



# ArduCAM WIFI Camera Board Data Sheet

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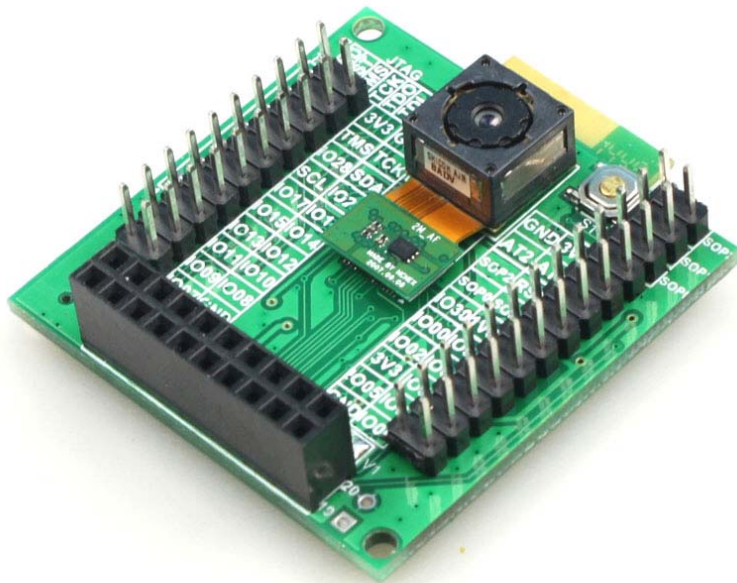


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## 1 Introduction

ArduCAM WIFI camera board is open source WIFI camera develop board which is based on Texas Instruments CC3200 SimpleLink WIFI IoT solution and Aptina MT9D111 camera module. It offers the high quality live video streaming functions as well as keep the small size and low power consumption.

TI makes connectivity even easier with the next-generation SimpleLink Wi-Fi solutions. The product family features Internet-on-a-chip™, Wi-Fi CERTIFIED™ solutions solving industry challenges for broad embedded applications. With SimpleLink CC3200 solutions you can:

- Program applications on the industry's first Internet-on-a-chip solution with user dedicated MCU
- Power Wi-Fi battery-operated designs for more than a year on two AA batteries
- Start quickly, no Wi-Fi experience needed

Both CC3200 solutions are supported by a software development kit (SDK) including software drivers, sample applications, API guide, user documentation and a world-class support E2E™ community. On the integrated Cortex-M4, all sample applications in the SDK are supported with Code Composer Studio™ Integrated Development Environment and no RTOS. A few of the applications support IAR, GCC, Free RTOS, TI-RTOS. And ArduCAM team provides a complete solution on WIFI video transmission.

## 2 Application

- WIFI cameras
- IoT cameras
- Robot cameras
- Wildlife cameras
- Other battery-powered products

## 3 Features

- Onboard 2MP JPEG camera modules
- Generous ArduCAM standard camera interface
- Onboard CC3200 base module
- MicroUSB power input
- GPIOs are also wired to 0.1 inch pin header

## 4 Pin Definition

Figure 1 shows the pin out diagram for ArduCAM WIFI camera board. Table 1~ Table 4 shows the pin definition of each connector.

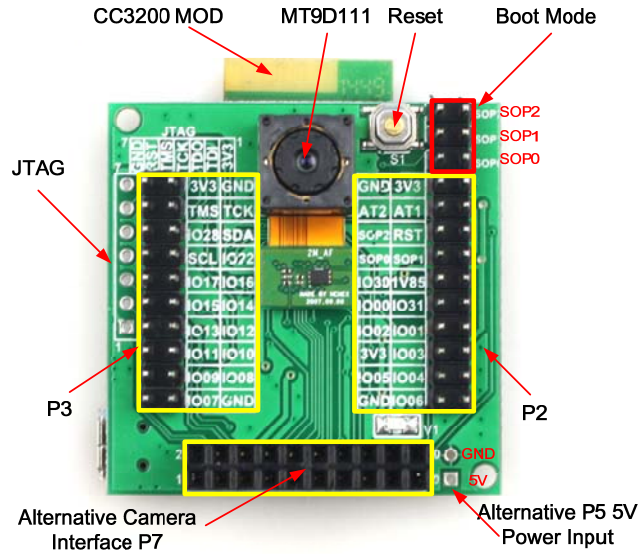


Figure 1 ArduCAM WIFI Camera Connectors Diagram

Table 1 JTAG Pin Definition

PIN	NAME
1	3.3V
2	TDI
3	TDO
4	TCK
5	TMS
6	RST
7	GND

Table 2 P3 Pin Definition

PIN	NAME	PIN	NAME
1	3.3V	2	GND
3	TMS	4	TCK
5	IO28	6	SDA
7	SCL	8	IO22
9	IO17	10	IO16
11	IO15	12	IO14
13	IO13	14	IO12
15	IO11	16	IO10
17	IO09	18	IO08
19	IO07	20	GND

