

DRAPER®

INSTRUCTIONS FOR Digital Clamp Meter

Stock Nos.34280

Part Nos.DCM2

IMPORTANT: PLEASE READ THESE INSTRUCTIONS CAREFULLY TO ENSURE THE SAFE AND EFFECTIVE USE OF THIS PRODUCT.



CE

DRAPER®

GENERAL INFORMATION

These instructions accompanying the product are the original instructions. This document is part of the product, keep it for the life of the product passing it on to any subsequent holder of the product. Read all these instructions before assembling, operating or maintaining this product.

This manual has been compiled by Draper Tools describing the purpose for which the product has been designed, and contains all the necessary information to ensure its correct and safe use. 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 the 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:
DIGITAL CLAMP METER
Stock nos. 34280. Part nos. DCM2.

1.2 REVISIONS:

Date first published July 2013

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/b2c/b2cmanuals.pgm>

DRAPER TOOLS LIMITED
HURSLEY ROAD
CHANDLER'S FORD
EASTLEIGH
HAMPSHIRE
SO53 1YF
UK

WEBSITE: www.drapertools.com
PRODUCT HELPLINE: +44 (0) 23 8049 4344
GENERAL FAX: +44 (0) 23 8026 0784

1.3 UNDERSTANDING THIS MANUALS SAFETY CONTENT:

- DANGER!** Information that draws attention to the risk of injury or death.
- WARNING!** Information that draws attention to the risk of damage to the product or surroundings.
- CAUTION!** Information that draws attention to the risk which may result in minor injury or moderate damage.

1.4 COPYRIGHT © NOTICE:

Copyright © Draper Tools Limited.
Permission is granted to reproduce this publication for personal & educational use only.
Commercial copying, redistribution, hiring or lending is prohibited.
No part of this publication may be stored in a retrieval system or transmitted in any other form or means without written permission from Draper Tools Limited.

In all cases this copyright notice must remain intact.

2. CONTENTS

2.1 CONTENTS

| | PAGE CONTENT | PAGE |
|----|---|-------------|
| 1 | TITLE PAGE | |
| | 1.1 INTRODUCTION | 2 |
| | 1.2 REVISION HISTORY..... | 2 |
| | 1.3 UNDERSTANDING THIS MANUAL | 2 |
| | 1.4 COPYRIGHT NOTICE..... | 2 |
| 2 | CONTENTS | |
| | 2.1 CONTENTS | 3 |
| 3 | GUARANTEE | |
| | 3.1 GUARANTEE | 4 |
| 4 | INTRODUCTION | |
| | 4.1 SCOPE | 5 |
| | 4.2 SPECIFICATION | 5-7 |
| | 4.3 HANDLING & STORAGE | 7 |
| 5 | HEALTH & SAFETY INFORMATION | |
| | 5.1 SAFETY INFORMATION | 8 |
| 6 | TECHNICAL DESCRIPTION | |
| | 6.1 IDENTIFICATION | 9 |
| | 6.2 OTHER METER MARKINGS | 10 |
| 7 | UNPACKING & CHECKING | |
| | 7.1 PACKAGING..... | 11 |
| | 7.2 WHAT'S IN THE BOX..... | 11 |
| 8 | OPERATION AND USE | |
| | 8.1 AC/DC CURRENT MEASUREMENTS | 12 |
| | 8.2 AC/DC VOLTAGE MEASUREMENTS | 12 |
| | 8.3 DATA HOLD..... | 12 |
| | 8.4 PEAK HOLD | 12 |
| | 8.5 RESISTANCE AND CONTINUITY MEASUREMENTS..... | 13 |
| | 8.6 DIODE MEASUREMENTS | 13 |
| | 8.7 TEMPERATURE MEASUREMENTS..... | 14 |
| 9 | BATTERY INSTALLATION | 15 |
| 10 | MAINTENANCE | 16 |
| 11 | EXPLANATION OF SYMBOLS..... | 17 |
| | DECLARATION OF CONFORMITY | ENCLOSED |

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 ninety 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. INTRODUCTION

4.1 SCOPE

This AC/DC clamp meter is for testing DC + AC voltage, DC + AC Amperage, resistance, capacitance, temperature and continuity.

