

Read directly

1 $\mu\mu a$ and

.1 μV

with 10 times previous accuracy!



Read directly

1 $\mu\mu a$

and

1 μV

with 10 times previous accuracy!

Drift less than $\pm 2 \mu v$; noise less than $0.2 \mu v$!

New -hp- 425A Microvolt-Ammeter
now makes these difficult measurements quickly and easily!

ENGINEERING

Minute dc potentials, difference voltages, nulls

Resistances from milliohms to 10 megmegohms*

Use with Esterline-Angus, other recorders

PHYSICS, CHEMISTRY

Grid, photomultiplier currents

Ionization levels in vacuum

Thermocouple potentials

Voltaic currents in chemicals

MEDICINE, BIOLOGY

Voltages in living cells

Nerve voltages

Voltages in plants, seeds

*with external dc source.



is announcing more than 30



The all-new *-hp-* 425A Microvolt-Ammeter will provide engineers, physicists, chemists and physiological scientists with one compact, direct-reading instrument measuring minute voltages and currents with speed, simplicity and 10 times the sensitivity of the complex equipment arrays previously required.

Very careful engineering, including heavy filtering against ac signals and substitution of a unique photoelectric chopper for the conventional mechanical vibrator, has resulted in performance heretofore unobtainable. The long-term drift of the 425A is less than $2\mu\text{v}$ and internal noise is less than $0.2\mu\text{v}$.

Conservative electrically, Model 425A includes every conceivable assurance of safety, accuracy and dependability. For example, momentary overloads of 1,000 volts cause no damage; and the new pickup probe is specially designed to minimize thermocouple and triboelectric effects. The meter provides constant polarity indication.

The new *-hp-* 425A also may be used to measure a wide range of resistances. Milliohms may be measured by using a battery and series resistor as a constant current source. Higher resistances may be measured with higher voltages; a 100 volt supply allows the 425A to measure accurately up to 10 megohms.

Call your *-hp-* representative now for demonstration on your bench; or, write for details.

HEWLETT-PACKARD COMPANY

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 FIELD REPRESENTATIVES IN ALL PRINCIPAL AREAS

SPECIFICATIONS

MICROVOLT-AMMETER

Voltage Range:	Positive and negative voltages from $10\mu\text{v}$ full scale to 1 v full scale in an eleven step, 1, 3, 10 sequence.
Current Range:	Positive and negative currents from $10\mu\text{a}$ full scale to 3 ma full scale in an eighteen step, 1-3-10 sequence.
Input Impedance:	Voltage Ranges: 1 megohm $\pm 5\%$. Current Ranges: Depends on range, 1 megohm to 0.33 ohm.
Accuracy:	Within $\pm 3\%$ of full scale.
AMPLIFIER	
Frequency Range:	dc to 0.2 cps.
Gain:	100,000 maximum.

Output:	0 to 1 v for full scale reading, adjustable.
Output Impedance:	10 ohms, shunted by 1000 ohm potentiometer.
Noise:	Less than $0.2\mu\text{v}$ rms referred to input.
Drift:	After 15 minute warm-up, less than $\pm 2\mu\text{v}$ per hour referred to the input.
Power:	115 v ± 10 v, 230 ± 20 v, 60 cps, 40 watts.
Dimensions:	Cabinet Mount: $7\frac{1}{2}$ " wide, $11\frac{1}{4}$ " high, 14" deep.
Weight:	Net 20 lbs.
Price:	\$500.00. -hp- 425AR (rack mount) \$505.00. -hp- 425A (cabinet) \$500.00.

Data subject to change without notice. Prices f.o.b. factory.

basic new instruments in 1958

In 1957, -hp- occupied the first two of six 85,000 square-foot buildings forming a complete new laboratory and manufacturing plant. New facility is approximately one mile west of previous plant on a 40-acre site just south of Stanford University. Your visit is invited.



COMPLETE COVERAGE

Won't you agree it is simple and more time-saving when you can turn to one source for your test equipment needs? -hp- engineers are continually working to produce new equipment that anticipates your future needs, yet functions smoothly with your existing -hp- instruments. At the 1958 I.R.E. Show 20 new, basic -hp- test instruments were introduced. Today, -hp- makes over 300 instruments; you can choose from the world's largest and most complete line

just the equipment you need. In making this choice, you are assured of -hp- quality; today the standard of the world in electronic test instruments.

To give you personal help with measuring problems, you have available over 150 electronics specialists in every major U. S. metropolitan area, and around the world. These men, trained and annually re-trained by -hp-, are experts in applying as well as selling and servicing -hp- instruments. Call them when you can use personal, competent help, in your plant, today.

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