

# 4-Channel biosignalsplux Hub

## Datasheet

4CH HUB 25032020

### SPECIFICATIONS

- > **Analog Ports:** 4
- > **Auxiliary Ports:** 1 common ground
- > **Sampling Rate:** up to 3kHz per channel<sup>1</sup>
- > **Sampling Resolution:** 8-bit or 16-bit per channel
- > **Internal memory:** none; 16GB optionally available
- > **Communication:** Bluetooth Class II (range up to ~10m in line of sight); USB<sup>2</sup>
- > **Battery:** 700mAh 3.7V LiPo rechargeable (~10h streaming; ~24h logging)

### FEATURES

- > 4-channel data acquisition
- > Sampling rate & resolution can be set independently for each channel via API
- > Raw data acquisition from all inputs
- > Fast download of recorded data via USB adapter<sup>2</sup>
- > Data logging & offline acquisition scheduling possible with optional internal memory
- > Wireless firmware updates

### APPLICATIONS

- > Life sciences studies
- > Biomedical research
- > Human-Computer-Interaction
- > Robotics & Cybernetics
- > Physiology studies
- > Biomechanics
- > Ergonomics

### GENERAL DESCRIPTION

Our flagship biosignalsplux hub gathers 10+ years of field-proven expertise, offering reliable high-performance raw data acquisition, both in real-time wireless streaming and local recording modes, from a wide range of sensors. It is an easy-to-use, versatile, reliable and portable platform for physiological data acquisition.



Fig. 1. 4-Channel biosignalsplux hub dimensions.

<sup>1</sup> More information about the sampling rate limitations is presented on page 2

<sup>2</sup> Requires the use of additional accessories (Fast USB Data Transfer Cable); real-time acquisition via USB only supported using the PLUX API(s)

**biosignalsplux**  
wearable body sensing platform

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### **WARNING**

Use only **ACCESSORIES APPROVED AND VALIDATED** for biosignalsplux.

### **SUPPORTED SAMPLING RATES**

The maximum supported sampling rate depends on the number of simultaneously acquiring channels. The following results were identified from tests conducted under the following conditions:

- Tested under Windows 10
- Tested by conducting 5-minute acquisitions
- Maximum supported sampling rate identified as the highest stable sampling rate in which no frames were lost
- Bluetooth communication using Bluetooth v.2.1 dongle which comes with biosignalsplux kits
- Distance between Bluetooth dongle & PC: 20cm
- Test conducted in environment with Wi-Fi, Bluetooth, and other potential noise sources

<b>API (C++)</b>	
<b># of Channels</b>	<b>Maximum Sampling Rate</b>
1	8000 Hz
2	5000 Hz
3	4000 Hz
4	3000 Hz

<b>OpenSignals (r)evolution</b>	
<b># of Channels</b>	<b>Maximum Sampling Rate</b>
1	4000 Hz
2	4000 Hz
3	4000 Hz
4	3000 Hz

Note: The maximum selectable sampling resolution of the OpenSignals (r)evolution is set to 4000Hz.

### **RADIO CHARACTERISTICS**

<b>Operating frequency range</b>	2400 – 2483.5 MHz ISM Band
<b>Modulation method</b>	GFSK (1 Mbps) P/4 DQPSK (2Mbps)
<b>Hopping</b>	1600 hops/s, 1 MHz channel space
<b>Transmission power</b>	Min: -11 dBm Max: +3 dBm
<b>Antenna peak gain (XZ-V)</b>	0.5dBi typical
<b>Average antenna gain (XZ-V)</b>	-0.5 dBi typical
<b>Antenna VSWR</b>	2 max
<b>Certifications</b>	Bluetooth, CE, FCC, IC, Japan and South Korea

### **BUTTON ACTIONS**

<b>Hub state before button press</b>	<b>Hub state after button press</b>
Off	Standby
Standby or Streaming	Off
Logging (Bluetooth on)	Logging (Bluetooth off)
Logging (Bluetooth off)	Logging (Bluetooth on)

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## LED STATUS

Standby	
None	Off
1 green blink	Bluetooth on
1 red blink	Low battery and Bluetooth on
1 black blink in green background	Charging and Bluetooth on
1 orange blink	Waiting for external trigger to start internal acquisition and Bluetooth off
1 orange blink alternating with 1 red blink	Waiting for external trigger to start internal acquisition, Low battery and Bluetooth off

Real-time Bluetooth Acquisition	
2 red blinks	Low battery
2 black blinks in green background	Charging
2 green blinks	Otherwise

Internal Acquisition	
2 orange blinks	Bluetooth off
orange and red alternating blinks	Low battery and Bluetooth off
2 orange blinks in green background	Charging and Bluetooth off
orange and green alternating blinks	Bluetooth on
green and red alternating blinks	Low battery and Bluetooth on
orange and black in green background alternating blinks	Charging and Bluetooth on

## PHYSICAL CHARACTERISTICS

- > **W x L x H:** 85x54x10mm
- > **Weight:** 45g
- > **Color:** White



## ORDERING GUIDE

Package Description	
High-performance wireless data acquisition unit with 4 generic analog inputs	
<b>SKU:</b> CMP-4CHUB-1	<b>PLUX Code:</b> 820201702