SENSORBIO

FOR RESEARCH PROGRAMS AND ALGORITHM PARTNERS

Wearable sensor configuration, set per state.

Wearable sensor configuration is the set of rules that decides what a device captures, when it captures, and at what fidelity. On Sensor Bio V2, each parameter is set independently per sensor state, per device and per organization: PPG sampling rate (25, 50 or 100 Hz), green, red and infrared wavelengths, duty cycle, accelerometer, skin temperature and sleep triggers.

DEFAULT DUTY CYCLE
PPG at 50 Hz for 45 seconds every 5 minutes

ACCELEROMETER
Logs at any time, with or without PPG captures, depending on your configuration.

WHITE-GLOVE SETUP
Set by Sensor Bio, based on how your team needs it.

01 Configure your study

Pick a state, set the dials, and see what the signal unlocks. This is how configurable a research wearable can be: every dial below is set per state, per device and per organization.

DUTY CYCLE PRESET	ON-TIME	INTERVAL
Continuous	Always on	None
60 s on, every 2 min	60 s	Every 2 min
45 s on, every 5 min DEFAULT	45 s	Every 5 min
30 s on, every 10 min	30 s	Every 10 min

Illustrative only. Sensor Bio sets and applies the final configuration for your organization's devices.

02 Sensor states

One device. Three operating modes, configured independently.

STATE	ACTIVATION	BEHAVIOR
Passive	Default, idle	The device baseline. Governs all background sensor logging.
Triggered	Time window or rest	Turns on during a set clock window or when the wearer is at rest (low motion). Tuned for the sleep-stage signal.
Active	User session	A workout or session started in the Sensor Bio app. The highest throughput in the system.

03 Configurable parameters

Every dial that matters, set per state, per device and per organization.

PARAMETER	AVAILABLE SETTINGS
PPG duty cycle	On-time and interval, or continuous. Default: 50 Hz for 45 seconds every 5 minutes
PPG sampling rate	25, 50 or 100 Hz
Accelerometer logging	On or off, gated or continuous (3-axis accelerometer, ±8 g by default, up to ±16 g), with or without PPG captures
Skin temperature	On or off, skin-surface °C, 1 reading per minute by default
Time-window trigger	Start and end clock times
Rest-mode trigger	On or off, low-motion activation

Duty cycle is the trade at the center of every study. By default, V2 captures PPG at 50 Hz for 45 seconds every 5 minutes. A longer on-time or a shorter interval gives you more signal, and more data to store and sync. Set it per state, so a sleep window can run dense while the rest of the day stays light.

04 Sampling rates

What the model sees.

RATE	WHAT IT UNLOCKS
25 Hz	Heart rate only. HRV and breathing rate (RR) degrade.
50 Hz DEFAULT	Heart rate, HRV, breathing rate (RR)
100 Hz	Heart rate, HRV, breathing rate (RR), PPG morphology

Need the pulse shape itself? 100 Hz keeps the waveform detail used for morphology work.

05 PPG wavelengths

Three wavelengths, switched on per state.

WAVELENGTH	PRIMARY USE
Green	530 nm. Heart rate and HRV. Best at rest.
Red	655 nm. SpO2, paired with infrared.
Infrared	940 nm. SpO2. Standard in sleep mode.

06 Who it is for

Partners who measure their own ground truth.

PARTNER	FOCUS
Algorithm developers	Models that need a fixed signal contract.
Sleep research	Four-stage sleep (wake, light, deep, REM) research signal at a high duty cycle.
Clinical and academic research	Protocol-defined sensing windows.
Remote monitoring programs	Battery life, sync and signal density at fleet scale.

One research wearable, configured four ways. A sleep study wearable runs dense through a nightly window. An algorithm team locks one signal contract across every device. A remote monitoring program keeps passive logging light so the fleet stays charged and in sync.

07 What ships

Raw, research-grade signal in your format. White-glove configuration.

