

# biosignals**plux**

The biosignals**plux** is a new generation of devices for biosignals data acquisition. This new generation is an evolution of the bioPlux device, keeping the original functionality of real-time data acquisition and transmission through Bluetooth. The features of the biosignals**plux** family can be summarized as follows:

## Data acquisition:

- eight sensor ports to connect to analog or digital sensors;
- one digital port to connect to a digital sensor, a synchronization accessory, or an expansion accessory;
- one ground port to connect to a ground cable, or to an USB accessory;
- data acquisition at up to 1000 Hz and at 16-bit or 8-bit resolution;
- each sensor has an unique serial number and stores production, characterization and test data;
- each digital sensor can multiplex up to 8 channels;
- sample frequency and resolution can be set independently for each sensor;
- asynchronous events (digital input change, synchronization, others).

## Internal memory:

- the device contains an internal memory of 8GB or more to save acquisition data;
- internal acquisitions can be scheduled to start at a given time (the device contains a real-time clock), or at an external trigger;
- internal acquisitions can be stopped when the scheduled duration is reached, or through a Bluetooth command;
- multiple schedules can be stored on the device, and each schedule includes a repetition count and period (not implemented yet);
- each schedule defines a set of conditions to start an internal acquisition (port, type of sensor, or serial number) (only port condition implemented yet);
- internal memory can store several acquisition sessions, and it can be erased through a Bluetooth command;
- saved acquisition session data is read as a replay of the acquisition, like a real-time acquisition;
- fast data transfer option through USB connection (not implemented yet).

## Other:

- Bluetooth command to query battery level;
- 15-minute auto-power off in battery-powered state and without Bluetooth activity;
- over-the-air firmware update;
- medical-grade power supply which enables safe usage while device is mains-powered.

## LED color codes

LED activity	Operational state
none	Power down (RTC is running)
1 green blink	Idle; Bluetooth on
2 green blinks	Real-time acquisition; Bluetooth on
1 red blink	Idle; low battery; Bluetooth on
2 red blinks	Real-time acquisition; low battery; Bluetooth on
1 black blink in green background	Idle; charging; Bluetooth on
2 black blinks in green background	Real-time acquisition; charging; Bluetooth on
1 orange blink	Waiting for external trigger to start internal acquisition; Bluetooth off
1 orange blink alternating with 1 red blink	Waiting for external trigger to start internal acquisition; low battery; Bluetooth off
2 orange blinks	Internal acquisition; Bluetooth off
orange – red blinks	Internal acquisition; low battery; Bluetooth off
2 orange blinks in green background	Internal acquisition; charging; Bluetooth off
orange – green blinks	Internal acquisition; Bluetooth on
green – red blinks	Internal acquisition; low battery; Bluetooth on
orange – black blinks in green background	Internal acquisition; charging; Bluetooth on

Main rules are:

- 1 blink – device is idle
- 2 blinks – device is acquiring
- green blink – Bluetooth on
- red blink – low battery
- green background – charging
- orange blink – internal acquisition

## Button behavior

Device state before button press	Device state after button press
Power down	Idle
Idle or real-time acquisition	Power down
Internal acquisition (Bluetooth on)	Internal acquisition (Bluetooth off)
Internal acquisition (Bluetooth off)	Internal acquisition (Bluetooth on)