

Photoplethysmography (PPG) Sensor Data Sheet

PPG 141220

SPECIFICATIONS

- > **Wavelength:** ~520nm (green)
- > **Consumption:** ~2.5-3mA
- > **Input Voltage Range:** 3.0 -5.5V
- > **Output Voltage:** 0.3 to V_{CC}

ACCESSORIES

- > 1x Sensor connection cable (1m)
- > 1x Adjustable velcro fastening strap
- > 1x Ear clip
- > 2x Adhesive velcro pads
- > 4x Transparent protective stickers

FEATURES

- > Includes all the accessories for high-quality data acquisition
- > Versatile form factor
- > Embeddable into wearables
- > Optical emitter and receiver
- > Reflectance operating principle

APPLICATIONS

- > Life sciences studies
- > Heart rate & heart rate variability
- > Pulse transit time analysis
- > Vasoconstriction effect detection
- > Affective computing
- > Physiology studies
- > Biofeedback

GENERAL DESCRIPTION

The Photoplethysmography (PPG) sensor is a basic non-invasive sensor to derive pulse data, complete with cable and accessories to facilitate placement at the fingertip or ear lobe. This is an adaptation of the PulseSensor by Joel Murphy & Yury Gitman; we replace the default wiring by a BITalino-compatible cable to provide plug & play operation with our kits. Furthermore, we add a 3D printed casing to protect the wires on the back of the sensor. Visit PulseSensor.com for additional information and this [link](#) for the license details.



Fig. 1. PPG sensor with UC-E6 connector and accessories.

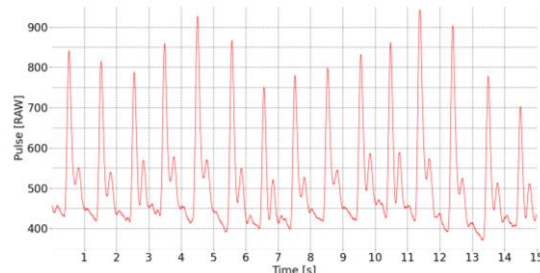


Fig. 2. Typical raw PPG sensor data (acquired with BITalino) from the index finger.

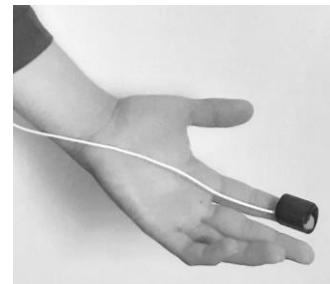


Fig. 3. PPG sensor positioning on the index finger.



Fig. 4. PPG sensor positioning on the earlobe.

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BEWARE: DIRECT OR INDIRECT COUPLING TO THE MAINS MAY RESULT IN SHOCKING HAZARD



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APPLICATION NOTES

This sensor is designed to measure the changes in reflected light caused by the light absorbing capabilities of blood and can be used in the following setups below.

Sensor Protection

Place one of the vinyl stickers onto your sensor to protect the underlying circuit.



Fig. 5. PPG sensor vinyl sticker placement.



Fig. 6. PPG sensor with protection sticker.

Fingertip Placement

Place the sensor at the centre of the velcro fastening strap with its backside (circuit side) placed on the velcro strap. Place your fingertip on the sensor, wrap the velcro strap around your finger, and fasten it.



Fig. 7. PPG sensor placement on fastening strap.



Fig. 8. PPG sensor fixation around the fingertip.

Alternatively, fixate one of the velcro pads (glue coating side) to the back of the sensor housing and stick the velcro pad to the velcro strap. Then proceed as above. This method reduces the movement of the sensor.

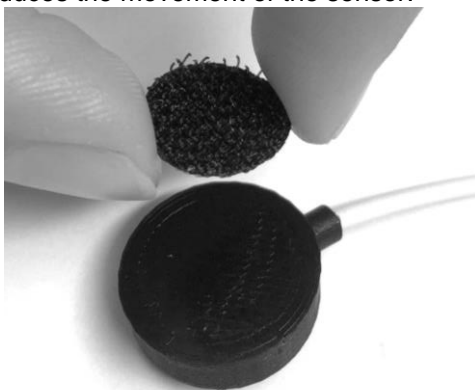


Fig. 9. PPG sensor placement of velcro pad.



Fig. 10. PPG sensor fixation on fastening strap.

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Ear Lobe Placement

Apply glue (hot glue) on the backside of the sensor housing, place the flat, inner part of the ear clip on the hot glue and wait until the glue has dried out. Clip the sensor to your ear lobe.



Fig. 11. PPG sensor placement of ear clip.



Fig. 12. PPG sensor fixation of earclip.

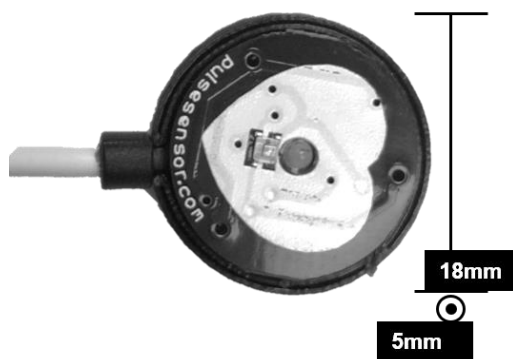
Recommended PDF for Additional Placement Information

For more information on how to set up and use this sensor, we would like to recommend the *Getting Started Guide*.

<https://www.generationrobots.com/media/DetecteurDePoulsAmplifie/PulseSensorAmpedGettingStartedGuide.pdf>

PHYSICAL CHARACTERISTICS

- > **Sensor Size (diameter):** 18mm
- > **Sensor Size (height):** 5mm
- > **Cable length:** 100cm



ORDERING GUIDE

Part #	Description
SENS-PUL-UCE6	Basic sensor for Photoplethysmography (PPG) with UC-E6 connector, complete with cable and accessories to facilitate placement at the fingertip or ear lobe.