LAMPIRAN

Lampiran Listing Program

```
/********************************************************************
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 *  Preferences--> Aditional boards Manager URLs :
https://dl.espressif.com/dl/package_esp32_index.json,
http://arduino.esp8266.com/stable/package_esp8266com_index.json

 *  Board Settings:

 *  Board: "ESP32 Wrover Module"

 *  Upload Speed: "921600"

 *  Flash Frequency: "80MHz"

 *  Flash Mode: "QIO"

 *  Partition Scheme: "Hue APP (3MB No OTA/1MB SPIFFS)"

 *  Core Debug Level: "None"

 *  COM Port: Depends *On Your System*

 *  GPIO 0 must be connected to GND pin while uploading the sketch

 *  After connecting GPIO 0 to GND pin, press the ESP32 CAM on-board
RESET button to put the board in flashing mode


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  #include "esp_camera.h"

#include <WiFi.h>

//

// WARNING!!! PSRAM IC required for UXGA resolution and high JPEG
quality

//  Ensure ESP32 Wrover Module or other board with PSRAM is selected

//    Partial images will be transmitted if image exceeds buffer size

//

// Select camera model

//#define CAMERA_MODEL_WROVER_KIT
```
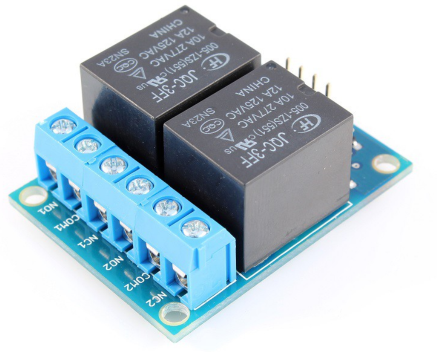

```
//#define CAMERA_MODEL_ESP_EYE
//#define CAMERA_MODEL_M5STACK_PSRAM
//#define CAMERA_MODEL_M5STACK_WIDE
#define CAMERA_MODEL_AI_THINKER
#include "camera_pins.h"
#define RED 13
#define GREEN 14
#define LOCK 12
const char* ssid = "Banten"; //WiFi SSID
const char* password = "irfabanten"; //WiFi Password
void startCameraServer();
boolean matchFace = false;
boolean openLock = false;
long prevMillis=0;
int interval = 6000;  //DELAY
void setup() {
  pinMode(LOCK,OUTPUT);
  pinMode(RED,OUTPUT);
  pinMode(GREEN,OUTPUT);
  digitalWrite(LOCK,LOW);
  digitalWrite(RED,HIGH);
  digitalWrite(GREEN,LOW);

  Serial.begin(115200);
  Serial.setDebugOutput(true);
  Serial.println();

  camera_config_t config;
```

```
config.ledc_channel = LEDC_CHANNEL_0;
config.ledc_timer = LEDC_TIMER_0;
config.pin_d0 = Y2_GPIO_NUM;
config.pin_d1 = Y3_GPIO_NUM;
config.pin_d2 = Y4_GPIO_NUM;
config.pin_d3 = Y5_GPIO_NUM;
config.pin_d4 = Y6_GPIO_NUM;
config.pin_d5 = Y7_GPIO_NUM;
config.pin_d6 = Y8_GPIO_NUM;
config.pin_d7 = Y9_GPIO_NUM;
config.pin_xclk = XCLK_GPIO_NUM;
config.pin_pclk = PCLK_GPIO_NUM;
config.pin_vsync = VSYNC_GPIO_NUM;
config.pin_href = HREF_GPIO_NUM;
config.pin_sscb_sda = SIOD_GPIO_NUM;
config.pin_sscb_scl = SIOC_GPIO_NUM;
config.pin_pwdn = PWDN_GPIO_NUM;
config.pin_reset = RESET_GPIO_NUM;
config.xclk_freq_hz = 20000000;
config.pixel_format = PIXFORMAT_JPEG;
//init with high specs to pre-allocate larger buffers
if(psramFound()){
  config.frame_size = FRAMESIZE_UXGA;
  config.jpeg_quality = 10;
  config.fb_count = 2;
} else {
  config.frame_size = FRAMESIZE_SVGA;
  config.jpeg_quality = 12;
```

```
    config.fb_count = 1; }
#if defined(CAMERA_MODEL_ESP_EYE)
  pinMode(13, INPUT_PULLUP);
  pinMode(14, INPUT_PULLUP);
#endif
  // camera init
  esp_err_t err = esp_camera_init(&config);
  if (err != ESP_OK) {
    Serial.printf("Camera init failed with error 0x%x", err);
    return;  }
  sensor_t * s = esp_camera_sensor_get();
  //initial sensors are flipped vertically and colors are a bit saturated
  if (s->id.PID == OV3660_PID) {
    s->set_vflip(s, 1);//flip it back
    s->set_brightness(s, 1);//up the blightness just a bit
    s->set_saturation(s, -2);//lower the saturation  }
  //drop down frame size for higher initial frame rate
  s->set_framesize(s, FRAMESIZE_QVGA);
#if defined(CAMERA_MODEL_M5STACK_WIDE)
  s->set_vflip(s, 1);
  s->set_hmirror(s, 1);
#endif
  WiFi.begin(ssid, password);
  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");  }
  Serial.println("");
  Serial.println("WiFi connected");
```

```
 startCameraServer();
 Serial.print("Camera Ready! Use 'http://");
 Serial.print(WiFi.localIP());
 Serial.println("' to connect");}
void loop() {
 if(matchFace==true && openLock==false)
 { openLock=true;
  digitalWrite(LOCK,HIGH);
  digitalWrite(GREEN,HIGH);
  digitalWrite(RED,LOW);
  prevMillis=millis();
  Serial.print("UNLOCK DOOR");    }
  if (openLock == true && millis()-prevMillis > interval)
  {openLock=false;
  matchFace=false;
  digitalWrite(LOCK,LOW);
  digitalWrite(GREEN,LOW);
  digitalWrite(RED,HIGH);
  Serial.print("LOCK DOOR");  }}
```

