

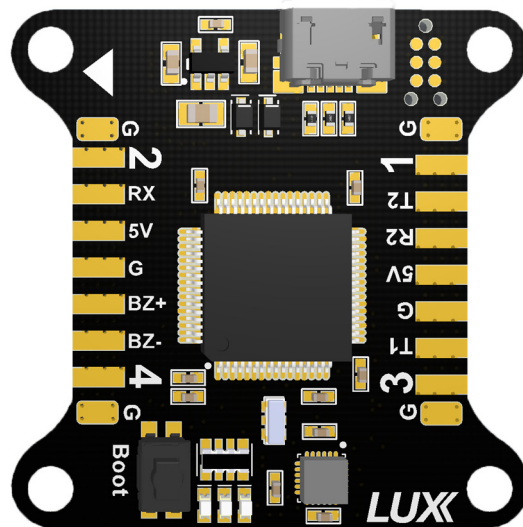


LUX

FLIGHT CONTROLLER

VERSION 1.1

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USER MANUAL

Lumenier *LUX* Flight Controller

Lumenier *LUX* Flight Controller provides high quality flight control using Lumenier's high standards and technological expertise. Please read this manual before soldering or configuring your Flight Controller.

Instructional icons



Warning: situations that could cause injury to yourself or others



Caution: situations that could cause damage to your device or other equipment



Note: notes, tips, or additional information

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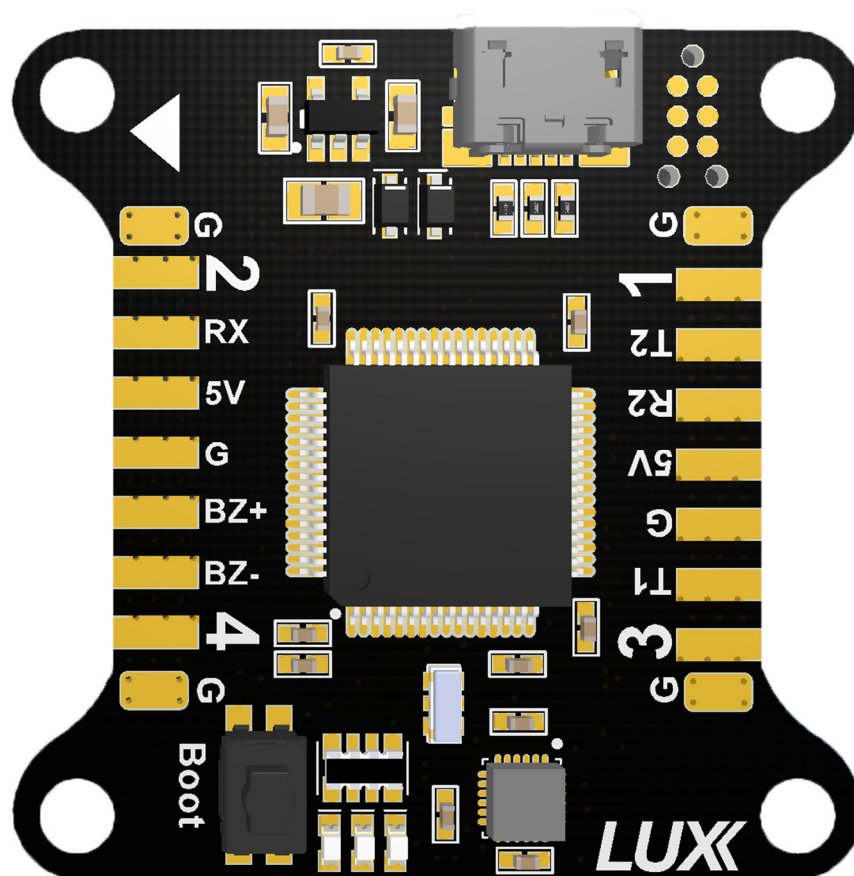
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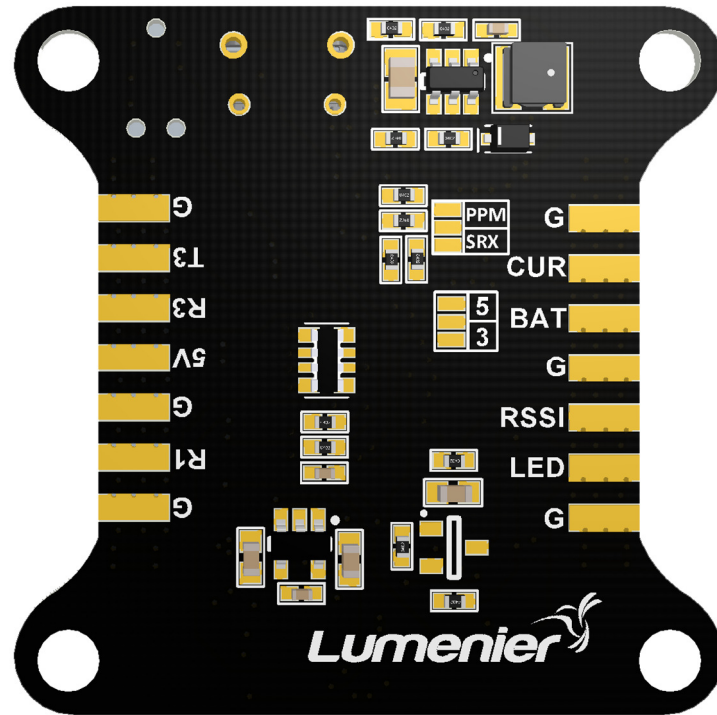
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GETTING STARTED

