Musical lighting microcontroller firmware installation manual

What if you are new to STM32 microcontroller programming? What if you have never install any firmware on microcontrollers? Which wires to connect, which button to press? Calm down, read below and you will easily feel as experienced engineer.

 First, you will need simple interface converter USB-COM. You are welcome to find the one you like in the store you prefer. The keyword for search is *FTDI*.
 For example: most popular или the cheapest



So, let us suppose you already have a board with STM32 controller and an interface converter.

2. Assembling the circuit

You will need four wires; colors are presented as in picture.

- 1st red, power +5V провод красный питание +5V
- 2nd brown, common
- 3rd yellow, informational, from A9 on controller (output) to RX on converter (input).
- 4th green, informational from TX on converter (output) to A10 on controller (input). Connection sequence:

Rearrange the jumper on the convertor board to 3.3V, 5V contact remains free;



Connect the freed 5V contact with the 5V contact of the controller board contact via the red wire; Connect common outputs of converter (GND) and controller (G) via the brown wire;

Yellow wire connects A9 on controller (output) with RX on converter (input);

The green one connects TX on converter (output) with A10 on controller (input).

Such configuration allows you to avoid death of microcontroller in case of accidental applying 5V to the output ports of the converter if you forget to rearrange the jumper.



The only hardware thing left is to connect converter to PC via the micro USB cable. However, before you need to download as well as the programmer software.

 You are welcome to download the firmware from one of the links below: Google Drive: <u>https://drive.google.com/open?id=1g5eqV_OeZVYaQT4km8bjpoutT9iPgOI0</u> Facebook group: <u>https://www.facebook.com/groups/336136297134996/</u>

4. Programming

Download the programmer software from the microcontrollers' manufacturer <u>website</u>. Execute the program.

I Flash Loader Demonstrator X	🧼 Flash Loader Demonstrator — 🗌 🗙
life.augmented	life.augmented
Select the communication port and set settings, then click next to open connection. Common for all families C UART	Target is readable. Please click "Next" to proceed.
Port Name COM4 Parity Even Baud Rate 115200 Echo Disabled Data Bits 8 Timeout(s) 10	Remove protection
	Flash Size 128 KB
	Back Next Cancel Close
Back Next Cancel Close	

Select port, to which you connected USB-COM converter and Baud Rate 115200. (how to find out the port name see below in the attachment) Press -> Next Press -> <u>N</u>ext

🧼 Flash Loader Demonstrator — 🗌 🗙	🧼 Flash Loader Demonstrator — 🗆 🗙
life.augmented	life.augmented
Please, select your device in the target list	
Tarret CTN22E1 Med device 120K	O Erase
PID (h) 0410	All O Selection
BID (h) NA	
Version 22	Download to device
Flash mapping	
Name Start address End address Size R W A	
🗞 Page0 0x 8000000 0x 80003FF 0x400 (1K)	Erase necessary pages O No Erase O Global Erase
≫ Page1 0x 8000400 0x 80007FF 0x400 (1K) □ □	@ (h) 8000000
See 2 UX 8000800 UX 8000BFF UX400 (1K)	
™ Page3 UX 8000000 UX 8000FFF UX400 (1K) ⊡ ⊡ ▲ Page4 0µ 9001000 0µ 90012EE 0µ400 (1K) ⊡ ⊡	Uptimize (Remove some FFs) [Verify after download
Page 0x 8001000 0x 80013FF 0x400 (1K) P	Apply option bytes
Section 2001 1000 0x 8001 BFF 0x400 (1K) □ □	
💊 Page7 0x 8001C00 0x 8001FFF 0x400 (1K) 🕒 🛅	Upload from device
💊 Page8 0x 8002000 0x 80023FF 0x400 (1K) 🕒 🖪	Upload to file
🦠 Page9 0x 8002400 0x 80027FF 0x400 (1K) 🖪 🛅	
💊 Page10 🛛 0x 8002800 🖉 0x 8002BFF 🛛 0x400 (1K) 🕒 🛅	
🙈 Page11 0x 8002C00 0x 8002FFF 0x400 (1K) 📑 📑 🗡	C Enable/Disable Flash protection
Legend : 😬 Protected 🔚 UnProtected	
Back Next Cancel Close	DISABLE VIEW WRITE PROTECTION
	C Edit option bytes
	Back Next Cancel Close

Press -> <u>N</u>ext

Select "**Download to device**". Search and destroy open downloaded firmware file **MC.HEX**.





Press-> Open

Then

Press -> <u>N</u>ext

Wait until the end of download



Press -> Close Congrats, you now have musical lighting controller with installed firmware!

Attachment: How to find out the COM port name

I will show you how to do this on Windows operating system; it will be easy to find the same for other systems in Google.

🐣 Диспетчер устройств \times 🗄 Диспетчер устройств \times <u>Ф</u>айл <u>Д</u>ействие <u>В</u>ид <u>С</u>правка <u>Файл Действие Вид С</u>правка 🗢 🔶 п 🗐 🗐 🖉 🤛 🗢 🔿 | 🖬 | 🗐 | 🛿 🖬 | 💻 | 💺 🗙 📀 ∨ 🛃 papaPC ✓ 🛃 papaPC > 🚯 Bluetooth > 🚯 Bluetooth > 🧟 DVD-дисководы и дисководы компакт-дисков > 🧟 DVD-дисководы и дисководы компакт-дисков > 📃 Jungo Connectivity > 📃 Jungo Connectivity > 🐗 Аудиовходы и аудиовыходы > 🧽 Батареи > 📓 Аудиовходы и аудиовыходы > 🏣 Видеоадаптеры > 🥁 Батареи > 🕳 Дисковые устройства > 🌄 Видеоадаптеры > 10 Другие устройства > 👝 Дисковые устройства > 🖣 Звуковые, игровые и видеоустройства > 10 Другие устройства > 🔤 Клавиатуры > 4 Звуковые, игровые и видеоустройства > 💻 Компьютер > 🔤 Клавиатуры > 📹 Контроллеры IDE АТА/АТАРІ > 💻 Компьютер > 🏺 Контроллеры USB 📹 Контроллеры IDE ATA/ATAPI 🕍 Контроллеры запоминающих устройств > > Контроллеры USB 🖷 Модемы > > > 📃 Мониторы У San Контроллеры запоминающих устройств > II Мыши и иные указывающие устройства > 🖳 Модемы > 📇 Очереди печати > 🔜 Мониторы > 💭 Порты (СОМ и LPT) > Мыши и иные указывающие устройства > 📱 Программные устройства > 📇 Очереди печати > 🔲 Процессоры 🗸 🛱 Порты (СОМ и LPT) 🚍 Сетевые адаптеры > USB Serial Port (COM5) > 🏣 Системные устройства > 📱 Программные устройства > 🐺 Устройства HID (Human Interface Devices) > 🔲 Процессоры Устройства обработки изображений > 🚍 Сетевые адаптеры > 🏣 Системные устройства > 🐺 Устройства HID (Human Interface Devices) Устройства обработки изображений

First, press on the start button, then type *devmgmt.msc* and press Enter.

Select Ports (COM & LPT)

Here will be the port you needed, in my case it is **USB Serial Port**, my **USB-COM** converter. If you have more than one COM port in the list, you will probably easily figure out, which one is right.

Good luck!