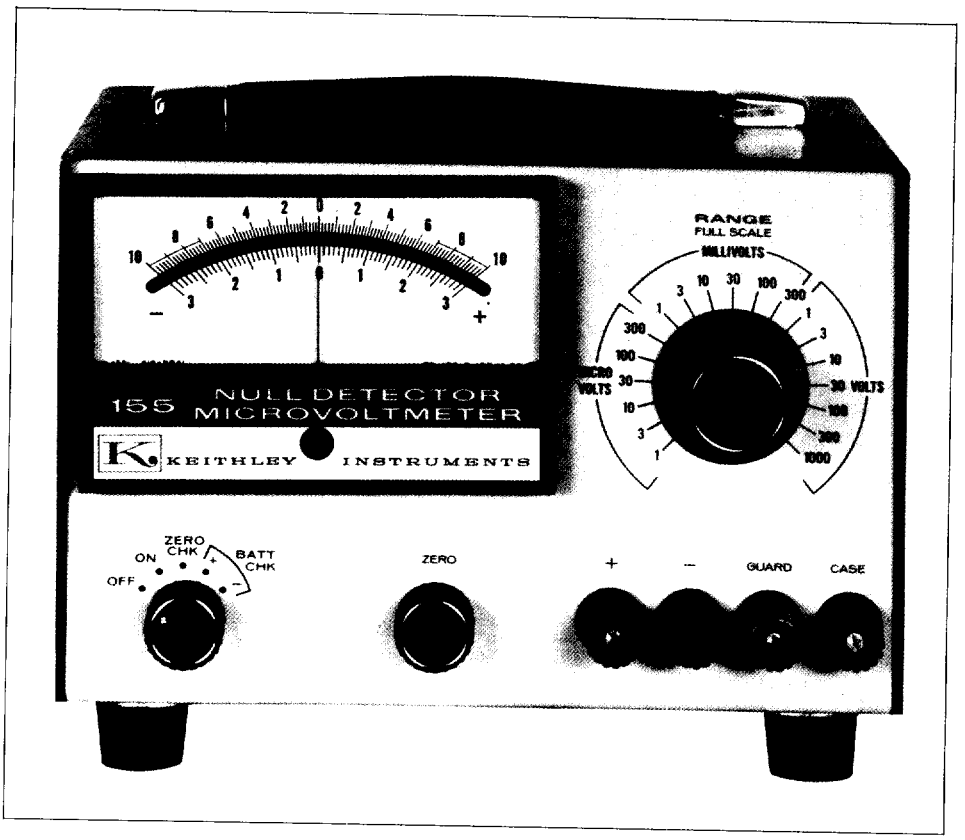
155/Microvoltmeter

Null Detector

- **150nV to 1kV**
- **1000-hour battery life**
- **$10^{12}\Omega$ isolation**



The Model 155 Null Detector-Microvoltmeter is a high-performance, low-cost instrument with better than 150nV resolution and full-scale ranges up to 1kV. Its electrical and physical ruggedness, broad range, and high common- and normal-mode rejection make it one of the most versatile voltmeters available for applications in standards labs, development labs, production testing, and basic research.

As a null detector, the guarded battery-operated 155 is often used with potentiometers, bridges, Kelvin-Varley dividers, and for amplifier gain and linearity measurements. The 155 can recover from 100V overloads within 5 seconds on the 30mV and higher ranges. Up to 1200V peak may be applied momentarily on any range without damaging the instrument.

A ±1V at 1mA output is located on the rear panel for connection to recorders or other readout devices. Accuracy is ±2% of full scale at the meter and ±1% at the rear panel recorder output.

The 155 is designed for battery operation to minimize ground loop and high frequency pickup problems in sensitive voltage measurements. Four internally mounted standard batteries provide greater than 1000 hours of operation.

RANGE: ±1μV full scale to ±1000V on zero center meter in 19 overlapping 1× and 3× ranges.

ACCURACY: ±1% of full scale at recorder output, ±2% of full scale at meter, exclusive of noise and drift.

ZERO DRIFT: <0.5μV per 24 hours, typically <0.1μV per °C. Long term drift is non-cumulative.

METER NOISE: <0.03μV rms (0.15μV peak-to-peak) on most sensitive range with input shorted.

INPUT RESISTANCE: 100MΩ on 3V to 1kV ranges; 10MΩ on 300mV to 1V ranges; 1MΩ on 1μV to 100mV ranges.

NORMAL MODE REJECTION: An applied 50-60Hz signal which is 80dB greater than full scale peak-to-peak will not affect reading on most sensitive range (equivalent to 100dB NMRR). Rejection decreases to 20dB on the 10mV and higher ranges. Peak ac+dc must never exceed 1200V.

COMMON MODE REJECTION: Common mode voltage, dc or 50-60Hz, 120dB greater than full scale up to 1200V peak will not affect reading (equivalent to 140dB CMRR).

ISOLATION: $>10^{12}\Omega$ shunted by 0.01μF between chassis ground (case) and input LO at up to 50% relative humidity and 25°C.

RISE TIME (10%-90%): 1 second on 10μV range and above, increasing to 5 seconds on 1μV range.

ZERO SUPPRESSION: ±25μV.

RECORDER OUTPUT: ±1V at up to 1mA.

OVERLOAD: Up to 1200V peak may be applied momentarily on any range. Recovery from overload 10^6 times full scale for 1 second with 10kΩ source is within 5 seconds on the 30μV and higher ranges, increasing to 20 seconds on the 1μV range.

CONNECTORS: Output: Barrier strip. **Input:** Binding posts.

POWER: Four internally mounted carbon-zinc batteries (2N6) provide >1000 hours continuous operation. Barrier strip provided for external power supply.

DIMENSIONS, WEIGHT: 165mm high × 210mm wide × 185mm deep (6½ in. × 8¼ in. × 7¼ in.). Net weight 2.5kg (6 lbs.).

ACCESSORY SUPPLIED: Instruction manual.