Board Layout



Pin	Function
G	Ground
2	PWM Output (Motor 2)
RX	RX Input (PPM,S.BUS, SUMD / 3.3-5v / GND)
5v	Receiver Voltage (3.3v-5v)
BZ+	Buzzer +
BZ-	Buzzer -
4	PWM Output (Motor 4)
1	PWM Output (Motor 1)
T1/T2/R2	UART1 TX, UART2 TX, UART2 RX
5v	5v output
3	PWM Output (Motor 3)



Pin	Function
G	Ground
T3/R3/R1	UART3 TX, UART3 RX, UART1 RX
5v	5v Output
CUR	Current Sensor
BAT	Input voltage 6-26v (2-6S lipo)
RSSI	RSSI
LED	Digital LED Output
PPM/SRX	Bridge PPM for PPM. SRX for SBUS, SUMD, other serial connections



The accelerometer and gyroscope need to initialize every time the board is given power.

- Do not disturb the **LUX** board or your quad while powering on.
- Do not disturb the **LUX** board or your quad while plugging in.
- Wait until the initialization sequence is completed. When the activity LEDs settle, you can move the quad/board.

Package Contents

Check the product box for the following items:

- *LUX* FC
- Pin Headers (Straight and Right Angle)
- Quick start guide

Device Specifications

- STM32F303 32-Bit Processor
- MPU6500 MEMS gyro/accelerometer
- STM32 DFU mode for bootloader + software
- Up to 26v (6S lipo) input
- 5v 1.0A output
- 3v/5v RX Voltage Output Selectable



Do not use *LUX* for unintended applications such as commercial aerial photography.

BASICS

Hardware Setup



Make sure to select your RX input and logic level by bridging the appropriate jumpers.

- Bridge only 3v for SPEKTRUM satellite.
- Bridge only 5v for Futaba, FRSKY S.BUS, ORANGE, etc. (no signal inverter needed).
- Select PPM for PPM, or SRX for Serial RX.
- The 3v jumper only changes voltage output for 5v pad next to **RX**.

Connect ESC signal wires

- Connect the corresponding ESC signal wires to pins **1, 2, 3, 4** on page 2.
- Ground wires can be connected to the pins labeled **G**.

Connect RX

- Connect signal (PPM/SRX), power (3.3-5V), and GND pins to your receiver.

Enable Telemetry

- Connect RX port on Receiver to UART pin **T1, T2, or T3**.

Enable feature in CLI: **feature TELEMETRY**

In the **Ports** tab in Cleanflight, select the **Telemetry** dropdown to output data on selected UART.

