



POCKET DIGITAL MULTIMETER

68476



IMPORTANT: Please read these instructions carefully to ensure the safe and effective use of this product and save these instructions for future reference. This manual has been compiled by Draper Tools and is an integrated part of the product with which it is enclosed and should be kept with it for future references.

This manual describes the purpose for which the product has been designed and contains all the necessary information to ensure its correct and safe use. We recommend that this manual is read before any operation or, before performing any kind of adjustment to the product and prior to any maintenance tasks. By following all the general safety instructions contained in this manual, it will ensure both product and operator safety, together with longer life of the product itself.

All photographs and drawings in this manual are supplied by Draper Tools to help illustrate the operation of the product. Whilst every effort has been made to ensure accuracy of information contained in this manual, the Draper Tools policy of continuous improvement determines the right to make modifications without prior warning.

1. TITLE PAGE

1.1 INTRODUCTION:

USER MANUAL FOR:

POCKET DIGITAL MULTIMETER

Stock no. 68476

Part no. DMM8.

1.2 REVISIONS:

Date first published August 2019

As our user manuals are continually updated, users should make sure that they use the very latest version.

Downloads are available from: <http://www.drapertools.com/manuals>

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1.3 UNDERSTANDING THIS MANUALS SAFETY CONTENT:

WARNING! Information that draws attention to the risk of injury or death.

CAUTION! Information that draws attention to the risk of damage to the product or surroundings.

1.4 COPYRIGHT © NOTICE:

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3. GUARANTEE

3.1 GUARANTEE

Draper tools have been carefully tested and inspected before shipment and are guaranteed to be free from defective materials and workmanship.

Should the tool develop a fault, please return the complete tool to your nearest distributor or contact Draper Tools Limited, Chandler's Ford, Eastleigh, Hampshire, SO53 1YF. England. Telephone Sales Desk: (023) 8049 4333 or Product Helpline (023) 8049 4344.

A proof of purchase must be provided with the tool.

If upon inspection it is found that a fault occurring is due to defective materials or workmanship, repairs will be carried out free of charge. The guarantee period covering parts/labour is 12 months from the date of purchase. This guarantee does not apply to normal wear and tear, nor does it cover any damage caused by misuse, careless or unsafe handling, alterations, accidents, or repairs attempted or made by any personnel other than the authorised Draper warranty repair agents.

Note: If the tool is found not to be within the Terms of Warranty, repair and carriage charges will be quoted and made accordingly.

This guarantee applies in lieu of any other guarantee expressed or implied and variations of its terms are not authorised.

Your Draper guarantee is not effective unless you can produce upon request a dated receipt or invoice to verify your proof of purchase within the guarantee period.

Please note that this guarantee is an additional benefit and does not affect your statutory rights.

Draper Tools Limited.

Note: This tool is intended for domestic use only.

4. INTRODUCTION

4.1 SPECIFICATION

Stock no..... 68476
Part no..... DMM8
Dimensions (W x H x D) 70 x 126 x 25.5mm
Battery type 1 x 9V (PP3)
Weight 150g
Fuse and diode protected.

Warning: To avoid electrical shock remove test leads before opening battery cover. To prevent risk of fire only use the correct size/type fuse, as fitted.

Range Selection	Range	Resolution	Accuracy
DC Voltage Overload Protection: 220V rms A.C. for 200mV range and 500V D.C. or 500V rms A.C. for other ranges.	200mV 2000mV 20V 200V 500V	100μV 1mV 10mV 100mV 1V	+/- 0.5% of reading +/- 3 digits +/- 1.0% of reading +/- 5 digits +/- 1.0% of reading +/- 5 digits +/- 1.0% of reading +/- 5 digits +/- 1.2% of reading +/- 5 digits
AC Voltage Overload Protection: 500V D.C. or 500V rms for all ranges. Response: Average responding, calibrated in rms of a sine wave. Frequency range: 45Hz-450Hz.	200V 500V	100mV 1V	+/- 1.2% of reading +/- 10 digits +/- 1.2% of reading +/- 10 digits
DC Current Overload Protection: 0.5A/250V fuse and 5A/250V fuse. Measuring Voltage Drop: 200mV.	200μA 2000μA 20mA 200mA 5A	100μA 1μA 10μA 100μA 10mA	+/- 1.8% of reading +/- 2 digits +/- 1.8% of reading +/- 2 digits +/- 1.8% of reading +/- 2 digits +/- 2.0% of reading +/- 2 digits +/- 2.0% of reading +/- 10 digits
Resistance Maximum open circuit voltage: 3.0V. Overload protection: 15 seconds maximum 220V rms on all ranges.	200 ohm 2000 ohm 20k ohm 200k ohm 2000k ohm	0.1 ohm 1 ohm 10 ohm 100 ohm 1k ohm	+/- 1.0% of reading +/- 10 digits +/- 1.0% of reading +/- 2 digits +/- 1.0% of reading +/- 2 digits +/- 1.0% of reading +/- 2 digits +/- 1.0% of reading +/- 2 digits

5. HEALTH & SAFETY INFORMATION

5.1 GENERAL SAFETY INSTRUCTIONS FOR MULTIMETER USE

Warning:

To avoid electric shock or personal injury, read “Safety Information” and “Warning and Precautions” before using the Meter.

