



## AVO® AVOMETER® MODEL 8 MK 7

- Basic d.c. accuracy  $\pm 1\%$  of full scale deflection, d.c. sensitivity 20 000 ohms/volts
- Fuse protection on all functions and ranges for increased instrument and user protection
- Robust centre-pole meter movement with a mechanical cut-out for over load protection

# Analogue Multimeter

## DESCRIPTION

The AVOMETER® Model 8 Mk 7 is a general-purpose, portable, analogue multimeter for the measurement of voltage, current and resistance.

The 20,000  $\Omega/V$  d.c. sensitivity matches data given in many service manuals for electronic equipment. The traditional appearance, with the two-switch range selection, is retained but the Avometer Model 8 Mk 7 utilizes modern technology in its design to give the high performance specified.

The instrument circuit incorporates a 10 A ceramic HBC fuse in series with the COMMON terminal to give the user increased protection, should connection be made to a high-energy source while the range switches are incorrectly set.

The range switch identification has colour coding to help in correct selection and the off position selects heavy damping of the meter movement for transit purposes.

The left-hand switch provides all the d.c. current and voltage ranges and the right-hand switch provides the a.c. current and voltage ranges plus the resistance ranges. These switches are electrically interlocked so that reading can only be made after a.c. or d.c. measurement and range has been selected. Resistance tests require the left-hand switch to be set to ' $\Omega$ ' and the right-hand one to the desired range. Wide coverage in resistance measurement has been achieved by having a fundamental range as marked on the scale, together with ranges of  $\Omega \times 100$  and  $\Omega \times 10 k$  to supplement it.

Each resistance range has its own zero adjustment control.

When the instrument is set for d.c. measurement, the moving-coil meter is associated with a universal shunt and series multipliers; whilst on a.c., diodes and a transformer are introduced.

The meter has a robust centre-pole movement with 37,5  $\mu A$  full-scale deflection. A knife-edge pointer and a mirror arc enable very fine readings to be taken and avoid parallax errors. The whole movement is balanced and damped so that the pointer quickly comes to rest. For current and voltage measurement, the 0 to 10 scale has 100 divisions and the 0 to 3 scale has 60 divisions.

The sensitive cutout, with very positive latching action, is triggered by the meter movement itself when overloaded. The cutout is reset by a pushbutton. The deflection of the meter movement can be reversed simply by pressing a second pushbutton; thus, the multi-meter can respond to a negative polarity of the measurements.

Several accessories are available to extend the measuring ranges and functions of the instrument.

## SPECIFICATION

The Avometer Model 8 Mk 7 is suitable for use in many areas of electrical and electronic work in the laboratory, in the workshop and in the field. Measurements are easily made when fault finding, servicing or installing and commissioning equipment. The instrument is robust enough to withstand normal use in this type of work.

All the advantages of an analogue meter, namely to monitor the rate of change or direction of change of the quantity being measured, are inherent with this multimeter.

The series HBC fuse, which is effective on all ranges, provides an added level of safety. However, the instrument should not be used for measurements on current transformers where a rupture of this fuse would present a safety hazard.

## FEATURES AND BENEFITS

- Robust centre-pole meter movement and a mirror arc enable accurate readings to be taken, avoiding parallax errors.
- Self-latching meter movement reversal switch for making negative polarity measurements.
- Fuse protection on all functions and ranges for increased instrument and user protection.
- User re-settable overload cutout switch protects the instrument in the event of operator error.
- Proven reliability of design and manufacture as experienced by many years in Education, Government and Industrial establishments.

## SPECIFICATIONS

## Ranges

**Voltage d.c.:** 100 mV(select 50  $\mu$ A d.c. range)

/3/10/30/100/300/600/1000 V

**Voltage a.c.:** 3/10/30/100/300/600/1000 V**Current d.c.:** 50/300  $\mu$ A/1/10/

100 mA/1/10 A

**Current a.c.:** 10/100 mA/1/10 A**Resistance:** 0 to 2 k $\Omega$ /0 to 200 k $\Omega$ /0 to 20 M $\Omega$ **Decibels:** -10 to +55 dB using a.c. voltage scale**Insulation Resistance:** Up to 200 M $\Omega$  using ohms scale and external 150 V d.c. supply