Name: **Relay Module 2-Channel**
Code: **MR009-004.1**



This *Relay Module 2-Channel* is a module designed to allow you to control two relays in a very simple and intuitive manner. Being compatible with Arduino, the most immediate way to use it is to connect it to an Arduino board using flexible jumpers.

Exploiting the characteristics of the relays mounted on the module and through the use of two Arduino digital I/O pins, it is possible to control motors, inductive loads and other devices; this product is therefore fundamental in domotics projects or, more in general, in robotics projects.

The module is equipped with optocouplers on *IN1* and *IN2* lines in such a way that it ensures the galvanic insulation between the relay load and the control board which drives this module.

CONNECTIONS

Pin	*Function*
IN1	TTL digital input
IN2	TTL digital input
GND	Ground
+5V	Power (+5V)
NO1	Normally open contact
COM1	Common contact
NC1	Normally closed contact

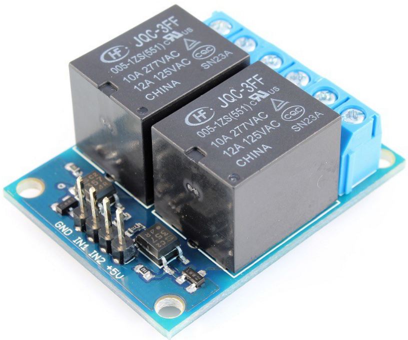
NO2	Normally open contact
COM2	Common contact
NC2	Normally closed contact