**Table 3 P2 Pin Definition**

PIN	NAME	PIN	NAME
1	GND	2	3.3v
3	ANTSEL1	4	ANTSEL2
5	SOP2	6	RST
7	SOP0	8	SOP1
9	IO30	10	1.85V
11	IO00	12	IO31
13	IO02	14	IO01
15	3.3V	16	IO03
17	IO05	18	IO04
19	GND	20	IO06

**Table 4 Alternative Camera Interface P7 Pin Definition**

PIN	NAME	PIN	NAME
1	3.3V	2	GND
3	SCL	4	SDA
5	VSYNC	6	HREF
7	PCLK	8	XCLK
9	D7	10	D6
11	D5	12	D4
13	D3	14	D2
15	D1	16	D0
17	NC	18	NC
19	NC	20	NC

## 5 Demo Application details

With default camera configuration, ArduCAM WIFI camera runs in Access Point Mode. User needs to connect the Wi-Fi enabled device PC/Smartphone to the device AP (Default SSID: mysimplelink-MACAddr).

Using a web browser, access [http://mysimplelink.net/camera\\_demo.html](http://mysimplelink.net/camera_demo.html), the static pages stored on Serial FLASH will be displayed.

The web page will ask for the URL of the CC3200 Websocket Server. Default value is `ws://192.168.1.1`. Enter this and send "Connect". Wait for the alert window to confirm connection.

Send Capture command to device. The video streaming will now start. You can choose to send "Disconnect" at any time. The streaming can be restarted by repeating the same process again. The following picture illustrates the usage of the camera application:

