KST

Unity™ engine

Unity V8 Engine Hardware Guide

KS Technologies, LLC

Table of Contents

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Unity V8 Engine Hardware Guide

Introduction

The purpose of this document is to go over all the hardware pinouts and components associated with Unity V8 Engine™.

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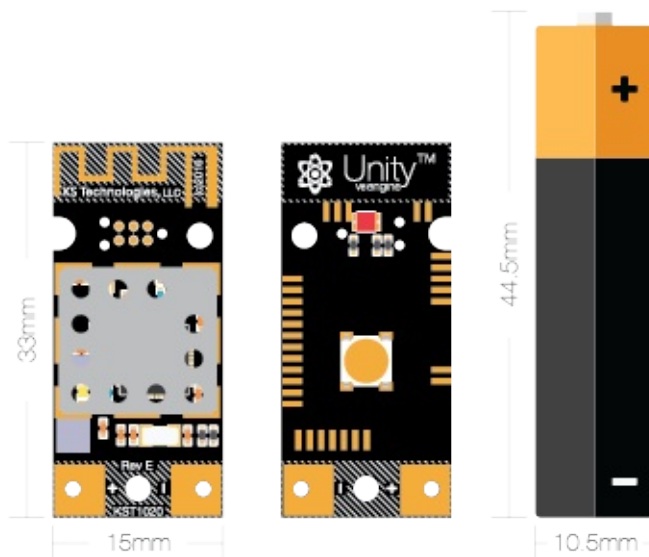
Document Revision

Revision	Date	Author	Changes
1.0.0	January 31st, 2017	Devin S.	Initial Document
1.0.1	February 3rd, 2017	Collin M.	Adding Device Description, Accessories, Installation & Output Power

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Device Description

This device is intended to act as a Bluetooth Low-Energy (BLE) transmitter and sensor collection mechanism. The default Unity V8 Engine firmware turns the device into a BLE beacon, which is compliant with the iBeacon and Eddystone standards. Connecting to the device will expose the on-board sensors through the GATT profile according to the Unity API. KST offers custom engineering services which can be leveraged to modify the firmware on the device without changing the underlying hardware.

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Accessories

Currently, the Unity V8 Engine platform does not ship with any accessories outside of the module itself. The user manual and API documentation are digital and are made available upon purchase of the module. KST also specializes in custom hardware design services, which can be leveraged to create any accessories that a particular Unity V8 Engine use case may require.

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Installation

The Unity V8 Engine only needs to be powered in order to start functioning. Once power is applied to the exposed battery pads, the device will begin transmitting. Unity V8 Engine needs to be shielded from the elements with an enclosure. Any non-metallic enclosure that is able to hold the Unity V8 Engine and its power supply will work. KST specializes in custom industrial designs that can be leveraged to create a unique enclosure for any application.

Unity V8 Engine can be mounted indoors or outdoors. If mounted outside, it is up to the hardware integrator to supply an industrial design that protects the hardware.

In order to get the most performance from Unity V8 Engine, it is recommended to install the hardware higher off the ground, away from metal and concrete, with the antenna facing away from the mounting surface. A typical installation would be on a wall, away from power outlets, and high enough to avoid typical obstructions, including people and furniture.

It is recommended to test the strength of the advertisements using KST's free beacon provisioning app, Commissioner, which is available for Android and iOS devices. If the beacon must be installed in a less-desirable location, the Tx power can be increased to improve the strength of the advertisements.

Ultimately, there are no hard and fast rules for beacon installation, and it is up to the hardware integrator to ensure their installation location is appropriate.

