



Lumen Light for Aquascaping

Timeable LED Controller - 5 channel (USB + software) TC420

User Guide and Waste Management Instructions



Technical Informations

- Distributor: Lumen Aquatech DOO
- Type: FullColor (WW + RGB) controller
- Voltage 12-24 Volt DC
- IP rating : IP20
- Number of channels: 5 channels
- Amperage: 20 Amper
- Max power: 480 Watt (under 24V)
- Width: 78 mm
- Length: 183 mm
- Thickness: 24 mm
- Input : GX16 2P connector
- Output GX16 7P connector
- Control mode: Pulse Width Modulation (PWM)
- Built-in switch: Timer
- Color: Black
- Smartphone application: Not available. Independent operation.
- Remote control: Not available.

Safety Instructions

- The device is only usable with the light units produced by Lumen Aquatech DOO. Connecting different types of lighting devices is forbidden.
- Do not extend or connect the cables in a non-standard way.
- The light source emits heat during operation, thus it should not be used near flammable materials.
- The device must be protected from strong impurities and rough external influences. Furthermore, knocking, drilling or modifying it in any way is strictly forbidden! It's also forbidden to use or to install it with any electronic product with a broken or defective connector!
- Devices operating on 12 or 24 volts of extra low voltage must NOT be connected to the 230V main power source, because of the high risks of electric shock, accident and fire! The device can only be connected to the power supply specified by Lumen Aquatech DOO! Failure caused by supplying the device with incorrect voltage is not a warranty defect!
- Covering the device is flammable, thus strictly forbidden! When installing such products, make sure that the unit is well ventilated.
- In humid environments, only use suitable products with IP44 or higher intrusion protection. Products with protection below IP44 can cause electric shock in humid, wet environments!
- Never touch wet / humid electronic devices under voltage!
- To protect children, store electronic devices out of their reach!
- Never look directly into the light source!
- Electrostatic discharges (ESD) may damage internal electronic components!
- Ignoring the instructions given in this guide may result in fire, electric shock, burns, personal injury, and other property and non-property related damage. Our company cannot be held responsible for the lack of compliance with this guide.

Introduction and features of the LED controller

The timeable LED controller comes with one input and one output for easier operation and ensuring secure connection. The connectors consist of an IN- and OUT-put, and due to their design, they cannot be interchanged or connected with the opposite polarity. When the controller is disconnected from the lamp, it can be independently connected to a USB port on your PC, which allows you to program your own lighting programs/presets, using it's software.



Our lamps work according to the instructions given by the programs written on the controller, or the programs you have uploaded via it's PC software. The controller can be connected to a computer via USB to upload the programs you create.



The controller can handle 5 (independent) channels, by controlling the PWM of the negative side of LED panels. The channels are set to the following colors: CH1: White, CH2: White, CH3: Red, CH4: Green, CH5: Blue.

Operating principle of the controller: Using the software included on the CD (or by downloading it from our website), enables you to specify 50 time intervals within a program. For each time interval, you can set a specific brightness level for each of the 5 channels, as well as specifying the way of how the brightness will change within the given time interval from point A, to point B (continuous transition, or a single sudden shift (jump)).

There are 4 buttons on the controller, with the following options:

