

ArduCAM ESP8266 UNO board

User Guide

Rev 1.0, Apr 2016





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1 Introduction

ArduCAM now released a ESP8266 based Arduino board for ArduCAM mini camera modules while keeping the same form of factors and pinout as the standard Arduino UNO R3 board. The high light this ESP8266 board is that it well mates with ArduCAM mini 2MP and 5MP camera modules, supports Lithium battery power supply and recharging and with build in SD card slot. It can be an ideal solution for home security and IoT camera applications.



Figure 1 ArduCAM ESP8266 UNO Kit

2 Features

- Build in ESP8266-12E Module
- > 11 digital input/output pins, IO ports are 3.3V tolerant
- 1 analog input(3.2V max input)
- ArduCAM Mini 2MP/5MP camera interface
- Lithium battery recharging 3.7V/500mA max
- Building in SD/TF card socket
- ➢ 7-12V power jack input
- Build in micro USB-Serial interface
- Compatible with Arduino IDE

3 Pin Definition



Figure 2 ArduCAM ESP8266 UNO Pin Out

Note that the SD/TF card CS pin is shared with UART TX signal, so the UART and the SD/TF can't be used at the same time.

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The board has build in Lithium battery charger, which accepts default 3.7V/500mA Lithium battery. The charging indicator and charging current setting can be found from the Figure 3.



(1) indicator light state

Charge state	Yellow LED CHRG	Greed LED				
charging	bright	extinguish				
Charge Termination	extinguish	bright				
Vin too low; Temperature of battery too low or too high; no battery	extinguish	extinguish				
BAT PIN Connect 10u Capacitance; No battery	Greed LEI LED Coru	D bright, Yellow scate T=1-4 S				

Figure 3 Battery Charging Indicator and Current Settings

(2) Rprog Current Setting

Rprog	I _{BAT}
(k)	(mA)
10	130
5	250
4	300
3	400
2	580
1.66	690
1.5	780
1.33	900
1.2	1000

4 Getting Started ESP8266 with Arduino IDE

This chapter shows you how to develop an application for ArduCAM ESP8266 UNO board using Arduino IDE.

4.1 Installing with Boards Manager

Starting with 1.6.4, Arduino 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 Arduino 1.6.8 from the Arduino website.
- > Start Arduino and open Preferences window.
- Enter the following link into Additional Board Manager URLs field. You can add multiple URLs, separating them with commas.

 $http://www.arducam.com/downloads/ESP8266_UNO/package_ArduCAM_index.json$

Open Boards Manager from Tools -> Board menu and install

ArduCAM_ESP8266_UNO addon package.

Note that the installed package source file is located in the C:\Users\Your computer

name\AppData\Local\Arduino15\ folder, here is

C:\Users\zk109\AppData\Local\Arduino15\ for example.

Preferences	×
Settings Network	
Sketchbook location:	
C:\Users\zk109\Documents\Ar	duino Browse
Editor language:	English (English) v (requires restart of Arduino)
Editor font size:	12
Interface scale:	Automatic 100 🗘 🕷 (requires restart of Arduino)
Show verbose output during:	compilation upload
Compiler warnings:	None 🗸
Display line numbers	
Enable Code Folding	
🗹 Verify code after upload	
🗌 Use external editor	
Check for updates on sta	rtup
🗹 Update sketch files to n	ew extension on save (.pde → .ino)
Save when verifying or u	ploading
Additional Boards Manager U	RLs: http://www.arducam.com/downloads/ESP8266_UNO/package_ArduCAM_index.json
More preferences can be elle	ed directly in the file
C:\Users\zk109\AppData\Local	l\Arduino15\preferences.txt
(odit only shon Arduino is a	ast summing)
	OK Cancel

Figure 4 ArduCAM ESP8266 UNO addon package

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4.2 Using Arduino IDE

After installation of ArduCAM ESP8266 UNO board add-on package, you can select this board from the Tool->Board menu. And there several ready to use examples from the File->Examples->ArduCAM. You can use these examples directly or as a starting point to develop your own code.

Select ArduCAM_ESP8266_UNO board from Tool->Board menu.

