Ardu@am

ArduCAM-M-2MP ESP8266 Nano V2 Evaluation Kit

User Guide

Rev 2.0, Nov 2017



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1. Introduction

The evaluation kit is designed for low cost WIFI IoT camera based on ArduCAM-Mini-2MP and ArduCAM-ESP8266-Nano-V2 modules. Users can implement a 2MP WIFI camera using HTTP or Websocket protocol on ESP8266, and the camera can act as an AP and mobile phone/PC can be connected to the camera directly or act as a Station which connected to the home router. The kit can take 2MP full resolution JPEG still image, but streaming low resolution low frame rate video due to the limitation of ESP8266. The kit can be USB powered or battery powered with build in charging circuits. The kit can also be used separately, it is identical to an ArduCAM-Mini-2MP camera and a ESP8266 Nano V2 module. The highlight of Version2 is that the ESP8266 can be put into deep sleep mode in order to be used in battery powered applications.



2. Kit Contents

- ArduCAM-Mini-2MP x1
- ArduCAM-ESP8266-Nano-V2 x1
- Battery power cable x1

Note: No battery is included, need to buy from local.

3. Features

- > 2MP image sensor OV2640, support JPEG
- M12 mount or CS mount lens holder with changeable lens options
- > I2C interface for the sensor configuration
- > SPI interface for camera commands and data stream
- Build in Lithium battery recharging 3.7V/500mA max
- Build in SD/TF card socket
- Build in micro USB-Serial (CH340g) convertor
- Compatible with Arduino IDE
- Deep sleep mode
- Small form of factor

4. Wiring Diagram



5. Getting Started ESP8266 with Arduino IDE

5.1 Installing with Boards Manager

Install Arduino 1.6.8 from the Arduino website. Starting Arduino and open Preferences window and entering 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

Preference	tes		×
Settings	Network		
Sketchb	ook location:		
C:\User	s\zk109\Documents\A	duino	Browse
Editor 1 Editor 1 Interfau Show ver Ompiler Disp Enab Veri Use	language: font size: ce scale: rbose output during: r warnings: lay line numbers le Code Folding fy code after uploa external editor	English (English) 12 2 Automatic 100 * % (requires restart of Arduino) compilation upload None v	(requires restart of Arduino)
✓ Chec ✓ Upda ✓ Save Addition	k for updates on st ite sketch files to r when verifying or v nal Boards Manager U eferences can be edi	artup new extension on seve (.pde → .ino) nploading RLs: http://www.arducam.com/downloads/ESP8266 UMO/package ted directly in the file	: ArduCAM index, json
(edit or	s\zk109\AppData\Loca	l Mrdunolb Upreferences. txt not running)	L3
			OK Cancel

Note that the installed package source file is located in the C:\Users\Your computer name\AppData\Local\Arduino15\ folder.

Open Boards Manager from Tools ->Board menu and install ArduCAM_ESP8266_UNO add-on

package.

🥯 sketch jun03a Arduino 1.8.2 — 🗆	×
File Edit Sketch Tools Help	
sketch_jun03a	
🞯 Boards Manager	×
Type All V Filter your search	
EMORO 2560 by Inovatic-ICT Boards included in this package: EMORO 2560. Board based on ATmega 2560 MCU. Online help More info AMEL-Tech Boards by replaced by Arrow Boards Boards included in this package: SmartEverything Fox. Online help More info	^
ArduCAM_ESP8266_UNO by ArduCAM Boards included in this package: ArduCAM ESP8266 UNO. Online help More info	L3 Install V
	Close
Arduine Vún en COM	1

Note if you download failed, you need to delete the C:\Users\Your computer name\AppData\ Local\Arduino15\ folder, and then restart the Arduino IDE, repeat the above operation.

