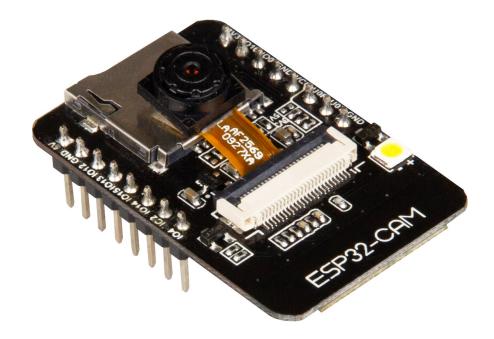


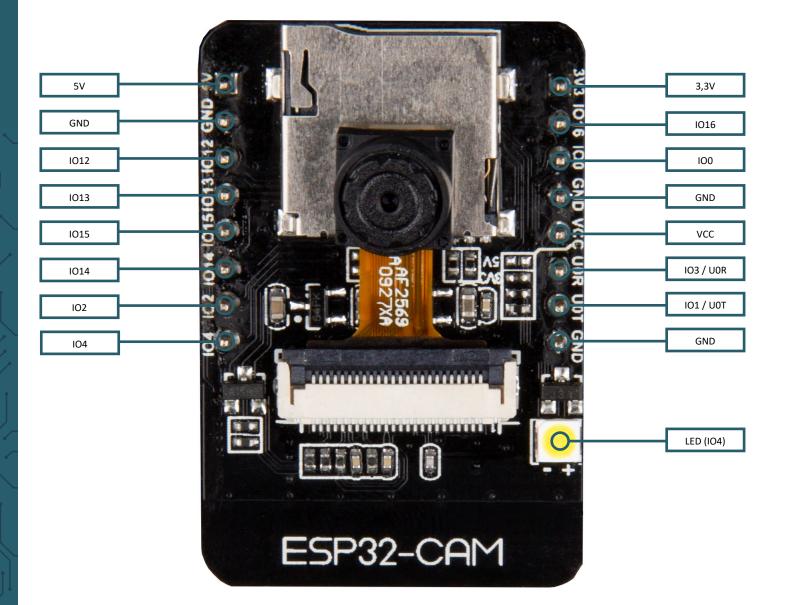
# **ESP32 CAMERA MODULE**

SBC-ESP32-Cam



## **1. GENERAL INFORMATION**

Dear customer, thank you very much for choosing our product. In following, we will introduce you to what to observe while starting up and using this product. Should you encounter any unexpected problems during use, please do not hesitate to contact us.



The following pins are internally connected to the SD card slot:

- IO14: CLK
- IO15: CMD
- IO2: Data 0
- IO4: Data 1 (also connected to the on-board LED)
- IO12: Data 2
- IO13: Data 3

To put the device into flash mode, IO0 must be connected to GND.

## 2. SETTING UP THE DEVELOPMENT ENVIRONMENT

You can program the camera module using the Arduino IDE. If you do not have the IDE installed on your computer, you can download it here.

After you have installed the development environment, you can open it to prepare you for using the camera module.

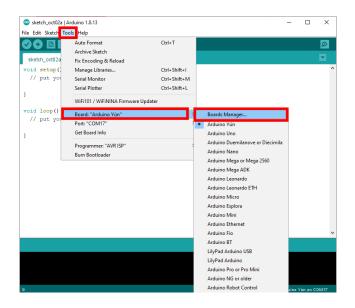
## Go to zu File -> Preferences

0	sketch_oct02a	Arduino 1.8.13		-		×
File	dit Sketch 1	fools Help				
	New	Ctrl+N				Ø
	Open	Ctrl+O				
	Open Recent	>				
	Sketchbook	>				^
	Examples		here, to run once:			
		Ctrl+W				
		Ctrl+S				
	Save As	Ctrl+Shift+S				
	Page Setup	Ctrl+Shift+P	here, to run repeatedly:			
	Print	Ctrl+P				
	Preferences	Ctrl+Comma	]			
	Quit	Ctrl+Q				
						*
1			١A	Thinker ESP32-C	AM on CC	0M17

Add the URL: *https://dl.espressif.com/dl/package\_esp32\_index.json* under Additional Board Manager URLs. Multiple URLs can be separated with a comma.