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Output Power

The Unity V8 Engine firmware default output power is -8 dBm. This can be changed when connected via the Unity API. The following table details the allowable output power values:
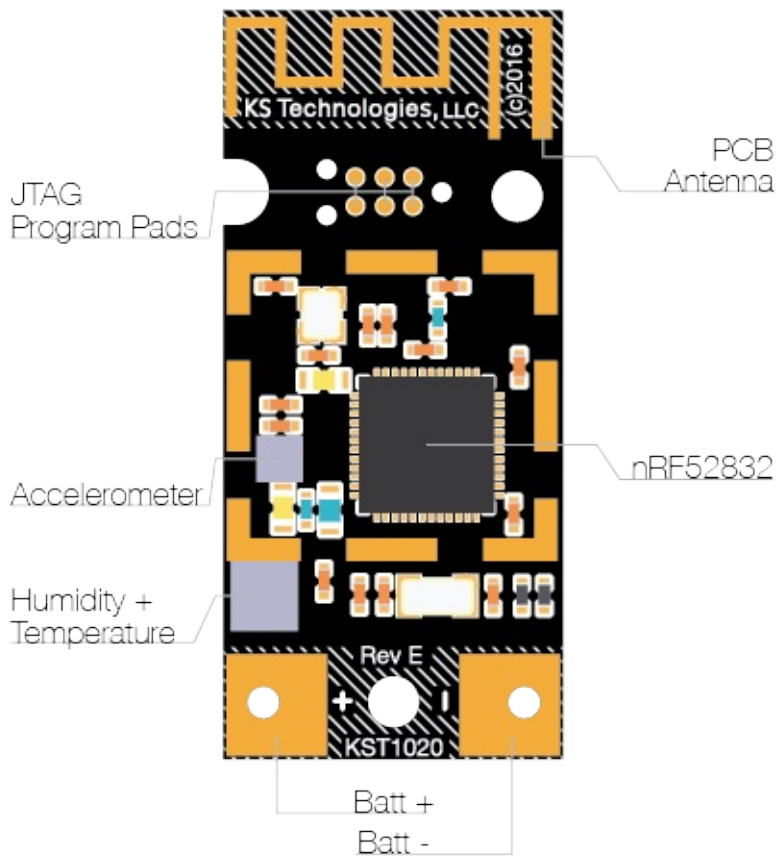
Output Power	Notes
+4 dBm	Maximum Output Power
0 dBm	
-4 dBm	
-8 dBm	
-12 dBm	
-16 dBm	
-20 dBm	
-30 dBm	Minimum Output Power

The operating range of the hardware is 2402.0 MHz - 2480.0 MHz. The low, medium, and high bands are shown below:

Frequency	Notes
2402 MHz	Low Channel
2441 MHz	Mid Channel
2480 MHz	High Channel

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Unity V8 Engine Pinout Front

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Unity V8 Engine Pinout Back

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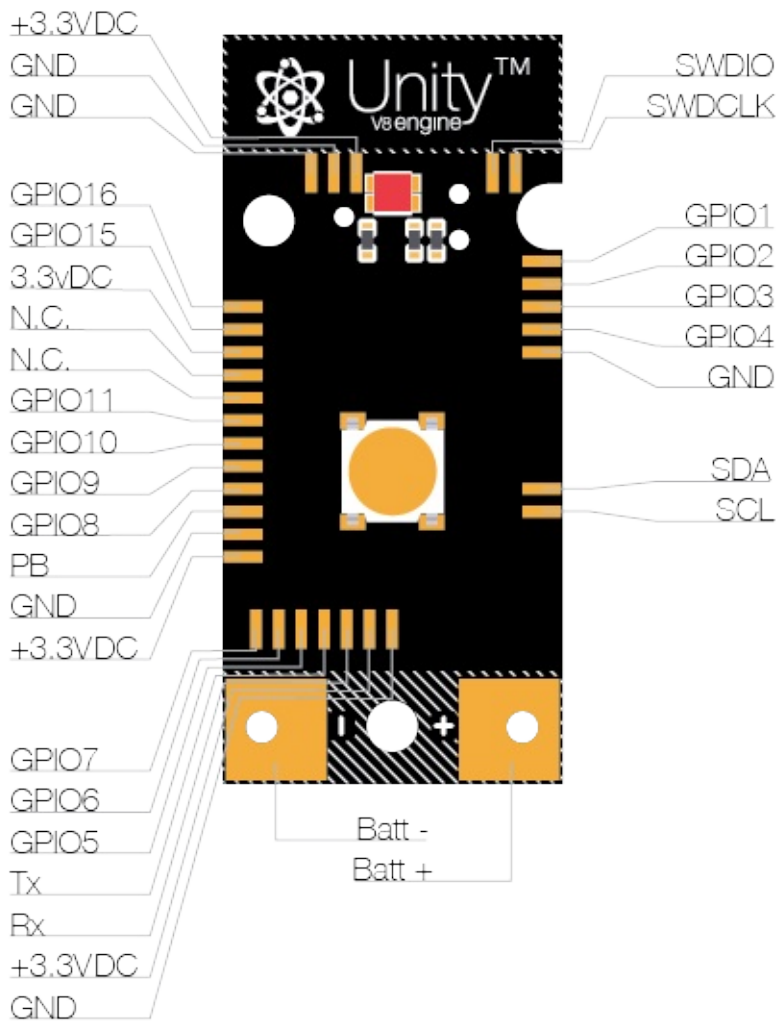
Unity V8 Engine Components Front