<u>~</u> 21	格プロ世界	₩	+ ds	
packages	2017-06-03 20:44	文件夹		
📙 staging	2017-06-03 20:43	文件夹		
📓 library_index.json	2017-06-03 20:49	JSON 文件	2,631 KB	
Z package_ArduCAM_index.json	2017-06-03 20:58	JSON 文件	14 KB	
package_ArduCAM_index.json.sig.tmp	2017-06-03 20:43	TMP 文件	0 KB	
🎽 package_index.json	2017-06-03 20:58	JSON 文件	181 KB	
package_index.json.sig	2017-06-03 20:58	SIG 文件	1 KB	
preferences.txt	2017-06-03 20:48	文本文档	3 KB	

5.2 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 Tools->Board menu.



Select the example from File->Examples->ArduCAM->ESP8266->ArduCAM_ESP8266_Nano_V2_Capture

00	ArduCAM_ESF	8266_Nano_V2	_Captu	re Arduino 1.8.2 —		o x		
File	Edit Sketch	Tools Help					_	
	New	Ctrl+N				<u>o</u> .		
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	Examples		2	▲				
	Close	Ctrl+W		06.Sensors	>			
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	Print	Ctrl+P		11.ArduinoISP	>			
	Preferences	Ctrl+Comma		Examples for any board		photo and		
	Quit	Ctrl+Q		Adafruit Circuit Playground	>	oto contin		
/// // <	This program r and use Arduin	equires the Ar o IDE 1.6.8 com		Bridge Ethernet Firmata LiquidCrystal SD SerialCommand Stepper Temboo TFT WiFi Examples for ArduCAM ESF	> > > > > > > > > > >	ArduCAM ES	,	ArduCAM_ESP8266_Nano_V1_Capture ArduCAM_ESP8266_Nano_V1_Capture2SD ArduCAM_ESP8266_Nano_V1_Video2SD ArduCAM_ESP8266_Nano_V2_Capture2SD ArduCAM_ESP8266_Nano_V2_Capture2SD ArduCAM_ESP8266_Nano_V2_Video2SD ArduCAM_ESP8266_UNO_Capture ArduCAM_ESP8266_UNO_V1_Capture2SD ArduCAM_ESP8266_UNO_V1_Video2SD ArduCAM_ESP8266_UNO_V1_Video2SD ArduCAM_ESP8266_UNO_V2_Capture2SD
				ArduCAM	2	ESP826	6	ArduCAM_ESP8266_UNO_V2_Video2SD
				ArduCAM_Touch	;	Shield_	V2 >	
				ArduinoOTA	>			
				DNSServer	>			

Configure the camera setting. You need to modify the memorysaver.h file in order to enable OV2640_MINI_2MP or OV5642_MINI_5MP_PLUS or OV5640_MINI_5MP_PLUS 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\ ArduCAM_ESP8266_UNO\hardware\ ArduCAM_ESP8266_UNO\2.2.3\libraries\ArduCAM.

🗐 memo	rvsaver, hE3
1	
2	idefine MFMORYSAVE
3	Facture
4	//Only when using raspherry enable it
5	//define BISPEREV PI
6	
7	//There are two steps you need to modify in this file before normal compilation
8	//Only ArduCAM Shield series platform need to select camera module, ArduCAM-Mini series platform doesn't
9	1273/004 Enclosed Antional Ant
10	//Step 1: select the hardware platform, only one at a time
11	#define OV2640 MINI 2MP
12	//#define OV5642 MINI 5MP
13	//#define OV5642 MINI 5MP BIT ROTATION FIXED
14	//#define OV5642 MINI 5MP PLUS
15	//#define OV5640_MINI_5MP_PLUS
16	
17	//#define ARDUCAM_SHIELD_REVC
18	//#define ARDUCAM_SHIELD_V2
19	I
20	
21	<pre>//Step 2: Select one of the camera module, only one at a time</pre>
22	<pre>[#if (defined(ARDUCAM_SHIELD_REVC) defined(ARDUCAM_SHIELD_V2))</pre>
23	//#define OV7660_CAM
24	//#define OV7725_CAM
25	//#define OV7670_CAM
26	//#define OV7675_CAM
27	//#define OV2640_CAM
28	//#define OV3640_CAM
20	//tdefine OV5642 CTM

5.3 There are 12 examples for both ArduCAM Mini 2MP and ArduCAM Mini 5MP camera modules. (ArduCAM ESP8266 UNO V1 and ArduCAM_ESP8266_Nano_V1 have been discontinued). ArduCAM_ESP8266_Nano_V2_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. You

can change the value of wifiType to select Station or AP mode. If you use Station mode the ssid and password should be modified before uploading.

