

Thank you for purchasing a Sealey product. Manufactured to a high standard this product will, if used according to these instructions and properly maintained, give you years of trouble free performance.

IMPORTANT: PLEASE READ THESE INSTRUCTIONS CAREFULLY. NOTE THE SAFE OPERATIONAL REQUIREMENTS, WARNINGS & CAUTIONS. USE THE PRODUCT CORRECTLY AND WITH CARE FOR THE PURPOSE FOR WHICH IT IS INTENDED. FAILURE TO DO SO MAY CAUSE DAMAGE AND/OR PERSONAL INJURY AND WILL INVALIDATE THE WARRANTY. PLEASE KEEP THESE INSTRUCTIONS SAFE FOR FUTURE USE.

1. SAFETY INSTRUCTIONS

1.1. PERSONAL PRECAUTIONS

- ✓ When using this multimeter, please observe all normal safety rules concerning:
 - Protection against the dangers of electric current.
 - Protection of the meter against misuse.
- ✓ Full compliance with safety standards can only be guaranteed if used with the test leads supplied. If necessary, they must be replaced with genuine Sealey leads with the same electronic ratings. Failure to do so will invalidate the warranty.
- x **DO NOT** use leads if damaged or if the wire is bared in any way.

1.2. GENERAL SAFETY INSTRUCTIONS

- ✓ Familiarise yourself with the application and limitations of the multimeter as well as the potential hazards. *IF IN ANY DOUBT CONSULT A QUALIFIED ELECTRICIAN.*
- ✓ When the meter is connected to a circuit, do not touch unused meter terminals.
- ✓ When the value scale to be measured is unknown, set the range selector to the highest value if using manual ranging.
- ✓ Before rotating the range selector to change functions, disconnect test leads from the circuit under test.
- ☐ **WARNING!** *Never perform resistance measurements on live circuits.*
- ✓ Always be careful when working with voltages above 60Vdc or 30Vac rms. Keep your fingers behind the probe barriers while measuring.
- ✓ Before attempting to insert transistors for testing, ensure that test leads have been disconnected.
- ✓ Components should not be connected to the transistor socket when making voltage measurement with the test leads.
- ✓ When not in use, store the multimeter carefully in a safe, dry, childproof location. Storage temperature range - 10°C to 50°C.

2. FEATURES

Auto-ranging multimeter with hi-contrast LCD display, 20mm high digital read-out. Durable case with protective boot, probe storage and integral two-position stand. Suitable for the toughest workshop conditions. Includes data hold, relative and audible continuity test. Auto switch off. Supplied with capped probe test leads.

Layout: (Fig.1.)

- | | | | |
|------------------|---------------------------|--------------------------|--------------|
| 1. Range Control | 4. AC/DC Current | 7. Function Switch | 10.mA Input |
| 2. Data Hold | 5. Hz/Duty | 8. V / Ω / Hz Input Jack | 11.10A Input |
| 3. Relative | 6. Transistor Test Socket | 9. COM Input | |

Measures:

- AC and DC Voltage
- AC and DC Current
- Resistance
- Capacitance
- Frequency
- Diode Test
- Audible Continuity
- Transistor Test

Function	Red Lead Connection	Input Limits
DCV/ACV	V Ω	1000V DC or 750V rms AC
kHz	V Ω	250V DC or rms AC
Ω / \rightarrow / \oplus	V Ω	250V DC or rms AC
μA / mA	mA	300mA DC or rms AC
nF / μF	mA	0.3A Fuse Protected
A	A	10A DC or rms AC

μA / mA and A ranges are protected by fuses

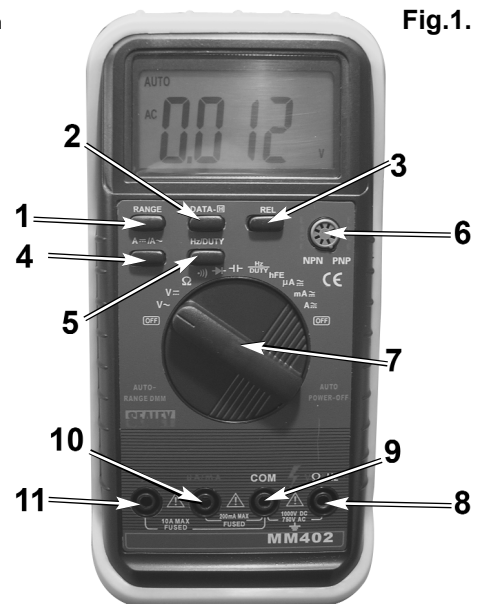


Fig.1.

