Nullmeter / Nanovoltmeter

- Sub PPM Voltage, Resistance and Temperature Calibration Transfers
- Range: 100 nV to 1000V
- Accuracy:
  - Analog Meter: 1%
  - Analog Output: 0.5%
- Resolution: 2 nV
- Independent I/V Zero per range
- Isolation: >100 GΩ
- Rechargeable Battery Operation (50 Hrs)
- Floating Measurements to 1000V
- Selectable Input Impedance

The Model AVM-2000 is a calibration laboratory grade Nullmeter/ nanovoltmeter. It can be used as a stand-alone analog voltmeter or in conjunction with Kelvin-Varley dividers and other calibration laboratory equipment where high sensitivity ratio-metric processes are used.

The AVM-2000 has a very high sensitivity front end amplifier with extremely high common mode rejection making it ideal for comparison/ratio measurements. It is specifically designed for standards comparison and displays readings on an easy to read, dual-scale, mirror-backed meter with null (0) shown at center scale. An isolated, single ended output allows connection to other instrumentation such as chart recorders, data acquisition systems and digital voltmeters. This output also enables the AVM-2000 to be used as a high quality instrumentation amplifier with input impedances ranging from 1 MΩ to 1 GΩ, and gains from 10-3 to 108 . Common mode rejection of 80dB, precision adjustable offset voltages and a wide selection of low pass filters ensure operation over the entire range from 100 nV to 1000V without compromising resolution or accuracy.

Mains Isolation

The AVM-2000 may be operated from line power or its internal rechargeable battery (rechargeable with the internal battery charger). Battery operation allows up to 50 hours of total independence and isolation from common mode signals generated through mains and building wiring, minimizing the possibility of errors induced by ground loops and other wiring induced noise.

Easy/Traditional Operation

At its heart, the AVM-2000 employs modern digital technology; however to the user it functions as a traditional analog meter. The AVM-2000 incorporates a mirror-backed, high-accuracy, dual-scale, analog meter display to facilitate use as a Nullmeter. Range is selected by rotating a traditional Range selection knob. All operating modes are pushbutton selected and displayed on an easy to read LCD. Output level, and input offset level are controlled by "press-rotate-press" rotary controls. Settings are held in non volatile memory.

Indicators

A backlit LCD alphanumeric display assists the user in operation and setup of the instrument. It continuously displays the status of the primary selected parameters and mode of operation. The current range setting is shown in large bold numbers to eliminate range reading errors incurred when reading knob position.

The AVM-2000, utilizing the latest available technology, surpasses all of the specifications of its predecessors. It replaces, and exceeds the performance and functionality of: the PPM model AVM-100 and the discontinued Hewlett Packard HP419A, Fluke 845AB, and Keithley 155.

Unique Features Include:

- Scalable rear panel output (±0.5 – 1.5 Volt for Full Scale)
- Low Thermal EMF input binding posts (Gold plated Tellurium Copper), complete with test leads, terminated with gold plated spade lugs on one end.
- Input connector shield for thermal isolation of input terminals
- Wide range of filter settings (0.1 – 100 sec in 1-2-5 sequence)
- Analog sub-system in heavy metal guarded enclosure for long term thermal stability

TEGAM

Model AVM-2000

RF CALIBRATION AND MEASUREMENT PRODUCTS

Specifications

Inputs and Range	• One set of input terminations for all ranges • HI LO & Guard • Low end 100nV full scale deflection with 2nV resolution • High-end range ≥1000V full scale deflection. with 5V or better resolution • 21 selectable ranges, (1-3-10 sequence)		
Outputs and Indicators	2 output indications • Analog meter • Isolated analog rear panel output		
Analog Output	± 0.5% of full scale of range selected (typically 0.1%)		
Resolution	Within 0.1% of full scale of selected range (after floor noise compensation)		
Linearity	Within 0.5% of full scale of selected range		
Analog Meter	± 2% of full scale of selected range		
Scaling	Mirrored zero center 10-0-10 and 3-0-3		
Resolution	≤1% of full scale of selected range (typically, 0.5% of full scale of selected range)		
Linearity	≤ ± 1% of full scale of selected range		
Input Impedance	100 nV to 1mV FS 1, 10, 100MΩ, or 1GΩ Selectable	3mV to 300 V FS 10MΩ, or 100MΩ Selectable	1 KV FS 1000MΩ
Offset Current	Adjustable (± 2.5 nA) to zero at front panel		
Filter	10-position digital low pass filter selectable from front panel 100, 200, 500 mSec, 1, 2, 5, 10, 20, 50, 100 Sec		
Offset	Continuously variable (0 to ±999.9% of range) offset for all ranges		
Resolution	≤ .01% of offset full scale		
Accuracy	≤±0.5% of offset full scale		
Series Mode Rejection	> 80dB at 50Hz-60 Hz		
Outputs	Isolated yielding ±0.5 to ±1.5V (user adjustable) for full scale deflection		
Isolation	Input to case or output > 100 GΩ (typically > 500 GΩ)		
Overload Protection	1100 VDC or peak on any range		
Indicators	Meter Status	4 ½" Mirror Backed with – 3 –- 0 –- +3 and -10 –- 0 –- +10 Scales Backlit LCD: Range, Offset, Filter Response Time, Input Impedance, ZERO/OPERATE Mode, Input Offset Mode and Isolated Output Mode	
Dimensions	6.5" H X 11.5"W X 13.5" D		
Weight	22.5 lbs		
Connectors	• Low thermal emf input terminals plus guard • Two output Binding Posts, plus a third for case common • Input terminal cover		
Power Supply	• Internal rechargeable battery • External 12 to 30 V DC @1.25 Ampere • External "Power Cube" included		
Environmental	Operating Temperature Range Operating Humidity Range Storage Temperature / Humidity	15 - 30 °C Full Specifications 0 - 50% RH Full Specifications -20 to + 60 °C / 0 - 80% non-condensing	

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