STREAMS	TIMESTAMPS	DELIVERY	CONFIGURATION
PPG, accelerometer, skin temperature	UTC epoch. Nanoseconds for PPG, milliseconds for accelerometer	One CSV per stream	Set by Sensor Bio

Raw files come through your organization's download from the Sensor Bio web platform, and live raw PPG is available through the mobile SDK.

PPG.CSV

```
ts,green,ir,red
```

- `ts` UTC epoch timestamp, nanoseconds
- `green` Raw green amplitude, AU, unfiltered. Default channel
- `ir` Raw infrared amplitude, AU, unfiltered. When enabled
- `red` Raw red amplitude, AU, unfiltered. When enabled

ACCELEROMETER.CSV

```
ts,x,y,z
```

- `ts` UTC epoch timestamp, milliseconds
- `x, y, z` Unfiltered axis values, m/s²

SKIN_TEMP.CSV EXAMPLE

```
ts,skin_temp_c
```

- `ts` UTC epoch timestamp. Example
- `skin_temp_c` Skin-surface temperature, °C. Example column name

PPG and accelerometer fields match the V2 raw export. File names and the skin temperature columns are examples. Columns follow the wavelengths and streams you turn on.

Derived metrics use the API field names at developers.sensorbio.com. Breathing rate (RR) is reported in breaths per minute as `resp_rate_brpm`.

08 How configuration works

You define it. We apply it. The signal ships.

01 YOU DEFINE

What each device captures, when it captures, and at what fidelity, state by state.

02 WE APPLY

Sensor Bio configures your sensors white-glove, based on how your team needs them set up, for your organization and, where your protocol needs it, for individual devices.

03 SIGNAL SHIPS

Raw PPG, accelerometer and skin temperature, one CSV per stream, with UTC timestamps.

FAQ Questions, answered.

QUESTION	ANSWER
What can I configure on Sensor Bio V2?	Six parameters, each set per sensor state, per device and per organization: PPG duty cycle, PPG sampling rate (25, 50 or 100 Hz), accelerometer logging, skin temperature, a time-window trigger and a rest-mode trigger. You also choose which PPG wavelengths run: green, red and infrared. That level of control is what makes V2 a configurable research wearable rather than a fixed consumer tracker.
Which PPG sampling rate should I choose?	50 Hz is the default and covers heart rate, HRV and breathing rate (RR), reported in breaths per minute as resp_rate_brpm in the API. 25 Hz keeps heart rate but HRV and breathing rate degrade, so it suits light background logging. 100 Hz adds PPG morphology, the pulse shape itself, for teams building waveform models. Higher rates produce more data to store and sync.
What are the three sensor states?	Passive is the default baseline that governs background logging. Triggered turns on during a clock window or when the wearer is at rest, and it is tuned for the sleep-stage signal. Active runs during a workout or session started in the Sensor Bio app and has the highest throughput. Each state has its own configuration.
How do I set up a sleep study wearable configuration?	Use the Triggered state. Set a time-window trigger for the nightly sleep period, turn on the rest-mode trigger for low-motion periods, and run a high duty cycle with green and infrared PPG plus the accelerometer. Passive logging can stay light during the day. Sensor Bio applies the final configuration for your protocol.
Can different devices in one study run different configurations?	Yes. Configuration is set per organization and per device, so a study arm or cohort can run a different sampling rate, duty cycle or trigger window. Sensor Bio sets and applies these configurations for you.
What format does the raw data ship in?	One CSV per stream: PPG, accelerometer and skin temperature, each with UTC epoch timestamps. PPG files carry ts, green, ir and red, with raw amplitudes in arbitrary units and nanosecond timestamps. Accelerometer files carry ts, x, y and z, in m/s² with millisecond timestamps. Files come through your organization's download from the web platform, and live raw PPG is available through the mobile SDK.
Is Sensor Bio V2 a medical device?	No. Sensor Bio V2 is a general wellness device. It is not FDA cleared and is not intended to diagnose, treat, cure or prevent any disease. Configured data is for wellness, research and product development use.

Configure Sensor Bio V2 for your study. Tell us your protocol. We set the configuration and ship the raw signal.
partners@sensorbio.com

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