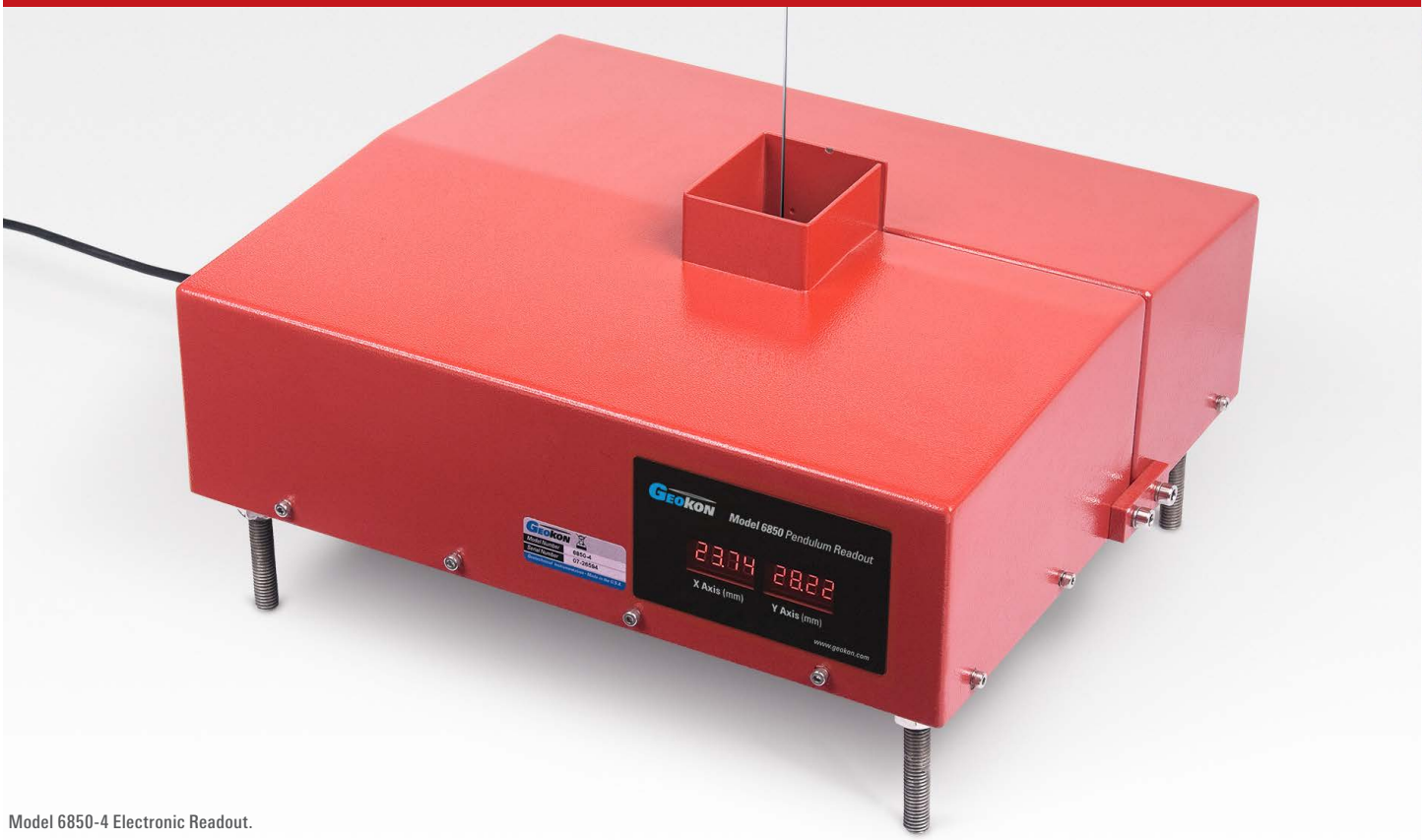
# PENDULUM SYSTEM

GEOKON®

## MODEL 6850




Model 6850-4 Electronic Readout.

