

Pendulum Readout

Applications

The 6850 Pendulum Readout is designed for use with direct or inverted pendulums. It automatically measures horizontal deflections in two directions and is suitable for use in measuring the tilting of large structures such as...

- Dams
- High-rise buildings
- Bridges



• Model 6850-10 Pendulum Optical Manual Readout with LED light beam, mounted above Pendulum electronics.



• Closeup of the Model 6850-10.



• Model 6850-4 Electronic Readout.

Description

The 6850 Pendulum Readout uses two high-resolution linear array CCDs (charge coupled device) as the basic sensors. Two collimated light sources at 90° to each other are directed onto two photo-sensitive CCD screens. The shadow of the pendulum wire falls on the CCD sensors and an automatically generated scan of the CCD pixel map records and digitally stores the coordinates of the shadow in the built-in computer.

This information is then converted to an analog signal that enables the position of the pendulum wire to be displayed locally in tenths of millimeter units on two LED panels mounted in the console. The signal can also be transmitted via 4-20 mA output or RS-485 output to a remote readout site.

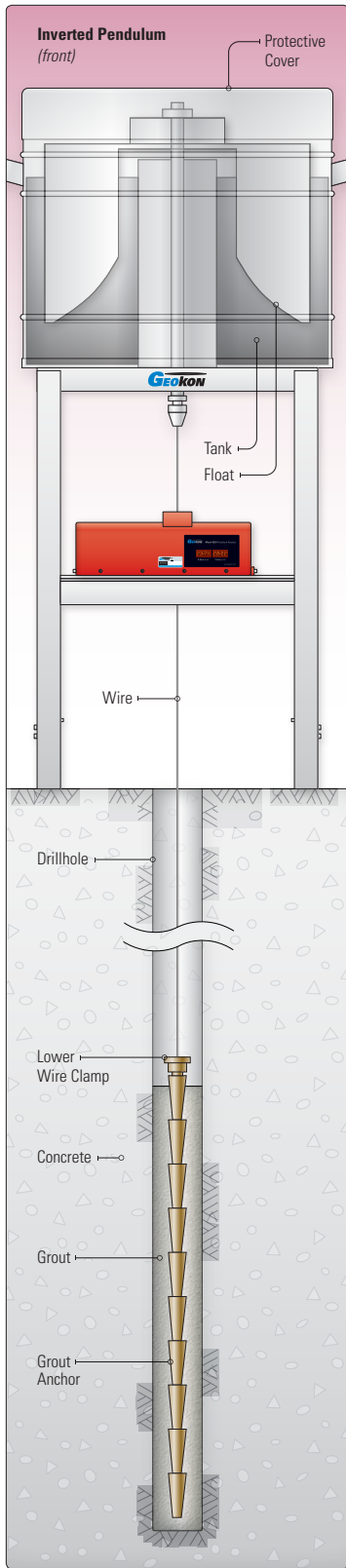
A Pendulum Optical Manual Readout with LED light beam, that's secured to a wall (Model 6850-9) or mounted to a table (Model 6850-10), is also available where automated systems are not necessary, or where a manual reading back-up is required (see photographs, inset left)

