

# ESP12 Deep Sleep problem

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2024.11.08.

I encountered a similar issue that others have faced with ESP12 modules. While I've previously used ESP12E/F without any problems when waking from deep sleep, I recently bought a new batch of ESP12F modules that don't wake up correctly—they enter a "zombie mode" instead.

To troubleshoot, I researched various articles on this topic and tried multiple suggestions. Initially, adding a 10kΩ resistor between GPIO7/MISO and the +3.3V pins worked fine. However, this solution is no longer effective.

After a wake-up attempt that resulted in "zombie mode," I used an oscilloscope to analyze the signals. I found a 297.15 kHz square wave signal on the GPIO11/SCLK pin and a similar signal, but in a sawtooth form, on the CS pin. On the GPIO0/FLASH pin, there was a 26 MHz signal oscillating between 1.4V and 2.4V.

Eventually, I discovered the solution. Although I used nicolzo's program, it alone was insufficient. I also needed to connect a 510Ω resistor between GPIO16 and RST, without using a jumper. After making these changes, the module woke from deep sleep successfully.

To summarize, the following steps helped resolve the problem:

1. Place a 10kΩ resistor between GPIO7/MISO and the +3.3V pins.
2. Connect a 510Ω resistor between GPIO16 and RST pins.
3. Use nicolzo's program.

The nicolzo's program

```
#define ets_wdt_disable ((void (*)(void))0x400030f0)
#define ets_delay_us ((void (*)(int))0x40002ecc)
#define _R (uint32_t *)0x60000700

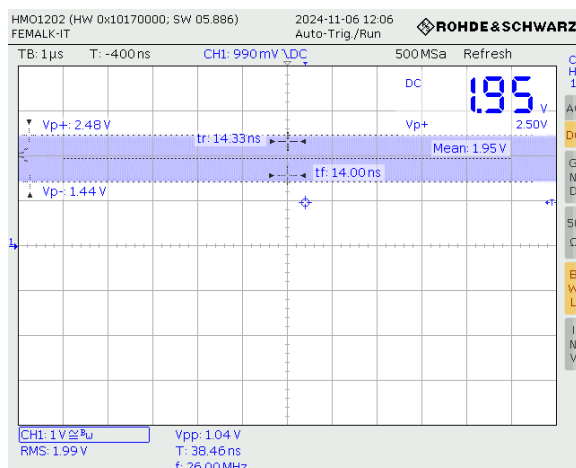
void nk_deep_sleep(uint64_t time)
{
    ets_wdt_disable();
    *(_R + 4) = 0;
    *(_R + 17) = 4;
    *(_R + 1) = *(_R + 7) + 5;
    *(_R + 6) = 8;
    *(_R + 2) = 1 << 20;
    ets_delay_us(10);
    *(_R + 39) = 0x11;
    *(_R + 40) = 3;
    *(_R) &= 0xFCF;
    *(_R + 1) = *(_R + 7) + (45*(time >> 8));
    *(_R + 16) = 0x7F;
    *(_R + 2) = 1 << 20;
    __asm volatile ("waiti 0");
}
```

```

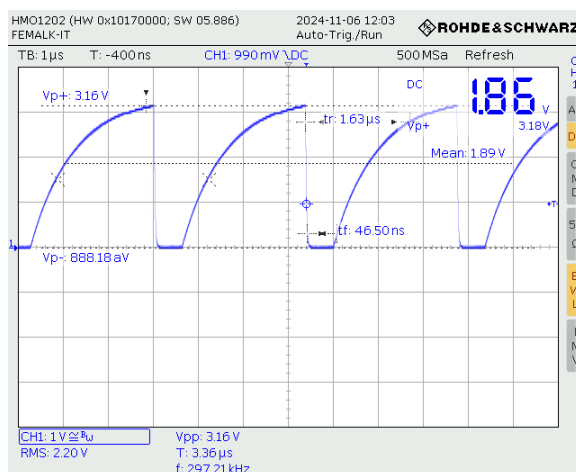
NodeMCU 1.0 (ESP-12...)
OK
1 void setup() {
2   Serial.begin(74880); // Győződj meg róla, hogy soros monitor 74880 baudra van állítva
3   Serial.println("Going to sleep...");
4   ESP.deepSleep(5e6); // 5 másodperces alvás
5 }
6
7 void loop() {
8   // Üresen hagyható
9 }
10
Serial Monitor x Output
[Message (Enter to send message to 'NodeMCU 1.0 (ESP-12E Module)' on 'COM4')]
14:30:05.342 ->
14:30:05.342 -> eta Jan 8 2019,zet cause:2, boot mode:(3,7)
14:30:05.342 ->
14:30:05.342 -> load 0x4010f000, len 3424, room 16
14:30:05.387 -> tail 0
14:30:05.387 -> chksum 0x2e
14:30:05.387 -> load 0x3ff220b8, len 40, room 8
14:30:05.387 -> tail 0
14:30:05.387 -> chksum 0x2b
14:30:05.387 -> csum 0x2b
14:30:05.387 -> w00041c40
14:30:05.387 -> ~ld
14:30:05.465 -> rf cal sector: 1020
14:30:05.465 -> freq trace enable 0
14:30:05.465 -> rf[112] : 0
14:30:10.490 ->
14:30:10.490 -> eta Jan 8 2019,zet cause:2, boot mode:(3,7)
14:30:10.536 ->
1