Safety Information











This meter complies with the standards IEC61010: in pollution degree 2, overvoltage category (CAT I 500V, transient overvoltages is 800V) and double insulation. Use the meter only as specified in this manual, otherwise the protection provided by the Meter may be impaired.

In this manual, a Warning identifies conditions and actions that pose hazards to the user.

A Caution identifies conditions and actions that may damage the meter or the equipment under test.

International symbols used on the meter and in this manual are in Table 1.


Table 1. International Electrical Symbols:

-  AC (Alternating Current)
-  DC (Direct Current)
-  AC or DC
-  Battery
-  Safety information. Refer to the manual
-  Dangerous voltage may be present
-  Earth ground
-  Fuse
-  Conforms to European Union directive
-  Double insulated

WARNING AND PRECAUTIONS

To avoid possible electric shock or personal injury, and to avoid possible damage to the meter or to the equipment under test, comply with the follow practices:



- Do not use the meter if it is damaged. Before you use the meter, inspect the case. Pay particular attention to the insulation surrounding the connectors.
- Inspect the test leads for damaged insulation or exposed metal. Check the test leads for continuity. Replace damaged test leads before you use the meter.
- Do not use the meter if it operates abnormally. Protection may be impaired. When in doubt, have the meter serviced.
- Do not operate the meter around explosive gas, vapour, or dust.
- Do not apply more than the rated voltage, as marked on the meter, between terminals or between any terminal and earth ground.
- Before use, verify the meter’s operation by measuring a known voltage.

- When measuring current, turn off circuit power before connecting the meter in the circuit.
- When servicing the meter, use only specified replacement parts. Do not use the meter in a manner not specified by this manual, or the safety features of the meter may be impaired.
- Use with caution when working above 30V ac rms, 42V peak, or 60V dc. Such voltages pose a shock hazard.
- When using the probes, keep your fingers behind the finger guards on the probes.
- Connect the common test lead before you connect the live test lead. When you disconnect test leads, disconnect the live test lead first.
- Remove the test leads from the meter before you open the battery door.
- Do not operate the meter with the battery door or portions of the cover removed or loosened.
- To avoid false readings, which could lead to possible electric shock or personal injury, replace the batteries as soon as the low battery indicator (“”) appears.
- Safety Compliance IEC 61010-1, 2000 CAT I 500V overvoltage standards. Do not measure voltages above 500V in Category I installations.

Overvoltage installation categories per IEC 61010-1, 2000: The Meter is designed to protect against transients in these categories:

- CAT I From high-voltage low-energy sources, e.g., electronic circuits or a copy machine.
- CAT II From equipment supplied from the fixed installation, e.g., TVs, PCs, portable tools and household appliances.
- CAT III From equipment in fixed equipment installations, e.g., installation panels, feeders and short branch circuits, and lighting systems in large buildings.

General Specifications

- Maximum Voltage between any Terminal and Earth Ground: 500V
- Measurement rate: updates 2-3/sec.
- Over range indication: “1” figure only in the display
- Automatic negative polarity indication.
- The “” is displayed when the battery voltage drops below the operating voltage
- Operating temperature: 10°C~40°C, 0~75% R.H.
- Storage temperature: -10°C~50°C, 0~75% R.H.
- Power: Single 9V  battery IEC 6F22, NEDA 1604, JIS 006P.
- Dimensions: 126L*70W*24Hmm.
- Weight: approx 140g (including battery)

6. TECHNICAL DESCRIPTION

6.1 IDENTIFICATION



- ① Function and range selector switch
- ② LCD display unit
- ③ "Com" jack socket
- ④ V/mA (voltage/resistance/ amperage) jack socket
- ⑤ "5A" jack socket (max 5A)
- ⑥ Transistor test socket
- ⑦ Red test lead
- ⑧ Black test lead

7. UNPACKING & CHECKING

7.1 PACKAGING

Carefully remove the product from the packaging and examine it for any sign of damage caused during shipping. Lay the contents out and check them. If any part is damaged or missing, do not attempt to use the tool and contact the Draper Helpline immediately (see back page for details).

Retain the packaging material at least during the guarantee period: in case the machine needs to be returned for repair.

Warning! Some of the packaging materials used may be harmful to children, keep them out of reach from children.

Disposed of any packaging correctly and according to local regulations.

7.2 HANDLING & STORAGE

Although this machine is small in size, care must still be taken when handling. Dropping this machine will have an effect on the accuracy. This machine is not a toy and must be respected.

The environment will have a negative result on its operation if you are not careful. If the air is damp, components will rust. If the machine is unprotected from dust and debris; components will become clogged: And if not cleaned and maintained correctly or regularly the machine will not perform at its best.