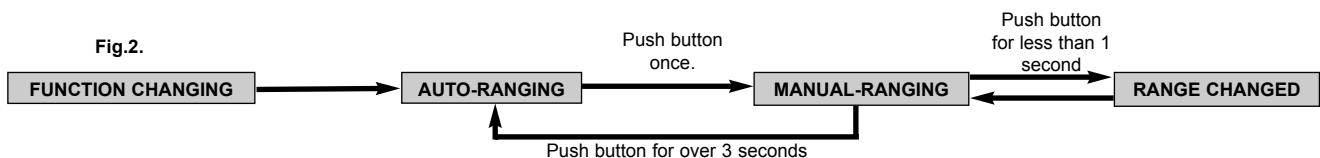
3. OPERATION

- ☐ **WARNING!** Ensure that you read, understand and apply the safety and operational instructions before connecting the multimeter. Only when you are sure that you understand the procedures is it safe to proceed with testing. Operating temperature range 0°C to 40°C.

NOTE! WHEN THE FIGURE '1' IS DISPLAYED, IT INDICATES AN OVER-RANGE SITUATION AND A HIGHER RANGE NEEDS TO BE SELECTED.

3.1. Range control button.

- 3.1.1. Ranges for AC/DC voltage, AC/DC current (μA and mA only). Resistance can be selected manually or handled by auto-ranging. Push this button as in Fig.2 to choose range control mode and desired ranges.



3.2. Data-hold button

- 3.2.1. Press this button to hold the last reading in the display. The 'HOLD' symbol will appear to show data is held, the display will remain held until you either press the Data-hold button again or rotate the function switch to another function.

3.3. Relative button

- 3.3.1. The relative feature allows you to take measurements relative to a stored reference value. A reference voltage, current etc. can be stored and measurements made in comparison to that value.
- 3.3.2. To perform a relative measurement, take a standard reading such as voltage; following the procedures in these instructions.
- 3.3.3. When you have taken your reading, press the relative button to store the reading and the 'REL ▲' indicator will be displayed.
- 3.3.4. The value displayed is the difference between the stored value and the new measured value.
- 3.3.5. Press the relative button to return to normal operation.

3.4. AC/DC current button

3.4.1. Press this button to select AC or DC current measuring function when the function switch is set in μA , mA or A positions.

3.5. Hz/Duty button

3.5.1. Press this button to select between Hz and Duty when the function switch is set in the Hz/Duty position.

3.6. Measuring voltage

3.6.1. Connect the black test lead to the COM input socket and the red test lead to the V/Ω input socket.

3.6.2. Set the rotary switch to the required $V \text{ --- } (dc)$ or $V \sim (ac)$ range and connect test leads across the source or load under measurement. The polarity of the red test lead connection will be indicated when measuring dc voltages.

3.7. Measuring current

3.7.1. Connect the black test lead to the COM input socket and the red test lead to the mA input socket for measuring a maximum of 300mA. For a maximum of 10A connect the red lead to the 10A socket.

3.7.2. Set the rotary switch to the required μA , mA or A range to be used and push the $\text{---} / \sim (AC/DC \text{ Current})$ button to select DCA or ACA measuring mode.

3.7.3. Connect the test leads in series with the load in which the current is to be measured.

3.7.4. Read the LED display. In DC current measurement, the polarity of the red lead connection will be indicated at the same time as the current value.

3.8. Measuring resistance

3.8.1. Connect the black lead to the COM input socket and the red test lead to the V/Ω input socket (the polarity of the red lead is '+').

3.8.2. Set the rotary switch to the ' Ω ' range and connect the test leads across the resistance under measurement.

3.8.3. For resistance over $3.26\text{M}\Omega$ the meter may take a few seconds to stabilise the reading. This is normal for high resistance measuring.

