx symbol display on LCD.
- Insert the black test lead plug into the **(COM)** Input Terminal (Negative) and the red test lead plug into the **(μ A-mA)** or **10A** Input Terminal (Positive).
- The measuring value is about AC/DC 200 μ A~200mA at μ A-mA position, please do not over input, the max. protective fuse at this position is 0.5A/600V; The measuring value is about AC/DC 10A at **10A** position, please do not over input, the max. protective fuse at this position is 10A/600V. Please choose input terminal correctly otherwise the meter may be damaged by this improperly operation.
- Touch the black test probe tips to the negative side then touch the red test probe tips to the positive side of the circuit.
- Read the current in the LCD display. If the measured current is unsure beforehand, set the range knob to the highest range, then reduce it gradually until obtain the highest resolution readings.
- When finished, set the function switch to the **OFF** position and turn off the multimeter.

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LED Test & hFE Test

A. LED Test

- Set the function switch to the NPN/LED position.
- Insert the LED pins into the **hFE & LED Terminal**, longer pin of the LED to + & shorter pin to - . (Fig.3)
- If LED light up, the LED is normal. If the LED dose not light up, then pins are inserted incorrect or LED is defective.
- When finished, set the function switch to the **OFF** position and turn off the multimeter.

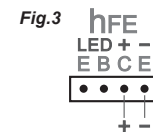
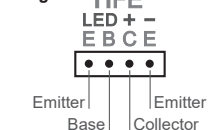


Fig.3

Fig.4



B. NPN & PNP Test

- Set the function switch to the NPN/LED or PNP position.
- Insert the pins of the NPN or PNP transistor into the **hFE & LED Terminal**. (Fig.4)
- If pins are correctly inserted, the hFE value can be read directly; If pins inserted incorrect, LCD will show 000 or over 1000.
- When finished, set the function switch to the **OFF** position and turn off the multimeter.

Auto Power Off Device (Power Saving)

The multimeter will power off automatically in 15 minutes later after the last operation was stopped. One minute before the multimeter shut down, the buzzer sounds to warn the operator. Press any key or turn the function switch can regenerate the multimeter.

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NOTE:

If the multimeter is regenerated by pressing **D-H** key while the Auto Power Off function will cancel thereof. If by pressing other keys or turn the function switch knob, the Auto Power Off is still available and will turn off the power again after 15 minutes.

Auto Power Off Cancellation

Hold down **D-H** key and then turn the function switch knob to power on the multimeter. The Auto Power Off function is canceled thereon. In case **D-H** symbol displays on the LCD, please press **D-H** key again to cancel **D-H** symbol and enter the normal measuring mode. The Auto Power Off function is still disabled.

Storage and Cleaning

- Don't wipe the instrument with any organic solvent to avoid damage or discolor happened in front panel. If necessary, clean the instrument with dry cloth.
- Don't leave the instrument exposed to direct sunlight or in a hot and humidity place.

For Environment

- Do not dispose electrical appliances as unsorted municipal waste, use separate collection facilities.
- Contact your local government for information regarding the collection systems available.
- If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being.
- When replacing old appliances with new ones, the retailer is legally obligated to take back your old appliance for disposal at least for free of charge.

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