Connect Buzzer

- Connect buzzer +/- to pins **BZ+** and **BZ-**.

Connect Blackbox Device

OpenLog serial data loggers work over simple serial connections and support microSD cards up to 64GB. Your **LUX** flight controller has **3** separate hardware serial (**UART**) TX/RX pin pairs.

- Connect VCC/TX/RX/GND to corresponding pins labeled **T1/R1/T2/R2/T3/R3**.

Enable feature in CLI: **feature BLACKBOX**

set blackbox_device = 0

In the **Ports** tab in Cleanflight, select the checkbox to enable Blackbox on the **UART** you choose. It is recommended **not** to connect a wire from **TX** pin on OpenLog logger to **RX** pin on **LUX**.



Connect LED Strip

You can connect an addressable LED strip (WS2812B) to the *LUX* flight controller. Connect your LED strip to pins labeled **LED**.

Enable feature in CLI: **feature LED_STRIP**

Connect Battery (Main Power connection)

Your *LUX* flight controller has input voltage 6-26v (2-6S lipo). Connect main power lead to pins labeled **10**.



Always check the polarity before plugging in. There is no reverse polarity protection.

Enable feature in CLI: **feature VBAT**

Connect Current Sensor

Connect a current sensor signal wire to the pin labeled **9**, and corresponding GND wire.

Enable feature in CLI: **feature CURRENT_METER**
current_meter_type 1

Connect OSD (On Screen Display)

You can connect a compatible OSD to your *LUX* flight controller. Connect the corresponding **TX** and **RX** pins to USART1 labeled **T1/R1**.



For MWOSD, remember to change Voltage/Amperage/RSSI to “Use FC”.

Connect RSSI

Connect RSSI pin from your receiver to *LUX* pin **RSSI**

Connect GPS

GPS features in Cleanflight are experimental. Please share your findings with the developers. GPS works best if the GPS receiver is mounted above and away from other sources of interference. Connect GPS TX/RX/5v/GND pins to corresponding **TX** and **RX** pins (TX to RX, RX to TX).

Enable feature in CLI: **feature GPS**
set gps_provider = 0 (nmea only)
set gps_provider = 1 (UBLOX only)

Software Installation/Setup

Hardware Driver

Your Lumenier **LUX** has a Micro-USB connector. Hold the “boot” button while plugging in for the first time. The LUX has two modes. It switches to “DFU” mode while the “boot” button is pressed as it is plugged in.

Windows users:

- Download Zadig from <http://zadig.akeo.ie>
- Open Zadig, choose Options > List All Devices
- Select STM32 Bootloader, WinUSB
- Click “replace driver” or “install driver”

Mac/Linux users:

Driver will install automatically

Cleanflight Configurator

Cleanflight Configurator from the Google Web Store will be used to configure your Lumenier **LUX** board.

- Download: <http://chrome.google.com/webstore>

Alternative Firmware Upgrade

Should Cleanflight Configurator stop working with your device, or your device becomes corrupted, you can restore **LUX** to factory defaults with a standalone utility.

Windows users:

Firmware upgrade utility - <http://bit.do/LUXDfuSe>

Use drivers from Windows Update

Mac & Linux:

- “DFU Util” “dfu-util” from the command line.



ADVANCED FEATURES

PID Stick Tuning (OSD)

MW OSD

Your **LUX** flight controller can be programmed via stick positions, using your OSD (On Screen Display) to display and change settings.

To access the OSD menu, make sure your **LUX** board is disarmed. Move the **Throttle** position to middle, **Yaw** right, **Pitch** up. Change PID settings by using **Pitch/Roll** for selecting a value, and **Yaw** for changing the selected value.

TROUBLESHOOTING

Firmware Upgrade

STM32 DFU MODE

Your **LUX** board can always be recovered and restored to factory defaults should you ever encounter software issues. Simply hold the “boot” button on your **LUX** board while plugging in the USB cable. You can release the button after plugging **LUX** into your computer.

STM32 DFU FLASH TOOL:

<http://bit.do/LUXDfuSe>

Follow the installer prompts, then select your device and firmware file. Windows users will need to uninstall the Zadig driver listed on page 7.