## APPLICATIONS

The Model 6850 is designed to measure horizontal deflections in two directions (2D models),and changes in the vertical distance between the top suspension point of the wire and the readout location (3D models). The system is suitable for measuring the tilting of large structures such as:

- Dams
- High-rise buildings
- Bridges

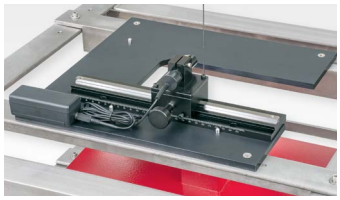
## OPERATING PRINCIPLE

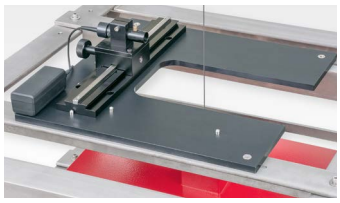
The Model 6850 Direct Pendulum System includes a pendulum weight, hanger, damping tank, measurement table, and readout. The inverted pendulum system includes a pendulum anchor, float tank and float, measurement table, and electronic readout.

The 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 in tenths of millimeter. 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 or mounted to a table, is also available where automated systems are not necessary, or where a manual reading back-up is required (see photographs, inset left).



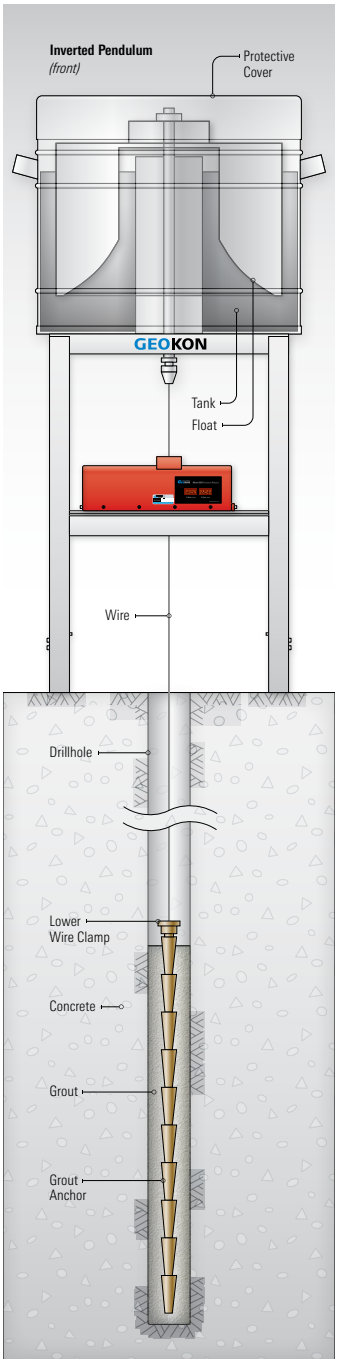


Model 6850 Optical Manual Readout

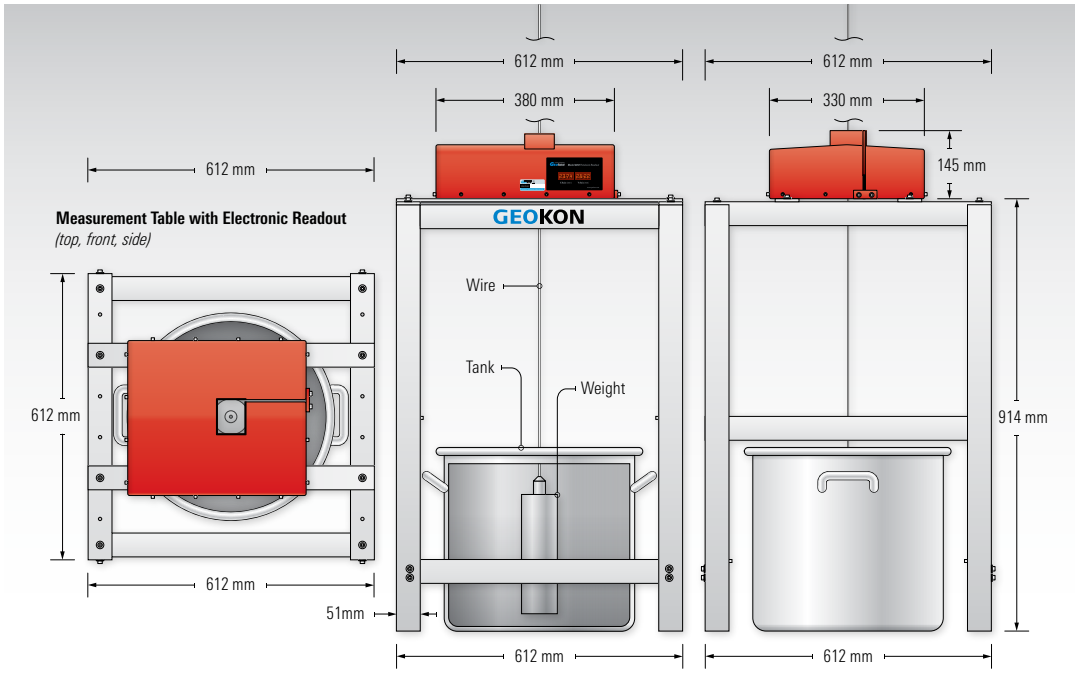
## ADVANTAGES AND LIMITATIONS

The Model 6850 Pendulum System can be used to make accurate measurements of horizontal deflections in two directions (2D models),and changes in the vertical distance between the top suspension point of the wire and the readout location (3D models).

The electronic readout is designed to make accurate measurements of the relative movements of normal and inverted pendulums 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).It is suitable for use with pendulums with a wire diameter between 1.0 mm and 9.9 mm.




Model 6850 Inverted Pendulum System.




Model 6850 Direct Pendulum System.