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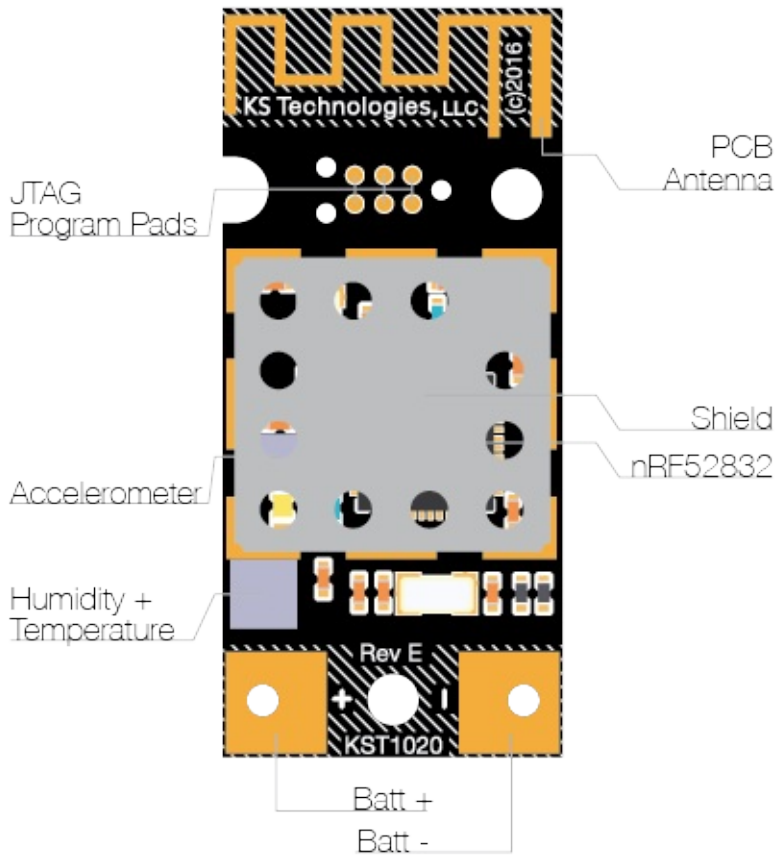
Unity V8 Engine Components Back

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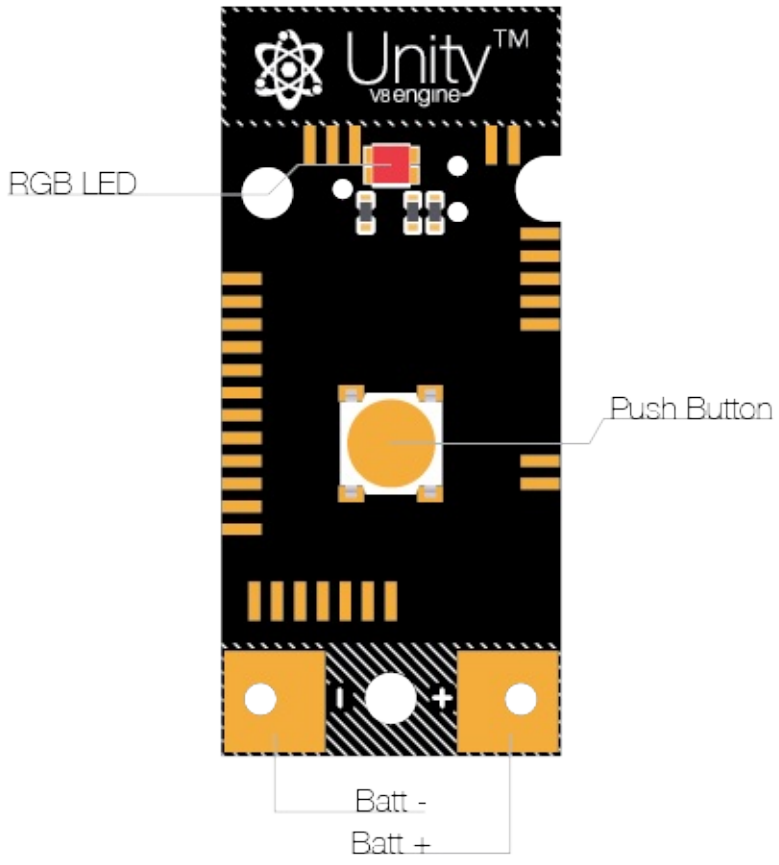
Part Variations

	KST1020-1	KST1020-2	KST1020-3
SMD		X	X
Temperature	X	X	
Humidity	X	X	
Accelerometer	X	X	X
Button	X		
RGB LED	X		

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FCC Label

KS Technologies, LLC
Model: Unity V8 Engine™
PN: KST1020
FCC ID: 2AA3A-UNITYV8
IC: 11487S-UNITYV8

MADE IN USA

This device complies with Part 15 of the FCC Rules
and with Industry Canada licence-exempt RSS
standard(s). Operation is subject to the following two
conditions: (1) this device may not cause
harmful interference, and (2) this device must accept
any interference received, including
interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie
Canada applicables aux appareils radio
exempts de licence. L'exploitation est autorisée aux
deux conditions suivantes: (1) l'appareil ne doit pas
produire de brouillage, et (2) l'utilisateur de l'appareil
doit accepter tout brouillage radioélectrique subi,
même si le brouillage est susceptible d'en
compromettre le fonctionnement.