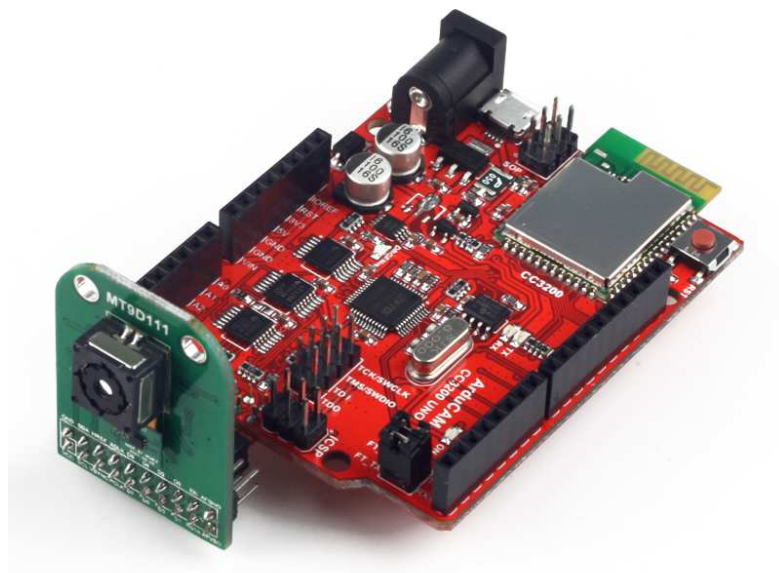




# ArduCAM CC3200 UNO board

## User Guide

Rev 1.2, Mar 2017



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# 1 Introduction

ArduCAM team now announces to release a new CC3200 UNO board which is full featured development board almost like a combination of CC3200 Launchpad plus CC3200CAMBOOST pack from TI while keeping exactly the same size as Arduino UNO and pin out.

It is based on TI simplelink series CC3200 chip, which gives you an ARM Cortex M4 processor with a built-in WiFi stack and radio. It supports things like web servers and SSL out of the box. It can be mated with existing thousand kinds of Arduino shields without effort. It makes writing firmware for these devices easier, since a lot of the work is already done. The collection of libraries aids in getting prototypes running quickly. You can even debug Energia sketches using TI's fully featured IDE.

In addition to standard Arduino pin out and Arduino development environment, it also has additional ArduCAM standard camera interface, user can use TI Code Composer Studio (CCS) to develop and debug camera based application.

ArduCAM CC3200 UNO has build in SWD and JTAG debug circuit, you do not need additional debugger tools to do the debugging. It supports TI CCS and Uniflash seamlessly. If you're looking to connect things to the internet, with the goal of building some sort of "Internet of Things," this new ArduCAM CC3200 UNO board is your right option.

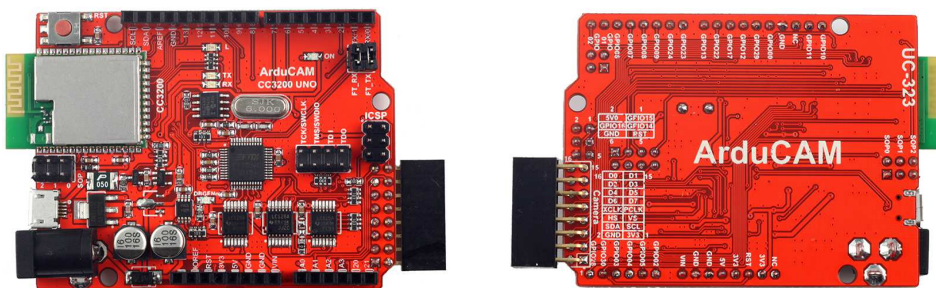


Figure 1 ArduCAM CC3200 UNO board

## 2 Features

- TI CC3200 ARM Cortex M4 Processor with WIFI support
- Arduino UNO Size and Pin Out
- Support ArduCAM Standard Camera Interface and MT9D111 Camera Module
- Onboard JTAG/SWD Debugger
- Support Energia and Code Composer Studio Development Environment

### Applications Microcontroller Subsystem:

- ARM Cortex-M4 Core at 80 MHz
- 256KB RAM, 1MB serial flash memory with file system for user
- Hardware Crypto Engine for Advanced Fast Security, Including AES, DES, 3DES, SHA2 MD5, CRC and Checksum
- Up to 27 individually programmable, multiplexed GPIO pins, including a fast parallel camera interface, I2S, SD/MMC, UART, SPI, I2C, and four-channel ADC.

