GB

DRAPER®

200 SERIES
MULTIMETER

41817 & 41818

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:

SERIES 200 MULTIMETER

Stock no. 41817 & 41818.
Part no. DMM200 & DMM201.

1.2 REVISIONS:

Date first published March 2017
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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:

2.1 CONTENTS

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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 the fault occurring is due to defective materials or workmanship, repairs will be carried out free of charge. This guarantee period covering parts/labour is 12 months from the date of purchase except where tools are hired out when the guarantee period is 90 days 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 agent.
Note: If the tool is found not to be within the terms of warranty, repairs 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.

4.1 GENERAL SPECIFICATIONS

Max Voltage between input terminal and Earth Ground: CATIII 600V.
Over-range Indication: display "1" for the significant digit.
Automatic display of negative polarity "–" .
Low Battery Indication: '⊟' displayed.
Max LCD display: 1999 (31/2 digits).
Fuse protection: F2-0.2A/250V (Ø5x20mm)； F1-10A/500V (Ø6x30mm).
Power Supply: 9V battery, 6F22 or NEDA 1604.
Operating Temp.: 0°C to 40°C (relative humidity <85%).
Storage Temp.:-10°C to 50°C (relative humidity <85%).
Guaranteed precision Temp.: 23±5°C (relative humidity <85%).
Dimension: 150x74x43mm (covering the protective cover).
Weight: approx. 233g (including battery).

DC Voltage

Range	Accuracy	Resolution
200mV	±(0.8% of rdg + 4 digits)	0.1mV
2V		1mV
20V		10mV
200V	±(0.8% of rdg + 5 digits)	100mV
600V	±(1.2% of rdg + 5 digits)	1V

Input Impedance: 1MΩ.

Overload protection: 600V DC and AC 380V effective value.

AC Voltage

Range	Accuracy	Resolution
200V	±(1.2% of rdg + 20 digits)	100mV
600V	±(1.2% of rdg + 20 digits)	1V

Overload protection: DC 800V or 600V AC rms.
Input Impendance: 1MΩ.
Frequency Range: 40 to 400Hz.
Display: average value response (calibrated in rms of sine wave)

4. INTRODUCTION

DC Current

Range	Accuracy	Resolution
2mA	±(1.0% of rdg + 10 digits)	1μA
20mA	±(1.0% of rdg + 10 digits)	10μA
200mA	±(1.5% of rdg + 20 digits)	100μA
10A	±(3.0% of rdg + 20 digits)	10mA

Overload protection: F1 10A/500V fuse, F2 200mA/250V fuse
Maximum input current: 10A (no more then 10 seconds)

Resistance

Range	Accuracy	Resolution
200Ω	±(1.5% of rdg +25 digits)	0.1Ω
2kΩ	±(0.8% of rdg +20 digits)	1Ω
20kΩ	±(0.8% of rdg +20 digits)	10Ω
200kΩ	±(0.8% of rdg +20 digits)	100Ω
2MΩ	±(2.0% of rdg +25 digits)	1kΩ

Over-load protection: 250V DC or 220V AC rms.

Temperature (Stock No.41818)

Range	Accuracy	Resolution
-20°C~400°C	±(1.2% rdg + 5 digits)	1°C
400°C~1000°C	±(2.0% rdg + 15 digits)	1°C

Transistor hFE Test

Range	Test Range	Test Current/voltage
NPN & PNP	0-1000	Ib=10μA / Vce=3V

Diode (Stock No.41818)

Range	Resolution	Function
	1mV.	Read the moment through the diode's approximate voltage.

Over-load protection: 250V DC or 220V AC rms.
Instantaneous DC current approximate 1mA
Reversed DC voltage: approximate 3.0V

Continuity Test

Range	Function
	Built-in buzzer will sound if resistance is lower than 70Ω

Over-load protection: DC 250V or AC 220V effective value
Open circuit voltage: approximate 3.0V

4.2 HANDLING & STORAGE

Care must still be taken when handling, dropping this machine will have an effect on the accuracy.

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.

5. HEALTH & SAFETY INFORMATION

5.1 SAFETY PRECAUTIONS

This instrument complies with IEC1010 (International Electrotechnical Commission promulgated safety standards). Design and production with an over-voltage category (CAT III) and using the pollution level 2 safety requirements.

