LEDs driver & sequencer

FMod-LEDSEQUENCER

User's manual

Version 1.1

f i v e co
innovative engineering

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Warning

This device is not intended to be used in medical, life-support or space products.

Any failure of this device that may cause serious consequences should be prevented through the implementation of backup systems. The user agrees that protection against consequences resulting from device system failure is the user's responsibility. Changes or modifications to this device not explicitly approved by FiveCo will void the user's authority to operate this device.

Support

Web page: http://www.fiveco.ch/
e-mail: support@fiveco.ch

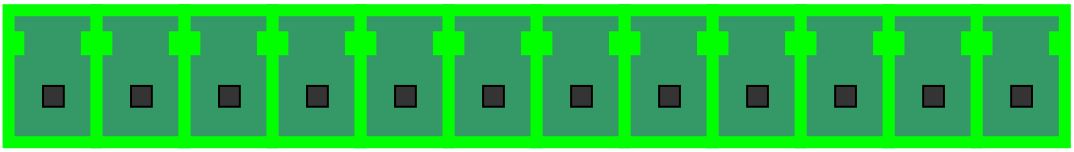
SUMMARY

Revision history

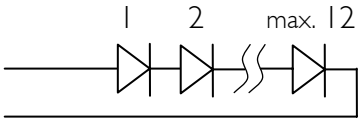
Revision	Date	Author	Note	Firmware version	Applet version	Win32 app version
1.0	20.03.07	AL	- First approved version	Since 1.0	1.0	-
1.1	04.04.08	AL	- Quick start	Since 1.0	1.0	-

1 Hardware Specifications

Main connector



PIN	Function
1	Gnd (0V)
2	PWR (10-48V)
3	LED1 +
4	LED1 -
5	LED2 +
6	LED2 -
7	LED3 +
8	LED3 -
9	LED4 +
10	LED4 -
11	LED5 +
12	LED5 -



Power Supply

- Power supply : 10 - 48 VDC
- Max current : All LEDs current + 100mA , (max 2.6A)
- Operating temperature : 0 – 70 °C
- LEDs output voltage : < (Supply voltage - 2V)
- LEDs output current (each) : 0mA, 10-500mA ±5mA

The RJ45 connector is protected against electrostatic discharges but the other components aren't.

Power supply selection:

Voltage	Number of LEDs per line		
12 V	1 – 2		Power [W] = Number total of LEDs connected to the device * 1.75 + 2
15 V	1 – 3		
24 V	1 – 6		
36 V	1 – 9		
48 V	1 – 13		

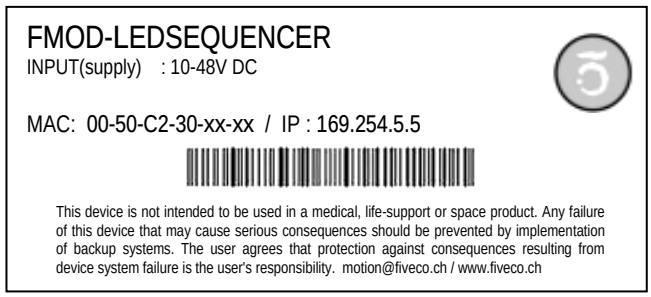
Warning

During the installation process, it is important to make sure that the exit lines are not crossed (example: a LED being plugged to LED1+ and LED2-). This could permanently damage the LEDs as well as the module itself.

2 Quick start

This section is intended to help users quickly plug the device into their system and establish a connection between the computer and the device. Detailed information about hardware and software is provided further in this document.

You can find the device's factory communication settings on the box label.



The MAC Address is the 48bits unique identifier on Ethernet networks. The IP Address can be modified. The complete procedure is described further in this manual.

Plug and Play

1. Connect DC power (10-48V) to the device.

2. Connect the device to a computer using a RJ45 **cross wired** cable (direct-link), or with a straight cable to an Ethernet-switch.

3. Download from www.fiveco.ch the windows application "ChangeIPAdd.exe" to your hard disk.
   Link: http://www.fiveco.ch/section_engineering/projects/leds_E.htm

4. Deactivate your computer's firewall software or configure it to accept TCP/IP connections and broadcast messages from "ChangeIPAdd.exe".

5. Run "ChangeIPAdd.exe" to configure the FMod-LEDSEQUENCER IP's address to a valid IP of your network. See "Changing IP address" chapter for more details.

6. Thanks to your web browser, you can visit the embedded web page to the following IP address: "http://169.254.5.5 (default IP address).

Changing IP address

To easily change the factory IP address, user can use the Win32 software provided on the CD-Rom.

