

Localization Cape Manual

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Contents

1	Notes	3
1.1	Using this document	3
2	Beagle Configuration	5
2.1	Hardware	5
2.2	Configuration	5
2.2.1	Getting an OS	5
2.3	Stuff to look into	5
3	Localization Cape Requirements	7
3.1	Power Requirements	7
3.1.1	Pocket Beagle	7
3.1.2	ELP VGA USB Camera Module	7
3.1.3	Dynamixel XL-320	7

Chapter 1

Notes

1.1 Using this document

All urls and table of contents entries are active. If you click on them they'll take you to the url or document location respectively.

The code view is copy and paste able only on particular pdf viewers. Firefox works.

Chapter 2

Beagle Configuration

2.1 Hardware

- BeagleBone Black
- Class 10 SD Card

2.2 Configuration

2.2.1 Getting an OS

Retrieve latest IoT (non-GUI) image from: <https://beagleboard.org/latest-images>.

Follow instructions available at <http://beagleboard.org/getting-started> for "Update Board with latest software. You can ignore the start your beagle section.

Configure udev rules for ssh over usb: <http://beagleboard.org/static/Drivers/Linux/FTDI/mkudevrule.sh>.

After plugging in the usb cable you should now be able to ssh into the BeagleBone Black

```
ssh debian@192.168.7.2
```

2.3 Stuff to look into

Building a custom image with just the stuff we need: <https://github.com/fhunleth/bbb-buildroot-fwup>, https://elinux.org/BeagleBone_Operating_Systems

Chapter 3

Localization Cape Requirements

3.1 Power Requirements

3.1.1 Pocket Beagle

Should be the same as the BeagleBone Black. Minimum recommended is 5V @ 1.2A, recommended is 5V @ 2A, which includes room for USB peripherals. See: <http://beagleboard.org/support/faq>

The actual usage by the BeagleBone Black measured during a test done by Adafruit saw current usage of less than 500mA. Which makes sense since it can operate as a USB device. See: <https://learn.adafruit.com/embedded-linux-board-comparison/power-usage>. It might actually be lower since there everything is integrated on the pocket beagle.

3.1.2 ELP VGA USB Camera Module

According to the specs available on Amazon this camera doesn't exceed 160mA of power usage. See: https://www.amazon.com/gp/product/B01DRG250Q/ref=oh_aui_search_detailpage?ie=UTF8&psc=1. Since they are USB Devices we can expect no more than 5V @ 500mA.

3.1.3 Dynamixel XL-320

See: <http://www.robotis.us/dynamixel-xl-320/> and 6 8.4V