Advantages and Limitations

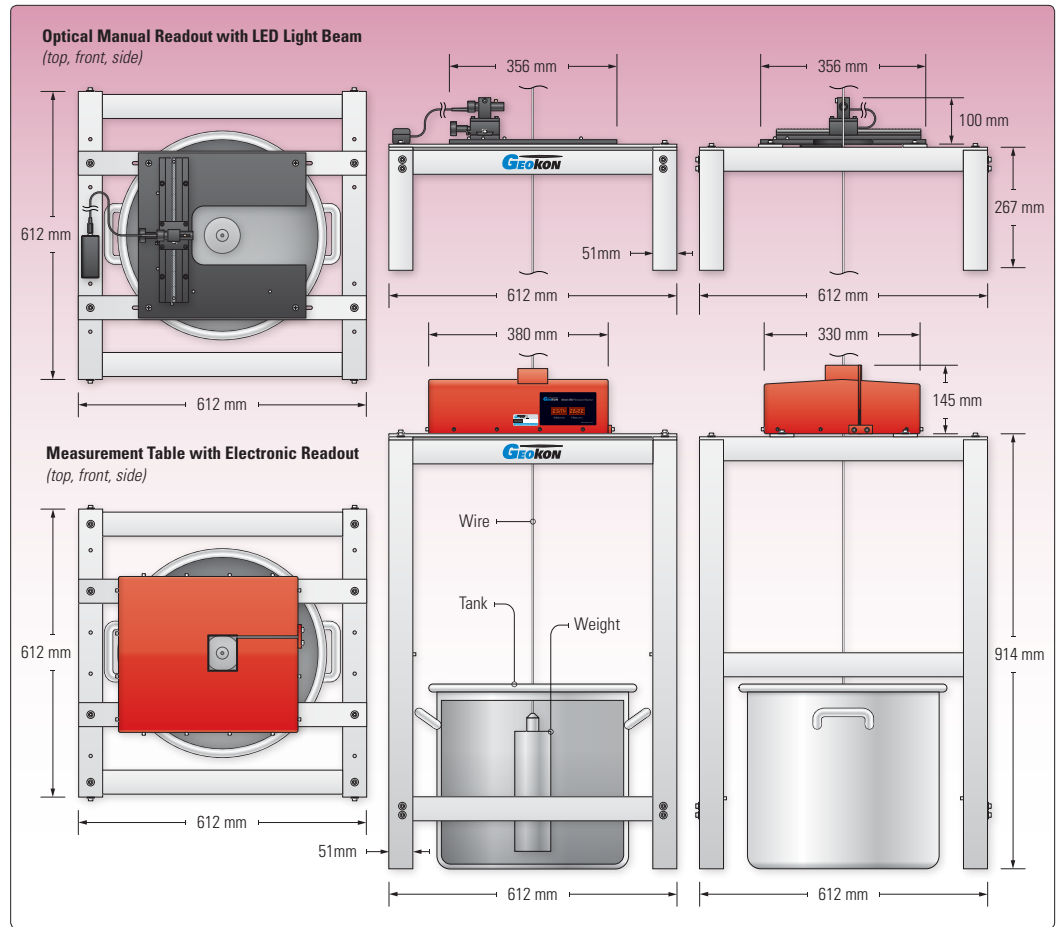
The Model 6850 Pendulum Readout is designed to make accurate measurements of the relative movements of normal and inverted pendulums, such as those found in dams, and can be installed as a new system or as an electronic upgrade for an existing system.

The electronics package provides both 4-20 mA and EIA RS-485 data outputs. The data can be stored locally or remotely in a Micro-1000 Datalogger, or other dataloggers, and thence by hard-wire or modem to a computer (IBM PC).

Two 2-D models are available: 50 × 50 mm and 50 × 100 mm; and one 3-D model: 50 × 100 × 50 mm. All models are suitable for use with pendulums with a wire diameter between 1.0 mm and 9.9 mm.



● Model 6850-1-2 Inverted Pendulum System.



● Model 6850-10 Pendulum Optical Manual Readout with LED light beam, mounted to a table (top). Model 6850-4 Electronic Readout installed on Measurement Table (bottom).

Specifications

	6850-4 (2D)	6850-5 (3D)	6850-6 (2D)	6850-9/10 (2D, Optical)
Standard Ranges	(X axis) 0 to 50 mm (Y axis) 0 to 50 mm	(X axis) 0 to 50 mm (Y axis) 0 to 100 mm (Z axis) 0 to 50 mm	(X axis) 0 to 50 mm (Y axis) 0 to 100 mm	(X axis) 0 to 50 mm (Y axis) 0 to 50 mm
Resolution	0.01 mm	0.01 mm	0.01 mm	0.1 mm
Accuracy	better than 0.1 mm	better than 0.1 mm	better than 0.1 mm	0.2 mm
Communication Method	4-20 mA, EIA RS-485	4-20 mA, EIA RS-485	4-20 mA, EIA RS-485	n/a
Display	4-digit LED	4-digit LED	4-digit LED	n/a
Data Storage	2000 data sets	1200 data sets	2000 data sets	n/a
Power Supply	85-265 VAC, 50-60 Hz	85-265 VAC, 50-60 Hz	85-265 VAC, 50-60 Hz	n/a
Operating Temperature	-15 °C to +60 °C	-15 °C to +60 °C	-15 °C to +60 °C	n/a
Operating Humidity	100% relative humidity	100% relative humidity	100% relative humidity	n/a
L × W × H	380 × 330 × 145 mm	425 × 375 × 190 mm	425 × 375 × 190 mm	356 × 356 × 100 mm