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R-IoT Quickstart Guide

ircam Centre Pompidou

Quickstart Guide

Connect to Another Network

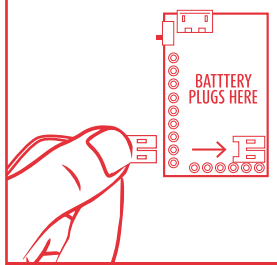
1 Start Here

BITalino R-IoT is pre-programmed to connect to a network called "riot".

Data streams as Open Sound Control (OSC) messages to **IP address 192.168.1.100 through port 8888**.

2 Connect Battery

Plug the battery onto the socket found on the R-IoT block.



When the device is **turned on**, a **red LED is lit**. Then, it **turns green and blinks** while it tries to **find the Wi-Fi network**. When it connects to that network, the **LED turns blue and stays on**.

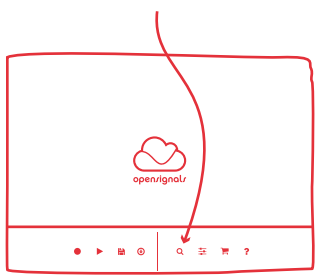
3 Have Fun!

At this point the BITalino R-IoT is already streaming data over UDP and **ready to use**.

One of the tools you can use to acquire data from the BITalino R-IoT is **OpenSignals**, (as described in the next steps), but any OSC-compatible software will work.

A Launch OpenSignals

Press 🔍 to configure your device.



This will enable you to configure your BITalino R-IoT for data acquisition on OpenSignals.

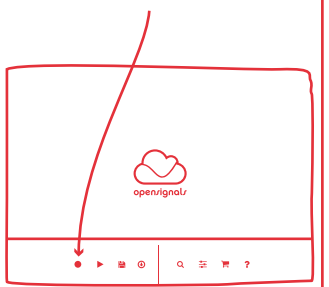
B Enable Device

Press the ⊕ button to manually add a device.

1. Set the computer's IP to static to match the one that R-IoT expect to find: **192.168.1.100**.
2. On the text box type **192.168.1.100:8888** and then press enter.

C Acquire Data

Press ● (record).

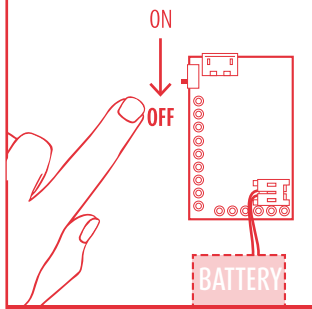


You should now be able to see the data stream coming from the device

After stopping your recording, data can be saved through the 💾 button; please refer to the OpenSignals manual to learn all about its features.

By default BITalino R-IoT is configured to connect to a computer with the fixed IP address 192.168.1.100 on port 8888 over a network with SSID named "riot". These settings can be changed as follows:

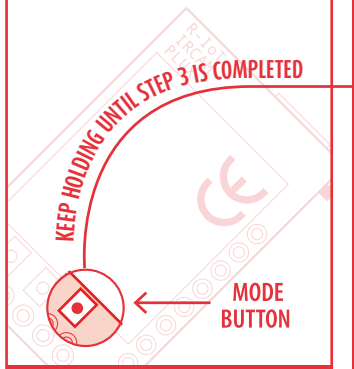
1 Turn Off the R-IoT



Slide the switch to the OFF position.

2 Set the R-IoT as Access Point

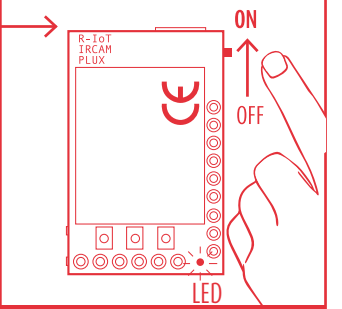
Press and **hold** the "mode" button.



Press the "mode" button.

3 Turn On the R-IoT

Turn on your R-IoT device; the LED will blink red, turn green and then become **static blue**.



The device is now a WiFi access point.

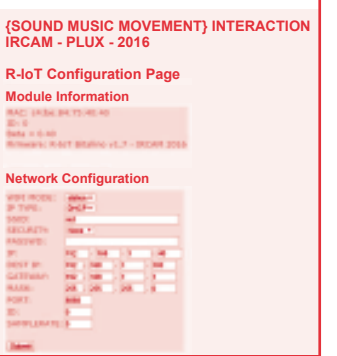
4 Search for a R-IoT SSID

Search and connect for a WiFi network named RIOT-XXXX (xxxx are 4 random characters).

By default the R-IoT WiFi network is open.

5 Setup Page

The following page will appear.



Here you can change the SSID, IP and other settings. Make sure that the Wi-Fi access point and the device's SSID match.

6 Have Fun!

Click on "Submit" button and then restart your device.

You're ready to go!

