Jefferson®
PROFESSIONAL TOOLS & EQUIPMENT

JEFDMM600V
600V DIGITAL MULTIMETER
USER GUIDE
v.1.1

Important: Please read all information carefully before use and keep these instructions in a safe place for future reference.

EQUIPMENT OVERVIEW

This is a compact CAT III 600V rated multimeter for measuring DC and AC voltage, DC current, resistance, continuity, diode and batteries. A short summary of the features of this equipement is listed below:

- CAT III 600V Digital Mulitmeter
- 3.5 Digit Backlit LCD Display (Maximum Reading 1999)
- Data Hold Function
- Overload Protection
- Low Battery Indication
- Continuity & Diode Testing
- Battery testing: 1.5V / 9V
- Resistance Measurements: up to 2000KΩ
- Manufactured & Tested to EN 61010

SPECIFICATIONS

DC Voltage Range:	**200m ~ 600V**
DC Current Range:	**2000µ ~ 10A**
AC Voltage:	**200 ~ 600V**
Input Impedance:	**1MΩ**
Resistance:	**200 ~ 2MΩ**
Continuity:	**less than 30Ω more than 100Ω**
Diode Testing:	**2.8V (approx)**
Test Current:	**1mA**
Battery Testing	**1.5V / 9V**
Overload Protection: Both Fuses: ø5x20mm	**F1: Fuse, 250mA / 600V, Fast action** **F2: Fuse, 10A / 600V, Fast action**
Power Supply:	**1x 9V Battery**
Dimensions:	**147 x 87 x 47mm**
Weight:	**290g (including battery)**

ELECTRICAL SYMBOLS

This equipment should only be used by fully trained, qualified and responsible personel. The following list of common electrical symbols is provided for reference:

~	Alternating Current (AC)
⎓	Direct Current (DC)
≂	Both Alternating and Direct Current AC/DC
⏚	Earth (ground) Terminal
⏛	Fuse
⧈	Double or reinforced insulation protection
⚠	Caution: Risk of electric shock

SAFETY

• Always check this equipment before use. In particluar ensure that you check the case and insulation surrounding the connectors. Inspect the test leads for damaged insulation or exposed wiring. Replace the test leads if any defects are identified .Do not use the equipment if any damage or defect is found.
• Do not operate the meter in environments where explosive gas, vapor or dust is present.
• You can test that the meter is functioning correctly by measuring a known voltage before use.
• Never exceed the rated voltage, as marked on the meter, between terminals or between any terminal and earth ground.
• When using the probes, ensure you keep your fingers behind the finger guards.
• Connect the common test lead before connecting the live test lead. When disconnecting test leads always disconnect the live test lead first.
• Remove the test leads from the meter before opening a battery cover or case.
• Do not operate the meter with a battery cover that is removed or loose.
• Avoid touching conductors with hands or skin.
• Never use the equipment in wet conditions or when hands or skin are wet.
• Do not use the equipment if any part of it or the test leads are wet.
• Please note that where an input terminal is connected to dangerous live potential, the potential can occur at all other terminals.

This equipment is suitable for use for CAT III rated measurements only and should not be used on equipement that requires CAT IV. Check compatibility before use.

• Disconnect circuit power and discharge all capacitors before testing resistance, diode, continuity or temperature (where applicable).
• Always use the proper terminals, function and ranges specified for your equipment. Contact Jefferson Tools for advise if you are unsure about any aspect of the functionality of this equipment.
• When measuring current always turn off the circuit power before connecting the meter. Remember to place the meter in series with the circuit.
• Always take precautions when working with voltages exceeding 30V AC RMS, 42V Peak or 60V DC.
• Always disconnect the test leads before rotating the range switch to change functions.

Important: Always replace the battery as soon as the low battery indicator appears on the display. Never use the equipment on low battery.

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EQUIPMENT IDENTIFICATION

The table below describes the features numbered in the diagram shown to the right:

1	**LCD Display** 3.5 Digits (Maximum reading 1999)
2	**Backlight Button**: Use this button to activate the backlight on the LCD Display. The backlight automatically turns off after 20 seconds.
3	**Function / Range Switch:** - Used to select the required Function / Range and turn the meter ON and OFF
4	**10A Terminal**: Plug in connector for the red test lead for current measurements between 200mA - 10A
5	**COM Terminal:** Plug-in connector for the black test lead
6	**INPUT Terminal:** Plug-in connector for the red test lead and all measurements except for current testing between 200mA - 10A.
7	**Hold Button** - Used to Enter / Exit "**Data Hold"** function
8	Holster

MEASURING DC VOLTAGE

1. Connect the black test lead to the **COM** terminal and the red lead to the **INPUT** terminal.
2. Set the **Function / Range** switch to the desired V⎓ range position. If the magnitude of the voltage is not known before hand you can set the range to the highest range first and then reduce it range by range until a suitable resolution is obtained.
3. Connect the test leads across the source or circuit to be tested.
4. Check the DC Voltage reading on the display. The polarity of the red test lead connection will also be indicated.