## READOUT SPECIFICATIONS

| | 6850-4 (2D) | 6850-5 (3D) | 6850-6 (2D) | 6850-9/10 (2D, Optical) |
|---|---|---|---|---|
| Standard Ranges | (X axis) 0 to 50 mm<br>(Y axis) 0 to 50 mm | (X axis) 0 to 50 mm<br>(Y axis) 0 to 100 mm<br>(Z axis) 0 to 50 mm | (X axis) 0 to 50 mm<br>(Y axis) 0 to 100 mm | (X axis) 0 to 50 mm<br>(Y axis) 0 to 50 mm |
| Resolution | 0.01 mm | 0.01 mm | 0.01 mm | 0.01 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 |
| Dimensions (L × W × D) | 380 × 330 × 145 mm | 425 × 375 × 190 mm | 425 × 375 × 190 mm | 356 × 356 × 100 mm |

## ORDERING INFORMATION

**6850-1-1:** Direct Pendulum System, 2D, 50 x 50 mm range
**6850-1-2:** Inverted Pendulum System, 2D, 50 x 50 mm range
**6850-2-1:** Direct Pendulum System, 3D, 50 x 100 x 50 mm range
**6850-2-2:** Inverted Pendulum System, 3D, 50 x 100 x 50 mm range
**6850-3-1:** Direct Pendulum System, 2D, 50 x 100 mm range
**6850-3-2:** Inverted Pendulum System, 2D, 50 x 100 mm range
**6850-4:** Pendulum Measurement Electronics, 2D, 50 x 50 mm range
**6850-4-1:** Pendulum Measurement Electronics, 2D, 50 x 50 mm range, 18-36 VDC
**6850-5:** Pendulum Measurement Electronics, 3D, 50 x 100 x 50 mm range
**6850-6:** Pendulum Measurement Electronics, 2D, 50 x 100 mm range
**6850-9:** Pendulum Optical Manual Readout with LED light beam, for 2D systems, includes mounting table and wall brackets
**6850-10:** Pendulum Optical Manual Readout with LED light beam, for 2D systems, for mounting above readout
**6850-11:** Pendulum Optical Manual Readout with LED light beam, for 2D systems, no mounting brackets
**B6800-30:** Drip Shield for Pendulum Measurement Electronics
**6800-3:** Pendulum Wire, stainless steel, 1.6 mm Ø

GEOKON | TRUSTED MEASUREMENTS

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