

Model 8 mK7

Analogue Multimeter



- **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**

DESCRIPTION

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

The 20,000 Ω/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 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 ' Ω ' 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 μA 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 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 μ 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 μ A/ 1/ 10/ 100 mA/ 1/10 A

Current a.c.:

10/ 100 mA/ 1/ 10 A

Resistance:

0 to 2 k Ω /0 to 200 k Ω /0 to 20 M Ω

Decibels:

-10 to +55 dB using a.c. voltage scale

Insulation Resistance:

Up to 200 M Ω 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 Ω /V all ranges

Voltage Ranges a.c.

100 Ω /V:

3 V range

1000 Ω /V:

10 V range

2000 Ω /V:

30 V range and upwards

Voltage Drop at Terminals

Current Ranges d.c.:

100 mV at 50 μ A, 350 mV at 300 μ 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 < V < 300V:

additional frequency error
< $\pm 3\%$ for 15 Hz < f < 15 kHz

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, Megger fused probe kits FPK3 or FPK4 are rated to CatIII 600V and 1000V respectively.

EMC

In accordance with IEC 61326 including amendment No.1

Typical Scale (not full size)

ORDERING INFORMATION

Item	Order Code	Item	Order Code
Analogue Multimeter Avometer	6110-610	Optional Accessories	
Included Accessories		Long reach safety clips, pair	
MK2A leadset, comprising	6121-302	(1 red, 1 black) for 6120-452	6220-007
2 x 1m plug-in leads (1 red, 1 black)		Standard prods, pair (1 red, 1 black)	
2 x insulated crocodile clips (1 red, 1 black)		for 6120-452	6220-499
2 x test prods (1 red, 1 black)		Uninsulated bulldog clip	
2 x 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	* Comply with Health and Safety Executive	
15 V (1)	25511-182	Guidance Note GS 38	
Battery adaptor (1)	5210-064	‡ For reasons of personal safety, it is strongly	
Spare fuses		recommended that these test leads should not be used above	
1 A ceramic HBC, 32 x 6 mm	25413-292	50 V. Metal connectors become exposed at the instrument	
10 A ceramic HBC, 32 x 6 mm	25950-013	terminals.	
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		

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