

# brandenburg Model 139



Digital High Voltage Meter  
Dual Range 0-20kV, 0-40kV DC  
Positive and Negative Reading

## Features

- Direct reading digital HV meter
- 3½ digit LCD display
- Extremely high input impedance
- Positive and negative reading without switching
- Accuracy better than 0.25% at 20kV
- Battery operated
- Precision output for recorder
- High voltage probe supplied
- Rugged construction with metal case

## Description

In this direct reading digital High Voltage meter, a fully encapsulated input potential divider chain, using precision HV resistors of extremely high value, feeds a digital voltmeter module of high input resistance. Two ranges are provided: 0-20kV with 10V resolution and 0-40kV with 100V resolution. This gives a dc voltage measuring instrument with an accuracy of better than 0.25% which loads the circuit under test by less than 2µA at the highest input voltage. The meter provides accurate, high resolution measurement of high voltages over a wide range of values, with extremely low circuit loading. Positive and negative voltages may be measured without the need for switching. The digital meter Model 139 offers greater accuracy and higher resolution than the analogue meters Models 88 and 109, but with a higher current drain on the circuit under test.

The HV meter is battery operated and has a single control: a 20kV/40kV range selector switch with an OFF position. The DVM module itself incorporates low-battery indication. A precision recorder output is provided at 10mV per kV of input.

The meter may be angled for convenience of reading when on a bench, and is housed in a metal case. The HV connection is made to a fully insulated socket with moulded polythene shroud. A mating screw-in connector with 2m lead, fitted with a 40kV hand-held probe, is supplied as standard. Other connectors are available.

## CAUTION

Great care must be taken when making measurements in high voltage circuits. **ALWAYS** ensure that the HV Return terminal of the meter is grounded. **DO NOT** use hand-held probes on supplies that are potentially lethal.

## Ordering Information

Meter ranges	Resolution	Input resistance	Ordering Code
0 to ±20kV dc and 0 to ±40kV dc	10V 100V	30,000MΩ (both ranges)	139



**Electrical Specification**

Voltage ranges	0 to ±20kV dc and 0 to ±40kV dc (switch selected)
Resolution	10V on 20kV range and 100V on 40kV range
Accuracy	0.25% at 20kV (spot) at 23 deg.C (additional 0.025% per 1kV for voltages < or > 20kV)
Input resistance	30,000MΩ
Stability	Better than 0.3% over 1 year
Input current	Less than 2µA drawn from circuit under test at maximum voltage
Polarity	Positive or negative, auto reading
Protection	Circuits protected against damage by external arcing, flashovers etc.
Recorder output	10mV per kV Accuracy ±1.5% at 40kV Initial offset <0.2mV Thermal drift < 150 ppm per deg.C Long term drift <0.5% over 1 year Source/sink capability up to 100µA
Controls	OFF / 20kV / 40kV switch
Battery type	One PP6 (IEC No.6F50-2. NEDA No. 1602)
Battery life	Approx. 1000 hours operation
Battery check	Automatic: BAT shown on LCD display when battery is low

**Environmental Specification**

Operating temperature range 0 to +50 deg.C  
 Storage temperature range -20 to +65 deg.C  
 All high voltage components are fully encapsulated for protection against humidity.

**Mechanical Specification**

Dimensions	215 x 60 x 185 mm (plus connectors)
Weight	1.35 kg including battery and HV cable
Connections	
HV input	Recessed terminal to accept Brandenburg screwed connector. Mating connector with 2m HV cable and hand held 40kV probe supplied.
HV return	4 mm screwed terminal
Recorder	4 mm sockets
Battery access	By removal of cover plate at the rear of the instrument

