# Electrooculography (EOG) Sensor Data Sheet

EOG 10102018

## SPECIFICATIONS

> **Gain:** 2040
> **Range**: ±0.81mV (with VCC = 3.3V)
> **Bandwidth:** 0.05-41Hz
> **Consumption:** ~3mA
> **Input Voltage Range:** 1.8-5.5V
> **Input Impedance:** > 100GOhm
> **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
> Biofeedback
> Sleep studies
> Neurophysiology studies
> Psychophysiology
> Biomedical device prototyping
> Biomedical research

## 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

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REV A

convenient form factor enables a discrete application in the typical EOG electrode placement locations.

## TRANSFER FUNCTION

[-0.81mV, 0.81mV]

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

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

$VCC = 3V$ (operating voltage)
$G_{EOG} = 2040$ (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 channel[1]

## ORDERING GUIDE

| Reference | Package Description |
|---|---|
| SENS-EOG | Electrooculography (EOG) sensor with standard physical characteristics (sensor cable length = 105±0.5cm and electrode cables 3±0.5cm) and random sleeve color. |
| SENS-EOG-A1-A2 | Electrooculography (EOG) sensor with custom signal characteristics A1 (sensor cable length) and A2 (electrode cable length). |

[1] The number of bits for each channel depends on the resolution of the Analog-to-Digital Converter (ADC); in biosignalsplux the default is 16-bit resolution ($n = 16$), although 12-bit ($n = 12$) and 8-bit ($n = 8$) may also be found.