Lumenier LUX F765 Flight Controller - NDAA
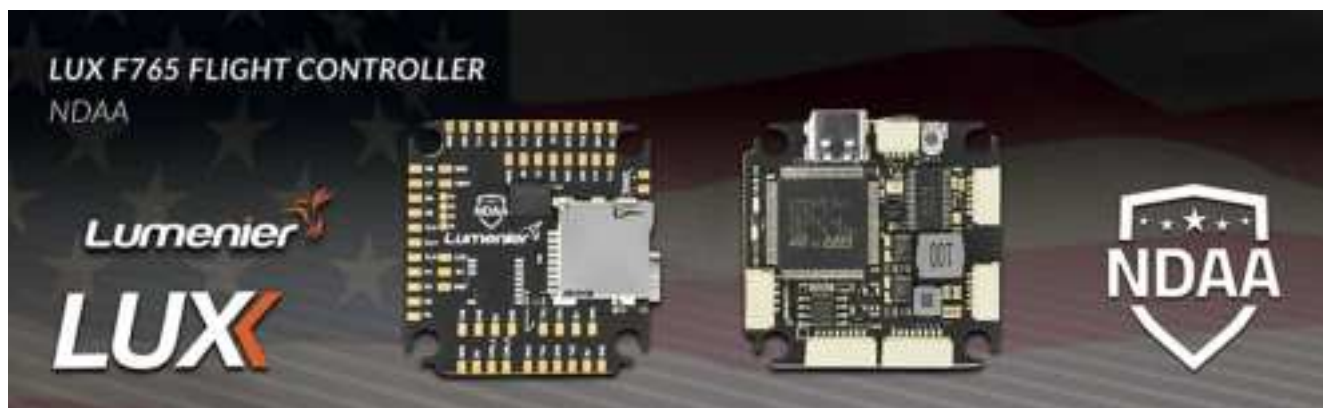
F765 / 5VBEC / 10VBEC / DJI FC Port / 8x UART / 8x PWM

MCU:	216MHz STM32F765
IMU:	ICM-42688
UARTs:	8
PWM output:	8x DSHOT, 4xPWM
I2C:	1
CAN:	1

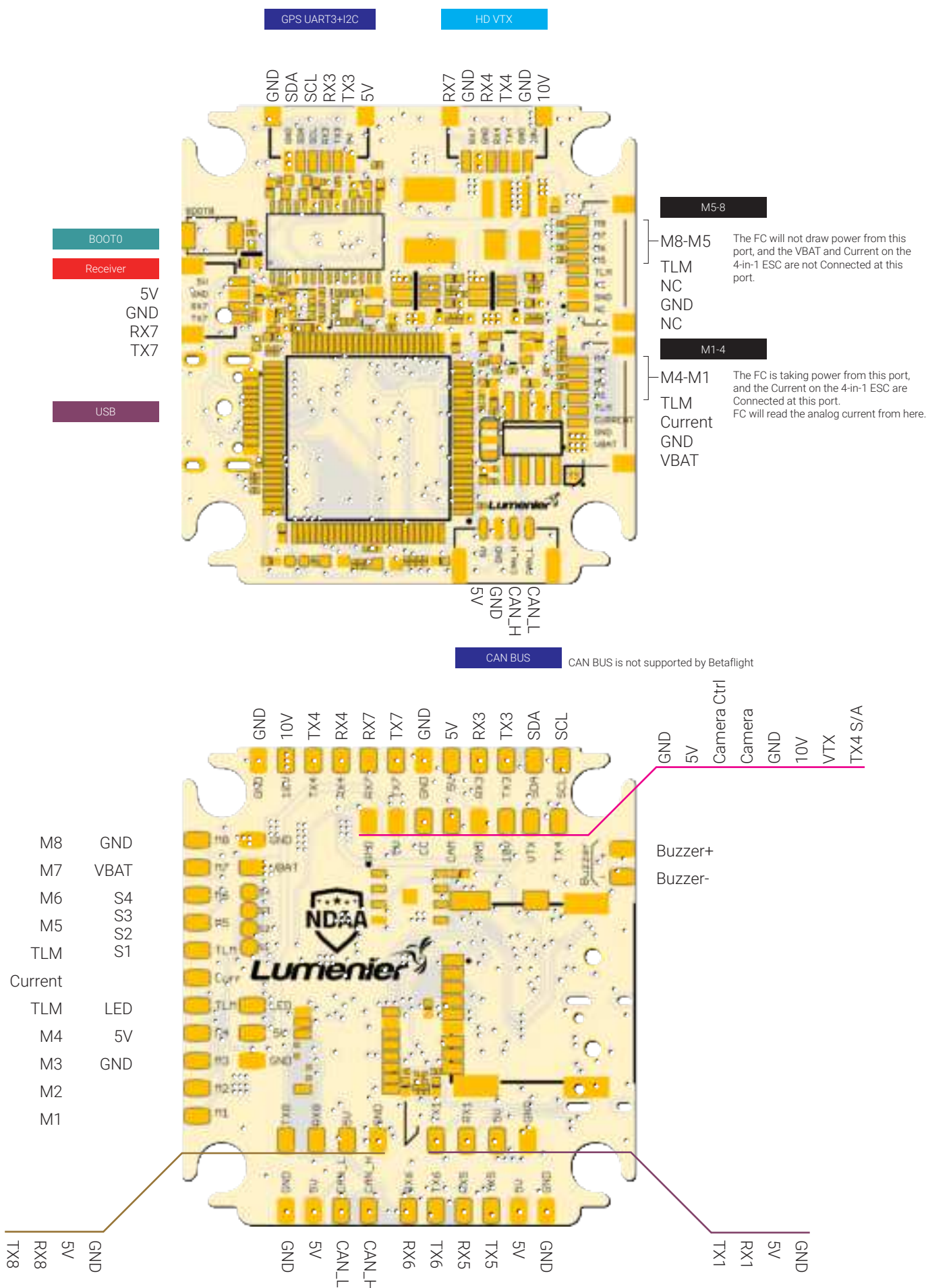|	
VBAT input:	8-36V, 3-6S Lipo
BEC:	5V 2.5A / 9V 2A
Blackbox:	128Mbit / 16MByte