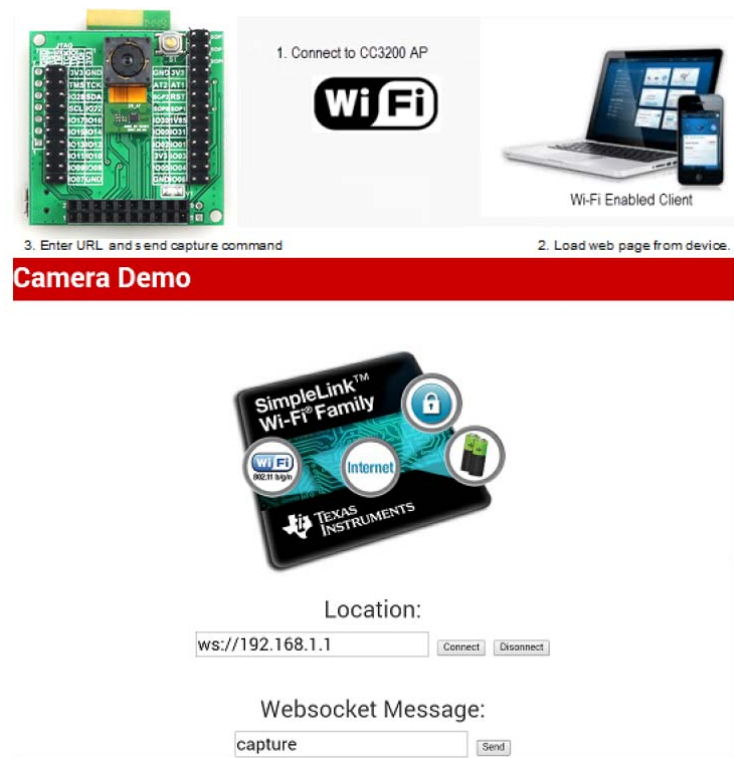


Figure 2 Demo Application

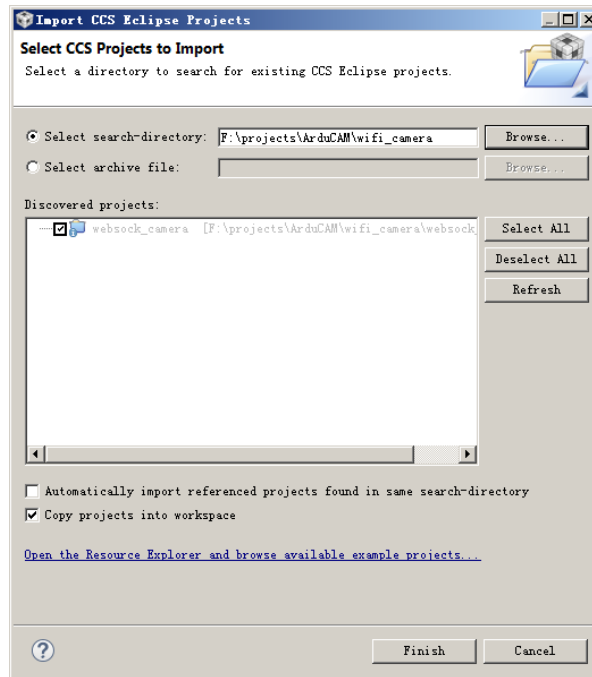
## 6 Rebuild the Source Code

The WIFI camera demo code can be downloaded from ArduCAM github <http://github.org/ArduCAM>. User can modify the code according to their target application based on this ready to use source code. Further technical support, please contact us for detail.

Supposed user has already installed the Code Compose Studio Version 6.0.1.00040 or later, CC3200 SDK 1.1.0, the TI-RTOS for SimpleLink and CC3200 Support Package. For detail information please refer the CC3200-Getting Started Guide.pdf from TI website.

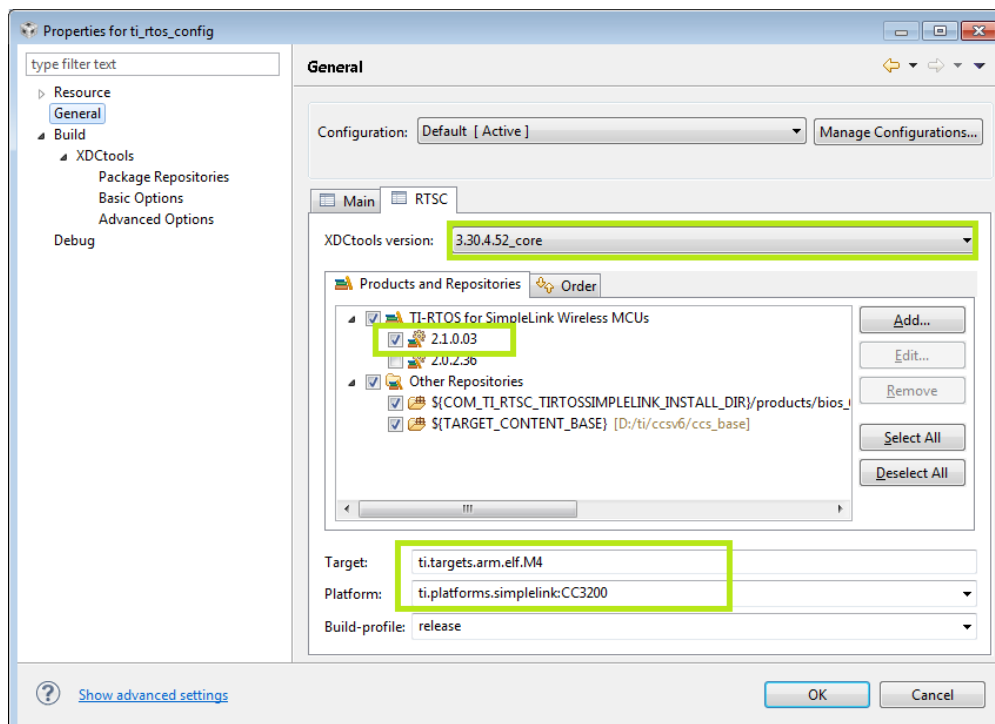
1. Before compiling the source code, *driverlib*, *simplelink*, *oslib* and *ti\_rtos\_config* projects should be imported into the workspace. For any library import, do not check the 'Copy projects into workspace' option. This would break the links the libraries have to their dependencies. After that user should import the *websocket\_camera* project which is

downloaded from ArduCAM github by select 'Copy projects into workspace'. Then the *websock\_camera* project will automatically be copied to the workspace.



**Figure 3 Select CCS Projects to Import**

2. Select the *ti\_rtos\_config* project in Project Explorer, and select Project>Properties from the menu. Setup the *ti\_rtos\_config* project configuration as shown in Figure 4. Select the latest versions of XDCtools and TI-RTOS for SimpleLink. Also verify the platform is selected as *ti.platforms.simplelink:CC3200*.



