POCKET MULTIMETER

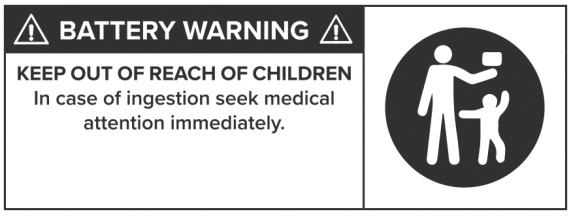
MODEL NO: **MM18**

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. KEEP THESE INSTRUCTIONS SAFE FOR FUTURE USE.

Refer to instruction manual

Warning! Electricity



1. SAFETY

1.1. **PERSONAL PRECAUTIONS**

- ✓ When using this multimeter, please observe all normal safety rules concerning:
- ✓ Protection against the dangers of electrical 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 electrical ratings. Failure to do so will invalidate the warranty.
- × **DO NOT** use leads if damaged or if the wires are 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.
- ▲ **USE EXTREME CAUTION** when working with high voltages.
- × **DO NOT** use the meter if it is damaged. Before you use it 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 inspected by your Sealey stockist.
- × **DO NOT** operate the meter where explosive gas, vapour or dust is present.
- × **DO NOT** apply more than the rated voltage, as marked on the meter, between the probes or between any probe 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. Remember to place the meter in series with the circuit.
- ❑ **WARNING!** Use caution when working with voltage 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.
- ✓ When making connections, connect the black test lead before you connect the red test lead. When you disconnect the test leads, disconnect the red one first.
- ✓ Remove the test leads from the circuit under test before you open the back cover.
- × **DO NOT** operate the meter with the back cover removed or loosened.
- ✓ To avoid false readings, which could lead to possible electric shock or personal injury, replace the button cells as soon as the low battery indicator ( ) appears.
- × **DO NOT** touch any naked conductor with your hand or skin, to avoid electric shock, **DO NOT** ground yourself whilst using the meter.
- ✓ When a probe is connected to a dangerous live potential, it must be noted that this potential can occur at the other probe.
  NOTE: CAT II measurement category is for measurements performed on circuits directly connected to low voltage installations. (Examples are measurements on household appliances, portable tools and similar equipment.) **DO NOT** use the meter for measurements within Measurement Categories III and IV.
- ✓ Disconnect circuit power and discharge all capacitors before testing resistance, diode or continuity.
- ✓ Use the proper function for your measurements.
- ✓ Before measuring current, check the meter's fuse and turn off power to the circuit before connecting the meter to the circuit.
- ✓ Before moving the function switch or rotating the range switch, disconnect the test leads from the circuit under test.
- ✓ The user shall ensure that test probes are correctly selected in order to prevent danger. Probes shall be selected to ensure that adequate barriers guard against inadvertent hand contact with live conductors under test and that probes have minimal exposed probe tips. Where there is a risk of the probe tip short circuiting with other live conductors under test, it is recommended that the exposed tip length shall not exceed 4mm.
  NOTE: The warnings, cautions and instructions referred to in this manual cannot cover all possible conditions and situations that may occur. It must be understood that common sense and caution are factors which cannot be built into this product, but must be applied by the operator.

1.3. **ELECTRICAL SYMBOLS**

~	Alternating Current.
⎓	Direct Current.
≂	Both direct and alternating current.
⚠	Caution risk of danger refer to operating manual before use.
⚠	Caution risk of electric shock.
⏚	Earth (ground) terminal.
▭	Fuse.
⧈	The equipment is protected throughout by double insulation or reinforced insulation.