Note: To avoid electric shock, personal injury or damage to the equipment do not apply any voltage higher than the rated capacity of 600V between the terminals

DC Voltage

Range	Resolution	Accuracy
200mV	100µV	± (0.5%+5)
2V	1mV	± (0.8%+5)
20V	10mV	
200V	100mV	
600V	1V	± (1.0%+5)

Input Impedance: 1MΩ
Max. Allowable Input Voltage: 600V DC/AC rms

MEASURING AC VOLTAGE

1. Connect the black test lead to the **COM** terminal and the red lead to the **INPUT** terminal.
2. Set the **Function / Range** switch to the desired V~ range position. If the magnitude of the voltage is not known before hand you can set the range to the highest range first and then reduce it range by range until a suitable resolution is obtained.
3. Connect the test leads across the source or circuit to be tested.
4. Check the AC Voltage reading on the display. The polarity of the red test lead connection will also be indicated.

Note: To avoid electric shock, personal injury or damage to the equipment do not apply any voltage higher than the rated capacity of 600V between the terminals.

AC Voltage

Range	Resolution	Accuracy
200V	100mV	± (1.2%+10)
600V	1V	

Frequency Response: 40Hz ~ 400Hz
Max. Allowable Input Voltage: 600V AC
Response: Average, calibrated in rms of sine wave

BATTERY TESTING

1. Connect the black test lead to the **COM** terminal and the red lead to the **INPUT** terminal.
2. Set the **Function / Range** switch to the corresponding **BATT** range position (1.5V or 9V).
3. Connect the red test lead to the positive terminal on the battery and the black test lead to the negative battery terminal.
4. Check the working voltage of the battery on the display.

Battery Testing

Range	Description	Test Condition
1.5V	The working voltage of the battery will be shown on the display so that the quality of the battery can be judged.	Test Current: about 30mA
9V		Test Current: about 8mA

Overload Protection: 250mA/600V FAST fuse

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MEASURING DC CURRENT

1a. For current measurements less than 200mA:
Connect the black test lead to the **COM** terminal and the red lead to the **INPUT** terminal.
1b. For current measurements between 200mA and 10A:
Connect the black test lead to the **COM** terminal and the red lead to the **10A** terminal.

2. Set the **Function / Range** switch to the desired A⎓ range position. If the magnitude of the current is not known before hand you can set the range to the highest range first and then reduce it range by range until a suitable resolution is obtained.
3. Turn off the power to the circuit you need to measure then discharge all capacitors of the circuit.
4. Break the circuit path to be measured and connect the test leads in series with the circuit.
5. Check the DC Current reading on the display. The polarity of the red test lead connection will also be indicated.

MEASURING RESISTANCE

Before measuring in-circuit resistance, disconnect all power to the circuit to be tested and discharge all capacitors thoroughly.

1. Connect the black test lead to the **COM** terminal and the red lead to the **INPUT** terminal.
2. Set the **Function / Range** switch to the desired Ω range position.
3. Connect the test leads across the equipment to be tested.
4. Check the resistance reading on the display.

Note: For measurements > 1MΩ, the meter may take a few seconds to stabilize the reading. This is normal for high resistance measurements. When the input is not connected, i.e at open circuit, "**1**" will be displayed as an over-range indication.

CONTINUITY TESTING

Before measuring the continuity, disconnect all power to the circuit to be tested and discharge all capacitors thoroughly.

1. Connect the black test lead to the **COM** terminal and the red lead to the **INPUT** terminal.
2. Set the **Function / Range** switch to the •)) setting.
3. Connect the test leads across the circuit to be measured.
4. If the resistance is lower than about 30Ω, the built in buzzer will sound.

DIODE TESTING

1. Connect the black test lead to the **COM** terminal and the red lead to the **INPUT** terminal. Note the polarity of the red test lead is positive "**+**"
2. Set the **Function / Range** switch to the ⏩ setting.
3. Connect the red test lead to the anode of the diode to be tested and the black test lead to the cathode of the diode.
4. The display will show the approximate forward voltage drop of the diode. If the connection is reversed, then only the reading "**1**" will be shown on the display.

