

Empyrean Alpha/Beta

Quick Reference Revision 1 — 6 Jun 2020 For Empyrean Alpha/Beta Rev A

Bootloader

Empyrean comes with a bootloader preinstalled for easy Arduino

using the Arduino IDE upload function or by mounting Empyrean

RESET button and dragging a sketch in UF2 format to the window.

Double press: Enter bootloader mode

on your PC as a storage device with a quick double-press of the

sketch loading. You may load a sketch onto Empyrean by either

Board Specifications

IC Microchip Technology ATSAMD21G18A (Alpha) Microchip Technology ATSAMD21G16B (Beta)

connected to USB! If you do, the host and/or Empyrean will likely be damaged!

Clock Speed 48 MHz

Flash Storage 256 kB (Alpha)/64 kB (Beta) *8 kB flash storage reserved for bootloader RAM 32 kB (Alpha)/8 kB (Beta)

ADC 12-bit, 6 available input pins DAC 10-bit, 1 available output pin

Input Voltage 5 VDC regulated (from USB or on VUSB pin) 3.3 VDC regulated (on 3.3V pin) 5-16 VDC (on VIN pin)

Pin Voltage 3.3 VDC maximum

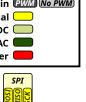
Pin Current 7 mA sink/source Board Current 150 mA total board current

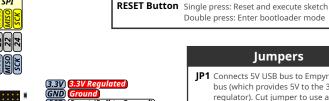
Dimensions 45 mm (L) x 18 mm (W) x 1.2 mm (H)

Pin Legend Pin Label 🛑 Digital Pin PWM No PWM Serial ____ ADC DAC Power |



SerialUSB







Reset (Pull to Ground)

Jumpers

IP1 Connects 5V USB bus to Empyrean VIN bus (which provides 5V to the 3.3V voltage regulator). Cut jumper to use an external voltage source without risk of damaging USB host.

JP2 Cut jumper to disable the red power LED. Located on back of PCB.

On-Board LEDs

Ref.	Function	Digital Pin	Active
D1	UART TX	26	LOW
D2	UART RX	25	LOW
D3	User LED	13	HIGH
D4	Power		

Power Options

The most common option for powering Empyrean is via the USB port. The on-board voltage regulator provides 3.3 V to the microcontroller from the 5 V USB bus. You may provide your own 5 V regulated supply to the VUSB pin if the board is not connected to USB. Empyrean can also accept a 5-16 V power supply on the VIN pin (see important note below). Finally, you may supply 3.3 V regulated to the 3.3V pin if the board is to be used stand-alone after programming.

Serial1 *VUSB and VIN are electrically connected; they can be isolated by cutting JP1. WARNING: Do not connect a voltage source to VIN if Empyrean is already