2. INTRODUCTION

Handy compact unit, small enough to fit in your pocket, making it ideal for basic circuit testing whilst on the move. Features flip lid for added screen protection and storage of leads. Conforms to EN 61010-1 CAT II safety requirements. Supplied with test leads. Measures: AC and DC Voltage, DC Current, Resistance, Audible Continuity

3. FEATURES

1. Display: 3½ digit LCD, with a max. reading of 1999.
2. Function selector.
3. Range Switch: used to select desired range.
4. Test Probes

4. SPECIFICATION

Model No:..... MM18
Measures:
Voltage DC:..... 2V, 20V, 200V, 250V (±1.0%)
Voltage AC: ..... 250V (±1.2%)
Current DC:.....200mA (±1.2%)
Resistance: .....2k Ω, 20k Ω, 200k Ω, 2000k Ω (±1.2%)
Continuity Audible: ..... Yes
Digits x Height:.....5 x 11mm
Batteries (Supplied):.....2 x 1.5V
Size (L x W x H): ..... 114 x 56 x 23mm
Weight:..... 101g
Conformity:..... EN 61010-1
Operation Environment: ..... 0°C to 40°C
Relative Humidity:.....<75%
Storage Temperature: .....-10°C to 50°C
Relative Humidity:.....<85%

DC CURRENT		
Range	**Resolution**	**Accuracy**
200mA	0.1mA	± (1.2% + 5 digits)
Overload protection: 250mA/250AV Fast fuse		

RESISTANCE		
Range	**Resolution**	**Accuracy**
2kΩ	0.001kΩ	± (1.2% + 5 digits)
20kΩ	0.01kΩ	
200kΩ	0.1kΩ	
2000kΩ	1kΩ	
Max open circuit voltage: About 0.4V **Overload protection:** 250V DC/AC rms		

DC VOLTAGE		
Range	**Resolution**	**Accuracy**
2V	0.001V	±(1.0% +5 digits)
20V	0.01V	
200V	0.1V	
250V	1V	
Input Impedance: 1MΩ **Max Allowable Input Voltage:** 250V dc		

AC VOLTAGE		
Range	**Resolution**	**Accuracy**
200V	0.1V	± (1.2% + 10 digits)
250V	1V	
Input Impedance:500kΩ **Frequency range: 40Hz to 400Hz** **Max. Allowable Input Voltage: 250V ac rms** **Response:** Average, calibrated in rms of sine wave.		

DIODE AND CONTINUITY		
Range	**Description**	**Remark**
⟶|	The display shows the approximate forward voltage drop of the diode.	Open circuit voltage about 2.5V Max test current: 1mA
•))	The built in buzzer will sound if the resistance is less than about 30Ω. The buzzer may not sound if the resistance is between 30Ω and 100Ω. The buzzer will not sound if the resistance is more than 100Ω.	Open circuit voltage about 2.5V.
Overload protection: 250V DC/AC rms		

4.1. **MEASURING DC VOLTAGE**

4.1.1. Set the function switch to the V ⎓ position.

4.1.2. Set the range to the desired position. If the magnitude of the voltage to be measured is not known beforehand, set the range switch to the highest range first and then reduce it range by range until satisfactory resolution is obtained.

4.1.3. Connect the test leads across the source or circuit to be tested.

4.1.4. Read the display. The polarity of the red test lead connection will be indicated as well.

NOTE: To avoid electric shock to you or damage to the meter, **DO NOT** measure a voltage higher than 250V.

4.2. **MEASURING AC VOLTAGE**

4.2.1. Set the function switch to the V~ position.

4.2.2. Set the range switch to 250V ⎓ or 200V ⎓ range position.

4.2.3. If the magnitude of the voltage to be measured is not known beforehand, set the range to the highest first and then reduce it until a satisfactory resolution is obtained.

4.2.4. Read the display.

NOTE: To avoid electric shock to you or damage to the meter, **DO NOT** measure a voltage higher than 250V.

4.3. **MEASURING DC CURRENT**

4.3.1. Set the function switch to A ⎓ position.

4.3.2. Set the range switch to the 200mA range position.

4.3.3. Turn off the circuit to be tested. Then discharge all capacitors.

4.3.4. Break the circuit path to be tested, then connect the test leads in series with the circuit.

4.3.5. Turn on the power to the circuit, then read the display. The polarity of the red test lead connection will be indicated as well.