```

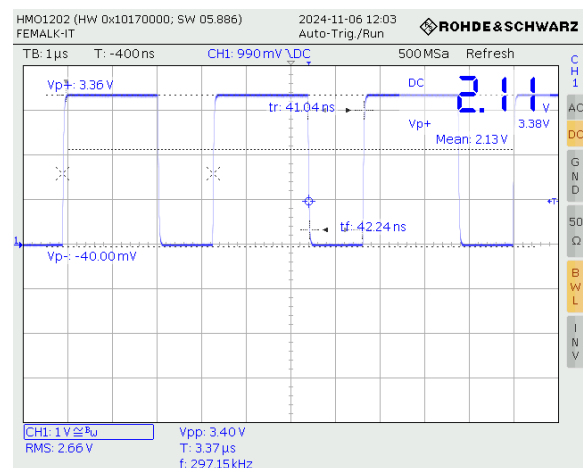
1. Figure Step to Zombie mode (74880 Baud)



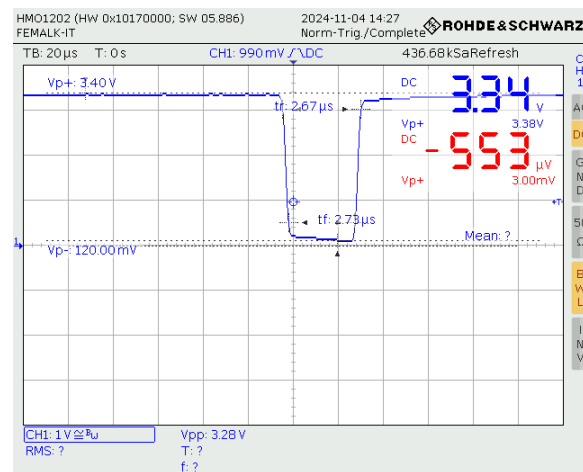
2. Figure GPIO11/SCLK pin signal



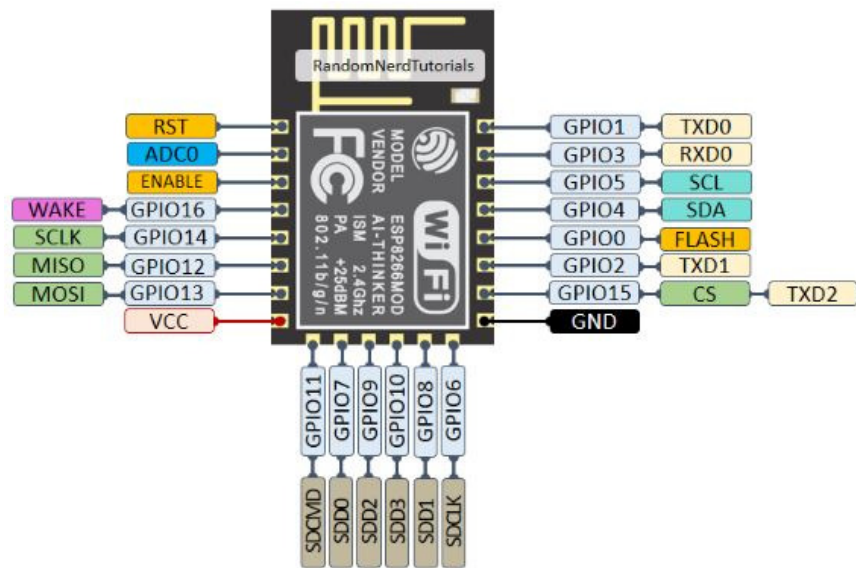