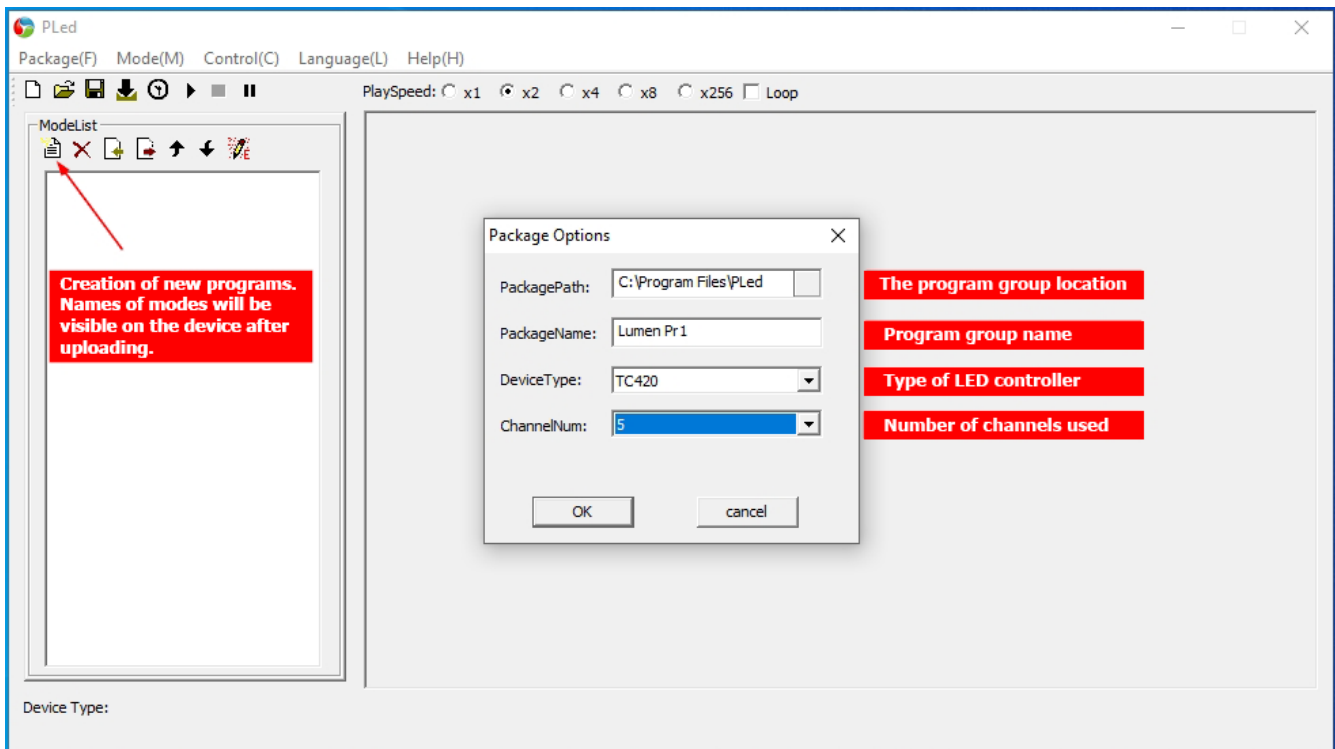
- Menu: Return from a menu item.
- Enter: Select (eg. entering a menu item)
- Up/Down: navigating within the menu, or increase/decrease of values.

The LED controller menu has the following options:

- 1. Mode: Choosing between programs written by your computer.
- 2. Setup: Date and time settings, and device beep.
- 3. Run: Runs the selected program.

Programming the LED controller

- 1. Install the software (PLed) on your PC, from the included CD (or by downloading it from our website).
- 2. Connect the controller to your computer with the USB cable.
- 3. Your computer will automatically recognize the controller as a standard USB device.
- 4. Run the PLed software.
- 5. Inside the software, create a new program group (Package->New Package)
- 6. The following window pops up with options for the program group store location, name, and device type (TC420), plus the number of channels you want to program. In our case of Lumen Light for Aquascaping lamps, this always means 5.



- 7. We'll get a new, empty programming space, in which we can create our first program (Mode->Insert) or by clicking on the „New mod file” (see picture, creation of new programs).

- 9. With the „Add” button we can add a new time point, having complete flexibility to alter each channel value. This step is repeated as long as necessary.
- 10. When done with programming, navigate to (Control->Download) to upload the program group(s) to your controller.
- 11. Disconnect the cable from the controller, then connect it to the power supply and the LED lamp.
- 12. Using the navigation buttons, navigate to the third point of the menu (RUN), and your program is ready to run.
- 13. If you don't like your program, or you'd like to change it, simply connect the controller to your computer, open up the PLED software, open your program package (Package - > Open), and edit your program to your liking. Once you're done with programming, upload it to your controller by choosing (Control -> Download).
- 14. If you'd like to delete the already present programs from your controller, choose (Control -> ClearAll). This will remove the existing programs from it. The device shows a „NULL” word on it's display, meaning there's no program available to run.



