

16-channel PWM controller entry for the aquarium LED light

What you need:

1. ESP8266 board
2. PWM PCA9685 board
3. The real-time clock DS1307 board (optional)
4. DS18x20 (optional)

What's the result:

1. 16 channels of 12-bit control (4096 steps) with a frequency of 50 - 1500Hz (can be customized)
2. Each channel has independent settings, to set the time for the sunrise/day/sunset/night.
3. Each channel has individual adjustment of the PWM value for the day / night. PWM value for sunrise / sunset are calculated automatically.
4. Each channel may be associated with one of the sensors DS18x20. In this case, the PWM value of this channel will be calculated based on readings of the temperature sensor. Any temperature sensor can be attached to any channels.
5. Each channel can have individual settings for inverting the PWM signal.
6. Emergency light - all channels are set using the maximum value. Activated by pressing «flash» button module esp8266. Deactivated by pressing again.
6. WEB management interface.
7. The ability to create and upload their own HTML pages management interface.
8. WIFI Access Point, and both WIFI Station

How to flashing firmware in ESP8266:

1. read the notes and hints on connecting to a computer ESP8266 <https://github.com/esp8266/Arduino/blob/master/doc/boards.md>
2. For firmware highly recommend esptool <https://github.com/igrr/esptool-ck/releases>
3. Flashing the main firmware file.
`esptool -v -cp <COM port> -cb 115200 -ca 0x00000000 -cf 0x00000000.bin`
4. Flashing the data file:
`esptool -v -cp / <COM port> -cb 115200 -ca 0x0006b000 -cf 0x0006b000.bin`
5. Reboot ESP8266
6. After a reboot of the module in the list of available networks should appear WIFI network named esp8266_xxxxxxx, connect to the network using as password last digits (xxxxxxx) of network name
7. Open your browser page `http: /192.168.4.1`

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Thanks Google translator for the translation :)