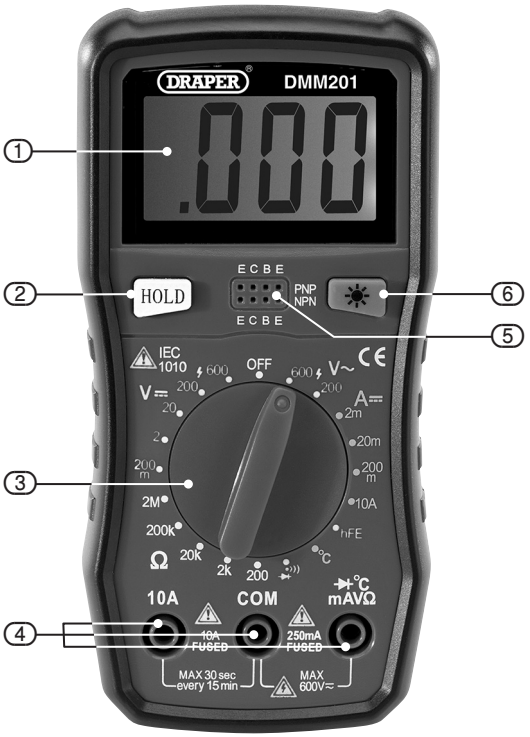
⚠Warning

To avoid electrical shock or personal injury.
Please read the safety information and “warnings and precautions” before use.

Warning: When measuring voltage above 30V, current above 10ma, AC power with an inductive load. Use caution not to touch exposed contacts due to the risk of electric shock, only use approved probes or clamps.

1. Before measuring, check whether the measurement function switch is in the correct position, check whether the test probe is connected correctly to avoid electric shock.
2. The meter is only to be used in conjunction with the supplied test leads to comply with safety standards. If the test leads are broken or damaged, replace the test leads of the same type or the same electrical specifications.
3. Do not use an unapproved fuse to replace the fuse inside the meter. Only replace with the same model or the same specifications of the fuse. Before changing, remove the test leads to ensure that there is no signal input.
4. Do not use unapproved batteries to replace the battery inside the meter. Replace only with the same model or the same electrical specifications of the battery. DO NOT mix new and old batteries and do not use re-chargeable batteries. Before changing, remove the test leads to ensure that there is no signal input.
5. During electrical measurements, the body must not be directly in contact with the earth, use insulating materials to keep your body insulated from the earth.
6. Do not store or use in high temperature, high humidity, flammable, explosive and strong magnetic field environments.
7. Measurements exceeding the limit values of the instrument may damage the instrument and endanger the safety of the operator.
8. Do not attempt to calibrate or service the instrument.
9. When the LCD shows “”, please replace the battery.
10. Do not insert the test leads to be inserted into the current terminals to measure the voltage!

6. IDENTIFICATION



41818 Shown

1. LCD display window.
2. HOLD button.
3. Measurement function range switch.
4. Probe sockets.
5. HFE Transistor test - input socket.
6. Backlight on and off button.

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).

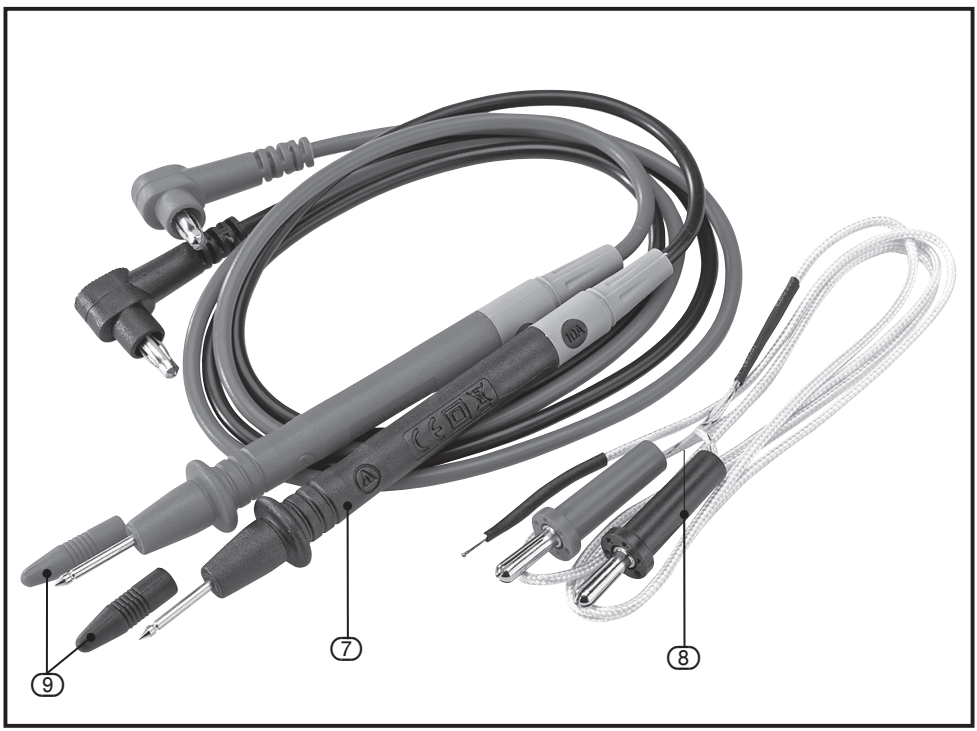
Retain the packaging material at least during the guarantee period: in case the machine needs to be returned for repair.