4.4. **MEASURING RESISTANCE**

4.4.1. Set the function switch to Ω position.

4.4.2. Set the range switch to the desired resistance measuring range position.

4.4.3. Connect the test leads across the object to be measured.

4.4.4. Read the reading on the display.

NOTE:

1. For measurements > 1MΩ, the meter may take a few seconds to stabilise a reading. This is normal for high resistance measurements.
2. When the test leads are in open circuit state , “1” will be displayed as an over-range indication.
3. Before measurement, disconnect all power to the circuit to be tested and discharge all capacitors thoroughly.

4.5. **DIODE TEST**

4.5.1. Set the function to the Ω position.

4.5.2. Set the range switch to the —▶|— position.

4.5.3. Connect the red test lead to the anode of the diode to be tested and the black lead to the cathode of the diode.

4.5.4. The display shows the approximate forward voltage drop of the diode. If the connection is reversed, “1” will be shown on the display.

4.6. **CONTINUITY TEST**

4.6.1. Set the function switch to the Ω position.

4.6.2. Set the range switch to the position.

4.6.3. Connect the test leads across the circuit to be tested.

4.6.4. If the resistance is less than about 30Ω, the built in buzzer will sound.

NOTE: Before test, disconnect all power to the circuit to be tested and discharge all capacitors thoroughly.

5. MAINTENANCE

5.1. **CLEANING**

5.1.1. Wipe the case clean with a damp cloth and mild detergent.

× **DO NOT** use abrasives or solvents.

5.2. **BATTERY REPLACEMENT**

5.2.1. When symbol appears on the display, the batteries are low and need to be replaced immediately.

❑ **WARNING!** Remove all leads from the circuit under test before opening back cover.

5.2.2. Remove the screws securing the back cover, refer to fig.1. below.

5.2.3. Replace the batteries (1.5V button cell LR44 or equivalent). Make sure the polarity connections are correct (refer to indication on the bottom of each cell compartment).

5.2.4. Refit back cover.

5.3. **FUSE**

5.3.1. The fuse rarely needs to be replaced and will blow as a result of operator error.

❑ **WARNING!** Remove all leads from the circuit under test before opening back cover.

5.3.2. Remove screws securing back cover, refer to fig.1, and replace with 250mA/250V, fast, Ø5 x 20mm fuse.

Battery/Fuse Cover Screws

fig.1

BATTERY REMOVAL REFER TO SECTION 6.2

Under the Waste Batteries and Accumulators Regulations 2009, Jack Sealey Ltd are required to inform potential purchasers of products containing batteries (as defined within these regulations), that they are registered with Valpak's registered compliance scheme. Jack Sealey Ltd Batteries Producer Registration Number (BPRN) is BPRN00705.

WEEE REGULATIONS

Dispose of this product at the end of its working life in compliance with the EU Directive on Waste Electrical and Electronic Equipment (WEEE). When the product is no longer required, it must be disposed of in an environmentally protective way. Contact your local solid waste authority for recycling information.

ENVIRONMENT PROTECTION

Recycle unwanted materials instead of disposing of them as waste. All tools, accessories and packaging should be sorted, taken to a recycling centre and disposed of in a manner which is compatible with the environment. When the product becomes completely unserviceable and requires disposal, drain any fluids (if applicable) into approved containers and dispose of the product and fluids according to local regulations.

REGISTER YOUR PURCHASE HERE

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 product.
Warranty: Guarantee is 12 months from purchase date, proof of which is required for any claim.

Sealey Group, Kempson Way, Suffolk Business Park, Bury St Edmunds, Suffolk. IP32 7AR
01284 757500 **sales@sealey.co.uk** **www.sealey.co.uk**

Original Language Version