



7-FUNCTION MULTIMETER

MODEL NO: MM19.V3

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

1. SAFETY

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.
- 1.1. **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.
 - ✓ When the meter is connected to a circuit, do not touch unused meter terminals.
 - ✓ When the magnitude of the value to be measured is unknown, set the range selector to the highest value available.
 - ✓ Before commencing testing, follow instructions below and select the correct input sockets, function and range on the multimeter.
 - ✓ Before rotating the rotary switch to change functions, disconnect the test leads from the circuit under test.
 - ✓ Take care when working with voltages above 35V DC or 25V AC rms. These voltages are considered a shock hazard. Keep fingers behind the probe barriers whilst measuring.
 - ✗ **DO NOT** test voltages above 750V AC - 1000V DC - the circuitry of the multimeter may be destroyed.
 - ☐ **WARNING! NEVER** connect the multimeter to a voltage source / live circuit when the rotary switch is set to any other function apart from Voltage testing.
 - ☐ **WARNING! NEVER** perform resistance, transistor, diode or continuity measurements on live circuits.
 - ✓ **ALWAYS** discharge filter capacitors in power supplies and disconnect the power when making resistance or diode tests.
 - ☐ **WARNING!** Voltage checks on electrical outlets can be difficult and misleading because of the uncertainty of connection to the recessed electrical contacts. Other means should be used to ensure that the terminals are not "live".
 - ✗ **DO NOT** use the multimeter in a potentially explosive atmosphere.
 - ✗ **NEVER** operate the meter unless the back cover and the battery and fuse doors are in place and fastened securely.
 - ✓ If any abnormal readings are observed, the multimeter must be checked out by an authorised technician.
 - ✓ When not in use, store the multimeter carefully in a safe, dry, childproof location out of direct sunlight.
 - ✓ Storage temperature range -20°C to 60°C.
 - ✓ **ALWAYS** turn off the power and disconnect the test leads before opening the doors to replace the fuse or batteries.
 - ✓ 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.
- 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.**

1.2. SAFETY SYMBOLS



This symbol adjacent to another symbol, terminal or operating device indicates that the operator must refer to an explanation in the Operating Instructions to avoid personal injury or damage to the meter.

WARNING This **WARNING** symbol indicates a potentially hazardous situation, which if not avoided, could result in death or serious or serious injury.

CAUTION This **CAUTION** symbol indicates a potentially hazardous situation, which if not avoided, may result damage to the product.



This symbol, adjacent to one or more terminals identifies them as being associated with ranges that may, in normal use, be subjected to particularly hazardous voltages. For maximum safety, the meter and its test leads should not be handled when these terminals are energized.



This symbol indicates that a device is protected throughout by double insulation or reinforced insulation.

- ❑ **WARNING!** NEVER apply voltage or current to the meter that exceeds the specified maximum stated.
- ❑ **WARNING!** USE EXTREME CAUTION WHEN WORKING WITH HIGH VOLTAGES.

2. INTRODUCTION

High quality general-purpose multimeter with a large (46 x 25mm), clear and easy-to-read LCD display. Supplied with test leads.

Measures:

- AC and DC Voltage
- DC Current
- Resistance
- Audible Continuity
- Diode/Transistor Verification Mode

3. SPECIFICATION

Model No:..... **MM19.V3**
 AC Voltage (Accuracy): 200V, 750V (±2%)
 DC Voltage (Accuracy):
 200mV, 2000mV, 20V, 200V (±1.5%), 1000V (±1.8%)
 AC Current (Accuracy): No
 DC Current (Accuracy):
 200µA, 2000µA, 20mA (±2%), 200mA (±2.2%), 10A (±2%)
 Resistance (Accuracy):
 200Ω, 2000Ω, 20kΩ, 200kΩ (±1.8%), 2000kΩ (±2%)
 Capacitance (Accuracy): No
 Temperature (Accuracy): No
 Frequency (Accuracy): No
 Duty Cycle: No
 Continuity Audible: Yes

4. BATTERY INSTALLATION

- ❑ **WARNING!** To avoid electric shock, disconnect the test leads from any source of voltage before removing the battery cover.
- 4.2.1. Disconnect the test leads from the meter.
 - 4.2.2. Open the battery cover by loosening the two cover screws using a cross head screwdriver.
 - 4.2.3. Insert the battery into battery holder, observing the correct polarity.
 - 4.2.4. Replace the battery cover. Secure with the screws.
- ❑ **WARNING!** To avoid electric shock, do not operate the meter until the battery cover is in place and fastened securely.
- NOTE!** If meter does not work properly, check the fuses and battery to make sure that they are still good and that they are properly inserted.