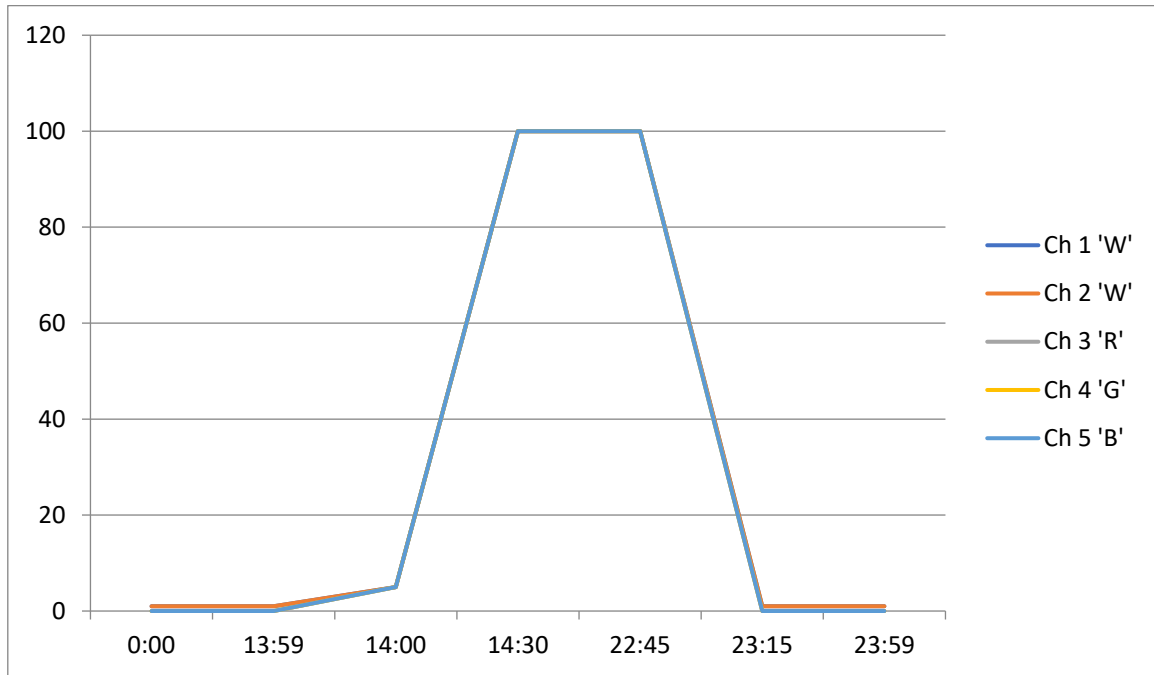
Example with detailed explanation:

Let's see how the software functions, and the logic behind it. On the picture below, we have a cycle. Each cycle lasts one day. Once the clock hits 00:00, the entire cycle repeats all over again. In order to avoid mistakes, we program our cycles from 00:00 to 23:59. This closes a full cycle - or a day.

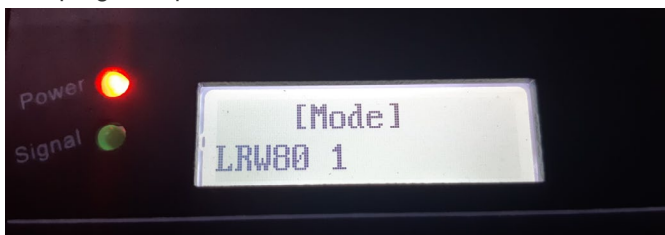
StepNo	TimePoint(H:M)	CH1 Value(%)	CH2 Value(%)	CH3 Value(%)	CH4 Value(%)	CH5 Value(%)
1	00:00	1	1	0	0	0
2	13:59	1	1	0	0	0
3	14:00	5	5	5	5	5
4	14:30	100	100	100	100	100
5	22:45	100	100	100	100	100
6	23:15	1	1	0	0	0
7	23:59	1	1	0	0	0

Based on the values specified in our example, the following happens... Let's see the first step (StepNo). On 00:00, Ch1 and Ch2 glows at 1% brightness, which is one white row of LEDs (We're using this as our night light, so our aquarium is visible in the dark. We can admire our nocturnal creatures in the „moonlight”). This row of LEDs remains on 1% brightness up until 13:59. On 14:00, within 1 minute, it raises from 1% to 5% (on all LED rows), while in the next step it continuously raises the brightness from 5% to 100% - getting to full brightness at 14:30. This will be our sunrise simulation. From this point on, our aquarium is under full brightness, which is kept unchanged all the way to 22:45, where our brightness starts to fade off to 1% - arriving there at 23:15. This is gonna be our sunset simulation. Lastly, going from 23:15, the light will keep operating at 1% brightness, until 23:59. From that point, our cycle starts all over from the beginning. Ch3, Ch4, and Ch5, are (as we can see), turned off within the time period of 23:15-23:59, since their specified values are 0.

For ease of understanding, this program (cycle) looks like this on the chart:



The program uploaded to the controller:



Using the software, our Lumen Light for Aquascaping lamps can be easily customized, and the possibilities are almost limitless. Color correction and light reduction can be easily handled, with altering the brightness percentages from 0 to 100 within a 24 hour cycle, on 5 different channels.

The software is included with the device in form of a CD, and additionally it's downloadable on our official website www.lumen-aquatech.com. Happy aquarization to everyone!