1. Plug your new device on your PC network.
2. Start the Win32 application "ChangeIPAdd.exe".
3. The software scans the network and displays a list of all FiveCo's devices found.
4. Select the MAC address corresponding to your new device.
5. If you have more than one network adapter on your PC, the software asks you to select the one which is connected to the same network as the FMod-LEDSEQUENCER.
6. The software suggests a new IP address without the last byte. Choose a new IP (**that is not already used on your network!!**) and click the "Change IP address" button.

That's it! The device has a new address and a new subnet mask (the same as your PC). These are automatically saved into EEPROM.

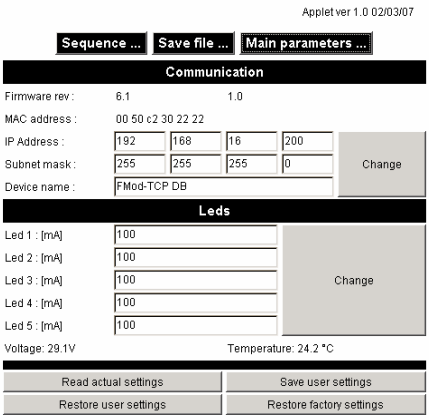
You can now open the embedded web page by typing its new IP address into a web browser.

Remark:
The IP address won't be changed if a TCP connection exists with the device.

3 Software

General Information

The embedded web page allows for a complete configuration of the sequencer. Besides programming the sequence, it also allows access to the following parameters:

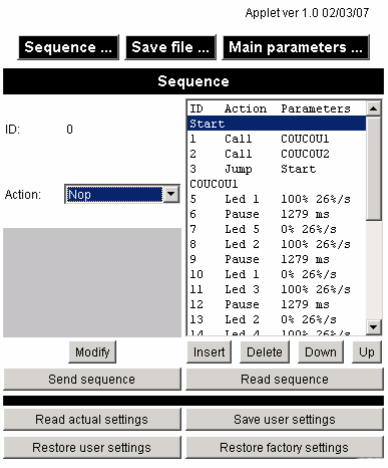


Setting of communication parameters.

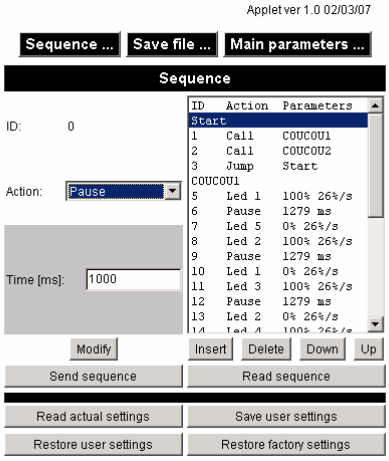
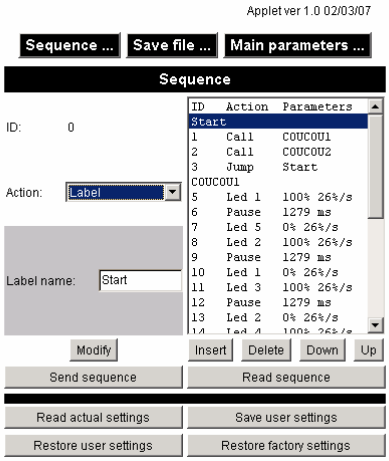
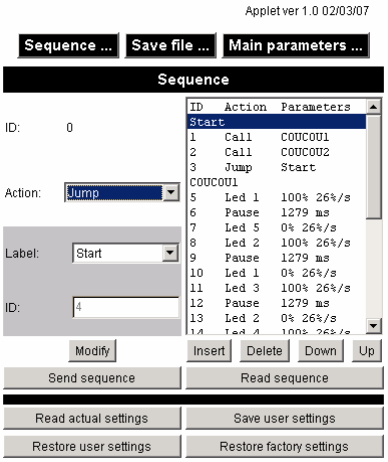
Setting of the maximum current for each LEDs' output.

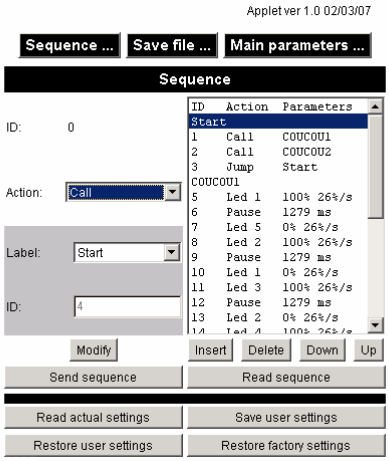
Sequencer's Programming

The sequence's programming consists of various elements being executed one after the other. Each of those elements can be configured as follows:

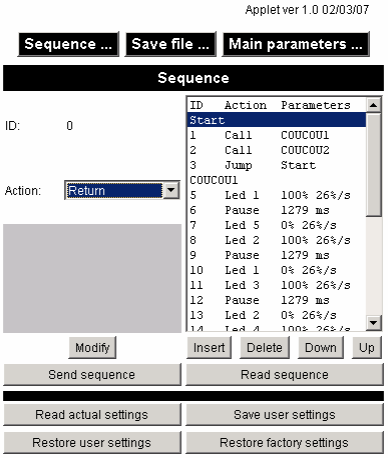


This instruction has not been assigned to a given operation. NOP thus means No Operation.

