ADINSTRUMENTS

# SEN2151 Goniometer Sensor

*PowerLab Sensors Series*

## Description

The Goniometer Sensor includes the Biometrics SG-150 Twin Axis Goniometer (Hip/Knee) along with two USB sensor cables for connecting to a PowerLab T1, USB hub, or computer. Biometrics Goniometers are extremely robust, lightweight, and flexible. The sensors can be comfortably worn undetected under clothing without hindering the joint's movement.

## Operation

The Goniometer Sensor consists of two plastic enclosures attached to either end of a 150 mm flexible coil. One enclosure (54x18x8mm) contains a strain-gauge-based sensing element. The other enclosure (70x18x8mm) is used solely for mounting.

*Fig A.*

The coil can be flexed in any direction. Each of the two output connectors represents one of the two axes of motion. The output is read in the software in units of Degrees. The USB plug with the green connector cable is labelled in hardware and software as the 'x-axis', and the USB plug with the black cable is labeled as the 'y-axis'. The two cables are otherwise identical. The Goniometer Sensor should be mounted so that the center of the coil lines up with the turning center of the joint being measured. The plastic enclosures can be attached to the brackets using double-sided tape.

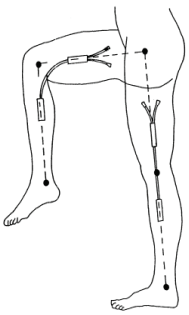
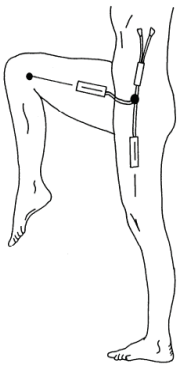


*Fig B.*

## Application

The sensor is used in joint angle studies in humans and large animals and is ideal for undergraduate classes, particularly for tendon-jerk experiments.



For mounting on the knee, start with the subject standing in the neutral position with the foot on a flat surface. Mount the distal endblock laterally on the leg so the axes of the leg and endblock coincide, when viewed in the sagittal plane (Fig. A.), with the leg fully extended in the position of reference. Extend the goniometer to position 2 (maximum length) and attach the proximal endblock to the thigh so the axes of the thigh and endblock coincide. The knee may now be flexed or extended with the goniometer freely sliding between positions 1 & 2. Measurements of flexion/extension may be monitored using the green plug; the black plug is redundant.

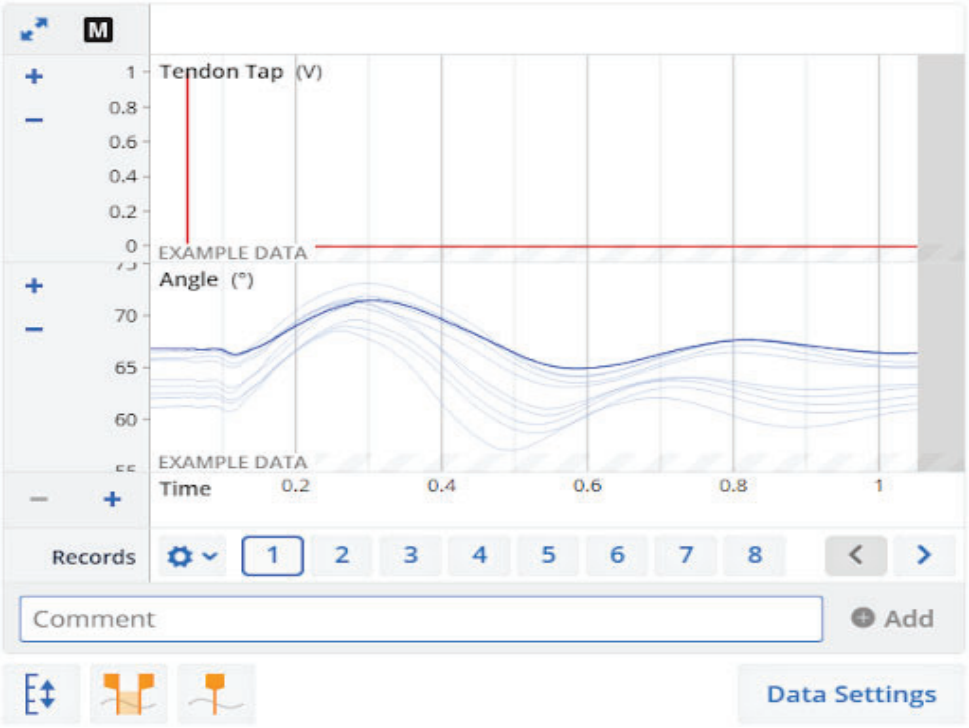
For mounting on the hip, start with the subject standing in the neutral position with

the foot on a flat surface. Attach the proximal endblock to the side of the trunk in the pelvic region as shown in Fig. B. With the limb in the position of reference, extend the goniometer to position 2 (maximum length) and attach the distal endblock to the thigh so that the axes of the thigh and endblock coincide (when viewed in the sagittal plane as shown). The hip may now be flexed or extended, abducted or adducted with the goniometer sliding freely between positions 1 and 2. Measurement of flexion/extension is obtained from the green plug, abduction/adduction from the grey plug.

## Cleaning and Disinfection

When cleaning or disinfecting, the sensors must be disconnected from all instrumentation. No solvents, acidic, or strong alkaline materials should be used to clean the sensors, or damage will result. Cleaning may be carried out by wiping the sensors with a damp cloth or a cloth moistened with soapy water. Disinfection of the sensors should be carried out as for cleaning, though disinfectant should be employed instead of soapy water.

## Typical Data



## Caution

Read “Statement of Intended Use” on our website.

## Specifications

| | |
|---|---|
| Full scale range: | ±150º |
| Accuracy: | ±6° measured over 90° from neutral position |
| Repeatability: | better than ±1° |
| Operating temperature: | 0 ºC to +40 ºC |
| Cable length: | 1.8 m (5.9’) |
| Weight: | 95 g |
| Connector: | USB |

All specifications were tested at the time of printing and are subject to change.

## Ordering Information

SEN2151 Goniometer

For use with:
Laptop or desktop computer with Windows or Mac operating system



WARRANTY: 1 year as per ADInstruments warranty terms for PowerLab Sensors.