

Photogate




Specification

1. Photogate rise/fall time: 1ms
2. Max sampling speed (one or two photogates): 1000/s
3. Detector-Transmitter distance (gate width): 76.6mm
4. Light source: Infrared
5. Equipped with LED indication (green)


What's in the Pack

Photogate

Preparing the Probe

1. Connect the Photogate cable to the Micro-USB external probe socket on the Labdisc. Make sure that the USB sign  on the adapter cable connector is facing up.
2. You may connect up to two Photogates to the Physio Labdisc

Using the Photogate with the Labdisc

1. Turn on the Labdisc.
2. The Labdisc reads the Photogate level. The Labdisc will show 0V - when no object is blocking the Detector-Transmitter line, or 5V when the line is blocked
3. Click on the probe key  located above the external probe socket where the Photogate is plugged in. If this key has two probe icons, it may need to be pressed twice to show the Photogate.
4. The Labdisc shows the Photogate reading in voltage units.



5. You may use the Labdisc plastic rod mounting on the Lab stand

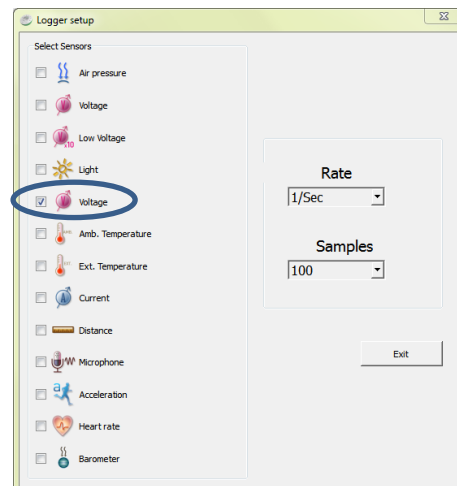
and connect it to the Photogate, enabling Photogate

Using the Photogate with the GlobiLab Software

1. Open the GlobiLab software.
2. Make sure it is connected to the Labdisc via USB or Bluetooth communication.



3. Click the SETUP icon to open the *Logger setup* dialog box.
4. The Photogate is automatically identified by the software.
5. To select this probe, simply click on selection button to the left of the Photogate icon.



Speed calculation with a single photogate

1. Observe the photogate pulse on the screen.
2. Place two markers at the beginning and end of the photogate pulse.
3. Calculate the time difference (T) between the markers.
4. Calculate speed $V = W/T$ – where W is the width of the moving object in meters.

Speed calculation with two photogate (possible only with the Physio Labdisc)

1. Observe two photogate pulses on the screen.
2. Place one marker at the beginning of the first photogate pulse and write down the marker time – T_1 .
3. Move the marker to the beginning of the second photogate pulse and write down the marker time – T_2 .
4. Measure the distance (in meters) between the photogates and mark it D .
5. Calculate speed $V = D/(T_2 - T_1)$.

Acceleration calculation with two photogates (possible only with the Physio Labdisc)

1. Observe two photogate pulses on the screen.
2. Calculating speed at the first photogate location:
 - a. Place two markers at the beginning and end of the first photogate pulse.
 - b. Calculate the time difference (T_1) between the markers.
 - c. Calculate Speed $V_1 = W/T_1$ – where W is the width of the moving object in meters.
3. Calculating speed at the second photogate location:
 - a. Place two markers at the beginning and end of the second photogate pulse.
 - b. Calculate the time difference (T_2) between the markers.
 - c. Calculate Speed $V_2 = W/T_2$ – where W is the width of the moving object in meters.
4. Place one marker at the beginning of the first photogate pulse and write down the marker time – T_1 .
5. Move the marker to the beginning of the second photogate pulse and write down the marker time – T_2 .
6. Calculate acceleration $a = (V_2 - V_1)/(T_2 - T_1)$.