3. Figure CS pin signal



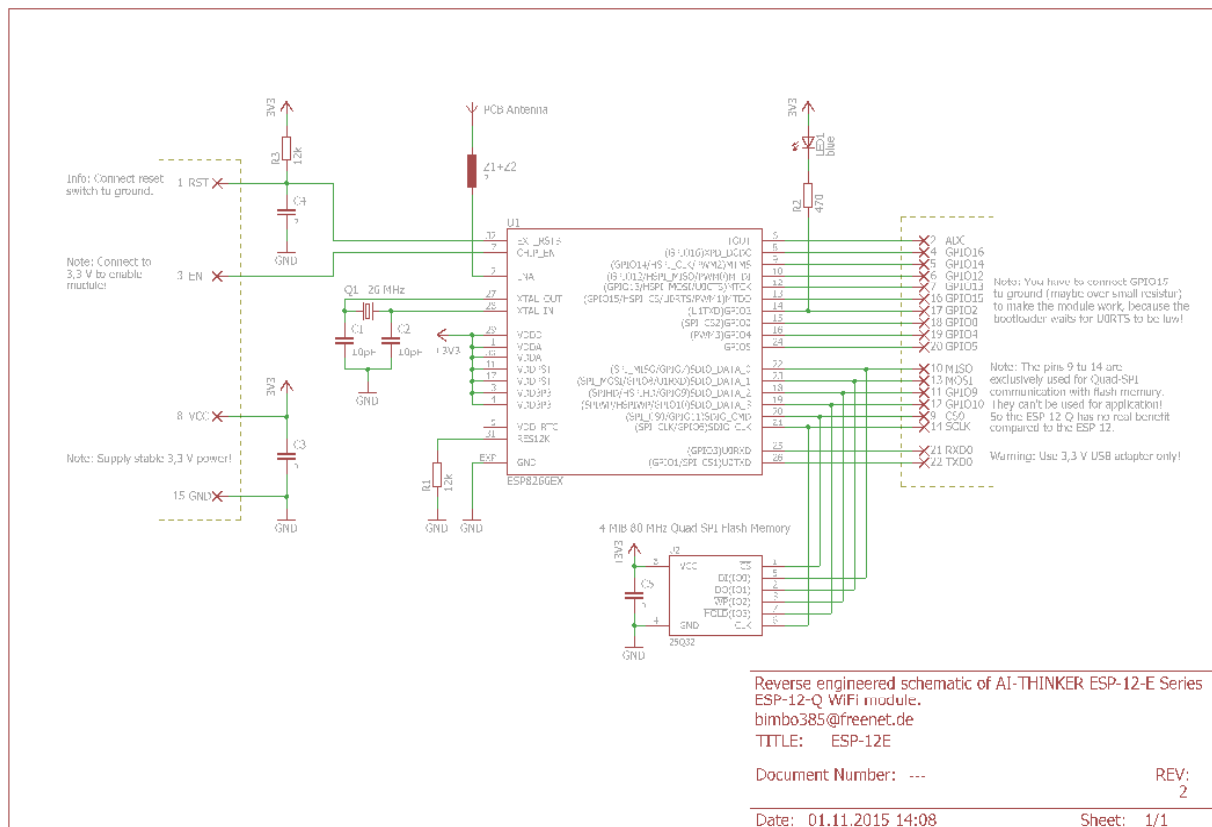
4. Figure GPIO11/SCLK pin signal



5. Figure GPIO16 wake up signal



6. Figure ESP12 pins



7. Figure ESP12E schematic