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*Instruction Manual*  
**Model 1500**  
Linear Potentiometer



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## **1. THEORY OF OPERATION**

The Geokon Model 1500 Linear Potentiometer is designed for making displacement measurements. It can be used as a replacement for the equivalent vibrating wire displacement transducer in such Geokon instruments as Extensometers, Crackmeters, Jointmeters, and the like.

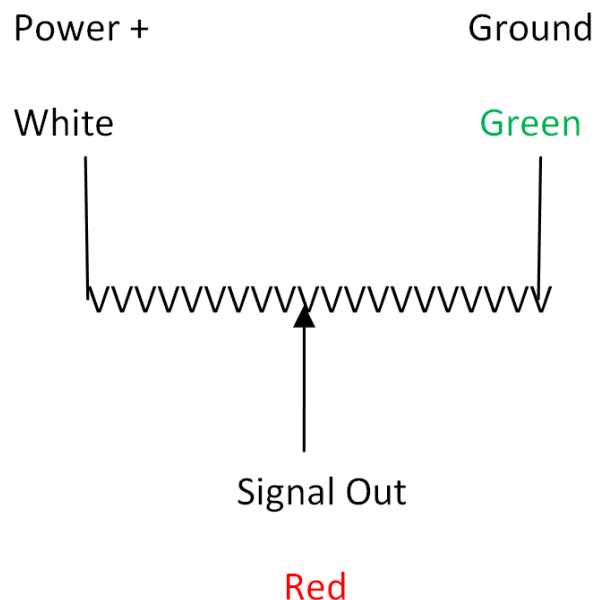
The instrument is essentially a rheostat that consists of a conductive plastic element used as the resistor in a linear voltage divider circuit. The sensor is housed in a 3/4" diameter stainless steel tube, ruggedized and sealed for outdoor use.

Two versions are available. In one version, the shaft protrudes from one end only. In the other, the shaft goes through the instrument. In either case, the shaft is free to rotate without affecting the reading. The choice of which type to use depends on the instrument and application.

## **2. WIRING**

Various wiring codes are used for extension cables and, in installations such as multipoint extensometers, a common ground can be used for more than one transducer. Thermistors, requiring two conductors, can be included with the sensors, or in a group of sensors as in the extensometer, for temperature measurement.

Each Potentiometer has three leads colored White, Green, and Red. A Wiring Diagram is shown in Figure 1.



**Figure 1 - Wiring Diagram**

### **3. RB-100 READOUT**

The Model RB-100 Linear Potentiometer Readout Box is designed to read Geokon's range of Model 1500 Linear Potentiometers. It gives the displacement directly in inches and can accept up to six inputs from a multipoint borehole extensometer.

The Readout utilizes a high-resolution 4.5 digit LCD digital voltmeter with circuitry to power and read out the potentiometers. A three wire ratio-metric system is used to minimize errors caused by long lead lengths and varying temperatures. In use, a regulated voltage is applied to the ends of the potentiometer resistance element and the position of a wiper, which rides along the element, can be determined by the voltage measured at this point.



Figure 2 - RB-100 Readout Box

### **4. SPECIFICATIONS**

Available Ranges	50 mm	100 mm	150 mm	200 mm	250 mm
Total Resistance	5 k $\Omega$	5 k $\Omega$	10 k $\Omega$	10 k $\Omega$	10 k $\Omega$
Accuracy <sup>1</sup>	$\pm 0.25\%$ F.S.				
Nonlinearity	$< 0.5\%$ F.S.				
Repeatability	0.1 mm				
Max Applied Voltage DC	42				
Temperature Range	-40 to 100 °C				
Least Reading	0.025 mm				

Table 1 - Specifications

Notes:

<sup>1</sup> Accuracy established under laboratory conditions. Accuracy of  $\pm 0.1\%$  available on request.