

Bean+ User Manual

Company: Punch Through Design, LLC.

Product Name: Bean+

FCC ID: 2AAV5-PTD1503001

Website: punchthrough.com/bean

Model Number: PTD1503001D

IC ID: 11371A-PTD1503001

Regulatory Compliance and Safety Information

Instructions for Safe Use

To avoid malfunction or damage to your Bean+ please observe the following:

- Do not connect anything other than a 5V micro-USB charger to the micro-USB connector on the Bean+.
- Do not expose the Bean+ to excessive heat. The Bean+ is intended for operation at 0°C to 45°C.
- Do not expose the Bean+ to water, moisture, or place on a conductive surface while the Bean+ switched on.
- Do not exceed 200mA total current drawn from the Bean+ by all connected peripherals.
- Handle the Bean+ gently to avoid mechanical or electrical damage to the circuit board and connectors.
- Handle the Bean+ while powered only when necessary. Handle the edges to avoid electrostatic discharge.
- The Bean+ is intended for operation at distances greater than 20cm from a human body.

Regulatory Compliance

FCC (Federal Communications Commission):

This device complies with part 15 of the FCC Rules. 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.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must be at least 20 cm from the user and must not be co-located or operating in conjunction with any other antenna or transmitter.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The information in this guide may change without notice. The manufacturer assumes no responsibility for any errors that may appear in this guide.

ISED (Innovation, Science and Economic Development Canada):

This device complies with Industry Canada's license-exempt RSSs. Operation is subject to the following two conditions: (1) This device may not cause interference; and (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme à Industrie Canada une licence standard RSS exonérés (s). Son fonctionnement est soumis aux deux conditions suivantes: 1) Cet appareil ne doit pas provoquer d'interférences 2) Cet appareil doit accepter toute interférence reçue, y compris les interférences pouvant provoquer un fonctionnement indésirable de l'appareil.

Operating Instructions

Follow the steps outlined below to get started with your new Bean+! For more information, guides, feature walkthrough's, example projects, and more, please visit punchthrough.com/bean

1. Download and install the Bean CLI Loader for your system:
punchthrough.com/bean/docs/guides/getting-started/cli-loader/
(Not comfortable with a Command Line Interface? Don't worry! Try one of our supported platform Bean Loaders: punchthrough.com/bean/docs/guides/getting-started/intro)
2. Turn your new Bean+ on by sliding the power switch (near the micro-USB connector) to the ON position.
3. In your favorite terminal (e.g., iTerm2, cmd.exe, etc.) scan for nearby Beans using the "scan" command:

```
> $ bean scan

Scanning for 30 seconds...

New LightBlue device discovered!
DEVICE_TYPE_LIGHT_BLUE:
  Name: Bean+
  Address: 2dc39c7c54464ef5b1cfa74f2db4526f
  Advertised Services:
    a495ff10c5b14b44b5121370f02d74de
```

4. We see there is a new LightBlue device discovered, with some basic information about it, including the important **Address**. To ensure that this is the Bean we are interested in, let's blink the on-board LED. Most commands require an address or name to identify the Bean of interest. We strongly recommend using the address to avoid name conflicts. The syntax works like this:

```
bean <command> --address <address>
```

Now blink the LED on your Bean+ with the "blink_led" command:

```
> $ bean blink_led --address 2dc39c7c54464ef5b1cfa74f2db4526f

Found Bean with name/address: Bean+/2dc39c7c54464ef5b1cfa74f2db4526f
Connected!
Blinking led...
```

5. If the LED on your Bean+ blinked, it looks like we're talking with the correct Bean! Let's move on. First, let's make sure the Bean+ Firmware is up-to-date by using the "program_firmware" command:

```
> $ bean program_firmware -a c5035367b3e84416894d1c26d9a061f9

2016-09-08T20:41:41.157Z INFO Setting scan timeout: 15 seconds
2016-09-08T20:41:41.400Z INFO Starting to scan...

Found Bean with name/address: Bean/c5035367b3e84416894d1c26d9a061f9
2016-09-08T20:41:41.496Z INFO No longer scanning...
2016-09-08T20:41:41.496Z INFO Connecting to device: Bean
```

6. The next step to utilizing the full potential of your Bean+ is making it so we can load the Bean+ with an Arduino Sketch. This step known as "Association" and is different based on your installed system and the install path of Arduino. The most common install paths for Windows, Linux, and Mac are shown below:

Windows: C:\Program Files (x86)\Arduino\

Linux: /home/user/Arduino/

Mac: /Applications/Arduino.app/

Note your system's Arduino install path as it is a required parameter of the next CLI command.

7. Associate the CLI Loader with the Arduino app on your system by sending the “install_bean_arduino_core” command. Specify the Arduino install path as prompted:

```
> $ bean install_bean_arduino_core

Where is Arduino core installed? (ex. /Applications/Arduino.app/)
Path:/Applications/Arduino.app/
Arduino app opened successfully
Bean Arduino core installed.

Command completed successfully
```

8. Open up your Arduino application and make sure of two things:
 - a. The correct “Board” is chosen under the “Tools” menu - the only two valid options for LightBlue devices are “Bean” and “Bean”.
 - b. The correct “Programmer” is selected under the “Tools” menu – the only valid option for LightBlue devices is “Bean Loader”.
9. Open a Sketch in the Arduino application that you want to upload to your Bean+. For example purposes we will use the “AccelerationLed” example Sketch located in the “File” menu of the Arduino application under “Examples->LightBlue-Bean->Acceleration”.
10. Click “Upload” in the Arduino application. This compiles the Sketch and puts it somewhere the CLI Loader can access it.
11. Now we can finally program the Bean+ with the Sketch. Using the CLI, send the “list_compiled_sketches” command to make sure Arduino compiled and uploaded your Sketch correctly:

```
> $ bean list_compiled_sketches

0: checkMotionEvent
1: enableConfigSave
2: getBatteryLevel
3: AccelerationLed
4: setServices
5: sketch_aug31a
6: sleep
```

12. Finally, program your Bean+ with your Sketch using the “program_sketch” command. The syntax for this command is:

```
bean program_sketch <sketch_name> --address <address>
```

Where <address> is the address of the Bean+ noted in step 4. Here is the command in action:

```
> $ bean program_sketch AccelerationLed -a c5035367b3e84416894d1c26d9a061f9

2016-09-08T20:51:17.741Z INFO Setting scan timeout: 15 seconds
2016-09-08T20:51:17.842Z INFO Starting to scan...

Found Bean with name/address: Bean/c5035367b3e84416894d1c26d9a061f9
2016-09-08T20:51:18.845Z INFO No longer scanning...
2016-09-08T20:51:18.846Z INFO Connecting to device: Bean
```

13. Your Bean+ should now be running a Sketch that makes the on-board LED change color as the Bean+ is tilted in different directions. Try moving the Bean+ around!