DC Current

Range	Resolution	Accuracy
200µA	0.1µA	± (1.0%+5)
2mA	1µA	
20mA	10µA	
200mA	100µA	± (1.2%+5)
10A	10mA	± (2.0%+5)

Overload Protection:
Fuse for **INPUT** Inputs Protection: 250mA/600V FAST fuse
Fuse for **10A** Inputs Protection: 10A/600V FAST fuse
Test Voltage Drop: 200mV
Max. Input Current: 10A (For inputs > 2A : measurement duration < 10 secs, interval > 15 minutes)

Resistance

Range	Resolution	Accuracy
200Ω	0.1Ω	± (1.2%+5)
2kΩ	1Ω	± (1%+5)
20kΩ	10Ω	
200kΩ	100Ω	
2MΩ	1kΩ	± (1.2%+5)

Max. Open Circuit Voltage: 3V
Overload Protection: 600V DC/AC rms

Continuity & Diode Testing

Range	Description	Remark
⏩	The forward voltage drop of the diode will be displayed.	Open Circuit Voltage: about 2.8V Overload Protection: 600V DC/AC rms
•))	The built-in buzzer will sound if the resistance is less than about 30Ω. If the resistance is between 30Ω and 100Ω, the buzzer may sound or may not sound. The buzzer will not sound if the resistance is more than 100Ω.	Overload Protection: 600V DC/AC rms

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MAINTENANCE & STORAGE

Note: Apart from replacing the fuse and battery, never attempt to service or repair this equipment yourself. Contact Jefferson Tools for information and advice if a fault is detected.

NOTE: Ensure the equipment is turned off and that the test leads are disconnected before carrying out any cleaning or maintenance on the multimeter.

- Periodically wipe the case with a slightly damp cloth a small quantity mild detergent. Do not use abrasives or solvents to clean.
- Keep the buttons / terminals clean (carefully) using a cleaning swab dipped in alcohol as required.
- Store the multimeter in a dry environment, away from devices emitting magnetic fields, when not in use.

LIMITED WARRANTY STATEMENT

Jefferson Professional Tools & Equipment ®, or hereafter "Jefferson" warrants its customers that its products will be free of defects in workmanship or material. Jefferson shall, upon suitable notification, correct any defects, by repair or replacement, of any parts or components of this product that are determined by Jefferson to be faulty or defective. This warranty is void if the equipment has been subjected to improper installation, storage, alteration, abnormal operations, improper care, service or repair.

Warranty Period
Jefferson will assume both the parts and labour expense of correcting defects during the stated warranty periods below. All warranty periods start from the date of purchase from an authorised Jefferson dealer. If proof of purchase is unavailable from the end user, then the date of purchase will be deemed to be 3 months after the initial sale to the distributor.

1 Year
- JEFDMM600V - 600V DIGITAL MULTIMETER

90 Days
- All replacement parts purchased outside of the warranty period

Important: All parts used in the repair or replacement of warranty covered equipment will be subject to a minimum of 90 days cover or the remaining duration of the warranty period from the original date of purchase.

Warranty Registration / Activation
You can register and activate your warranty by visiting the Jefferson Tools website using the following address: www.jeffersontools.com/warranty and completing the online form. Online warranty registration is recommended as it eliminates the need to provide proof of purchase should a warranty claim be necessary.

Warranty Repair
Should Jefferson confirm the existence of any defect covered by this warranty the defect will be corrected by repair or replacement at an authorized Jefferson dealer or repair centre.

Packaging & Freight Costs
The customer is responsible for the packaging of the equipment and making it ready for collection. Jefferson will arrange collection and transportation of any equipment returned under warranty. Upon inspection of the equipment, if no defect can be found or the equipment is not covered under the terms of the Jefferson warranty, the customer will be liable for any labour and return transportation costs incurred. These costs will be agreed with the customer before the machine is returned.

NOTE: * Jefferson reserve the right to void any warranty for damages identified as being caused through misuse *

Warranty Limitations
Jefferson will not accept responsibility or liability for repairs made by unauthorised technicians or engineers. Jefferson's liability under this warranty will not exceed the cost of correcting the defect of the Jefferson products. Jefferson will not be liable for incidental or consequential damages (such as loss of business or hire of substitute equipment etc.) caused by the defect or the time involved to correct the defect. This written warranty is the only express warranty provided by Jefferson with respect to its products. Any warranties of merchantability are limited to the duration of this limited warranty for the equipment involved.