### Wi-Fi Network Processor Subsystem:

- Dedicated ARM MCU, completely offloads Wi-Fi and Internet Protocols from the Application Microcontroller
- 802.11 b/g/n Radio
- WPA2 Personal and Enterprise Security
- Station, Access Point, and Wi-Fi Direct Modes
- Powerful Crypto Engine for Fast, Secure Wi-Fi and Internet Connections with 256-Bit AES Encryption for TLS and SSL connections
- SmartConfig Technology, AP Mode and WPS2 for easy and flexible Wi-Fi provisioning
- The power-management subsystem includes integrated DC-DC converters supporting a wide range of supply voltages. This subsystem enables low-power consumption modes, such as the hibernate with RTC mode requiring less than 7  $\mu$  A of current

- Easy to use SDK with full APIs with lots of examples for Energia, GCC,IAR System and Ti Code Composer Studio (CCS)

### 3 Pin Definition

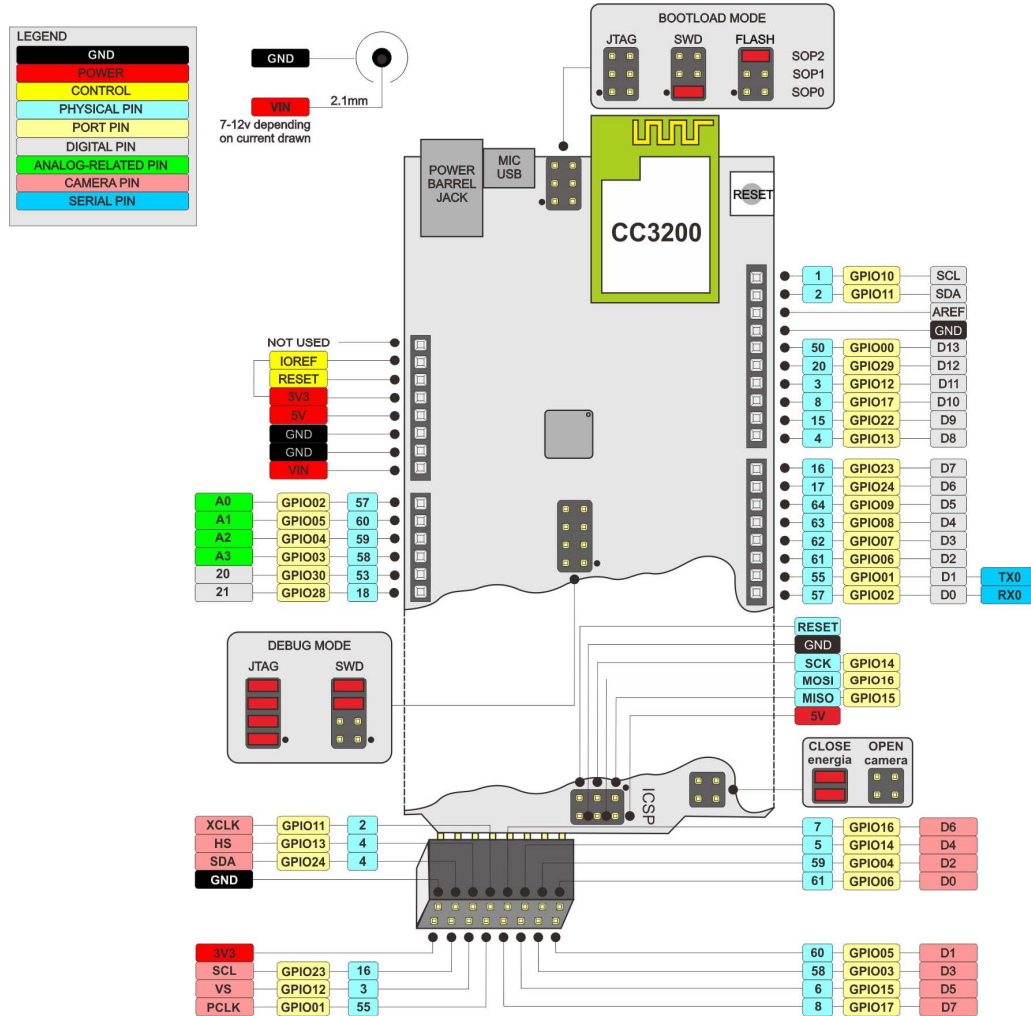


Figure 2 ArduCAM CC3200 UNO Pin Out

## 4 Getting Started CC3200 with Energia

This chapter shows you how to develop an application for ArduCAM UNO CC3200 board using Energia, an open-sourced version of the Arduino IDE for Texas Instruments MCU.

Please note that the jumpers marked in red box should be closed when using Energia to upload your sketches. They are Serial port TX/RX signals from the FTDI usb-serial controller.

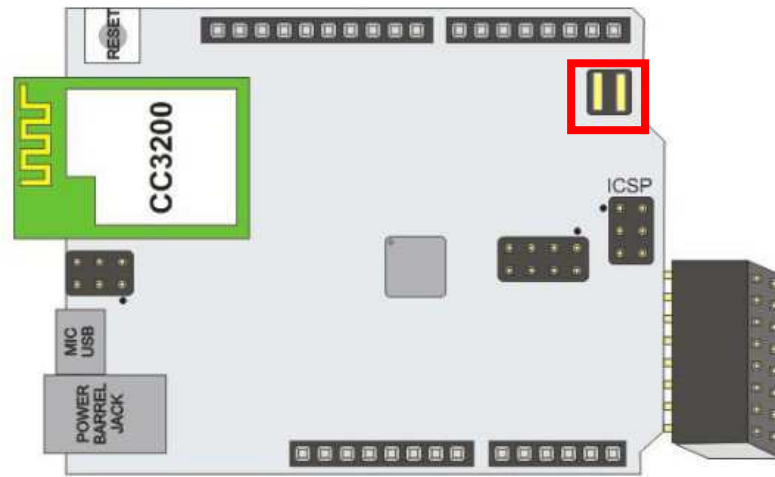


Figure 3 Jumper Connection for Energia

### 4.1 Out of the Box Test

Power on the ArduCAM UNO CC3200 board by using a micro USB cable and connect it to a host PC or an USB power source/battery. Both the on-board power indicator LED (ON) and the I/O indicator - LED (L) should be on.