## Accuracy (at 20 °C)

**Voltage and Current Ranges d.c.:** $\pm 1\%$  of full-scale deflection**Voltage and Current Ranges a.c.:** $\pm 2\%$  of full-scale deflection at 50 Hz**Resistance Ranges:**  $\pm 5\%$  of reading at centre scale

## Sensitivity

**Voltage Ranges d.c.:** 20 000  $\Omega$ /V all ranges**Voltage Ranges a.c.**100  $\Omega$ /V: 3 V range1000  $\Omega$ /V: 10 V range2000  $\Omega$ /V: 30 V range and upwards

## Voltage Drop at Terminals

**Current Ranges d.c.:** 100 mV at50  $\mu$ A, 350 mV at 300  $\mu$ A, 390 mV at

1 mA, 400 mV at 10 mA, 410 mV at

100 mA, 490 mV at 1 A, 710 mV at 10 A

**Current Ranges a.c.:** 480 mV at 10 mA, 110 mV at 100 mA, 240 mV at 1 A, 390 mV at 10 A

## Frequency Response

For 10V&lt;V&lt;300V:

additional frequency error

<  $\pm 3\%$  for 15Hz<f<15kHz

## Response Time

Typically 1 second to full scale

## Magnetic Field Effect

Variation due to external magnetic fields is within the limits of BS 89 (1977) and IEC 51 (1973)

## Temperature Range

Operation: -5 to +35°C

Storage: -40 to +50°C

## Temperature Effect

Variation due to temperature change, not greater than 0,15% per °C

## Flash Test

7 kV a.c. rms

## Overload Protection

High-speed electromechanical cutout with a fuse on the two lower resistance ranges and one in series with the COMMON terminal

## Fuses

1 A ceramic HBC, 32 x 6 mm

10 A ceramic HBC, 32 x 6 mm

(Belling Lee L693)

## Batteries

One 1,5 V cell, IEC R20 type

One 15 V battery, IEC 10F15 using Cat. No. 5210-064 adaptor supplied, or IEC 10F20 without adaptor

## Dimensions (excluding handle and lugs)

192 H x 167 W x 115 D mm

(7,6 H x 6,6 W x 4,5 D in. approx.)

## Weight

2,2 kg (4,75 lb) approx with batteries and leads

## Safety

EN61010-1 (1993) CatIII, 250V d.c., 500V a.c.

For use above these levels, AVO fused probe kits FPK3 or FPK4 are rated to CatIII 600V and 1000V respectively.

## EMC

Meets requirements of EN50081-1 (1992) and EN50082-1 (1992) (emissions and immunity)



Typical scale (not full size)

## ORDERING INFORMATION

Item (Qty)	Cat. No.	Item (Qty)	Cat. No.
Analogue Multimeter .....	Avometer Model 8 Mk 7	Optional Accessories	
Included Accessories		Long reach safety clips, pair	
MK2A leadset, comprising:.....	6121-302	(1 red, 1 black) for 6120-452.....	6220-007
2x 1m plug-in leads (1 red, 1 black)		Standard prods, pair (1 red, 1 black)	
2x insulated crocodile clips (1 red, 1 black)		for 6120-452.....	6220-499
2x test prods (1 red, 1 black)		Uninsulated bulldog clip	
2x sprung hook probes (1 red, 1 black)		for use with 6120-452.....	6120-003
Batteries		Leather Case, test and carry.....	6320-052
1,5 V (1).....	25511-013		
15 V (1).....	25511-182		
Battery adaptor (1) .....	5210-064		
Spare fuses			
1 A ceramic HBC, 32 x 6 mm.....	25413-292		
10 A ceramic HBC, 32 x 6 mm.....	25950-013		
Operating instruction book .....	6171-369		
Optional Lead Sets			
Traditional hook ended 4'			
(includes prods and clips).....	6120-452‡		
Fused lead set: FPK3 2x1.3m leads			
with 660V fused prods .....	6111-286*		
Fused lead set: FPK4 2x1.2m leads			
with clips & 1000V fused prods .....	6111-287*		
Replacement for supplied set .....	6121-302		

\* Comply with Health and Safety Executive Guidance ... Note GS 38

‡ For reasons of personal safety, it is strongly recommended that these test leads should not be used above 50 V. Metal connectors become exposed at the instrument terminals.