GB

DRAPER®

400 SERIES
MULTIMETER

41835

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 400 MULTIMETER

Stock no. 41835.
Part no. DMM403.

1.2 REVISIONS:

Date first published March 2017

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

Environment condition of using:
IEC/EN 61010-1 600V CAT III, Pollution level 2.
Altitude 〈2000m.
Max. Voltage Between Terminals And Earth Ground: CATIII600V ⎓ and 600V~.
Max. Show Value: 1999 (3 1/2).
Measuring Principle：Double integral A/D conversion.
Auto range.
Measuring rate：（2.5 times ~ 3 times）/ second
Unit showing: showing of function and electrical capacity.
Polarity Indication: '-'indicates negative polarity.
Over range Indication: Display 'OL'.
Data Hold Function: "DATA H" displayed on the LCD.
Low Battery Indication: " 🪫 "displayed on the LCD.
Power Supply:： 6F22 9V.
Dimension：225mm×38mm×26mm.
Weight：less than 333g（covering battery.）
Fuse protection：250mA/250V resettable fuses.
Operation Temperature:：5°C~35°C.
Storage Temperature:：-10°C~50°C.

DC Voltage

Range	Accuracy	Resolution
200mV	±（0.5% rdg + 3 digits）	0.1mV
2V		1mV
20V		10mV
200V		0.1V
600V	±（0.8% rdg + 5 digits）	1V

Input Impedance: 10MΩ
Max. Input Voltage: 250V DC or AC rms

4. INTRODUCTION

AC Voltage

Range	Accuracy	Resolution
2V	± (0.8% rdg + 3 digits)	1mV
20V		10mV
200V		0.1V
600V	± (1.0% rdg + 5 digits)	1V

Input Impedance: 10MΩ.
Frequency Range:40Hz~400Hz.
Max. Input Voltage: 250V DC or AC rms.

DC Current

Range	Accuracy	Resolution
20mA	± (1.8% rdg + 5 digits)	0.01mA
200mA		0.1mA

Input Protection：250mA /250V resettable fuses.

AC Current

Range	Accuracy	Resolution
20mA	± (2.0% rdg + 5 digits)	0.01mA
200mA		0.1mA

Frequency Range:：50Hz ~ 60Hz.
Input Protection：250mA /250V resettable fuses.

Resistance

Range	Accuracy	Resolution
200Ω	± (1.0% rdg + 35 digits)	0.1Ω
2kΩ		0.001kΩ
20kΩ		0.01kΩ
200kΩ		0.1kΩ
2MΩ		0.001MΩ
20MΩ	± (1.2% rdg + 15 digits)	0.01MΩ

Overload protection：250V DC or AC rms.

Diode

Range	Test Environment	Resolution
	The display will show the approximate value of the diode forward voltage drop forward voltage (open circuit voltage is about 1.5V)	1mV

Overload protection：250V DC or AC rms.

Continuity

Range	Test Environment	Resolution
	Built-in buzzer will sound, if resistance is lower than 50Ω. (open circuit voltage is about 0.45V)	100MΩ