Claiming Warranty Coverage
The end user must contact Jefferson Professional Tools & Equipment:
(Tel: **+44 (0) 1244 646 048**) or their nearest authorised Jefferson dealer where final determination of the warranty coverage can be ascertained.

EC DECLARATION OF CONFORMITY

We, Jefferson Professional Tools & Equipment, as the authorised European Community representative of the manufacturer, declare that this equipment conforms to the requirements of the following standards:

EN 61010 - Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use : related to CE Directives 2014/35/EU (Low Voltage) & 2014/30/EU (EMC)

Signed by: Stephen McIntyre (Operations Director) **Date:** 14.01.20

Jefferson Tools, Herons Way, Chester Business Park, Chester, United Kingdom, CH4 9QR,
Tel. +44 (0)1244 646 048, **Email:** sales@jeffersontools.com

BATTERY & FUSE REPLACEMENT

Replacing the Battery:
Change the battery immediately with a like-for-like replacement (1x 9V) as required when the low-battery indicator is displayed. **Do not use the meter when the indicator is displayed.** To replace the battery, first remove the holster then remove the screws on the battery cover, remove the old battery and insert the replacement. Replace the battery cover and screw to secure.
Replacing the Fuses:
The fuses supplied with this equipment should rarely need to be replaced and any requirement to replace them will usually be the result of misuse of the multimeter. To replace the fuse, remove the holster and screws on the backcover, remove the faulty fuse and replace with a similar size and rated fuse. Reinstall the backcover and secure with the screws. This meter is supplied with two Ø6.35 x 32mm fuses: **F1 Fuse:** 250mA / 600V, Fast action **F2: Fuse:** 10A / 600V, Fast action

Step 1 - Reporting the Defect

Online Method:
Visit our website www.jeffersontools.com/warranty and complete the Warranty Returns form. You can complete the form online and submit it to us directly or download the form to print out and return by post.

Telephone Method:
Contact your Jefferson dealer or sales representative with the following information:

- Model number
- Serial number (usually located on the specification plate)
- Date of purchase

A Warranty Returns form will be sent to you for completion and return by post or fax, together with details of your nearest authorised Jefferson repair centre. On receipt of this form Jefferson will arrange to collect the equipment from you at the earliest convenience.

Step 2 - Returning the Equipment
It is the customer's responsibility to ensure that the equipment is appropriately and securely packaged for collection, together with a copy of the original proof of purchase. Please note that Jefferson cannot assume any responsibility for any damage incurred to equipment during transit. Any claims against a third party courier will be dealt with under the terms & conditions of their road haulage association directives.

NOTE: Jefferson will be unable to collect or process any warranty requests without a copy of the original proof of purchase.

Step 3 - Assessment and Repair
On receipt, the equipment will be assessed by an authorised Jefferson engineer and it will be determined if the equipment is defective and in need of repair and any repairs needed are covered by the warranty policy. In order to qualify for warranty cover all equipment presented must have been used, serviced and maintained as instructed in the user manual. Where repair is not covered by the warranty a quotation for repair, labour costs and return delivery will be sent to the customer (normally within 7 working days).

Note: If the repair quotation is not accepted Jefferson Professional Tools & Equipment will invoice 1 hour labour time at £30 per hour plus return carriage costs (plus VAT). In cases where no fault can be found with the equipment, or, if incorrect operation of the equipment is identified as the cause of the problem, a minimum of 1 hour labour at £30 per hour plus carriage costs will be required before the equipment will be despatched back to the customer.

Any equipment repaired or replaced under warranty will normally be ready for shipment back to the customer within 7 working days upon receipt of the equipment at an authorised Jefferson Repair centre (subject to part availability). Where parts are not immediately available Jefferson will contact you with a revised date for completion of the repair.

General Warranty Enquiries
For any further information relating to Jefferson warranty cover please call:
+44 (0) 1244 646 048 or send your enquiry via email to warranty@jeffersontools.com

Disclaimer:
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Please note that the warranty for this item covers manufacturing defects. The warranty does not cover overloading, normal wear and tear and abuse. The warranty will become invalid if the casing is opened or tampered with in any way.

Information on Disposal for Users of Waste Electrical & Electronic Equipment (WEEE)]

This symbol on the product(s) and / or accompanying documents means that used electrical and electronic products should not be mixed with general household waste.

For proper treatment, recovery and recycling, please take this product(s) to designated collection points where it will be accepted free of charge.