Typhon LED Controller Kit

Quick Overview

Typhon LED Controller (Typhon) is an Arduino-based platform that provides four independent output channels (both 5V PWM and 10V PWM signals) for dimmable LED drivers. This LED controller controls each channel with "Start" and "End" times, fade duration, and maximum intensity level.

What's Included:

- Typhon LED Controller with ATMega328P chip and LCD screen.
- 12V AC/DC Power Adapter (Universal).
- (4) 2-pin JST Wire Connectors.

What You Need:

- Project Box *(HIGHLY recommended to physically and electrically isolate the Typhon preventing premature failure and/or electrical shock).*
- Soldering Iron and Solder.
- Electrical Tape or Heat Shrink Wire Wrap.
- Optional FTDI USB Cable with 6-pin connector to update the Typhon with new/modified Arduino sketches.

Disclaimer Notice

Please read the entire manual before using the Typhon LED Controller. By using the Typhon LED Controller, you agree that BoostLED™ will not be held responsible for any injury and damage as a result of using the Typhon LED Controller.

Although the information and recommendations in this manual are presented in good faith and believed to be correct, BoostLED™ makes no representations or warranties as to the completeness or accuracy of the information.

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Credit

BoostLED™ gives full credit to N. Enders and R. Ensminger who designed and created the Typhon. The original Arduino sketch has been minimally modified to give a better user interface. This Typhon unit has been assembled by BoostLED™ and brought to you under Creative Commons 3.0 BY-SA.

Helpful Links

MeanWell LED Drivers: http://www.meanwell.com/webnet/search/seriessearch.html

LuxDrive™ 3021 BuckPuck: http://www.luxdrive.com/content/3021-BuckPuck.pdf

Arduino: http://www.arduino.cc

Compatible Dimmable LED Drivers

Meanwell LED Drivers

- ELN-30-XXP, ELN-60-XXP (such as ELN-60-48P)
- HLN-40H-XXB, HLN-60H-XXB, HLN-80H-XXB
- LPF-XXD

LuxDrive™ 3021 BuckPuck

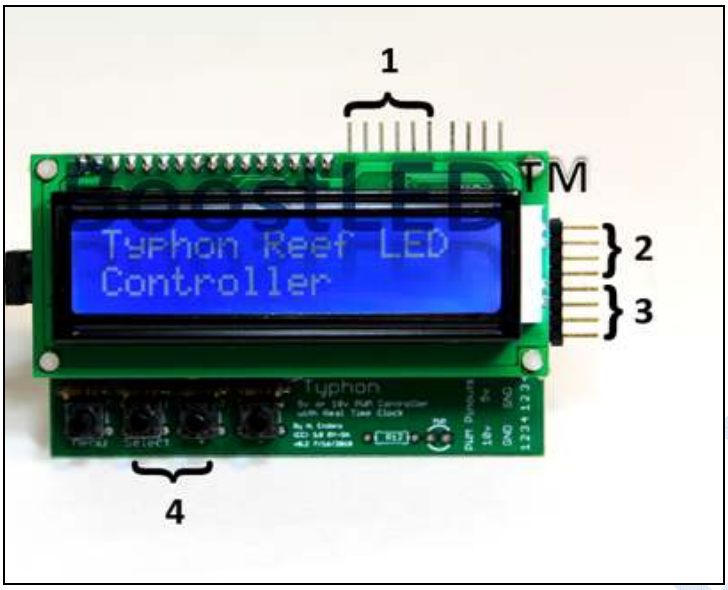
- 3021-D-E-XXXXmA

NOTE: BuckPuck LED drivers have **inverted** 0-5V PWM input signals. Thus, 0% intensity on the Typhon will increase the driver output to 100%, and 100% intensity on the Typhon will decrease the driver output to 0%. Easy solution: Set the "Start Time" on the Typhon to the desired time when you want the LED channel to turn “OFF”, and vice versa.

Any dimmable LED drivers with 5V PWM or 10V PWM input should work. Check out our website at http://www.boostled.com for an updated list of compatible LED drivers.