Preferences				×
Settings Network				
Sketchbook location:				
C: Users Entwicklung4.SIMA	CGMBH\Documents\Arduino			Browse
Editor language:	English (English)	<ul> <li>(requires restart of Arduino)</li> </ul>		
Editor font size:	14			
Interface scale:	Automatic 100 + % (requires restart of	Arduino)		
Theme:	Default theme $\ arsigma$ (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 startup		Save when verifying or uploading		
Use accessibility features				
Additional Boards Manager UR	Ls: https://dl.espressif.com/dl/package_esp32_in	dex.json	C	
More preferences can be edit	ed directly in the file			
· · ·	GMBH\AppData\Local\Arduino15\preferences.txt			
(edit only when Arduino is not	running)			
			ОК	Cancel

Now go to Tools -> Board -> Boards Manager...



Enter esp32 in the search bar and install the ESP32 board manager

😨 Boards Manager	×
Type All v esp32	
esp32 by Espressif Systems Boards included in this package: ESP32 Dev Module, WEMOS LoLin32, WEMOS D1 MINI ESP32. More Info	î
1.0.4 V Install	
	✓
	Close

# Now you can select under **Tools** -> **Board** -> **ESP 32 Arduino**, the board **AI Thinker ESP32-CAM.**

sketch_oct02a	Arduino 1.8.13			M5Stack-FIRE	- 0	×
File Edit Sketch				M5Stick-C		
	Auto Format	Ctrl+T		ODROID ESP32		
	Auto Format Archive Sketch	Ctri+1		Heltec WiFi Kit 32		₽ P
sketch_oct02a				Heltec WiFi LoRa 32		-
void setup()	Fix Encoding & Reload	Ctrl+Shift+I		Heltec WiFi LoRa 32(V2)		^
// put you	Manage Libraries Serial Monitor	Ctrl+Shift+M		Heltec Wireless Stick		
// pac you	Serial Plotter	Ctrl+Shift+L		ESPectro32		
}	Serial Plotter	Ctri+Shift+L		Microduino-CoreESP32		
	WiFi101 / WiFiNINA Firmware Update	r		ALKS ESP32		
void loop()	Board: "Arduino Yún"	_	Boards Manager	WiPy 3.0		
// put you	Port: "COM17"		Arduino AVR Boards	BPI-BIT		
	Get Board Info		ESP32 Arduino	Silicognition wESP32		
}	Get board mild		ESP32 Arduino	T-Beam		
	Programmer: "AVR ISP"	>		D-duino-32		
	Burn Bootloader			LoPy		
				LoPy4		
				OROCA EduBot		
				ESP32 FM DevKit		
				Frog Board ESP32		
				Al Thinker ESP32-CAM		
				SparkFun LoRa Gateway 1-Channel		
				TTGO T-Watch		
				WEMOS D1 MINI ESP32		
				Pycom GPy		
				VintLabs ESP32 Devkit		
1					uino Yún on	COM17
					anno Fan On	0.010111

You can now start programming your module.

As the module does not have a USB port, you will have to use a USB to TTL converter. For example the SBC-TTL interface converter from Joy-it.



You must use the following pin assignment.

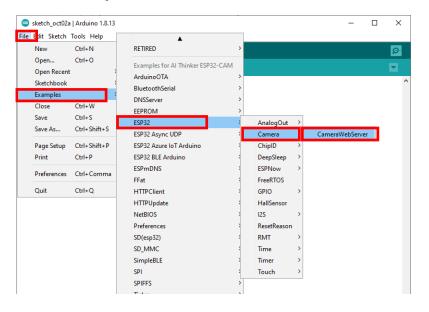
Camera module	Interface converter
5V	5V
GND	GND
UOT	RX
UOR	ТХ

You also need to connect a ground pin of your camera module to the IO0 pin to upload your programme.