From your PC or smart phone, go to the WiFi setting page. You should see an Access Point (AP) which the SSID name "ArduCAM UNO CC3200" on the AP scan result list. Choose the "ArduCAM UNO CC3200" AP to connect to it. This AP's password is "00000000".



Figure 4 WIFI connections from Windows

Open a web browser (e.g. IE/Safari/Chrome) on your PC or smart phone. Type the AP's IP address, which is "192.168.1.1", into the web browser address bar and go. It will show the welcome message "ArduCAM UNO CC3200 WiFi Test" and two buttons to allow you to turn on or off the on-board yellow I/O indicator - LED (L).



Figure 5 ArduCAM UNO CC3200 WiFi Test Webpage

Press the "ON" or "OFF" button on the web page and see the state of the on-board IO indicator - LED (L) to verify your board is fully functional.

## 4.2 Using Energia

This chapter shows you how to develop an application for ArduCAM CC3200 UNO board using Energia IDE.

### 4.2.1 Installing with Boards Manager

Starting with 1.6.10E18, Energia allows installation of third-party platform packages using Boards Manager. We have packages available for Windows, Mac OS, and Linux (32 and 64 bit).

- Install Energia 1.6.10E18 from the Energia website.
- Start Energia IDE and open Preferences window.
- Enter the following link into Additional Board Manager URLs field. You can add multiple URLs, separating them with commas.

[http://www.arducam.com/downloads/CC3200\\_UNO/releases/1.0.2/package\\_ArduCAM\\_CC3200\\_UNO\\_index.json](http://www.arducam.com/downloads/CC3200_UNO/releases/1.0.2/package_ArduCAM_CC3200_UNO_index.json)

- Open Boards Manager from Tools -> Board menu and install ArduCAM\_CC3200\_UNO addon package.