Beeper/WS2812b LED Strip

Supported Firmware - Betaflight, Ardupilot, and PX4
Firmware: abc_Betaflight_x.y.z_STM32F745_LUXNDAAF7
Download in product page

Resources:

UARTs	Function	Notes
1	Spare	
2	TLM	RX Only
3	GPS	
4	HDOSD or Smartaudio	
5	Spare	
6	Spare	
7	Receiver	
8	Spare	

SPI	Function	Notes
1	Gyro	
2	Flash	Default Black box device
3	AT7456 OSD	
4	SD Card	Can't be used with Flash at same time

Layout / Pinmap

GPS UART3+I2C

HD VTX

GND SDA SCL RX3 TX3 5V

RX7 GND RX4 TX4 GND 10V

BOOT0

Receiver

5V
GND
RX7
TX7

USB

M5-8

M8-M5

TLM
NC
GND
NC

The FC will not draw power from this port, and the VBAT and Current on the 4-in-1 ESC are not Connected at this port.

M1-4

M4-M1

TLM
Current
GND
VBAT

The FC is taking power from this port, and the Current on the 4-in-1 ESC are Connected at this port.
FC will read the analog current from here.

5V
GND
CAN_H
CAN_L

CAN BUS

CAN BUS is not supported by Betaflight

GND 10V TX4 RX4 RX7 TX7 GND 5V RX3 TX3 SDA SCL

GND 5V Camera Ctrl Camera GND 10V VTX TX4 S/A

M8   GND
M7   VBAT
M6   S4
          S3
M5   S2
TLM   S1
Current
TLM   LED
M4   5V
M3   GND
M2
M1

Buzzer+
Buzzer-

TX8 RX8 5V GND

GND 5V CAN_L CAN_H RX6 TX6 RX5 TX5 5V GND
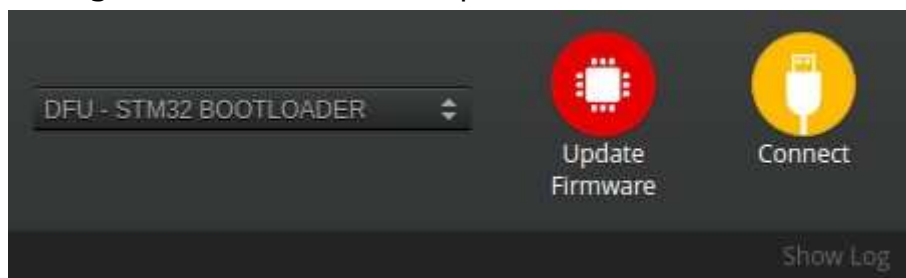
TX1 RX1 5V GND

