

Voltage Sensing Bushings

G&W's Voltage Sensing Bushings are a temperature compensated, built-in, voltage measuring system that eliminates the need for PTs when analog phase to ground voltage monitoring is required. The voltage sensing bushing can be used on both SF6 and solid dielectric (Trident) style switchgear on grounded wye systems through 38kV. Compared to potential transformers, the voltage sensing bushing offers these benefits:

- Significant cost savings
- Cleaner, less cumbersome installation
- Less space required
- Fewer add-on components
- Factory installed and tested
- Capable of field recalibration

OPERATION

The voltage sensing bushing utilizes a capacitively coupled screen which is embedded within the epoxy bushing. The low energy output of the screen can be directly read by various relays. Alternatively, the output is amplified by integral circuitry, resulting in a 0-120 VAC analog output suitable for direct connection to any relay, IED or RTU. The circuitry incorporates built-in calibration and temperature compensation which improve accuracy.

CONSTRUCTION

Bushings are designed to ANSI/IEEE 386 standards and are available in either a 600A Apparatus or 200A Deepwell interface capable of accepting conventional elbow style connectors (elbows must be ordered separately).

APPLICATIONS

Voltage sensing bushings are ideal for applications requiring the sensing of presence or loss of voltage on one or all phases of a primary cable. Common applications include metering, automatic transfer and automatic loop restoration schemes. The internal screens and LEA inputs are ideal for submersible vault applications. Voltage sensing bushings are fully factory connected and provide a cleaner installation and significant savings compared to using PTs connected to all three phases.



▲ For solid dielectric switches, all voltage sensing components are built into the epoxy module.



▲ Voltage sensing bushings mounted on a SF6 switch.

SPECIFICATIONS

General Ratings

Use on: Grounded wye systems
 Operating temperature: -40°C to +65°C
 Storage temperature: -50°C to +65°C

Input Ratings

Input voltage range (phase to ground) options:
 Low Energy: 1.2 - 4.61 or 4.62 - 21.9kV
 Amplified: 1.7 - 6.2 or 6.2 - 21.9
 Frequency range: 48Hz - 61.2Hz

Output Ratings

Low Energy output voltage: 8 VAC
 Low Energy Relay Input Impedance: 1M Ω
 Nominal amplified output voltage: 120 VAC with digital output contact (1 per 3 phase set)
 Digital pick-up voltage:
 90% of Vnom (on all phases)
 Digital drop-off voltage:
 75% of Vnom (on any phase)
 Maximum burden (per output):
 0.06VA
 Low Energy accuracy:
 +/- 4% from -40°C to 65°C
 (+/- 2% from -20°C to 65°C)
 Amplified accuracy: +/- 5% from -40°C to 65°C

Amplification Circuitry Calibration Information

Communication port: RS 232
 Communication protocol:
 - Hyper Terminal
 - Windows XP