Hapticlabs.io

Hapticlabs Satellite

v.23.02

Overview

- Instantaneous playback of haptic signals
- Internal Firmware (Haptics engine)
- Support for electromagnetic haptic actuators
  - LRA (Linear Resonant Actuator)
  - ERM (Eccentric Rotating Mass)
  - Voice coil
- 2 independent output channels
  - Simultaneous playback and A/B testing
- Internal storage for up to ~2500 haptic signals
- 2 Multi-purpose I/O pins and 1 Capacitive touch sensor
  - Trigger internally stored haptic signal playback
- UART Serial communication via USB
- Bluetooth Low Energy (BLE) & WIFI-capable hardware (Upcoming release)

Applications

- Concept prototyping
  - Quick, iterative exploration of ideas and functional prototypes
  - Small footprint for easy integration
  - Standalone - no other electronics required
- Actuator evaluation
  - Compare different actuator technologies, characteristics, placement and footprints
- Development
 - Rich set of parameters and tuning...

Features

The Hapticlabs Satellite is a hardware module incorporating an Espressif ESP32 MCU and two Texas Instruments DRV2605 haptic drivers.
It allows instantly playback of haptic signals designed in Hapticlabs Studio The communication is established through a UART Serial communication via the USB port. The module's internal haptic engine is optimized to play back haptic signals on electromagnetic haptic actuators, including LRAs (Linear Resonant Actuators), ERMs (Eccentric Rotating Masses), and voice coils, accounting for their respective properties.

The two output channels of the device act completely independently. Combinations of different actuator types and simultaneous playback of different haptic signals are fully supported.
The Hapticlabs Satellite can store haptic tracks designed in Hapticlabs Studio in its internal storage. This enables playback of these tracks even without communication to Hapticlabs Studio. The playback can be triggered through the multi-purpose I/O contacts, the capacitive touch pad or the UART interface on the hardware module.

The firmware running on the device is regularly and automatically updated through Hapticlabs Studio.
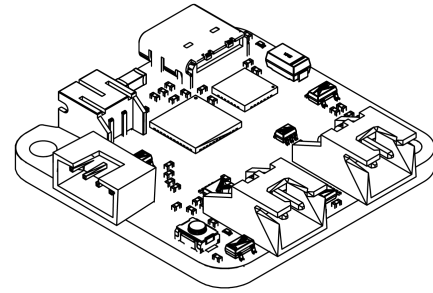
Operating Conditions

Parameter	Typical	Min	Max
USB Power supply voltage	5V	4.5V	5.5V
USB Power supply current	0.6A	0.1A	0.9A
Battery voltage	3.7V	3.4V	4.2V
Charging current	100mA	-	-
Actuator impedance	-	8 Ω	-
Driver output voltage	3.3V	0V	3.3V
Multipurpose I/O polling rate	30 Hz	-	-
Start-up time	600ms	-	-
I/O 3.3 V pin current	-	-	0.3 A
Multipurpose I/O switching voltage	1.7V	-	-
Logic Voltage	3.3V	-	3.3V

Power Path
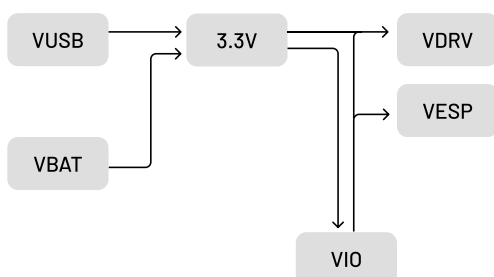
Input & Output

Port Reference	Description
Battery	JST PH-2
Channel A/B	JST XH-2
USB	USB-C
I/O Port	JST PH-4
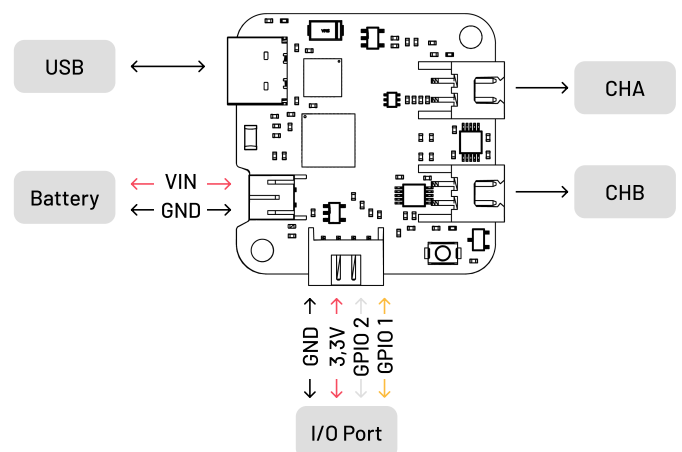
Physical Characteristics