4.2 SPECIFICATION

| | |
|-----------------------------|---|
| Stock no | 34280 |
| Part no | DCM2 |
| Battery type | 1x 9V PP3 |
| Maximum clamp opening..... | 33mm (approx.) |
| Diode test current | 0.3mA typical with open circuitry voltage 1.5V DC typical |
| Continuity check | threshold <50Ω, test current <1mA |
| Measurement rate..... | 2 per second, nominal |
| Input impedance | 7.8M Ω (VDC & VAC) |
| LCD display | 3-¾ digits (4,000 counts) LCD |
| AC bandwidth | 50/60Hz (AAC & VAC) |
| AC response | True rms (AAC & VAC) |
| Operating temperature | -10 to 50°C (14 to 122°F) |
| Storage temperature | -30 to 60°C (-14 to 140°F) |
| Max. altitude | operating 3,000m |
| | storage 10,000m |
| Over voltage | Category II 600V |
| Weight (no leads)..... | 281g |
| Dimensions | 204(H) x 80(W) x 43(D) mm |

- DC VOLTAGE: Input limit 600VDC

| Range | Accuracy |
|---------|---------------------|
| 400mVDC | ± (0.5% + 5 digits) |
| 4VDC | ± (1.2% + 3 digits) |
| 40VDC | |
| 400VDC | |
| 600VDC | ± (1.5% + 3 digits) |

- AC VOLTAGE: Input limit 600VAC

| Range | Accuracy |
|--------|---------------------|
| 4mVAC | ± (1.5% + 3 digits) |
| 40VAC | |
| 400VAC | |
| 600VAC | ± (2.0% + 4 digits) |

4. INTRODUCTION

- **AC CURRENT:** Input limit 600AAC

| Range | Accuracy |
|--------|----------------------------------|
| 400AAC | 0 to 70A $\pm (3.0\% + 0.6A)$ |
| | 71 to 300A $\pm (3.5\% + 0.3A)$ |
| | 301 to 400A $\pm (3.5\% + 0.6A)$ |
| 600AAC | 0 to 150A $\pm (3.0\% + 4A)$ |
| | 151 to 350A $\pm (3.5\% + 5A)$ |
| | 351 to 600A $\pm (4.0\% + 8A)$ |

- **DC CURRENT:** Input limit 600ADC

| Range | Accuracy |
|--------|----------------------------------|
| 400ADC | 0 to 70A $\pm (2.5\% + 0.6A)$ |
| | 71 to 300A $\pm (3.0\% + 0.3A)$ |
| | 301 to 400A $\pm (3.5\% + 0.3A)$ |
| 600ADC | 0 to 150A $\pm (2.5\% + 4A)$ |
| | 151 to 350A $\pm (3.0\% + 4A)$ |
| | 351 to 600A $\pm (4.0\% + 6A)$ |

- **RESISTANCE:** Overload protection 500V \approx /rms ~

| Range | Accuracy |
|---------------|----------------------------------|
| 400 Ω | $\pm (1.5\% + 2 \text{ digits})$ |
| 4K Ω | |
| 40k Ω | |
| 400k Ω | |
| 4M Ω | $\pm (2.0\% + 3 \text{ digits})$ |
| 40M Ω | $\pm (3.0\% + 5 \text{ digits})$ |

- **CAPACITANCE:**

| Range | Accuracy |
|-------------|----------------------------------|
| 40 nF | $\pm (5.0\% + 7 \text{ digits})$ |
| 400 nF | $\pm (3.5\% + 5 \text{ digits})$ |
| 4 μ F | |
| 40 μ F | |
| 100 μ F | $\pm (5.0\% + 5 \text{ digits})$ |

4. INTRODUCTION

- **TEMPERATURE:** Sensor: Type K thermocouple.

| Range | Accuracy |
|---------------|---------------------|
| -4 to 1,400°F | ± (3.0% + 5 digits) |
| -20 to 760°C | ± (3.0% + 5 digits) |

4.3 HANDLING & STORAGE

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.