Tab.1 – Connections

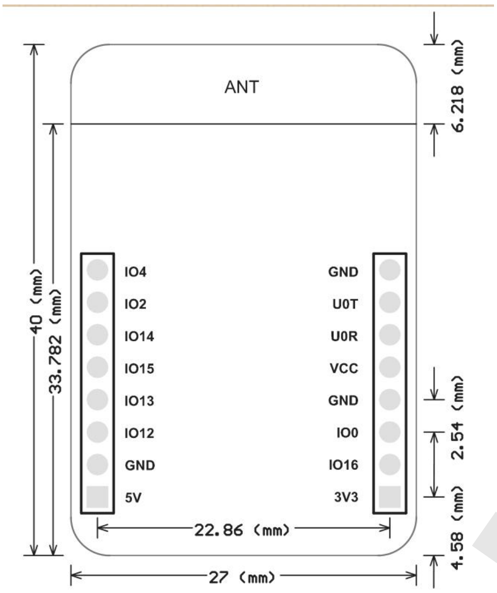
CHARACTERISTICS

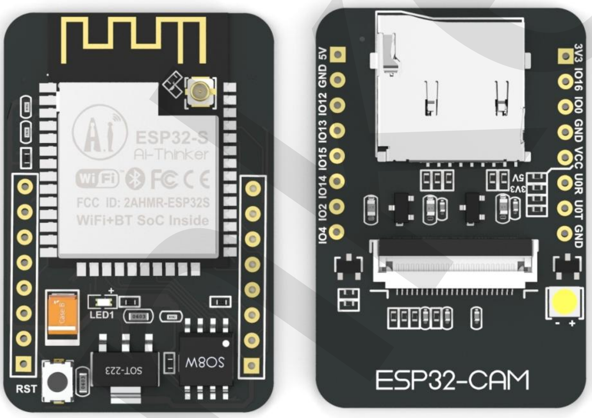
Pin	***Function***
Supply voltage	+5V
Supply current	144mA typ. (150mA max.)
Current on pin IN	14mA typ.
Rated load	7A 250VAC
Operating temperature	-30°C / +70°C
Operate time max.	10ms Max.
Release time max.	5ms Max.
Insulation resistance	100Mohm Min.
Mechanical Life Expectancy	10,000,000 operations
Electrical Life Expectancy	10,000 operations
Dimensions	1.7” x 1.3” (43.2 x 33.0 mm)
Weight	0.92oz (26.2g)

Tab.2 - Characteristics



ESP32-CAM Module





Features

- The smallest 802.11b/g/n Wi-Fi BT SoC Module
- Low power 32-bit CPU,can also serve the application processor
- Up to 160MHz clock speed，Summary computing power up to 600 DMIPS
- Built-in 520 KB SRAM, external 4MPSRAM
- Supports UART/SPI/I2C/PWM/ADC/DAC
- Support OV2640 and OV7670 cameras,Built-in Flash lamp.
- Support image WiFI upload
- Support TF card
- Supports multiple sleep modes.
- Embedded Lwip and FreeRTOS
- Supports STA/AP/STA+AP operation mode
- Support Smart Config/AirKiss technology
- Support for serial port local and remote firmware upgrades (FOTA)

Overview

The ESP32-CAM has a very competitive small-size camera module that can operate independently as a minimum system with a footprint of only 27*40.5*4.5mm and a deep sleep current of up to 6mA.

ESP-32CAM can be widely used in various IoT applications. It is suitable for home smart devices, industrial wireless control, wireless monitoring, QR wireless identification, wireless positioning system signals and other IoT applications. It is an ideal solution for IoT applications.

ESP-32CAM adopts DIP package and can be directly inserted into the backplane to realize rapid production of products, providing customers with high-reliability connection mode, which is convenient for application in various IoT hardware terminals.

Product Specifications

Module Model	ESP32-CAM
Package	DIP-16
Size	27*40.5*4.5（±0.2）mm
SPI Flash	Default 32Mbit
RAM	520KB SRAM +4M PSRAM
Bluetooth	Bluetooth 4.2 BR/EDR and BLE standards
Wi-Fi	802.11 b/g/n/
Support interface	UART、SPI、I2C、PWM
Support TF card	Maximum support 4G
IO port	9
UART Baudrate	Default 115200 bps
Image Output Format	JPEG(OV2640 support only),BMP,GRAYSCALE
Spectrum Range	2412 ~2484MHz
Antenna	Onboard PCB antenna, gain 2dBi
Transmit Power	802.11b: 17±2 dBm (@11Mbps) 802.11g: 14±2 dBm (@54Mbps) 802.11n: 13±2 dBm (@MCS7)
Receiving Sensitivity	CCK, 1 Mbps : -90dBm CCK, 11 Mbps: -85dBm 6 Mbps (1/2 BPSK): -88dBm 54 Mbps (3/4 64-QAM): -70dBm MCS7 (65 Mbps, 72.2 Mbps): -67dBm
Power Dissipation	Turn off the flash lamp:180mA@5V Turn on the flash lamp and turn on the brightness to the maximum:310mA@5V Deep-sleep: Minimum power consumption can be achieved 6mA@5V Moderm-sleep: Minimum up to 20mA@5V Light-sleep: Minimum up to 6.7mA@5V
Security	WPA/WPA2/WPA2-Enterprise/WPS
Power Supply Range	5V
Operating Temperature	-20 ℃ ~ 85 ℃
Storage Environment	-40 ℃ ~ 90 ℃ , < 90%RH