Note that the installed package source file is located in the C:\Users\*Your computer name*\AppData\Local\Energia15\ folder, here is C:\Users\zk109\AppData\Local\Energia15\ for example.

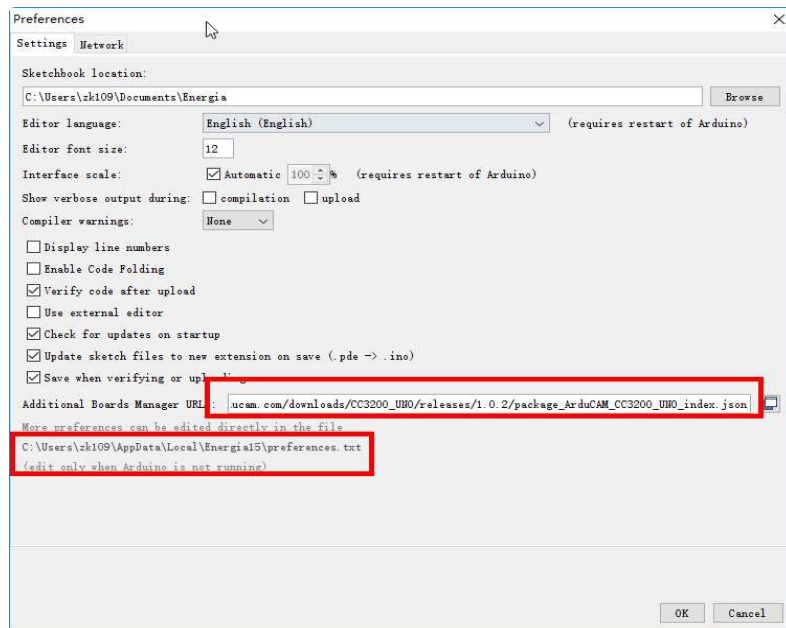


Figure 6 ArduCAM CC3200 UNO installed package path

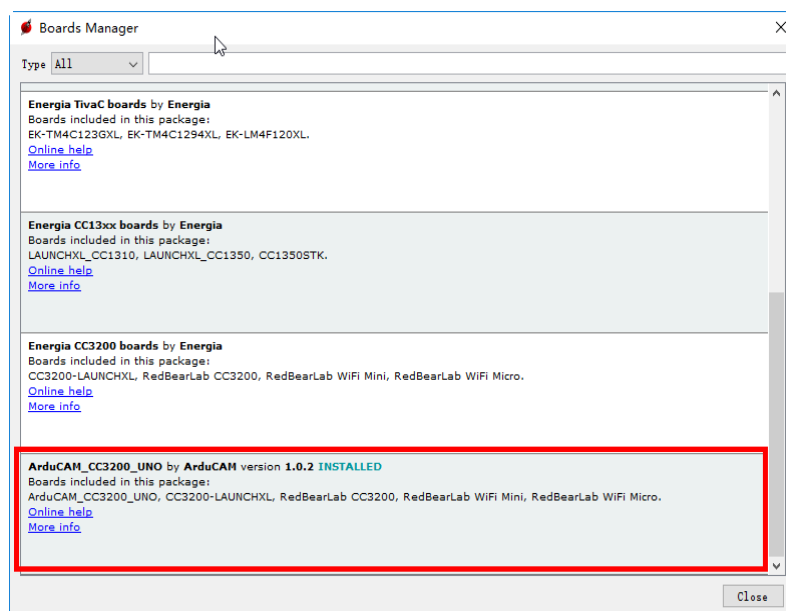


Figure 7 ArduCAM CC3200 UNO addon package



## 4.2.2 Using Energia IDE

After installation of ArduCAM CC3200 UNO board add-on package, you can select this board from the Tool->Board menu.

- 1) Select ArduCAM UNO w/ cc3200 board from Tool->Board menu.

Click on the "Tools > Serial Port" to choose the serial port for your WiFi board.