Parameter	Typical	Min	Max
Ambient temperature	25°C	5°C	40°C
Weight	20g	-	-
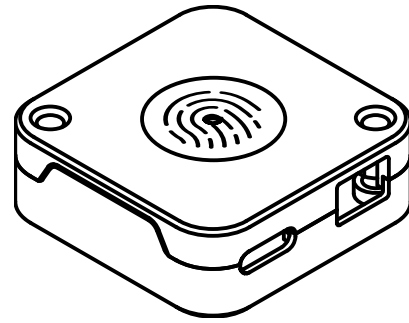
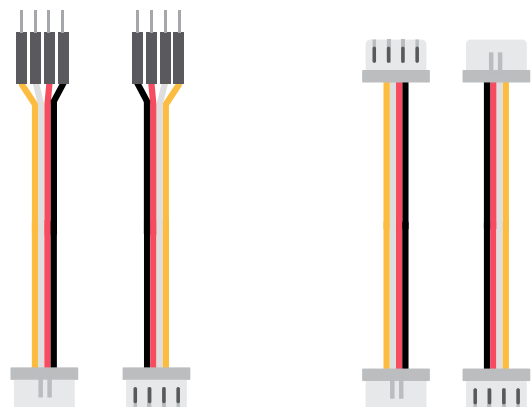## Drawings & Dimensions
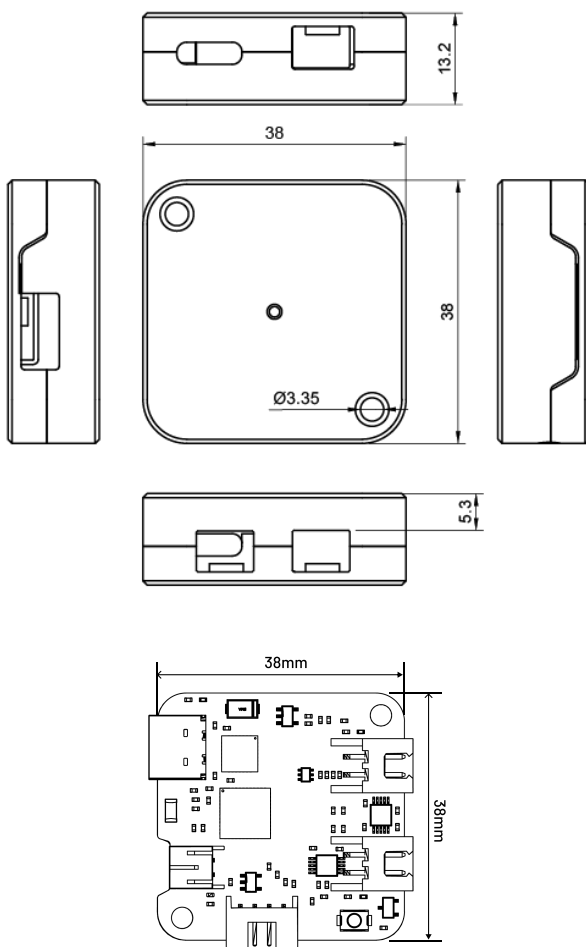
Available cables & accessories
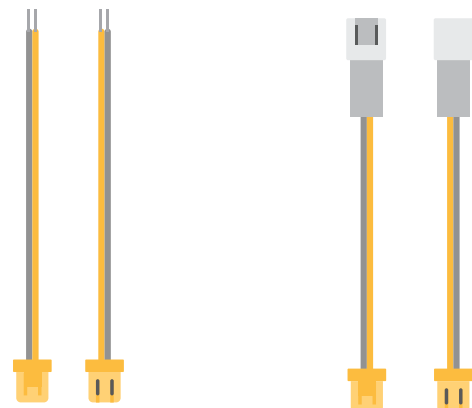
Actuator
(JST XH)

Actuator extension
(JST XH)

I/O Port
(JST PH to Dupont male)

I/O Port to sensor board
(JST PH to JST PH)