5. HEALTH & SAFETY INFORMATION

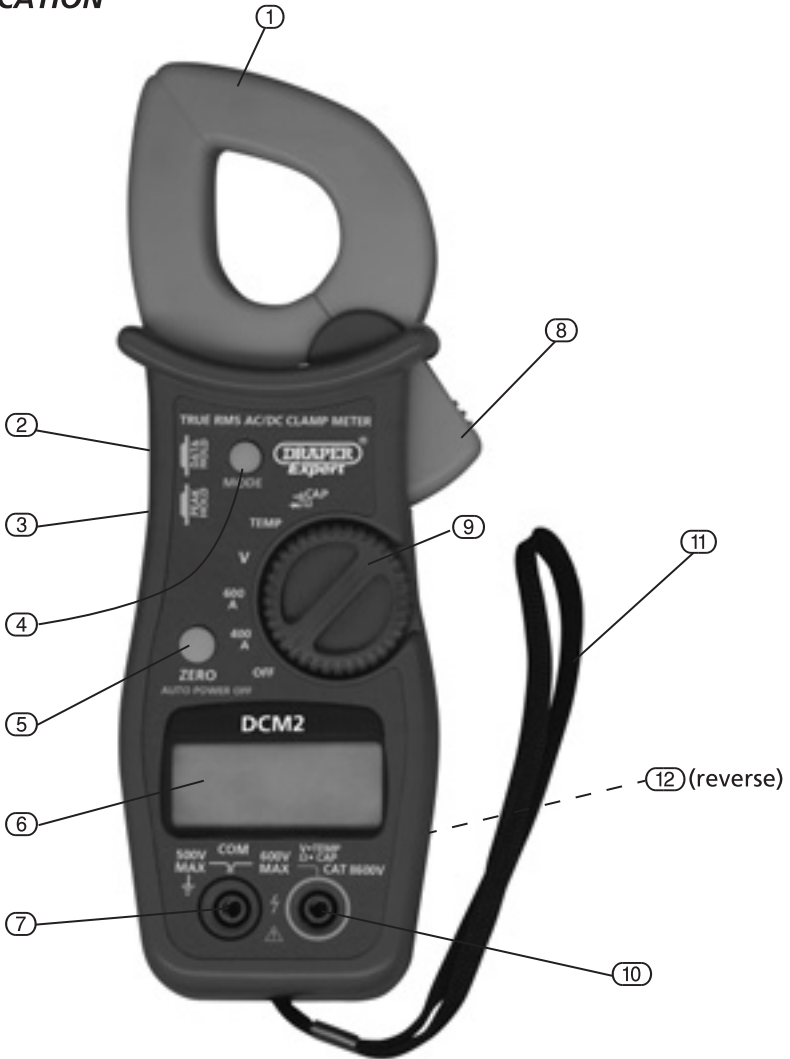
5.1 SAFETY INFORMATION

The following safety information must be observed to insure maximum personal safety during the operation of this meter.

- Do not use the meter if the meter or test leads look damaged, or if you suspect that the meter is not operating correctly.
- Never ground yourself when taking electrical measurements. Do not touch exposed metal pipes, outlets, fixtures, etc. which might be at ground potential. Keep your body isolated from ground by using dry clothing, rubber shoes, rubber mats, or any approved insulating material.
- Turn off power to the circuit under test before cutting, unsoldering, or breaking the circuit. Small amounts of current can be dangerous.
- Use caution when working above 60Volts DC or 30Volts AC, as these voltages pose a shock hazard.
- When using probes, keep your fingers behind the finger guards on the probes.
- Measuring voltage which exceeds the limits of the multimeter may damage the meter and expose the operator to a shock hazard. Always recognise the meter voltage as stated on the front of the meter.
- Never apply voltage or current to the meter that exceeds the specified maximum.
- Ensure the test probes are fully connected to the meter to avoid electric shock.

6. TECHNICAL DESCRIPTION





6.1 IDENTIFICATION



- | | | | |
|---|--------------------|---|----------------------------------|
| ① | Current clamp | ⑦ | COM input socket |
| ② | Data hold button | ⑧ | Clamp trigger |
| ③ | Peak hold button | ⑨ | Rotary selection switch |
| ④ | Mode select button | ⑩ | V / Ω / CAP / Temp socket |
| ⑤ | Zero button | ⑪ | Wrist strap |
| ⑥ | LCD display | ⑫ | Battery compartment (on rear) |

