

## Sound

The Sound Level Sensor measures the level of sound sources within close proximity to the sensor. The *dB*C scale includes all frequencies; the noise is unfiltered. The *dB*A scale filters out some frequencies to more closely match the frequency response of the human ear. Sound intensity ( $\mu\text{W}/\text{m}^2$ ) is a value calculated from the *dB*C sound level.

### Materials List

1: Xplorer Datalogger (PS-2000)


1: Sound Sensor (PS-2109)






### Site Selection



- Sound levels for settings range from  $1 \times 10^{-3}$ - $10 \mu\text{W}/\text{m}^2$  (low), from  $1 \times 10^{-1}$ - $1,000 \mu\text{W}/\text{m}^2$  (medium), and  $10$ - $100,000 \mu\text{W}/\text{m}^2$  (high). Accuracy is  $\pm 2$ dB at 94dB<sub>A</sub> at 1000 Hz.
- *Note environmental variables such as foliage (open, covered, or dappled), groundcover (grass, dirt, or concrete), airflow, and reflected sound sources.*


### Sample Preparation


1. Press  to turn on the datalogger and attach the light sensor.
2. Select the appropriate sensor range setting (dB<sub>A</sub> or dB<sub>C</sub>) for the sample:

 = 30-70 dB;  = 50-90 dB (default);  = 70-110 dB

### Measurement & Recording

1. Hold the sensor in a specific direction for 10 to 15 seconds. *Readings may fluctuate.*
2. Press  to start logging data; wait 15 seconds; press  to stop logging data.
3. Record the time of day, site notes, sound levels in decibels (dB<sub>A</sub> and dB<sub>C</sub>) and sound intensity in micro-waves per meters squared ( $\mu\text{W}/\text{m}^2$ ).

 *At 188 decibels, the whistle of the blue whale is the loudest sound produced by any animal. Typical sound level and intensity readings for the following sources are: rustling leaves = 20 dB,  $10^{-4} \mu\text{W}/\text{m}^2$ ; library = 40 dB,  $10^{-2} \mu\text{W}/\text{m}^2$ ; normal conversation = 60 dB,  $1 \mu\text{W}/\text{m}^2$ ; noisy office = 80 dB,  $10^2 \mu\text{W}/\text{m}^2$ ; subway train = 100 dB,  $10^4 \mu\text{W}/\text{m}^2$ ; rock concert = 120 dB,  $10^6 \mu\text{W}/\text{m}^2$ .*

4. Press  to turn off the datalogger.

### Clean-up & Completion

1. Unplug the sensor from the datalogger and replace items in the original storage bag(s).