**Figure 4 Properties for *ti\_rtos\_config***

3. Select the *simplelink* project and build it as shown in Figure 5.

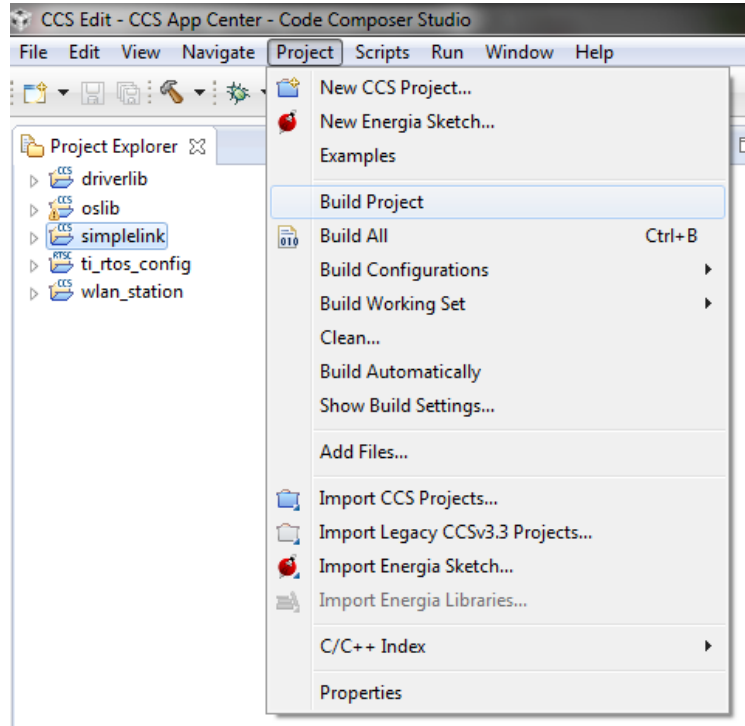


Figure 5 Select *simplelink* Project

4. Select the *ti\_rtos\_config* project and build it.
5. Select the *driverlib* project and build it.
6. Select the *oslib* project and build it.
7. Open the *common.h* file located at the path  
C:\TI\CC3200SDK\_1.1.0\cc3200-sdk\example\common\.
8. Edit *common.h* to use the SSID, security type and security key of the Access Point being used. Edit the macros *SSID\_NAME*, *SECURITY\_TYPE* and *SECURITY\_KEY* to contain the Access Point's information as shown in Figure 6. The security types supported for this demo are WPA/WPA2 and Open. For Open security, define *SECURITY\_TYPE* as *L\_SEC\_TYPE\_OPEN*. For WPA and WPA2 security, define it as *SL\_SEC\_TYPE\_WPA*. Alternatively, the SSID and security of the Access Point being used can be changed to match the default (SSID: *cc3200demo*, Security: Open). For the *SSID\_NAME* and *SECURITY\_KEY*, the quotation marks must remain as part of the macro definition.

```

// Values for below macros shall be modified as per access-point(A // Values for below macros shall be modified as per access-point(
// SimpleLink device will connect to following AP when application // SimpleLink device will connect to following AP when applicatio
//
#define SSID_NAME "cc3200demo" /* AP SSID */ #define SSID_NAME "Your_AP_Name_Here" /* AP SSID */
#define SECURITY_TYPE SL_SEC_TYPE_OPEN /* Security type (OPEN) #define SECURITY_TYPE SL_SEC_TYPE_WPA /* Security type (WPA)
#define SECURITY_KEY "" /* Password of the sec #define SECURITY_KEY "Your_AP_Security_Key_Here"
#define SSID_LEN_MAX 32 #define SSID_LEN_MAX (32)
#define BSSID_LEN_MAX 6 #define BSSID_LEN_MAX (6)