3.8.4. When the input is not connected i.e. open circuit, the figure 'OL' will be displayed for the overrange condition.

3.8.5. When checking in-circuit resistance, ensure that the circuit under test has all power removed and all capacitors have been fully discharged.

3.9. Continuity testing

3.9.1. Set the rotary switch to the --- position.

3.9.2. In continuity testing, if the circuit resistance under test is lower than 20Ω , the built-in buzzer will sound.

3.10. Diode testing

3.10.1. Connect the black lead to the COM input socket and the red lead to the V/Ω input socket (the polarity of the red lead is '+').

3.10.2. Set the rotary switch to the --- position.

3.10.3. Connect the RED and BLACK test leads to the ANODE and CATHODE respectively of the diode under test. The forward voltage drop of this diode will be displayed.

3.11. Capacitance measurement

3.11.1. Connect the black test lead to the COM jack and the red test lead to the $V/\Omega/F/Hz$ jack.

3.11.2. Set the function switch to --- position. NOTE: polarity of red lead is positive '+'.
 3.11.3. Connect the test leads across the capacitor under measurement and be sure connection polarity is correct.

NOTE! The range control mode in capacitance measurement is automatic ranging.

WARNING! When checking in-circuit capacitance, be sure the circuit has all the power removed and all capacitors are fully discharged.

3.12. Frequency measurement

3.12.1. Connect the black test lead to the COM jack and the red to the V/Ω jack.

3.12.2. Set the function switch to the Hz position and connect the test leads across the source or load under measurement.

NOTE! The input voltage should be between 200mV and 10V rms AC. If the voltage is more than 10V rms, reading may be out of the accuracy range.

3.13. Transistor hFE measurement

3.13.1. Set the rotary switch to the hFE position.

3.13.2. Determine whether the transistor to be tested in NPN or PNP type and locate the Emitter, Base and Collector leads. Insert leads of the transistor into the correct holes in the transistor testing socket.

3.13.3. The meter will show the approximate hFE value at test conditions of base current $10\mu\text{A}$ and $V_{ce} 3.2\text{V}$.

4. SPECIFICATION

AC VOLTAGE		
Range	Accuracy	Resolution
3.26V	$\pm 0.8\%$ of reading ± 3 digits	1mV
32.6V	$\pm 0.8\%$ of reading ± 3 digits	10mV
326V	$\pm 0.8\%$ of reading ± 3 digits	0.1V
750V	$\pm 0.8\%$ of reading ± 3 digits	1V

Input impedance: $10\text{M}\Omega$ for 326mV range.

DC CURRENT (Auto Ranging for μA and mA)		
Range	Accuracy	Resolution
326 μA	$\pm 1.2\%$ of reading ± 3 digits	0.01 μA
3260 μA	$\pm 1.2\%$ of reading ± 3 digits	0.1 μA
32.6mA	$\pm 1.2\%$ of reading ± 3 digits	1 μA
326mA	$\pm 1.2\%$ of reading ± 3 digits	10 μA
10A	$\pm 2.0\%$ of reading ± 5 digits	0.1mA

Overload protection: 0.3A/250V fused.
10A/250V fused.

DC VOLTAGE (auto ranging)		
Range	Accuracy	Resolution
326mV	$\pm 0.5\%$ of reading ± 2 digits	0.1mV
3.26V	$\pm 0.3\%$ of reading ± 2 digits	1mV
32.6V	$\pm 0.3\%$ of reading ± 2 digits	10mV
326V	$\pm 0.3\%$ of reading ± 2 digits	0.1V
1000V	$\pm 0.5\%$ of reading ± 2 digits	1V

Input impedance: $10\text{M}\Omega$ more than $100\text{M}\Omega$ for 326mV range.