8. OPERATING INSTRUCTIONS

WARNING: To avoid electric shock hazard and/or damage to the instrument, do not measure voltages that might exceed 500V above earth ground. Before the use of instrument, inspect test leads, connectors and probes for cracks, breaks, or crazes in the insulation. Dangerous voltages may be present at the input terminals and may not be displayed. To avoid electric shock or damage to the meter when measuring resistance or continuity in a circuit, make sure the power to the circuit is turned off and all capacitors are discharged.

8.1 DC & AC VOLTAGE MEASUREMENT

1. Connect red test lead to “VΩmA” jack, Black lead to “COM” jack.
2. Set RANGE switch to desired VOLTAGE position, if the voltage to be measured is not known beforehand, set switch to the highest range and reduce it until satisfactory reading is obtained.
3. Connect test leads to device or circuit being measured.
4. Turn on power of the device or circuit being measured voltage value will appear on Digital Display along with the voltage polarity.

8.2 DC CURRENT MEASUREMENT

1. Red lead to “VΩmA”, Black lead to “COM” (for measurements between 200mA and 5A. connect red lead to “5A” jack with fully depressed.)
2. RANGE switch to desired A $\overline{=}$ position.
3. Open the circuit to be measured, and connect test leads IN SERIES with the load in with current is to measure.
4. Read current value on Digital Display.
5. Additionally, “5A” function is designed for intermittent use only. Maximum contact time of the test leads with the circuit is 10 seconds, with 15 minutes intermission time between tests.

8.3 RESISTANCE MEASUREMENT

1. Red lead to “VΩmA”. Black lead to “COM”.
2. RANGE switch to desired OHM position.
3. If the resistance being measured is connected to a circuit, turn off power and discharge all capacitors before measurement.
4. Connect test leads to circuit being measured.
5. Read resistance value on Digital Display.

8.4 DIODE MEASUREMENT

1. Red lead to “VΩmA”, Black lead to “COM”.
2. RANGE switch to “ $\rightarrow+$ ” position.
3. Connect the red test lead to the anode of the diode to be measured and black test lead to cathode.
4. The forward voltage drop in mV will be displayed. If the diode is reversed, figure “1” will be shown.


8.5 TRANSISTOR hFE MEASUREMENT


1. RANGE switch to the hFE position.
2. Determine whether the transistor is PNP or NPN type and locate the Emitter, Base and Collector leads. Insert the leads into the proper holes of the hFE Socket on the front panel.
3. The meter will display the approximate hFE value at the condition of base current 10μA and VCE 2.8V.


9. EXPLANATION OF SYMBOLS


9.1 EXPLANATION OF SYMBOLS


Carefully remove the product from the packaging and examine it for any sign of damage


- 


WEEE
Do not dispose of Waste Electrical & Electronic Equipment in with domestic rubbish
- 


Attention.
- 


For indoor use.
Do not expose to rain.
- 


High voltage / current!
Danger.
- 


Class II construction
(Double insulated)
- 


Conforms to all relevant safety standards.
- 


Earth
- 


Fuse
- 

Diode test
- 

Low battery display
- 

Voltage AC
- 

Voltage DC
- 

Warning!
Read instruction manuals before operating and servicing this equipment.
- 

Resistance in Ohms

10. MAINTENANCE

- Beyond replacing batteries and fuses, 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 instructions. The recommended calibration cycle is 12 months.
- 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
 - a) Switch the meter OFF and remove the test leads.
 - b) Shake out any dirt that may be in the terminals.
 - c) Soak a new swab with isopropyl alcohol and work around the inside of each input terminal.
 - d) Use a new swab to apply a light coat of fine machine oil to the inside of each terminal.

10.1 TEST LEADS REPLACEMENT

Warning: Full in compliance with safety standards can be guaranteed only if used with test leads supplied. If necessary they must be replaced with the same model or same electric ratings. Electric ratings of the test leads: 600V 5A. You must replace the test leads if the lead is exposed.

- The measurement category of a combination of the test leads and an accessory is the lower of the measurement categories of the test leads and of the accessory.
- The test leads intended for use within measurement category I, shall not be used for measurements within the other measurement categories.

10.2 TESTING THE FUSES

Warning: To avoid electric shock or injury, remove the test leads and any input signals before replacing the fuses.

1. Turn the rotary switch to 200mA position.
2. Use a multimeter to measure resistance of V Ω mA terminal of 5A terminal to COM terminal. A good mA terminal or 5A terminal fuse is indicated by a reading between 0 Ω and 10 Ω . If the display is overloaded, replace the fuse and test again. If the display shows any other value, have the meter serviced. Contact an authorised service agent.

11. DISPOSAL

11.1 DISPOSAL

- At the end of the machine's working life, or when it can no longer be repaired, ensure that it is disposed of according to national regulations.
- Contact your local authority for details of collection schemes in your area.

In all circumstances:

- Do not dispose of power tools with domestic waste.
- Do not incinerate.
- Do not abandon in the environment.
- Do not dispose of WEEE* as unsorted municipal waste.



* Waste Electrical & Electronic Equipment.

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Service/Warranty Repair Agent:

For aftersales servicing or warranty repairs, please contact the Draper Tools Helpline for details of an agent in your local area.

YOUR DRAPER STOCKIST

DBCM0819

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