

Setup Guide: ESP32-CAM with RHYX M21-45 Camera

Important: Read Before Using

If your ESP32-CAM came with a camera module labeled **RHYX M21-45** (or **GC2145**), it is **not compatible** with the default settings of the ESP32 Camera examples.

The standard OV2640 camera supports JPEG compression. The **RHYX M21-45 does not support JPEG**. It only supports **Raw Color (RGB565)**.

If you try to use the standard code without the changes below, you will see these errors:

- Error 0x106 (ESP_ERR_NOT_SUPPORTED)
- Error 0x105 (ESP_ERR_NOT_FOUND)

Required Code Changes

To make this camera work, you must modify the standard **CameraWebServer** example in Arduino IDE.

Step 1: Open the Standard Example

1. Open Arduino IDE.
2. Go to **File > Examples > ESP32 > Camera > CameraWebServer**.

Step 2: Select the Correct Board

1. In the code, look for the "Select camera model" section (lines 10-20).
2. Ensure **only** the AI_THINKER model is uncommented:

```
// Select camera model
//#define CAMERA_MODEL_WROVER_KIT // Has PSRAM
//#define CAMERA_MODEL_ESP_EYE // Has PSRAM
#define CAMERA_MODEL_AI_THINKER // <--- UNCOMMENT THIS LINE ONLY
```

Step 3: Modify the Configuration (The Vital Fix)

Scroll down to the void setup() function. You need to change the **pixel_format** and the **frame_size**.

Find these lines in the standard code:

```
config.frame_size = FRAMESIZE_UXGA;
config.pixel_format = PIXFORMAT_JPEG; // for streaming
```

REPLACE them with these lines:

```
// --- RHYX M21-45 FIX START ---
```

```
config.pixel_format = PIXFORMAT_RGB565; // Camera does not support JPEG
config.frame_size = FRAMESIZE_QVGA; // Resolution must be low (320x240) for Raw Video
// --- RHYX M21-45 FIX END ---
```

Step 4: Comment out the PSRAM check

Just below the lines you changed, you will see an if statement checking for PIXFORMAT_JPEG. You should comment this out or ensure it doesn't run, as we are no longer using JPEG.

Change this:

```
if(config.pixel_format == PIXFORMAT_JPEG){
    if(psramFound()){
        config.frame_size = FRAMESIZE_UXGA; // <--- This will break the RHYX cam!
        // ...
    }
}
```

To this (or simply delete the block):

```
/* if(config.pixel_format == PIXFORMAT_JPEG){
    // Code commented out because we are using RGB565
}
*/
```

Troubleshooting

Why is the video laggy?

This is normal for the RHYX M21-45.

- **Standard Camera (OV2640):** Sends compressed JPEGs (small data, fast stream).
- **RHYX Camera:** Sends Raw RGB data (huge data, slow stream).
- **Result:** You will likely get 5-10 Frames Per Second (FPS).

Error 0x105 (Camera Not Found)

This usually means a hardware connection issue.

1. Unplug the ESP32-CAM.
2. Check the ribbon cable. The **gold fingers** usually face **inwards** (towards the ESP32 chip).
3. Ensure the black locking latch is pressed down firmly.

Stream Fails / Black Screen

If you see the website but the stream doesn't load:

1. Check your code changes in Step 3.
2. Ensure you set config.frame_size = FRAMESIZE_QVGA.

3. If you try to use UXGA or SVGA with RGB565 mode, the data is too large for the ESP32 to handle, and the stream will crash.