Frequency (Auto Ranging)		
Range	Accuracy	Resolution
32.6kHz	$\pm 1.2\%$ of reading ± 3 digits	10Hz
200kHz	$\pm 2.5\%$ of reading ± 3 digits	100Hz

Sensitivity: 200mV up to 50kHz, 1V 50kHz to 200kHz


CAPACITANCE (Manual Range)		
Range	Accuracy	Resolution
32nF	$\pm 3.0\%$ of reading ± 5 digits	0.1nF
32.6 μF	$\pm 3.0\%$ of reading ± 5 digits	10nF

AC CURRENT (Auto Ranging for μA and mA)		
Range	Accuracy	Resolution
326 μA	$\pm 1.5\%$ of reading ± 5 digits	0.1 μA
3260 μA	$\pm 1.5\%$ of reading ± 5 digits	1 μA
32.6mA	$\pm 1.5\%$ of reading ± 5 digits	10 μA
326mA	$\pm 1.5\%$ of reading ± 5 digits	0.1mA
10A	$\pm 3.0\%$ of reading ± 7 digits	10mA

Overload protection: 0.3A/250V and 10A/250V fuse

RESISTANCE (Auto Ranging)		
Range	Accuracy	Resolution
326 Ω	$\pm 0.8\%$ of reading ± 3 digits	0.1 Ω
3.26k Ω	$\pm 0.8\%$ of reading ± 1 digits	1 Ω
32.6k Ω	$\pm 0.8\%$ of reading ± 1 digits	10 Ω
326k Ω	$\pm 0.8\%$ of reading ± 1 digits	100 Ω
3.26M Ω	$\pm 0.8\%$ of reading ± 1 digits	1k Ω
32.6M Ω	$\pm 1.2\%$ of reading ± 2 digits	10k Ω

5. MAINTENANCE

- **WARNING!** Before attempting to open the case, ensure that test leads have been disconnected from measurement circuits to avoid electric shock hazard.
- 5.1. For continued protection against fire, replace fuse only with another of the same rating (0.5A/250V fast blow, 10A/250V fast blow). Fuse is located under the circuit board. To gain access to the fuse remove the three screws from the rear of the meter, lift of the rear cover and gently lift the circuit board from the front cover, replace the fuse and re-assemble in reverse order. **NOTE: take care not to touch any of the internal components.**
- 5.2. If the battery sign  appears on the LCD display, it indicates that the batteries should be replaced. Remove the meter from the outer protective casing. Remove the rear cover retaining screws and lift off the back cover. Replace the batteries. (2 x AA)
- 5.3. **SPARE PARTS** **MM402-V2.01.....FUSE 0.5A** **MM402-V2.02.....FUSE 10A** **MM30/L.....LEADS**



Environmental Protection.



Recycle unwanted materials instead of disposing of them as waste. All tools, accessories and packaging should be sorted, taken to a recycle centre and disposed of in a manner which is compatible with the environment.



When product is no longer required, it must be disposed of in an environmentally protective way. Do not incinerate battery as it may explode when exposed to fire. Do not attempt to open battery.

6. DECLARATION OF CONFORMITY

Declaration of Conformity We, the sole UK importer, declare that the product listed below is in conformity with the following standards and directives.

DIGITAL MULTIMETER Model: MM402.V3

73/23/EEC Low Voltage Directive
89/336/EEC EMC Directive
93/68/EEC CE Marking Directive
2002/95/EC RoHS Directive
2002/96/EC WEEE Directive

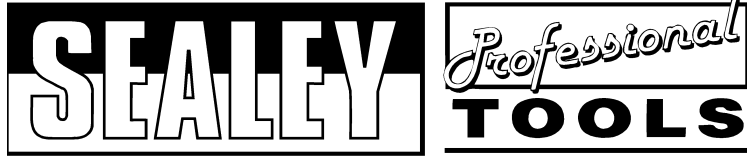


The construction file for this product is held by the Manufacturer and may be inspected, by a national authority, upon request to Jack Sealey Ltd.

Signed by Tim Thompson

1st February 2007

For Jack Sealey Ltd. Sole UK importer of Sealey Professional Tools.



NOTES

NOTE: It is our policy to continually improve products and as such we reserve the right to alter data, specifications and component parts without prior notice.

IMPORTANT: No liability is accepted for incorrect use of this equipment.

WARRANTY: Guarantee is 12 months from purchase date, proof of which will be required for any claim.

INFORMATION: For a copy of our latest catalogue and promotions call us on 01284 757525 and leave your full name and address, including postcode.



Sole UK Distributor
Sealey Group,
Bury St. Edmunds, Suffolk.



01284 757500



01284 703534



www.sealey.co.uk



sales@sealey.co.uk