

1. Preparation

You will need:

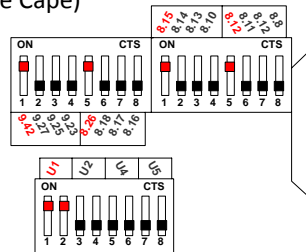
- 1 or more Tarts wireless sensors
- Tarts Gateway Capes
- Beaglebone Black (Model B or C) and USB-Mini Cable
- Ethernet cable
- PC to tether with

2. Setup Procedure

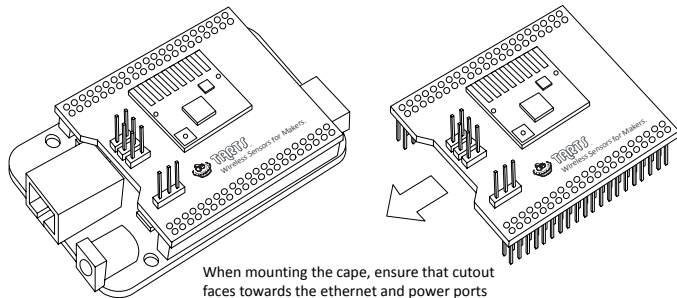
Setup the Hardware:

- Select the pin options you want to use to communicate with the cape. Make note of your options, as once you connect the Cape, you can no longer reference them. (The selector is on the bottom side of the Cape)

- Default UART: U1
- Default ACT : 9.42
- Default pCTS : 8.26
- Default pRTS: 8.15
- Default nRST: 8.12



- Attach the Tarts cape to your BeagleBone Black platform (unpowered!)



- Attach the antenna.
- Connect the Ethernet cable to your platform and a router (for OS updates).
- Straighten the antennas on your sensors. (No batteries yet!)
- Connect BeagleBone Black to computer (tethering mode).

Setup the Software:

- Complete step 1 and 2 on <http://beagleboard.org/getting-started> (You only need the main driver).
- Download and Install your favorite SSH Client (Putty, Terminal, Tera Term, OpenSSH, Xshell) and log into the platform.
- Log in using SSH to 192.168.7.2
 - Default User Name: root
 - Default Password: <empty>
- Confirm that Linux is up to date: “apt-get update” then “apt-get dist-upgrade” (will need an Ethernet connection to do this). Create a location to put the Tarts Library, not in the root directory.
- Download Tarts library and upload* to the BeagleBone Black : <http://www.tartssensors.com/libraries/beagleboneblack>

Modify and Compile Program:

- Modify one or more of the example code files provided. Put in your gateway’s identification number (alpha-numeric), pin options and sensor information and save.
- Run "chmod 777 build" and then run "./build all" to use the automatic builder.
- Run the program. (example: “./TartsSniffer”).

Set up the wireless sensor network

- Wait for the gateway to indicate that it is Active (via viewing console or when activity light is steady green).
- Put the batteries in the sensors.

3. Tips

If you are experiencing issues getting your BeagleBone Black to run, see: <http://beagleboard.org/getting-started>

DO NOT insert the batteries until the very last step. Everything else must be operating first, before batteries are inserted into the wireless sensors.

DO NOT hot plug the cape onto the BeagleBone Black. Make sure everything is unpowered when attaching and removing the cape.

BB-UART5 is not enabled by default because of a direct conflict with the HDMI pins.

The automatic build script must be run every time you reset the BBB because the UARTs are not ready to use without it.

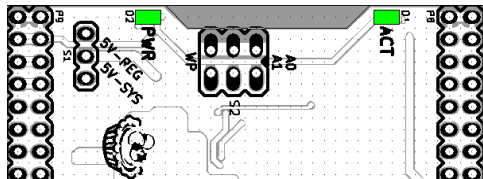
To turn off your BeagleBone Black: send the command “sudo shutdown -h now” and wait for the module to shut completely down (like you would a computer).

To reset your BeagleBone Black: send the command "sudo shutdown -r now".

Each device will need separation from the others. **Allow at least 3 feet** between the Tarts Gateway Shield and each sensor and allow a few feet separation between the sensors. If the sensors are too close to the gateway, the radio link cannot be established.

4. Light Indicators

The Tarts Gateway cape has two lights that indicate it is functioning properly. Upon power up, the power light will turn green. When the gateway goes ACTIVE, the activity light will turn green. Sensor communication will cause the activity light to turn off and then back on.



5. Community Forum

Tartssensor.com provides access to the Tarts community with set up tips, support issues, and user applications. Please visit the forum at:

www.tartssensors.com/community

* Uploading methods include: USB memory stick, SSH using LAN, rz Linux ZModem command, or mount a network share drive.

When creating a sensor, register your sensor object by the class it belongs to.

Sensor Object Type	Sensor Type	Data
TartsTemperature	Temperature Sensor	Degrees Celsius
TartsWaterTemperature	Water Temperature Sensor	Degrees Celsius
TartsHumidity	Humidity Sensor	Percent RH Humidity, Degrees Celsius
TartsDryContact	Dry Contact Sensor	Closed (1); Open (0)
TartsWaterDetect	Water Detection Sensor	Present (1); Not Present (0)
TartsWaterRope	Water Rope Sensor	Present (1); Not Present (0)
TartsOpenClose	Open/Closed Sensor	Closed (1); Open(0)
TartsButton	Button Sensor	Not Pressed (0); Pressed(1)
TartsAsset	Asset Sensor	“ ”, Present
TartsPassiveIR	Passive IR Motion Sensor	No Motion (0); Motion (1)
TartsActivity	Activity Detection Sensor	No Motion (0); Motion (1)
TartsVACDetect	VAC Detection Sensor	Present (1); Not Present (0)
TartsVDCDetect	VDC Detection Sensor	Present (1); Not Present (0)
TartsMeasure20mA	Measure 0-20mA Sensor	Current in mA
TartsMeasure1VDC	Measure 0-1 VDC Sensor	Voltage in volts
TartsMeasure5VDC	Measure 0-5 VDC Sensor	Voltage in volts
TartsMeasure10VDC	Measure 0-10 VDC Sensor	Voltage in volts
TartsMeasure50VDC	Measure 0-50 VDC Sensor	Voltage in volts
TartsMeasure500VAC	Measure 0-500 VAC Sensor	Voltage in volts
TartsResistance	Resistance Sensor	Resistance in Ohms
TartsTilt	Tilt Sensor	Angle in Degrees
TartsCompass	Compass Sensor	Direction in Degrees
TartsBasicControl	Single Control Device	State of Switch (open or closed)



Tarts Sensors

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