6. TECHNICAL DESCRIPTION

6.2 OTHER METER MARKINGS

| | | | |
|-------------|---------------------------------------|---|---|
| DC | Direct current |  | Caution. |
| A | Units of measuring current (AMPS). |  | Caution, risk of electric shock. |
| V | Units of measuring voltage (VOLTS). |  | Audible continuity range. |
| Ω | Units of measuring resistance (OHMS). | BAT | Indicates that the meter battery voltage has dropped excessively. |
| CAP | Capacitance |  | Diode |
| AUTO | Unit is in Auto-ranging mode. | | |

7. UNPACKING & CHECKING

7.1 PACKAGING

Carefully remove the product from the packaging and examine it for any signs of damage that may have happened during shipping. Lay the contents out and check them against the parts list provided. If any part is damaged or missing; please contact the Draper Helpline (the telephone number appears on the Title page) and do not attempt to use the product.

The packaging material should be retained at least during the guarantee period: in case the meter needs to be returned for repair.

Warning! Some of the packaging materials used may be harmful to children. Do not leave any of these materials in the reach of children.

If any of the packaging is to be thrown away, make sure they are disposed of correctly; according to local regulations.

7.2 WHAT'S IN THE BOX?

As well as the clamp meter; there are parts not fitted or attached to it.



- (13) Test leads
- (14) Tip caps
- (15) Temperature probe and adaptor

8. OPERATION AND USE

WARNING: Each time you use this instrument, inspect the test leads, connectors and probes for damage, e.g. cracks or breaks in the insulation. Any defective leads should be replaced. If the voltage to be measured is not known and the meter is not auto-ranging, set the selector switch to the highest range and reduce until a satisfactory reading is obtained. Always ensure that the probe plugs are inserted fully into the multimeter.

WARNING: Risk of electrocution. High-voltage circuits, both AC and DC, are very dangerous and should be measured with great care.

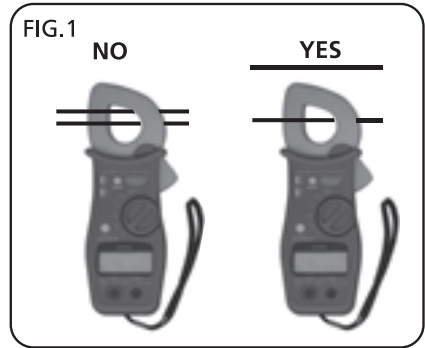
1. ALWAYS turn the function switch to the OFF position when the meter is not in use.
2. If "OL" appears in the display during a measurement, the value exceeds the range you have selected. Change to a higher range.

NOTE: On some low AC and DC voltage ranges, with the test leads not connected to a device, the display may show a random, changing reading. This is normal and is caused by the input sensitivity. The reading will stabilise and give a proper measurement when connected to a circuit.

8.1 AC/DC CURRENT MEASUREMENTS - FIG.1

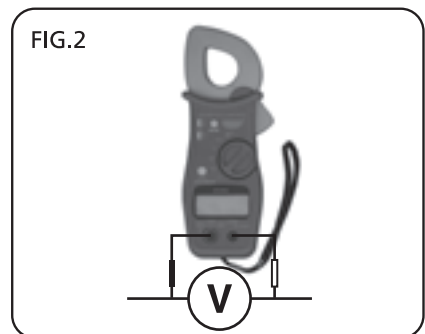
WARNING: Ensure that the test leads are disconnected from the meter before making current clamp measurements.

1. Set the function switch to the 400A OR 600A. If the circuit range to be measured is not known, select the higher range first then move to the lower range if necessary.
2. Press mode button to select AC or DC current.
3. Press the trigger to open jaw. Fully enclose one conductor to be measured.
4. The clamp meter LCD will display the reading.



8.2 AC/DC VOLTAGE MEASUREMENTS - FIG.2

1. Insert the black test lead into the negative (COM) terminal and the red test lead into the positive (V) terminal.
2. Select V with the selector switch.
3. Press mode button to select AC or DC current.
4. Connect the test leads in parallel to the circuit under test.
5. Read the voltage measurement on the LCD display.



8.3 DATA HOLD

To freeze the LCD meter reading, press the data hold button. The data hold button is located on the left side of the meter. Press the data hold button again to return to normal operation.

