

Electrooculography (EOG) Sensor Data Sheet

EOG 190918

SPECIFICATIONS

- > **Gain:** 2038
- > **Range:** $\pm 0.81\text{mV}$ (with $V_{CC} = 3.3\text{V}$)
- > **Bandwidth:** 0.05-41Hz
- > **Consumption:** $\sim 3\text{mA}$
- > **Input Voltage Range:** 1.8-5.5V
- > **Input Impedance:** $> 100\text{G}\Omega$
- > **CMRR:** 100dB

FEATURES

- > Single-channel sensor
- > Bipolar differential measurement
- > Pre-conditioned analog output
- > Small form factor
- > Raw data output
- > Easy-to-use

APPLICATIONS

- > Human-Computer Interaction
- > Eye gaze analysis
- > Neurofeedback
- > Sleep studies
- > Neurophysiology studies
- > Psychophysiology
- > Biomedical devices prototyping

GENERAL DESCRIPTION

Our electrooculography (EOG) sensor has been especially designed for seamless EOG data acquisition. Either used by itself or in combination with an eye tracker, our sensor can provide an additional insight into your subjects' eye gaze patterns. The bipolar configuration, with two measurement electrodes, detects the electrical potentials in the specific temporal or facial region of choice, with respect to a reference electrode (placed in an area of low bioelectrical activity). The resulting signal is the amplified difference between these two leads, eliminating the common unwanted signals. Its convenient form factor enables a discrete application in the typical EOG electrode placement locations.

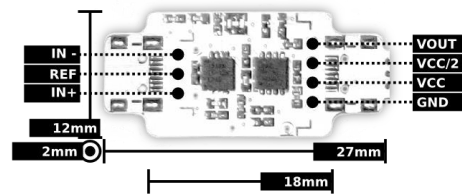


Fig. 1. Pin-out and physical dimensions.



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



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TRANSFER FUNCTION

[-0.81mV, 0.81mV]

$$EOG(V) = \frac{\left(\frac{ADC}{2^n} - \frac{1}{2}\right) \times VCC}{G_{EOG}}$$

$$EOG(mV) = EOG(V) \times 1000$$

$VCC = 3.3V$ (operating voltage)

$G_{EOG} = 2038$ (sensor gain)

$EOG(V)$ – EOG value in Volt (V)

$EOG(mV)$ – EOG value in millivolt (mV)

ADC – Value sampled from the channel

n – Number of bits of the channel¹

ORDERING GUIDE

Part #	Description
SENS-EOG-NC	Electrooculography (EOG) sensor without connectors
SENS-EOG-UCE6	Electrooculography (EOG) sensor with UC-E6 sockets on both sides for seamless plug & play connection to a BITalino (r)evolution Plugged or Core
SENS-EOG-SHER	Electrooculography (EOG) sensor with a Molex Sherlock 4-pin socket on one side and a Molex Sherlock 3-pin socket on the other for easy power and signal cable connection or pin breakout using PCB wires

¹ The number of bits for each channel depends on the resolution of the Analog-to-Digital Converter (ADC); in BITalino the first four channels are sampled using 10-bit resolution ($n = 10$), while the last two may be sampled using 6-bit ($n = 6$).