4.3 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

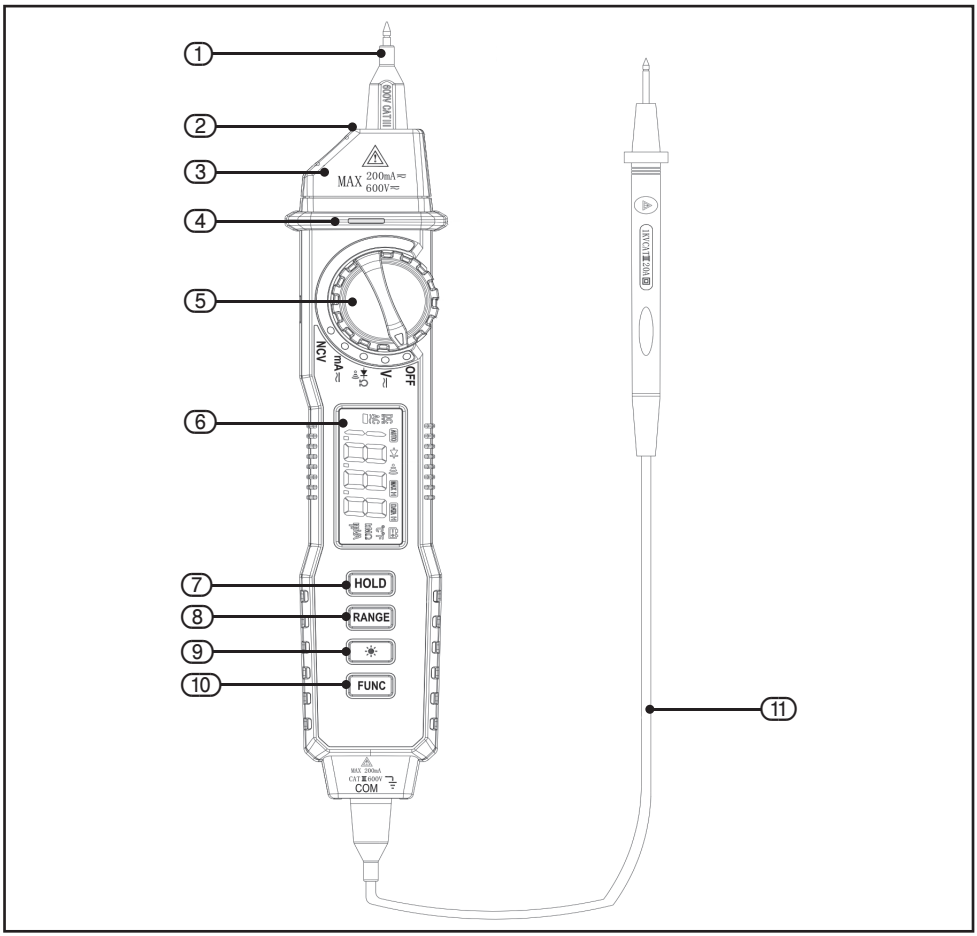
5.1 SAFETY PRECAUTIONS

This instrument complies with IEC1010 (International Electrotechnical Commission promulgated safety standards). Design and production 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. 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!



① Test probe.
② Work light.
③ NCV sensor area.
④ NCV indicator.
⑤ Measurement function range switch.
⑥ LCD.
⑦ Hold button.
⑧ Range button.
⑨ Back light & work light.
⑩ Function button.
⑪ Test probe.

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.

8.1 ROTARY SWITCH

Rotate to select functions and desired ranges.

8.2 RANGE

This button is used to switch between Auto range or manual range. The meters default range is set to Auto. In auto mode, the meter will select the best range for the input signal detected, press and hold the ' RANGE ' button to switch to manual range. When in manual range press the ' RANGE ' button to change to the desired input signal.

8.3 HOLD

During measuring press the 'HOLD' button this will hold the current reading on the display. "DATA H " symbol will appear on the display, press the 'HOLD' button again and the instrument will return to normal measuring status.

8.4 FUNC

This button is used to switch between functions.
When the measuring function range switch is set to V≂ press the 'FUNC' button to switch between DCV & ACV.
When the measuring function range switch is set to Ω press the 'FUNC' button to switch between resistance Ω , diode and continuity.

8.5 BACKLIGHT AND WORK LIGHT.

Press and hold ☀ button for 2 seconds to turn on and off the backlight and work light.

8.6 AUTO POWER OFF

If the meter is not used for approx. 15 minutes, the meter will make 5 short beeps.
Approx 1 minute later the meter will make 1 long beep and power off.

8.7 AC & DC VOLTAGE

1. Rotate the measurement function range switch to V≂, press "FUNC" button, and select DC or AC.

⚠ **WARNING**
Do not attempt to use this meter on a voltage higher than 600V.

8.8 AC & DC CURRENT

1. Rotate the measurement function range switch to, mA≂ press " FUNC" button, and select DC or AC current measurement.

⚠ **WARNING**
Do not attempt to use this meter on a current higher than 200mA.

8. OPERATING INSTRUCTIONS

8.9 RESISTANCE (Ω)

1. Rotate the measurement function range switch to , press “FUNC” button to switch to resistance function.

⚠ WARNING

Ensure the power is switched off and all capacitors are fully discharged.

8.10 DIODE TEST

1. Rotate the measurement function range switch to , press “FUNC” button and switch to diode function.

⚠ WARNING

Ensure the power is switched off and all capacitors are fully discharged.

8.11 CONTINUITY TEST

1. Rotate the measurement function range switch to , press ”FUNC” button and switch to continuity function.

⚠ WARNING

Ensure the power is switched off and all capacitors are fully discharged.

8.12 NCV (NON-CONTACT VOLTAGE)

1. Rotate the measurement function range switch to NCV.

9.1 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.

Diode test

Low battery display

Attention.

High voltage / current!
Danger.

Voltage AC

Voltage DC

Current DC

Current AC

Resistance in Ohms

Continuity test buzzer

Data hold / Screen lock

Auto power off

Non Contact Voltage test

10. DISPOSAL

10.1 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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