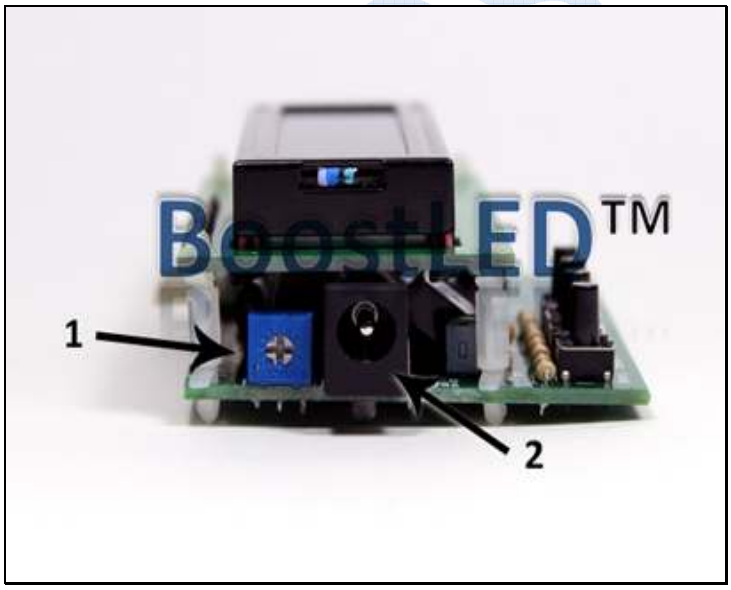
Typhon LED Controller Diagrams

Figure 1.



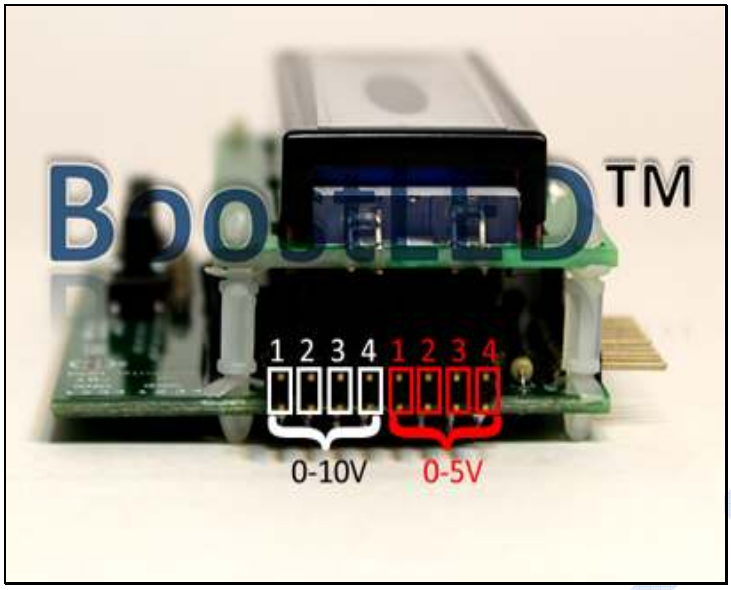
- (1) – 6-pins for FTDI USB Cord (used for uploading new Arduino sketches).
- (2) – 5V PWM Channels.
- (3) – 10V PWM Channels.
- (4) – “Menu”, “Select”, (+), and (-) Buttons.

Figure 2.



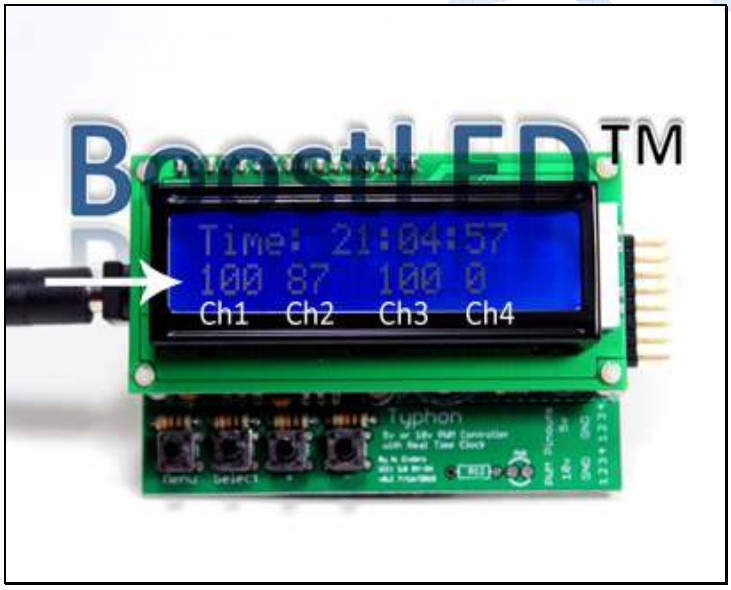
- (1) – LCD Contrast Adjuster.
- (2) – Connector for Power Adapter.

Figure 3.



- **NOTE:** Top row of pins connect to (-) of PWM input on LED driver and bottom row of pins connect to (+) of PWM input on LED driver.
- White color denotes 10V PWM Channels.
- Red color denotes 5V PWM Channels.

Figure 4.



- Arrow shows level of LED intensity (%) for each channel.

Initial Set Up

1) Before you begin, ensure the dimmable LED drivers and Typhon are **unplugged** and **OFF**.
2) Solder the 2-pin red & black wire connector to the PWM input wires of the LED driver.