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 WHAT´S IN THE BOX?

As well as the product; there are several parts not fitted or attached to it.



⑦ Test probe

⑧ Temperature probe (41818 only)

⑨ Test probe caps

WARNING: DO NOT USE ON VOLTAGES ABOVE 600V.

8.1 DC VOLTAGE

1. Connect the black test lead to COM probe socket and the red to VΩmA probe socket.
2. Set the measurement function range switch to the desired V⎓ range position.

⚠ Note:
A) When the measurement is unknown always, set the highest position.

8.2 AC VOLTAGE

1. Connect the black test lead to COM probe socket and the red to VΩmA probe socket.
2. Set the measurement function range switch to the desired V~ position.

⚠ Note:
A) When the measurement is unknown always, set the highest position.

8.3 DC CURRENT

1. Connect the black test lead to COM probe socket and the red to the VΩmA probe socket for a maximum 200mA current, for a maximum 10A current, move the red lead to the 10A probe socket.
2. Set the measurement function range switch to the desired range position.

8.4 RESISTANCE (Ω)

1. Connect the black test lead to COM probe socket and the red to VΩmA probe socket.
2. Set the measurement function range switch to the desired Ω range position.

⚠ Note:
A) When measuring resistance above 1MΩ, the reading may take a few seconds to become stable.
B) When the input is not connected, i.e. at open circuit, the figure '1' will be displayed.
C) When checking in-circuit resistance, be sure the circuit under test is switched off and that all capacitors have been discharged fully.
E) When the measurement is uknown always set the measurement function range switch to the highest position.

8.5 TEMPERATURE (41818 ONLY)

1. Connect the black temperature probe lead to COM probe socket and the red to VΩmA probe socket.
2. Set the measurement function range switch to the desired °C position.

8. OPERATING INSTRUCTIONS

8.6 TRANSISTOR TESTING

1. Set the measurement function range switch to the ‘hFE’ position.
2. Determine whether the transistor under testing is NPN or PNP. Insert the leads into the correct holes of hFE socket on the front panel.

8.7 DIODE TEST

1. Connect the black test lead to COM probe socket and the red to VΩmA probe socket.
2. Set the measurement function range switch to ⊣◀ F position.

⚠ Note:
A) The meter will show approximate forward voltage drop of the diode.

8.8 CONTINUITY TESTING

1. Connect the black test lead to COM probe socket and the red to VΩmA probe socket.
2. Set the measurement function range switch to the ◦))) position.

⚠ Note:
If the circuit is open, figure ‘1’ will be displayed.

9.1. BATTERY REPLACEMENT

⚠ WARNING!
Before attempting to open the battery cover of the meter, be sure the test leads have been disconnected.

10. EXPLANATION OF SYMBOLS

10.1 EXPLANATION OF SYMBOLS

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

For indoor use.
Do not expose to rain.

Class II construction
(Double insulated)

Conforms to all relevant safety standards.

Earth

Fuse

Back light

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

Temperature

Diode test

hFE (Transistor testing)

Low battery display

Attention.

High voltage / current!
Danger.

Voltage AC

Voltage DC

Current DC

Resistance in Ohms

Continuity test buzzer

Data hold / Screen lock

Auto power off

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.

CONTACT US

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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.

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