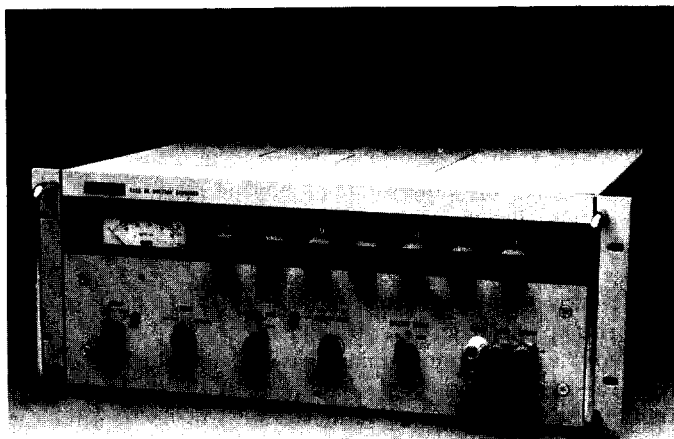


CALIBRATORS AND STANDARDS

DC Voltage Calibrator 332B/332D



332B

332B, 332D DC Voltage Calibrators

Offering extremely high accuracy and stability, the 332B and 332D satisfy the most critical requirements for a precision dc calibrator or voltage reference. Outstanding regulation and environmental specifications as well as overvoltage and overcurrent protection, make these instruments well suited for day-to-day use on the production line or in a controlled laboratory environment.

Output voltage is set by seven in-line decade switches to provide 0.1 ppm resolution in each voltage range. Three voltage ranges provide full scale outputs of 0-11, 0-111, or 0-1111V. Output current for any range is rated at 0 to 50 mA.

Overcurrent and overvoltage limits are provided to afford protection in the event of component failure or operator error. The current limit may be set to operate at any level from 1 mA to 60 mA by means of a continuously adjustable front panel control. When limiting begins, a panel light illuminates. When the overload is removed, the supply returns to normal operation. Continuous limiting will not harm the supply. The over-voltage trip may be set to operate at any point from 10% to 110% of each voltage range by a continuously variable front panel control. In the event the set point is exceeded, the calibrator is immediately returned to standby mode and the output is disconnected from the load. Normal operation may be restored by returning the power switch to standby and then to operate.

The main regulating loop, which controls the output voltage, consists of a chopper-stabilized amplifier having more than 180 dB of gain at dc. Output voltage is controlled by a sample string consisting of Fluke-manufactured precision wire-wound resistors that are carefully selected and matched for resistance ratio and very low temperature coefficient.

Specifications

Output Voltage: 0 to 1111.1110V dc

Output Current: 0 to 50 mA

Voltage Ranges: 10, 100, and 1000V ranges with outputs as follows: 0 to 11.11110 (1 μ V steps), 0 to 111.11110 (10 μ V steps), 0 to 1111.1110 (100 μ V steps)

Accuracy of Output:

Range	332B (For 90 days)	332D (For 60 days)
10 V	$\pm(0.002\%$ of setting +10 μ V)	$\pm(0.001\%$ of setting +10 μ V)
100V	$\pm(0.002\%$ of setting +20 μ V)	$\pm(0.001\%$ of setting +20 μ V)
1000V	$\pm(0.002\%$ of setting +200 μ V)	$\pm(0.001\%$ of setting +200 μ V)

Note: The above accuracies are absolute, relative to NBS standards and include effects of stability, line regulation, load regulation, and calibration uncertainties under standard reference conditions of 23°C \pm 1°C and up to 70% relative humidity.

Stability of Output: (at reference condition^c described above):

Range	332B	332D
10V	$\pm(0.001\%$ of setting +10 μ V)/mo $\pm(0.001\%$ of setting +20 μ V)/yr	$\pm(0.0005\%$ of setting +7 μ V)/mo
100V & 1000V	$\pm(0.001\%$ of setting +20 μ V)/mo $\pm(0.002\%$ of setting +40 μ V)/yr	$\pm(0.0005\%$ of setting +30 μ V)/mo

Temperature Coefficient of Output: (0.0002% of setting +1 μ V)/°C from 0°C to 50°C

Overcurrent Protection: Limits current at 1 mA to 60 mA via continuously variable front panel control

Overvoltage Protection: Trips output if voltage level exceeds setting of front panel controls. Continuously variable from 10% to 110% of each range

Ripple and Noise: 10V range, <20 μ V rms. 100V range, < 30 μ V rms. 1000V range, < 40 μ V rms.

Settling Time: Typically within 10 ppm of final output, less than 20s after a range change

Regulation: 0.0002% of setting or 10 μ V for a 10% line voltage change or a full load change

Common Mode Rejection: 140 dB from dc to 400 Hz, up to 700V rms or 1000V dc

Isolation: Either output terminal may be floated up to 1000V dc from chassis ground

Remote Sense: Separate terminals are provided for sensing the output voltage directly at the load

Meter (switch selectable): 0 to 1200V dc and 0 to 60 mA

Operating Temperature: 0°C to 50°C

Input Power: 115/230V ac \pm 10%, 50 - 60 Hz, single phase. Approximately 130 VA fully loaded

Size: 17.8 cm H x 48.2 cm W x 45.7 cm D (7 in. H x 19 in. W x 18 in. D)

Weight: 27.21 kg (60 lbs.)

Mounting: Standard EIA relay rack (tapped for attachment of slides); resilient feet provided for bench use

Price

Model

332B DC Voltage Calibrator	\$3595
332D DC Voltage Calibrator	4095