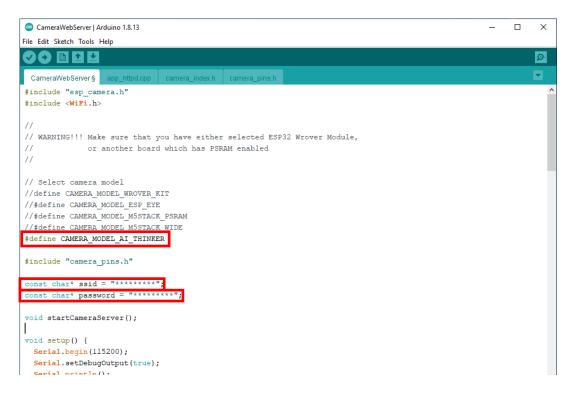
When uploading, you have to restart your camera module once with the reset button as soon as "Connecting......" appears in the debug window below.



To open the sample program CameraWebServer click on File -> Examples -> ESP32 -> Camera -> CameraWebServer



Now you must first select the correct camera module (CAMERA\_MODEL\_AI\_THINKER) and enter the SSID and password of your WLAN network, as shown in the picture below.



When this step is also done, you can upload the programme to your camera module.

In the serial monitor, if you have set the correct baud rate of 115200, you can see the IP address of your web server.

© COM17		-		×	
				Send	
15:39:01.405 -> .					^
15:39:01.405 -> WiFi connected					
15:39:01.405 -> Starting web server on port: '80'					
15:39:01.405 -> Starting stream server on port: '81'					
15:39:01.405 -> Camera Ready! Use 'http://192.168.1.125' to connect					
					v
Autoscroll Show timestamp Newline	~ 115200	paud 🗸	Clear	output	

You must enter the displayed IP address in your Internet browser to access the web server.

Ξ Toggle OV2640 settings				
Resolution	QVGA(320):240) 🗸			
Quality	10 63			
Brightness				
Contrast				
Saturation	-2 2			
Special Effect	No Effect 🗸			
AWB				
AWB Gain				
WB Mode	Auto 🔹			
AEC SENSOR				
AEC DSP				
AE Level	-2			
AGC				
Gain Ceiling	2x — 128x			
BPC				
WPC				
Raw GMA				
Lens Correction				
H-Mirror				
V-Flip				
DCW (Downsize EN)				
Color Bar				
Face Detection				
Face Recognition				
Get Still Stop Stre	eam Enroll Face			

Our information and take-back obligations according to the Electrical and Electronic Equipment Act (ElektroG)



# Symbol on electrical and electronic equipment:

This crossed-out dustbin means that electrical and electronic appliances do not belong in the household waste. You must return the old appliances to a collection point.

Before handing over waste batteries and accumulators that are not enclosed by waste equipment must be separated from it.

### **Return options:**

As an end user, you can return your old device (which essentially fulfils the same function as the new device purchased from us) free of charge for disposal when you purchase a new device.

Small appliances with no external dimensions greater than 25 cm can be disposed of in normal household quantities independently of the purchase of a new appliance.

Possibility of return at our company location during opening hours: SIMAC Electronics GmbH, Pascalstr. 8, D-47506 Neukirchen-Vluyn, Germany

#### Possibility of return in your area:

We will send you a parcel stamp with which you can return the device to us free of charge. Please contact us by email at Service@joy-it.net or by telephone.

### Information on packaging:

If you do not have suitable packaging material or do not wish to use your own, please contact us and we will send you suitable packaging.

### 5. SUPPORT

If there are still any issues pending or problems arising after your purchase, we will support you by e-mail, telephone and with our ticket support system.

Email: service@joy-it.net

Ticket system: http://support.joy-it.net

Telephone: +49 (0)2845 98469-66 (10-17 o'clock)

For further information please visit our website:

www.joy-it.net