```

Figure 6 Editing *common.h*

9. Save *common.h*.
10. Select the *websock\_camera* project and build it.

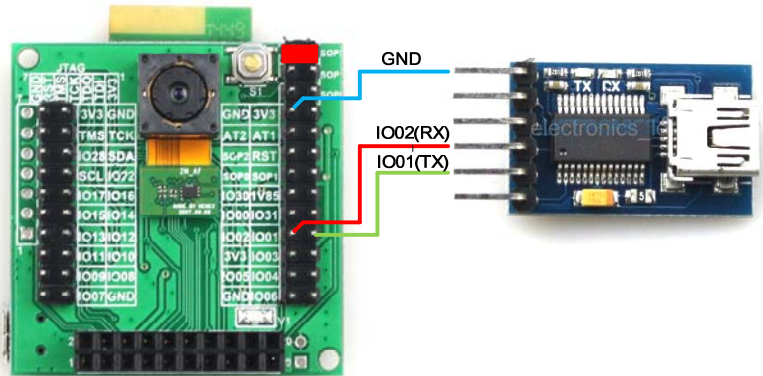
## 7 Upload the New Firmware

After successfully compiling the source code, user can upload the new firmware to the ArduCAM WIFI camera board with a USB-Serial TTL cable like this one or similar. <http://www.uctronics.com/ft232rl-usb-to-serial-adapter-module-usb-to-232-download-cable-for-ar>



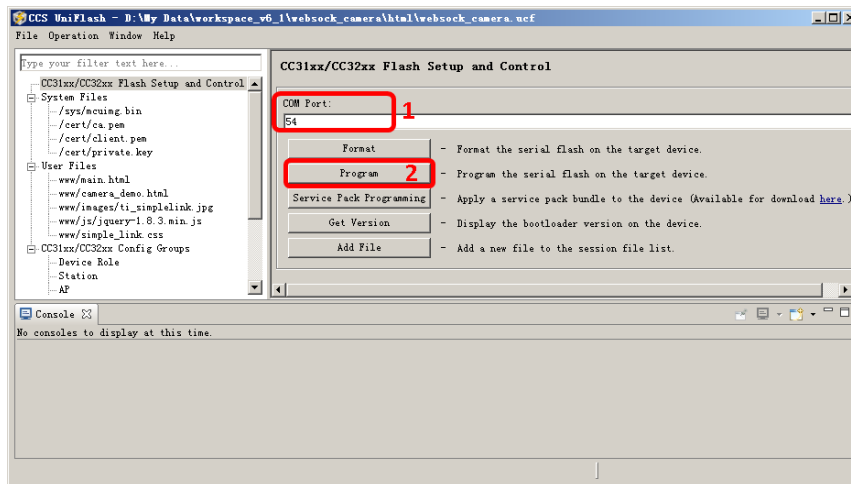
[duino-p-16991.html](http://duino-p-16991.html)

Connect the USB-Serial to CC3200's UART port, TX and RX should be cross over. It is recommended to remove the camera FPC cable from the connector when uploading. And plug the FPC cable back to the connector again after uploading. Use a jumper to short the SOP2 and leave the SOP1 and SOP0 unconnected as the Figure 7 shown, then apply the power supply.



**Figure 7 Uploading Setup**

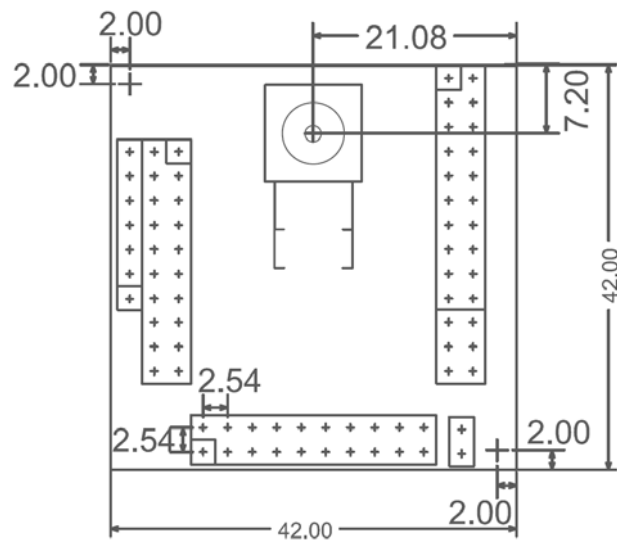
Open the UniFlash from the Start->Program->Texas Instruments-> CCS UniFlash - CC3xxx Edition 3.2.0, then open the preconfigured configuration file in websocket\_camera/html/websocket\_camera.ucf, it will be look like the Figure 8.



**Figure 8 UniFlash Dialog**

Input the correct COM port number of your USB-Serial device and press the Program button to start the firmware upload. In the upload process, user will be informed to press the reset button on the camera board when needed.

## 8 Mechanical Dimension



All dimensions are in mm

Figure 9 Mechanical Dimension