Firmware Information

NOTE: The latest firmware files for the LUX F765 Flight Controller NDAA are only available on the [product page](#) at this time! Firmware files will soon be available directly in the Betaflight Configurator (Betaflight firmware) and QGroundControl/Mission Planner (Ardupilot and PX4 firmware). Please watch for updates and additional information on the [product page](#)!

Required Software:
- Betaflight Configurator – Offline or Online
- QgroundControl
- Mission Planner
- STM32CubeProgammer

How to flash Betaflight

1) Navigate to the Lumenier LUX F765 product page and download the latest Betaflight firmware file – abc_Betaflight_x.y.z_STM32F745_LUXNDAAF7.hex.

2) While holding down the "BOOT0" button on the flight controller, plug a USB-C cable into the flight controller and your PC. Only the flight controller's red LED should be lit.

3) Open the Betaflight Configurator and navigate to the the "Update Firmware" tab in the top right corner of the page. If not done automatically, connect to the flight controller by selecting "DFU – STM32 BOOTLOADER". NOTE: In some Betaflight Configurator versions, you will be asked to select the flight controller after clicking "Flash Firmware" in Step #4.


Update Firmware and Flight Controller Connection

4) Next, click "Load Firmware" in the bottom right corner of the page and select the Betaflight firmware file downloaded from the product page in Step #1. Click "Flash Firmware" to begin the firmware download to the flight controller.
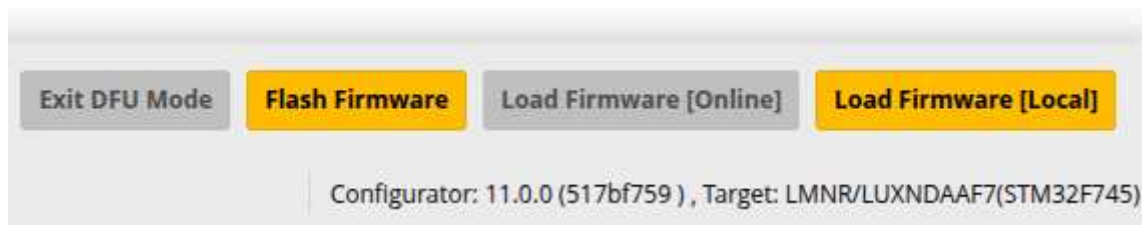
Flash and Load Firmware

5) Allow a minute or two for the firmware to download to the flight controller. Once complete, the Betaflight Configurator will read "Programming: SUCCESSFUL" at the bottom of the page. Congratulations, your flight controller is now running Betaflight and ready for additional configuration!
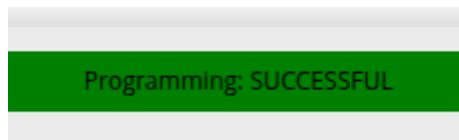
Programming Successful!

How to flash Ardupilot
- There are multiple ways to flash Ardupilot, but using the STM32CubeProgrammer is the easiest method if the flight controller is NOT running Ardupilot. Please see the official Ardupilot documentation for additional information.
- Skip to the QGroundControl section if the flight controller is already running Ardupilot.

STM32CubeProgrammer (Flight controller NOT running Ardupilot)
1) Navigate to the Lumenier LUX F765 product page and download the latest Ardupilot firmware file – abc_LUXNDAAF7_arducopter_x.y.z_with_bl.hex.
2) While holding down the "BOOT0" button on the flight controller, plug a USB-C cable into the flight controller and your PC. Only the flight controller's red LED should be lit.
3) Open the STM32CubeProgrammer and select "USB" in the configuration tab on the right side of the application. Next, click the refresh button and then "Connect" if the flight controller is found in DFU mode. Target information should populate in the bottom right-hand side of the window if a connection is established. If the flight controller is not found, return to Step #2.