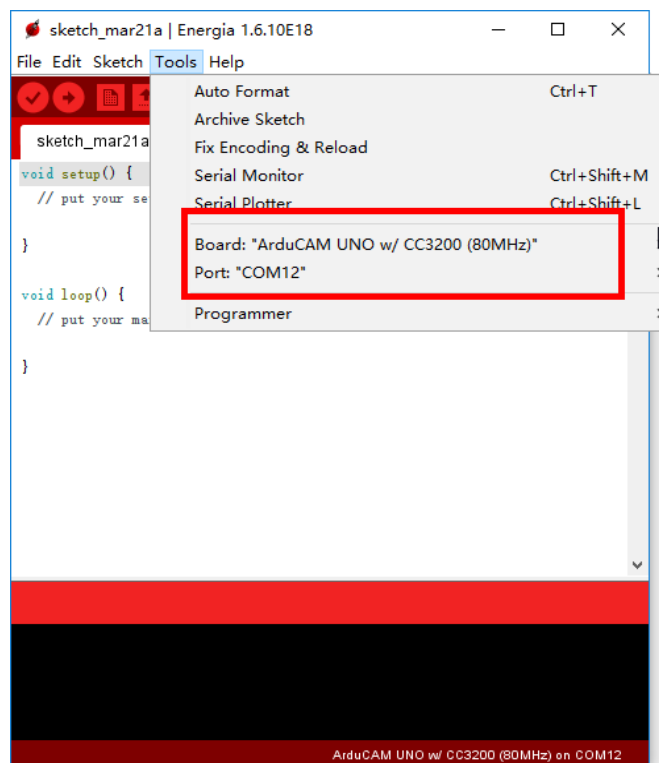


Figure 8 Board Selection

- 2) Open the Energia IDE. Click on the "File > Examples > 1.Basics > Blink" to open the blink sketch.

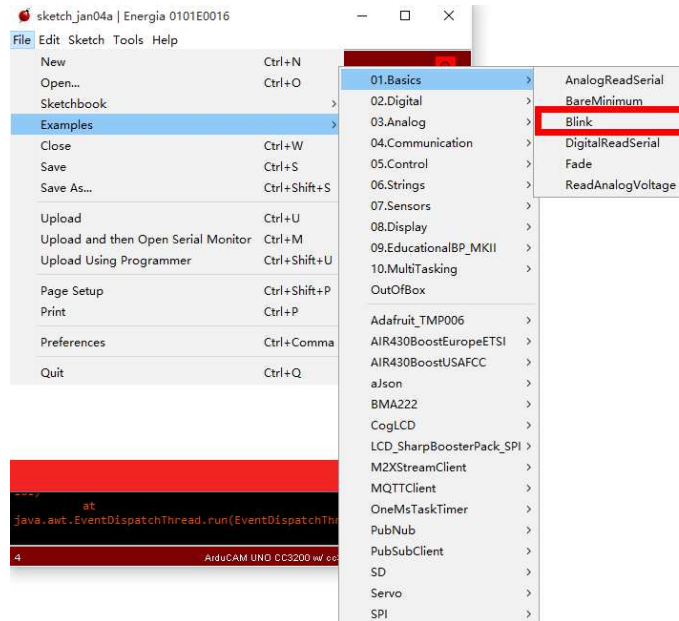


Figure 9 Blink sketch

- 3) Click on the right arrow button on the tool bar to compile and upload the sketch to your WiFi board.

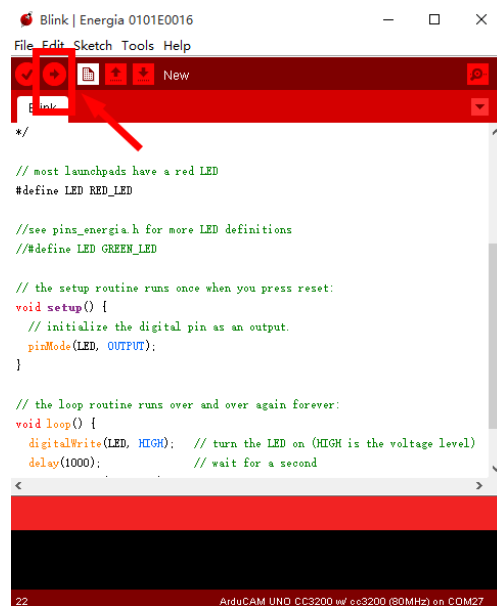


Figure 10 Upload blink sketch

- 4) After uploading the sketch, push the on-board reset button to run. You will see the on-board I/O indicator - LED (L) toggling in every second interval.