8.4 PEAK HOLD

To capture the peak reading, press the peak hold button. Press the button again to return to normal operation.

8. OPERATION AND USE

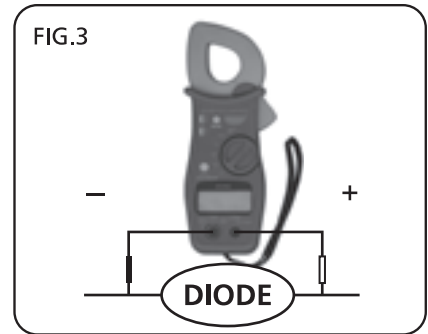
8.5 RESISTANCE AND CONTINUITY MEASUREMENTS

WARNING: If the resistance to be measured is part of a circuit, turn off and disconnect the power and discharge all capacitors before measurement.

1. Insert the black test lead into the negative (COM) terminal and the red test lead into the positive terminal.
2. Set the function switch to the Ω \llcorner \blacktriangleright CAP range position.
3. Press the mode button to select the correct test mode.
4. Touch the test probe tips across the circuit or component under test. It is best to disconnect one side of the device under test so the rest of the circuit will not interfere with the resistance reading.
5. For resistance tests (Ω), read the resistance on the LCD display.
6. For continuity tests (Ω \llcorner \blacktriangleright), if the resistance is $<50\Omega$, a tone will sound.

8.6 DIODE MEASUREMENTS - FIG.3

1. Insert black test lead into the negative (COM) socket and the red test lead into the positive socket.
2. Set the function switch to Ω \llcorner \blacktriangleright CAP range position.
3. Press the mode button to select \blacktriangleright diode measurements.
4. Connect the test leads to the positive and negative connections of the diode. Note the reading on the LCD display.
5. Reverse the connection leads - it should show no measurement if diode is operating correctly.



8. OPERATION AND USE

8.7 TEMPERATURE MEASUREMENTS - FIG.4

WARNING: To avoid electric shock, disconnect both test probes from any source of voltage before making a temperature measurement.

1. Set the function switch to TEMP.
2. Insert the Temperature Probe k-type adaptor into the negative (COM) and the positive jacks, making sure to observe the correct polarity .
3. Connect the temperature probe lead to the adaptor. NOTE:- The lead will only fit one-way! DO NOT FORCE the connection - rotate the connector 180° and insert correctly!
4. Touch the Temperature Probe head to the part whose temperature you wish to measure. Keep the probe touching the part under test until the reading stabilizes (about 30 seconds).
5. Read the temperature in the display. The digital reading will indicate the proper decimal point and value. **WARNING:** To avoid electric shock, be sure the thermocouple has been removed before changing to another measurement function.

DATA HOLD

To freeze the LCD meter reading, press the data hold button. The data hold button is located on the left side of the meter (top button). While data hold is active, the DH display icon appears on the LCD. Press the data hold button again to return to normal operation.



9. BATTERY INSTALLATION

- **WARNING: To avoid electric shock, disconnect the test leads from any source of voltage before opening the casing.**
 1. Disconnect the test leads from the meter and rotate function selector or dial to "OFF".
 2. Open the casing by loosening the screw at the rear.
 3. Open the casing gently, taking care not to damage the meter.
 4. Replace the battery in the holder, observing the correct polarity.
 5. Close and resecure the casing.
- **WARNING: To avoid electric shock, do not operate the meter until the casing is in place and fastened securely.**
- **Note:** If your meter does not function correctly, check the battery to ensure it is properly installed.

10. MAINTENANCE

10.1 MAINTENANCE

- There are no user serviceable items inside this multimeter.

Maintenance is limited to replacement of battery and test leads only.

11. EXPLANATION OF SYMBOLS

11.1 EXPLANATION OF SYMBOLS



Warning!
Read the instruction manual



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

- **DRAPER TOOLS LIMITED,**
Hursley Road, Chandler's Ford,
Eastleigh, Hampshire. SO53 1YF. U.K.
- **Helpline:** (023) 8049 4344
- **Sales Desk:** (023) 8049 4333
- Internet: www.drapertools.com
- E-mail: sales@drapertools.com
- **Sales Fax:** (023) 8049 4209
- **General Enquiries:** (023) 8026 6355
- **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