USB Connection

Target Information

4) Navigate the the "Erasing and Programming" window by clicking the download arrow on the left side of the page. The window should open and look similar to the image below.
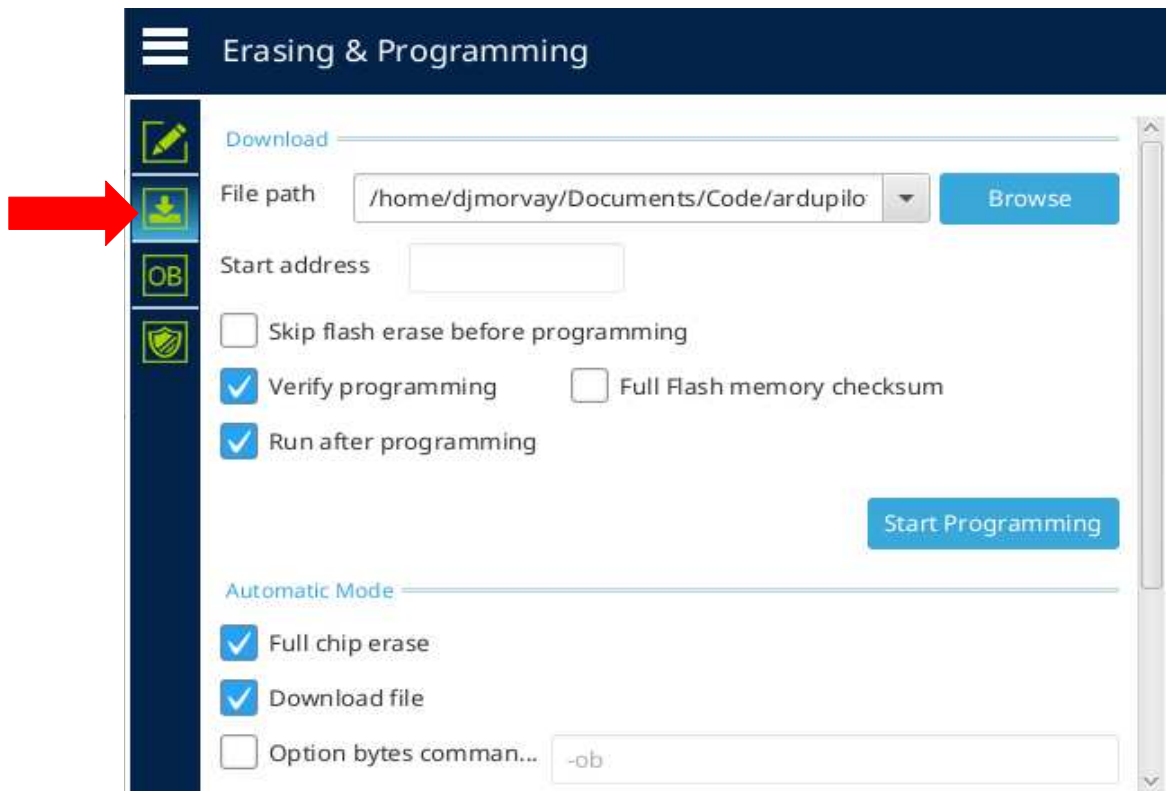
Erasing and Programming Tab

5) Next, click browse and select the Ardupilot firmware file downloaded from the product page. Click the check boxes for "Verify programming" and "Run after programming". Finally, click "Start Programming" to flash the Ardupilot firmware onto the flight controller.