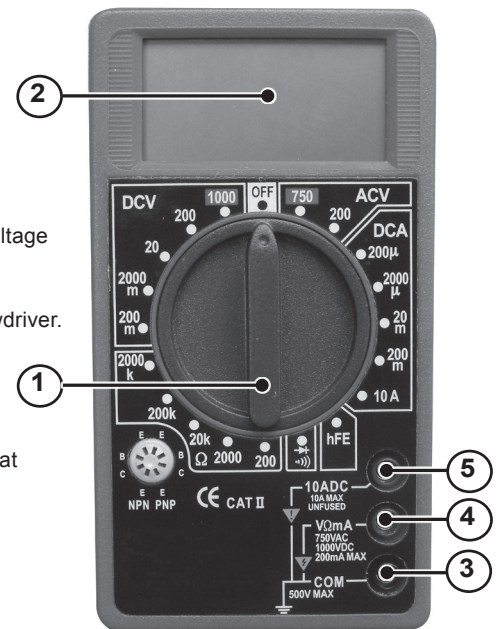
5. FEATURES

Refer to diagram on right hand side

1. Function Switch
2. LCD Display
3. Common Jack
4. V.Ω.mA Jack
5. 10A Jack

NOTE: Fuse and battery compartment are at the rear of the unit.

Function	Range	Resolution	Accuracy
DC Voltage (V DC)	200mV	100µV	±(1.5% reading + 2 digits)
	2000mV	1mV	
	20V	10mV	
	200V	100mV	
	1000V	1V	±(1.8% reading + 2 digits)
OVERLOAD PROTECTION: 220Vrms AC for 200mV range and 1000VDC or 750Vrms AC for other ranges.			
AC Voltage (V AC)	200V	100mV	±(2% reading + 2 digits (50/60Hz))
	750V	1V	
	OVERLOAD PROTECTION: 1000 V DC or 750Vrms AC for all ranges. RESPONSE: Average responding, calibrated in rms of a sine wave. FREQUENCY RANGE: 45Hz - 450Hz		



SYMBOLS AND ANNUNCIATORS

-))) Continuity
- Diode Test
- M Micro (amps)
- M Milli (volts, amps)
- K Kilo (ohms)
- Ω Ohms
- DCV Volts Direct Current
- ACV Volts Alternating Current
- DCA Amps Direct Current
- HFE Transistor Measurement

DC Current (A DC)	200µA	100nA	±(2.0% reading + 2 digits)
	2000 µA	1 µA	
	20mA	10µA	±(2.2% reading + 2 digits)
	200mA	100µA	
	10A	10mA	±(2.0% reading + 2 digits)
OVERLOAD PROTECTION: 200mA /250V fuse (10A range unfused) MEASURING VOLTAGE DROP: 200mV.			
Resistance	200Ω	0.1Ω	±(1.8% reading + 5 digits)
	2000Ω	1Ω	±(1.8% reading + 2 digits)
	20kΩ	10kΩ	
	200kΩ	100Ω	±(2% reading + 2 digits)
	2000kΩ	1kΩ	
MAXIMUM OPEN CIRCUIT VOLTAGE: 2.8V OVERLOAD PROTECTION: 15 seconds maximum 220Vrms on all ranges.			
Diode Test	Display Voltage Drop Approximation		
	OVERLOAD PROTECTION: 15 seconds maximum 220Vrms Sounds alarm.		
Audible Continuity (•)))	Built-in buzzer sounds if resistance is less than 100Ω		
	OVERLOAD PROTECTION: 15 seconds maximum 220Vrms Sounds alarm.		
hFE Transistor hFE Data Test	0 ~ 1000	Basic Current is Approx. 10µA., Vce is Approx. 3V	
	Overload Protection: 10 seconds max. 220Vrms.		

