

Aplab

DIGITAL MULTIMETER 4½ DIGITS 1089-S



Aplab Model 1089S Digital Multimeter 4½ Digits is a compact portable measuring instrument. It measures DC Voltage in 5 ranges up to 1000V, AC Voltage in 5 ranges up to 600V with freq response up to 20KHz, AC/DC current in 6 ranges up to 1A & resistance in 6 ranges up to 20M it has dB measurement facility reference to 600 ohms load. The instrument can be operated in auto ranging or manual mode. The instrument is provided with RS232 interface i.e. a remote interface through that we can perform testing data logging calibration etc. once unit is in remote mode then front panel control are locked. Which can be operated through personal computer.

The instrument operates from 240V AC supply or 6V external battery.

Features

- Microcontroller Based Design
- Auto Calibration (ATE)
- Basic Accuracy of 0.05%
- Auto & Manual Ranging
- LED Annunciation for Function & Unit
- dB Measurement
- RS232C Interface

Technical Specifications

DC VOLTAGE

Ranges : Manual - 200mV, 2V, 20V, 200V & 1000V.
Auto - 200mV, 2V, 20V, 200V & 500V Max.

Resolution : 10µV in 200mV range.

Input Resistance : 10M ohms (typical) in all ranges.

Response Time : 2 Seconds (typical) to rated accuracy in the Manual mode.

Temperature Coefficient : ± (0.005% of Rdg. ± 2 counts) 0°C at 25°C Ref. temp.

Overload Protection (Max. Applicable Input)

Mode	Range	Max. Input
Auto		±550V
Manual	200mV & 2V	±250V
	20V & 200V	±1000V
	1000V	±1200V

Normal Mode Rejection : Better than 60dB at 50Hz or 60Hz AC mains Frequency.

Ratio

Common Mode Rejection: Better than 90dB at 50Hz or 60Hz AC mains Frequency with 1K ohms unbalance.

Ratio

Accuracy

Range	Accuracy
200mV	±(0.02% of Rdg ± 0.02% of Range) ±1 counts.
2V, 20V, 200V	±(0.02% of Rdg ± 0.02% of Range) ±1 counts.
1000V	±(0.03% of Rdg ± 0.02% of Range) ±1 counts.

AC VOLTAGE (Sinusoidal)

Ranges (RMS) : Manual - 200mV, 2V, 20V, 200V & 600V.
Auto - 200mV, 2V, 20V, 200V & 300V Max.

Resolution : 10 μ V in the 200mV range.

Input Impedance : 10M ohms (typical in parallel with 100pF max.).

Response Time : 5 Seconds (typical) to rated accuracy in the Manual mode.

Temperature Coefficient : \pm (0.025% of Rdg. + 0.5 count) / $^{\circ}$ C.

Overload Protection (Max. Applicable Input)

Mode	Range	Max. Input
Auto	—	400V rms
	200mV & 2V	200V rms
Manual	20V & 200V	500V rms
	600V	800V rms

Frequency Response : 40Hz to 20KHz in 200mV & 2V range
40Hz to 10KHz in 20V range.
40Hz to 4KHz in 200V range.
40Hz to 2KHz in the 600V range.

Accuracy :
Range Accuracy
200mV \pm (0.3% of Rdg \pm 0.2% of Range) \pm 3 counts.
2V, 20V, 200V \pm (0.3% of Rdg \pm 0.2% of Range) \pm 1 count
600V.

Note : AC Converter - Average responding, RMS Calibrated (Pure Sinewaves).

RESISTANCE

Ranges :
Manual : 200 ohm, 2 Kohm, 20 Kohm, 200Kohm, 2000Kohm, 20Mohm.
Auto : 200 ohm, 2 Kohm, 20 Kohm, 200Kohm, 2000Kohm, 20Mohm.

Resolution : 10 milliohms in the 200 ohms range.

Response Time in the Manual Mode : 10 secs. (typical) in the 20M ohms range.
3 secs (typical) in other range.

Temperature Coefficient : \pm (0.01% of Rdg \pm 0.5 count) / $^{\circ}$ C. Ref. Temp. 25 $^{\circ}$ C.

Overload Protection : 200V (RMS) in all ranges typically for one minute.

Voltage Drop at Full Scale : 2V DC (Max.).

Accuracy : As stated below.
Range Accuracy
200 ohm \pm (0.2% of Rdg \pm 0.05% of range +2 counts).
2Kohm, 20Kohm, \pm (0.1% of Rdg \pm 0.01% of range +1 count).
200Kohm
2000K ohm \pm (0.5% of Rdg \pm 0.01% of range +1 count).

20M ohm \pm (1.0% of Rdg \pm 0.01% of range +3 count) up to 10M ohm.
 \pm (2.0% of Rdg \pm 0.01% of range +3 counts) from 10M ohm to 20M ohm.

DC CURRENT (Manual Mode only)

Range (Manual Selection) : 200 μ A, 2mA, 20mA, 200mA, 1A.

Resolution : 10 Nano Amps in the 200 μ A range.

Response Time : Less than 3 sec. to rated Accuracy in any range.

Temperature Coefficient : \pm (0.01% of Rdg \pm 0.4 count) / $^{\circ}$ C Ref. Temp. 25 $^{\circ}$ C.

Overload Protection : By 1.5A Fuse & clamping diodes in all ranges.

Accuracy : \pm (0.1% of Rdg \pm 0.05% of range +2 counts).

AC CURRENT (Manual Mode only)

Range (Manual selection only) : 200 μ A, 2mA, 20mA, 200mA, 1A.

Resolution : 10 Nano Amps in the 200 μ A range.

Response Time : Less than 5 secs. to rated accuracy in any range.

Temperature Coefficient : \pm (0.025% of Rdg \pm 0.5 count) / $^{\circ}$ C.

Overload Protection : By 1.5A fuse & clamping diodes in all the ranges.

Frequency Response : 40Hz to 4KHz.

Accuracy : \pm (0.3% of Rdg \pm 0.3% of range +3 counts).

GENERAL DATA

Display : 4 $\frac{1}{2}$ Digits by seven segments, Red LEDs 0.5" character height
Max. Count : 19999.

Dimensions (approx.) : 260 (W) x 300 (D) x 90 (H) mm.

Weight : 3 Kg. (approx.).

Power : 240V \pm 10%, 50/60Hz, 6VA.
Battery compartment for 6V/ 1.2AH (Battery not provided).

Sampling Rate : 1 sample / sec. (typical).

Warm-up Time : 30 minutes to rated accuracy (typical).

ACCESSORIES

a) Banana Plug to Sharp Tips - Qty. 1 No.

Carried Spares :

a) 100mA Glass Cartridge Fuse - Qty. 1 No.

b) 1.5A Glass Cartridge Fuse - Qty. 1 No.

Conditions of Use :

Reference Condition : 23 $^{\circ}$ C \pm 1 $^{\circ}$ C; Rh 20% to 80%.

Warm-up Time : 1/2 Hr.

WE PURSUE A POLICY OF CONTINUOUS DEVELOPMENT AND PRODUCT IMPROVEMENT. THUS THE SPECIFICATIONS IN THIS DOCUMENT AND THE LOCATION OF CONTROLS ON THE FRONT PANEL MAY BE CHANGED WITHOUT NOTICE.

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