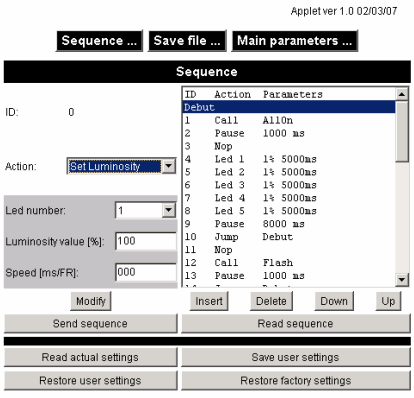
	This command allows for a pause. The length of this pause is indicated in milliseconds.
	This command allows for the labeling with a name of a given point of the program.
	This command allows for a jump towards a specified Label.



This command will allow for a jump towards a given Label, followed by a return to the next instruction upon the execution of the « Return » command.



This command allows leaving a block previously pulled up through a Call.



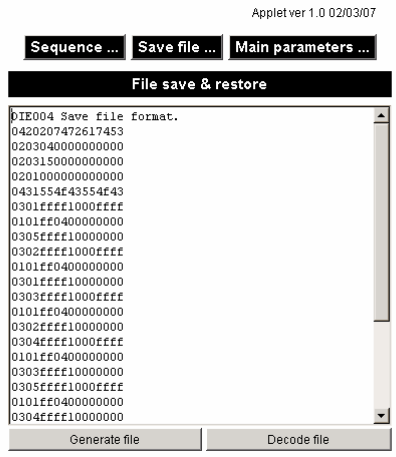
This command will turn on or turn off a LED output by specifying :

- The LED's exit number.
- The desired light's strength.
- Time allowed to achieve it

(time allowed to go from 0 to 100%)

File Management

For security purposes and as the programming is done through the web page (Java applet), it is not possible to access the reading and writing features of a file. However, a method exists which allows the user to save a sequence through the use of a word processing software. One will simply need to copy the information and data found in the 'Save file' memo to a word processor (such as Notepad under Windows) and to paste it back to the Memo when needed.

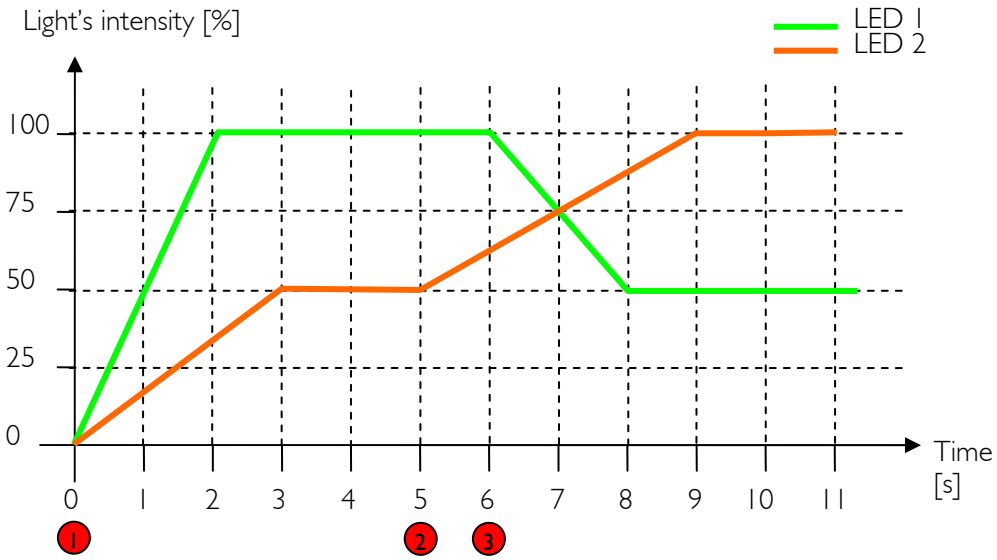


The « Generate file » button allows for the generation of the sequence's raw data from the list of commands.

The « Decode file » button allows for the filling of the list of commands, based on the raw data

4 Example

Suppose the following:



From a programming point of view, the sequence is as follows:

1. SetLuminosity (1, 100%, 2'000ms)
   SetLuminosity (2, 50%, 6'000ms)
   Wait (5000ms)

2. SetLuminosity (2, 100%, 8'000ms)
   Wait (1000ms)

3. SetLuminosity (1, 50%, 4'000ms)

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