6) Allow a minute or two for the firmware to download onto the flight controller. Once complete, the STM32CubeProgrammer will report "File Download Complete". Congratulations, your flight controller is ready for additional configuration in QGroundControl or Mission Planner!
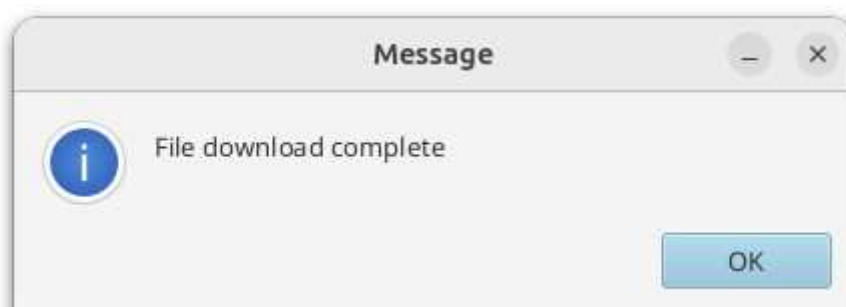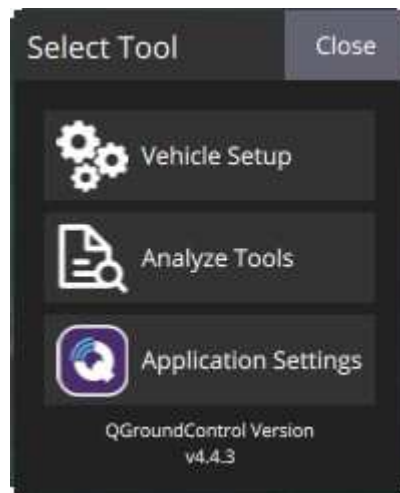

File Download Complete!

QGroundControl (Flight Controller is already running Ardupilot)

1. Navigate to the Lumenier LUX F765 product page and download the latest Ardupilot firmware file – abc_LUXNDAAF7_arducopter_x.y.z.apj.

2. Open QgroundControl and click the "Q" icon at the top left-hand side of the page. Next click "Vehicle Setup" and then "Firmware".


"Q" Icon

Vehicle Setup

Firmware Setup

3. Connect the flight controller to your PC using the dedicated USB-C port. QGroundControl should immediately recognize the flight controller and display a "Firmware Setup" pop-up. Click "Ardupilot", "Advanced settings", and "Custom firmware file". Finally, click "OK" and select the Ardupilot firmware downloaded from the product page. The firmware will then begin downloading to the flight controller.
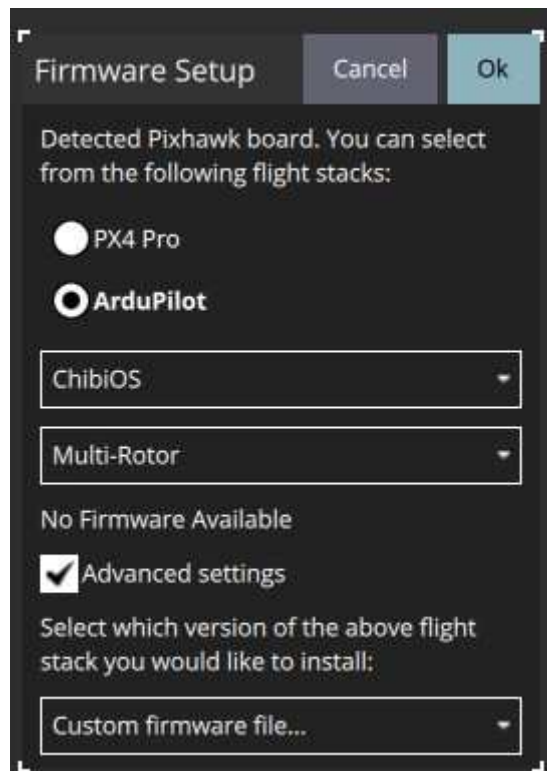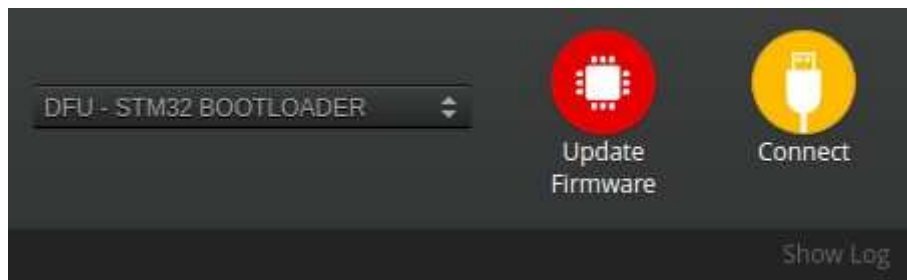
Firmware Setup Pop-up

4. Please allow a minute or two for the firmware to download onto the flight controller. Once complete, QGroundControl will open to the Vehicle Setup – Summary tab. Congratulations, your flight controller is ready for additional configuration in QGroundControl or Mission Planner!