🥯 ArduCAM_ESP8266_Nano_V2_Capture Arduino 1.8.2 — 🛛	×
File Edit Sketch Tools Help	
	>
ArduCAM_ESP8266_Nano_V2_Captu	
//you can change the value of wifiType to select Station or AP mode.	^
int wifiType = 1; // O:Station 1:AP	
//AP mode configuration	
//Default is arducam_esp8266.If you want, you can change the AP_aaid to yo const char *AP ssid = "arducam esp8266".	r
//Default is no password. If you want to set password, put your password her	e
const char *AP_password = "";	
//Station mode you should put your ssid and password	
const char *ssid = "SSID"; // Put your SSID here	
const char *password = "PASSWORD"; // Put your PASSWORD here	
<pre>static const size_t bufferSize = 4096;</pre>	~
<	>
ArduCAM ESP8266 UNO, 80 MHz, 921600, 4M (3M SPIFFS) on COM	11

AP mode:

After uploading, the board IP address is 192.168.4.1. You can figure out the IP address through the serial monitor. The default serial monitor baudrate setting is 115200bps.

© COM6	3 <u>10</u>	
		Send
ArduCAM Start!		
0V2640 detected.		
Share AP: arducam_esp8266		
The password is:		
192. 168. 4. 1	Ν	
Server stærted	45	
Autoscroll	Newline 🗸	115200 baud ~

From your PC, go to the WiFi setting page. You should see an Access Point (AP) which the SSID name "arducam_esp8266" on the AP scan result list. Choose the "arducam_esp8266" AP to connect to it. This AP's password is "".

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	KK2 安全			
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	360W 安全	iFi-501 2		
	设置			
		\$P		
WLAN		飞行模式		

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\ AppData\Local\Arduino15\packages\ArduCAM_ESP8266_UNO\hardware\ArduCAM_ESP8266_UN\ 2.2.3\libraries\ArduCAM\examples\ESP8266\ArduCAM_ESP8266_Capture\html_2640

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ArduCAM_ESP8266_OV2640_Capture Demo						
			C	à		
192.160.4.1						
160 #100041236448 Check The Company ID Address (Book 160X120 176X144 320X240 352X288 640X480						
80005600 102457568 1280X1024 1500X1200						

Also you can use ArduCAM_Host_V2.0_Windows Host app. You can download it on: https://github.com/ArduCAM/Arduino/tree/master/ArduCAM/examples/host_app.

ArduCAM_Host_V2	ArduCAM_Host_V2_View4	100	X
IF : 192.166.4.1 Close IF : 192.166.4.1 Close COMP ort COMP ort Open Port : 0017 • Open Pix : 2840 • Adapt Pix : Sigule • Adapt Node : Sigule • Adapt CANERA Sectionar FILE File : ./teep Path	Sever is running! Request plen=undefined&ql=2 CAN Start single shoot CAN Capture Done!		

5.4 To reduce power consumption, calling the interface function immediately goes into the Deep – sleep mode. In this mode, the chip will disconnect all wi-fi connections and data connections and enter the sleep mode. Only the RTC module will still work and be responsible for the timing of the chip. This demo is suitable for battery power.



After uploading ArduCAM_ESP8266_Nano_V2_DeepSleep.Please note that the jumper marked in red box should be closed. (The jumper should be open when you upload sketches.)



ArduCAM_ESP8266_Nano_V1_Capture2SD (or ArduCAM_ESP8266_Nano_V2_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_ESP8266_Nano_V1_Video2SD (or ArduCAM_ESP8266_Nano_V2_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.

If any problems or suggestions for the tutorial or the camera kit, please feel free to contact us by following ways:

Website: <u>www.arducam.com</u> Email: <u>support@uctronics.com</u> Tel: +86 025 84271192 Skype: fpga4u