💿 Blink Arduino	1.6.8		-		\times						
File Edit Sketch Tools Help											
	Auto Format	3	Ctrl+T		Ø						
	Archive Sketch				-						
Blink	Fix Encoding & Re	eload									
/*	Serial Monitor		Ctrl+Shi	ft+M	^						
ESP8266 Blink b	Serial Plotter Ctrl+Shift+L										
This example co	his exemple as Board: "ArduCAM ESP8266 LINO"										
THES CRUMPLE CO	CPU Frequency: "8	30 MHz"		>							
The blue LED on	Flash Size: "4M (3	M SPIFFS)"		>							
(which is also	Upload Speed: "9	21600"		>	e time						
	Port: "COM3"			>	1 1 1 1						
*/	Dec common "LIC	Pasa"			ar LEI						
	Programmer: US	basp									
void setup() {	burn bootioader										
pinMode(LED_BUIL	TIN, OUTPUT): //	Initialize t	he LED_BUILTI	N pin s	as an (
}											
// the loon functi	on runs over and over	again forev	er								
<		-8			> [×]						
	ArduCAM ESP8266 UN	0, 80 MHz, 921	600, 4M (3M SP	IFFS) on	сомз						

Figure 5 Board Selection

Select the example from File->Examples->ArduCAM.



Figure 6 Example Selection

Configure the camera setting

You need to modify the *memorysaver.h* file in order to enable OV2640 or OV5642 camera for ArduCAM Mini 2MP or 5MP camera modules. Only one camera can be enabled at a time. The *memorysaver.h* file is located at C:\Users*Your computer name*\AppData\Local\Arduino15\packages\

 $\label{eq:arduCAM_ESP8266_UNO\hardware\ArduCAM_ESP8266_UNO\2.1.0\libraries\ArduCAM_ESP8266_UNO\bardware\ArduCAM_ESP8266_UNO\bardwa$



Figure 7 Camera Configuration

Compile and uploading

Change the SSID and password if needed with your own network environment before compile the example. Click uploading the example will automatically flashed into the board.

4.3 Examples

There are 3 examples for both 2MP and 5MP ArduCAM mini camera modules.

ArduCAM_Mini_OV2640_Capture (or ArduCAM_Mini_OV5642_Capture)

This example uses HTTP protocol to capture still or video over home wifi

network from ArduCAM mini 2MP/5MP and display on the web browser.

Using this example the ssid and password should be modifies before uploading.



Figure 8 Wifi Camera Example

After uploading, the board IP address is obtained via DHCP protocol. You can figure out the IP address through the serial monitor as Figure 9 shown. The default serial monitor baudrate setting is 115200bps.

💿 СОМЗ												-		Х
														Send
rdd泼 窘鄭 0V2640 detected. 🔫	1	cl徝	:挿	chų́gn乘og∰	c	8剣lrl;lx髈		d	劀	#	銃	硼醇	#₩fng	1審1 ^
Connecting to 360WiFi WiFi connected	i-1032	27 F												
192. 168. 0. 8 Server stærted														
<		-				-	\langle	1	Jo line	endi	ng	v 11	15200	baud

Figure 9 Identifying IP address



Finally, open the index.html or video.html, input the IP address obtained from the

serial monitor then take pictures or videos. The html files are located at

C:\Users\Your computer name\Local\Arduino15\packages\

 $\label{eq:arduCAM_ESP8266_UNO\ardware\ArduCAM_ESP8266_UNO\2.1.0\libraries\ArduCAM\examples\ESP8266\arduCAM\examples\Bracket{ESP8266}$



$ArduCAM_Mini_OV2640_Capture \ html$

Figure 10 Example Html page

ArduCAM_Mini_OV2640_Capture2SD (or ArduCAM_Mini_

OV5642_Capture2SD)

This example takes time elapse still photos using ArduCAM mini 2MP/5MP and then stored on the TF/SD card. The LED indicates when the TF/SD card is writing.

ArduCAM_Mini_OV2640_Video2SD (or

ArduCAM_Mini_OV5642_Video2SD)

This example takes motion JPEG video clips using ArduCAM mini 2MP/5MP and then stored on the TF/SD card as AVI format, about 4 minutes to complete.