Weight	10g

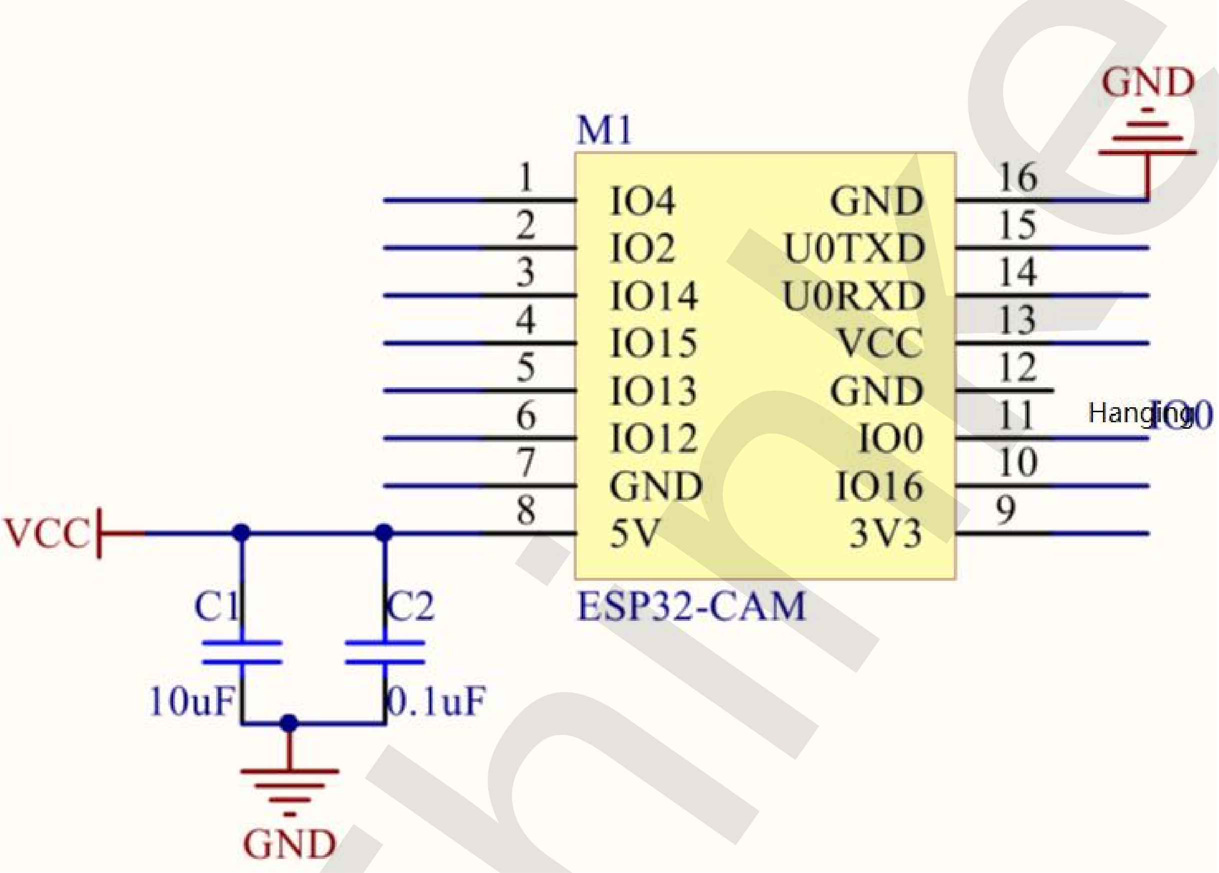
ESP32-CAM module picture output format rate

Format Size	QQVGA	QVGA	VGA	SVGA
JPEG	6	7	7	8
BMP	9	9	-	-
GRAYSCALE	9	8	-	-

Internal Pin Connect

CAM	ESP32	SD	ESP32
D0	PIN5	CLK	PIN14
D1	PIN18	CMD	PIN15
D2	PIN19	DATA0	PIN2
D3	PIN21	DATA1/Flash lamp	PIN4
D4	PIN36	DATA2	PIN12
D5	PIN39	DATA3	PIN13
D6	PIN34		
D7	PIN35		
XCLK	PIN0		
PCLK	PIN22		
VSYNC	PIN25		
HREF	PIN23		
SDA	PIN26		
SCL	PIN27		
POWER PIN	PIN32		

Minimum system diagram



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