   For example on the Meanwell ELN-60-48P, the blue wire is (+) PWM input and the white wire is (-) PWM input.

3) After soldering, cover the connection with electrical tape. For better results, use heat shrink wire wrap.
4) Before connecting the 2-pin connector to the Typhon, set the maximum current output of the LED driver to that of the LED with the lowest "maximum forward current." If the LED driver is not adjustable, use a multimeter to ensure that the maximum output current of the LED driver **DOES NOT EXCEED** the specifications of the LEDs.
5) Connect the 2-pin connector to the Typhon. See Figure 3.
6) Connect the LED driver output wires to the LEDs.
7) Plug in the power adapter of the Typhon and then the power cord of the LED driver.
8) The Typhon will power up and idle at the screen with the time and intensity levels of the 4 channels. See Figure 4.

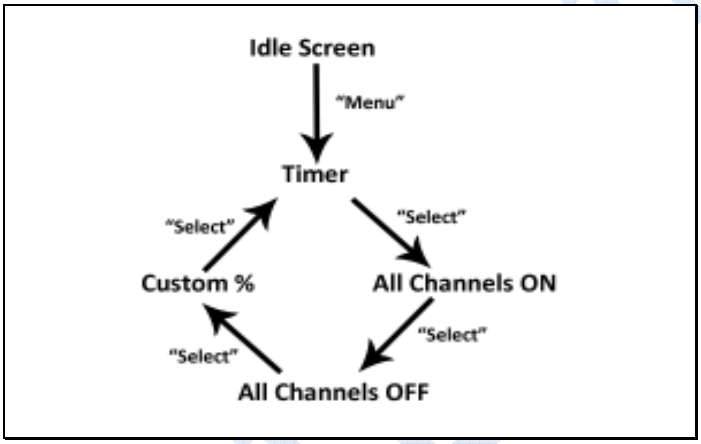
Setting the Time:

1. Push "Menu" until reaching the "Set Time: Hrs" menu.
2. Push the (+) or (-) buttons to adjust the hours.
3. Push "Menu" again moving forward to the "Set Time: Mins" menu.
4. Adjust the minutes using the (+) and (-) buttons.

Setting the Modes:

1. By default, the Typhon is set to "Timer" Mode. The other modes are "All Channels ON", "All Channels OFF", and "Custom %".
2. To adjust the mode, push "Menu" and then "Select" to scroll through. See Figure 5.
3. "All Channels ON" and "All Channels OFF" will change the intensity level to 100% and 0%, respectively.
4. "Custom %" allows adjustment of the light intensity for all the channels at once.

Figure 5.



Setting the Timer, Fading Duration, and Maximum Intensity:

1. To set "Start" and "End" times, fade duration, and maximum light intensity for the LEDs controlled by Channel 1, push "Menu" twice to reach "Channel 1 Start."
2. Push and hold down either (+) or (-) buttons to set the desired start time.
3. Push "Menu" to move forward to "Channel 1 End." Use the (+) and (-) buttons to set the desired end time.
4. Push "Menu" to move forward to "Channel 1 Fade Duration." Using (+) and (-) buttons, adjust the duration of fade time (HH:MM) of light intensity for Channel 1.
5. Push "Menu" to move forward to "Channel 1 Max Level." Adjust maximum intensity from 0-100% with the (+) and (-) buttons.
6. Push "Menu" to move onto the next channel.
7. Repeat steps 2-6 for the other 3 channels, if you plan to use them.

Troubleshooting

1) The Typhon LED Controller turns on, but the LCD screen is blank or the letters appear faded.
    a. Ensure that the power adapter is plugged in.
    b. Use a small screw driver, *carefully* turn the LCD Contrast Adjuster to the desired level. Refer to Figure 2.

2) The Typhon turns ON and is connected to the LED driver, but the LEDs won't turn on or adjust appropriately.
    a. Make sure the LED driver is connected to an electrical socket and ON.
    b. Ensure 2-pin connector is connected to the correct channel. Refer to Figure 4.
    c. Double check that the (+) PWM input is connected to the bottom pin and the (-) PWM input is connected to the top pin for that channel.

3) The LEDs appear to be only at 50% intensity even though the Typhon states 100% intensity.
    a. Ensure that the power adapter connected to the Typhon is at least 10.5V DC.
    b. Do not use the FTDI USB cable to power the Typhon.
    c. If the LED driver has an adjustable current, use a multimeter and check the maximum current output. Note: 100% intensity level on the Typhon will only as high as the set output current on the LED driver.

4) The clock has stopped ticking.
    a. Go to "Set Time: Hrs" and "Set Time: Mins", and adjust accordingly. It should automatically reset itself and work again.

If you have further questions/concerns or comments, feel free contact us at info@boostled.com.