6. OPERATION

- ❑ **WARNING!** Risk of electrocution. High-voltage circuits, both AC and DC, are very dangerous and should be measured with great care. **DO NOT** measure voltages that might exceed 500 V above earth ground.

ALWAYS turn the function switch to the "OFF" position when the meter is not in use.

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

6.1. DC VOLTAGE MEASUREMENTS

CAUTION: DO NOT measure DC voltages if a motor on the circuit is being switched ON or OFF. Large voltage surges may occur that can damage the meter.

- 6.1.1. Set the function switch to the highest VDC position.
- 6.1.2. Insert the black test lead banana plug into the negative (COM) jack. Insert the red test lead banana plug into the positive (V) jack.
- 6.1.3. Touch the black test probe tip to the negative side of the circuit. Touch the red test probe tip to the positive side of the circuit.
- 6.1.4. Read the voltage in the display. Reset the function switch to successively lower VDC positions to obtain a higher resolution reading. The display will indicate the proper decimal point and value.

6.2. AC VOLTAGE MEASUREMENTS

- ❑ **WARNING!** Risk of Electrocution. The probe tips may not be long enough to contact the live parts inside some 240V outlets for appliances because the contacts are recessed deep in the outlets. As a result, the reading may show 0 volts when the outlet actually has voltage on it. Make sure the probe tips are touching the metal contacts inside the outlet before assuming that no voltage is present. **CAUTION: DO NOT** measure AC voltages if a motor on the circuit is being switched ON or OFF. Large voltage surges may occur that can damage the meter.

- 6.2.1. Set the function switch to the highest VAC position.
- 6.2.2. Insert the black test lead banana plug into the negative (COM) jack. Insert red test lead banana plug into the positive (V) jack.
- 6.2.3. Touch the black test probe tip to the negative side of the circuit. Touch the red test probe tip to the positive side of the circuit.
- 6.2.4. Read the voltage in the display. Reset the function switch to successively lower VAC positions to obtain a higher resolution reading.

6.3. DC CURRENT MEASUREMENTS

CAUTION: DO NOT make current measurements on the 10A scale for longer than 30 seconds. Exceeding 30 seconds may cause damage to the meter and/or the test leads.

- 6.3.1. Insert the black test lead banana plug into the negative (COM) jack.
- 6.3.2. For current measurements up to 200mA DC, set the function switch to the highest DC mA position and insert the red test lead banana plug into the (mA) jack.
- 6.3.3. For current measurements up to 10A DC, set the function switch to the 10A range and insert the red test lead banana plug into the (10A) jack.
- 6.3.4. Remove power from the circuit under test, then open up the circuit at the point where you wish to measure current.
- 6.3.5. Connect test leads in series with the circuit under measurement.
- 6.3.6. Apply power to the circuit.
- 6.3.7. Read the current in the display. For mA DC measurements, reset the function switch to successively lower mA DC positions to obtain a higher resolution reading. The display will indicate the proper decimal point and value.

6.4. RESISTANCE MEASUREMENTS

- ❑ **WARNING!** To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any resistance measurements. Remove the batteries and unplug the line cords.

- 6.4.1. Set the function switch to the highest Ω position.
- 4.4.2. Insert the black test lead banana plug into the negative (COM) jack. Insert the red test lead banana plug into the positive Ω jack.

- 6.4.2. Touch the test probe tips across the circuit or component under test. It is best to disconnect one side of the component under test so the rest of the circuit will not interfere with the resistance reading.
- 6.4.3. Read the resistance in the display and then set the function switch to the lowest Ω position that is greater than the actual or any anticipated resistance. The display will indicate the proper decimal point and value.



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.

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. Please note that other versions of this product are available. If you require documentation for alternative versions, please email or call our technical team on technical@sealey.co.uk or 01284 757505.

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.

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