How to Flash PX4

- If NOT running PX4, start at Step #1. If already running PX4, skip to Step #6.

1. Navigate to the Lumenier LUX F765 product page and download the latest PX4 bootloader file – abc_LUXNDAAF7_PX4_bl.hex.
2. While holding down the "BOOT0" button on the flight controller, plug a USB-C cable into the flight controller and your PC. Only the flight controller's red LED should be lit.
3. Open the Betaflight Configurator and navigate to the the "Update Firmware" tab in the top right corner of the page. If not done automatically, connect to the flight controller by selecting "DFU – STM32 BOOTLOADER". NOTE: In some Betaflight Configurator versions, you will be asked to select the flight controller after clicking "Flash Firmware" in Step #4.

Update Firmware and Flight Controller Connection

4.   Next, click "Load Firmware" in the bottom right corner of the page and select the PX4 bootloader file downloaded from the product page in Step #1. Click "Flash Firmware" to begin the firmware download to the flight controller.
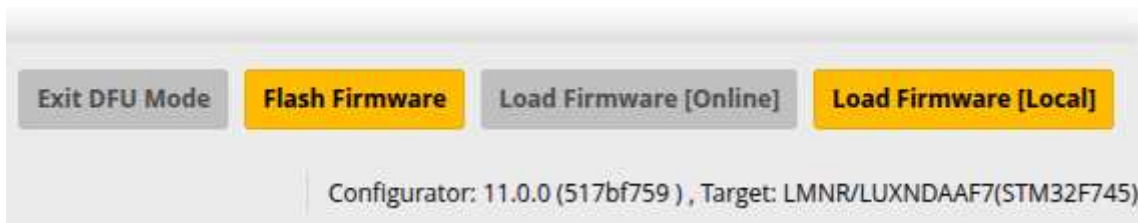
Flash and Load Firmware

5.   Allow a minute or two for the bootloader to download onto the flight controller. Once complete, the Betaflight Configurator will read "Programming: SUCCESSFUL" at the bottom of the page. The PX4 bootloader is now installed on the flight controller! Unplug the flight controller from your computer momentarily.
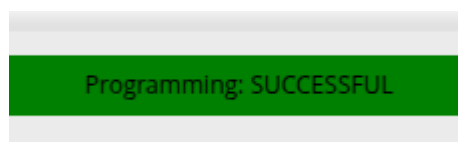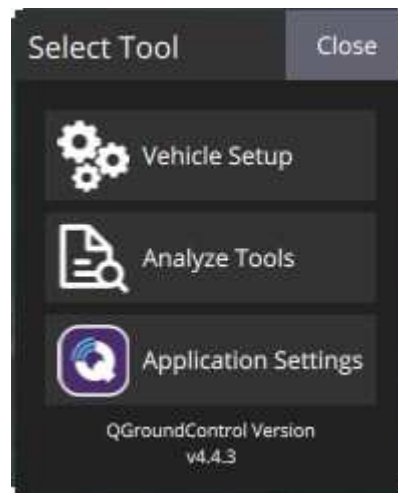

Programming Successful!

6.   Navigate to the Lumenier LUX F765 product page and download the latest PX4 firmware file – abc_LUXNDAAF7_PX4_x.y.z.px4.

7.	Open QgroundControl and click the "Q" icon at the top left-hand side of the page. Next click "Vehicle Setup" and then "Firmware".

"Q" Icon

Vehicle Setup

Firmware

8.	Connect the flight controller to your PC using the dedicated USB-C port. QGroundControl should immediately recognize the flight controller and display a "Firmware Setup" pop-up. Click "PX4 Pro", "Advanced settings", and "Custom firmware file". Finally, click "OK" and select the PX4 firmware downloaded from the product page. The firmware will then begin downloading to the flight controller.

Firmware Setup Pop-up

9.   Please allow a minute or two for the firmware to download onto the flight controller. Once complete, QGroundControl will open to the Vehicle Setup – Summary tab. Congratulations, your flight controller is ready for additional configuration in QGroundControl or Mission Planner!