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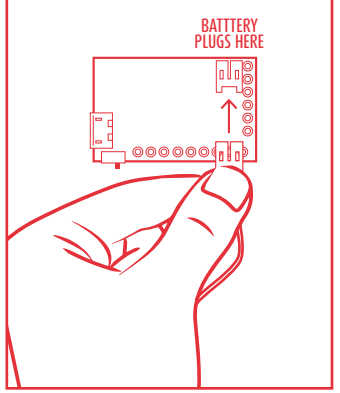
Quickstart Guide — Flashing Your Own Firmware

1. Download and install Energia version 17 from energia.nu/download
2. Modify the cc3200.ld file and change the HEAP_SIZE value to 0x00007500.
   - **Windows:** this file is located in C:\Program Files(x86)\energia-0101E0017\hardware\cc3200\cores\cc3200
   - **Mac OS:** right-click on the Energia application and select "show package contents" then go to Contents/Resources/Java/hardware/cc3200/cores/cc3200
3. Additionally, the WiFiUdp.cpp source file must be modified (hardware\cc3200\libraries\Wifi), as its function parsePacket() blocks during 10ms. The code has been modified to reduce this timeout to 1ms (change timeout.tv_usec = 1000 instead of 10000) to maintain a low latency and a 200Hz update rate of the IMU streaming.
4. We also provide a pre-configured version of Energia 17 (Windows and MacOS) for an easier setup of the environment; check out the root of the following GitHub repository: github.com/BITalinoWorld/firmware-bitalino-riot
5. Get the SLFS library from github.com/Ircam-R-IoT/SLFS and copy it into Documents/Energia/libraries
6. Get the BITalino Energia library from github.com/Ircam-R-IoT/bitalino-energia-library and drop it into Documents/Energia/libraries
7. Open the firmware.ino file with Energia and click the "Verify" button in the upper left corner. If it compiles without errors, you're ready to upload your own code to the BITalino R-IoT board.

To upload your firmware the following steps are needed:

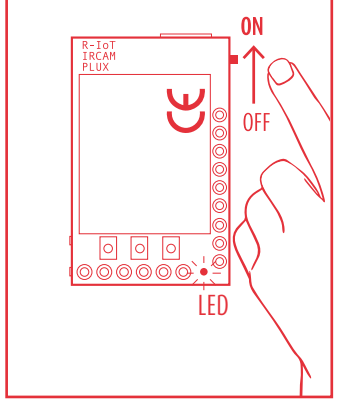
1 Connect Battery

Plug the battery onto the socket found on the R-IoT block.



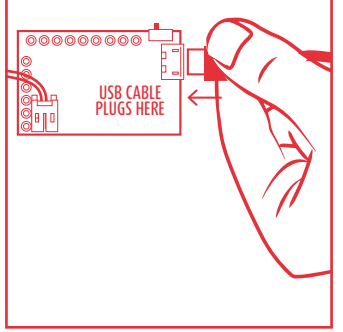
2 Turn On the R-IoT

Turn on your R-IoT device.



3 Plug USB Cable

Plug the USB cable onto the connector found on the R-IoT block.



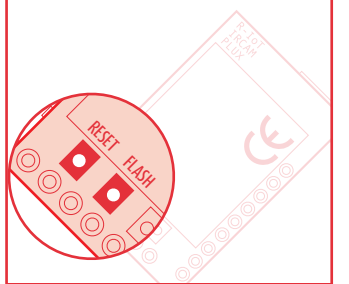
4 Open Energia

Go to the **TOOLS** menu.

Connect to the R-IoT's **serial port**.

5 Press Buttons

Press the **RESET** and **FLASH** buttons simultaneously.



Keep holding both buttons - **DO NOT RELEASE**.

6 Upload Firmware

Click the **UPLOAD** button.

You will see a "**Compiling Sketch**" message. Hold both buttons until it changes to "**Uploading**" then release only the **RESET** button.

Keep pressing **FLASH**.

7 Done Uploading

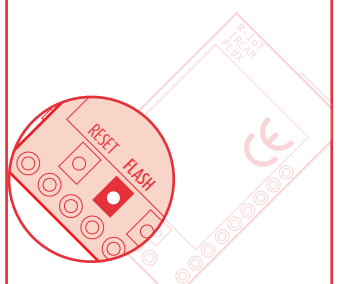
You should see some normal debugging messages.

```
Done uploading.
erasing 13 blocks start
erasing file "/sys/mcu
deleting file "/sys/mcu
erase file completed
Downloading file "/sys/
.....................
DEBUG cc3200prog.c:2665
DEBUG cc3200prog.c:2671
DEBUG cc3200prog.c:2677
```

This output is expected and does not compromise the firmware uploading process.

8 Release Flash Button

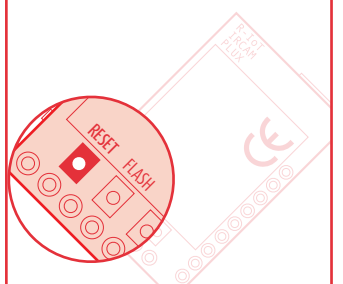
You can now release the **FLASH** button.



Wait for 5 seconds after releasing the button and then proceed to the next step.

9 Reset the Device

Press the **RESET** button, wait for 5 seconds and press the **RESET** button again.



You're ready to R-IoT!

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