iFlight Nazgul Evoque F5

Quick Start and Setup Guide

IFLIGHT
Where dreams can fly

Disclaimer and Safety Guidelines

1. Store the flight battery in a dry and ventilated place away from direct sunlight to prevent the battery from overheating.
2. To avoid possible injury and damage, please fly in good weather conditions and in a safe environment.
3. Please return as soon as possible when there is low battery or strong wind conditions.
4. Please ensure that the power system or other electronic components are soldered correctly, that the power supply works normally and the various components are not damaged before flying, otherwise it may cause the equipment to burn out and other losses or damage to equipment or property.
5. Make sure to operate the aircraft in an open space. Tall steel buildings, mountains, rocks, trees, etc. may interfere with the transmitter signal on the aircraft.
6. To prevent the remote controller from interfering with other wireless equipment, please turn off other WiFi devices.
7. Do not fly near sources of electromagnetic or radio interference. Sources of interference include, but are not limited too, WiFi hotspots, routers, Bluetooth devices, high voltage power lines, high voltage power stations, mobile phone base stations, and television broadcast towers. Otherwise, the wireless transmission performance of the aircraft may be affected by interference and cannot fly normally.
8. Please charge/discharge the battery to a storage voltage of about 3.85V when the battery is not in use.

Caution:

1. Users should ensure that they have a sufficient level of understanding of the aircraft and are aware of all emergency response measures.
2. Users should have a flight plan and do not be reckless, impromptu to fly the aircraft.
3. Please respect the privacy of others when you use aircraft to record video.
4. Stay away from the rotating propellers and motors.
5. After landing, first stop the motor, then turn off the flight battery, and then turn off the remote controller.
6. Turn off power or take off the propellers to prevent motors from high-speed rotation before setting the remote controller channels, upgrading firmware, and setting parameters.

Let·s get started.

❖ The DC5 HD comes preconfigured and tuned with rates and PIDs and more.
❖ First, Props off (if not already, lol props off or fingers off) then plug into the flight controller's USB-C port.
❖ We will start by backup your settings in betaflight. Go to the CLI tab/page in betaflight and in the text entry box type Diff All and then hit enter. Next find the save to file button, click save to a file and save in a place you can find later.
❖ While in the CLI paste in set gps_rescue_allow_arming_without_fix = on then hit enter. Then type
save and enter and you will reboot. With this you can arm and fly and GPS lock etc. will follow later but doesn't hinder arming. You can always set to off later if the need arises.
❖ Go back to the first page in betaflight and put the quad so it faces away from you and towards the screen. Hit the reset Z axis button and the view on screen should match your quad and when you move the quad that it moves in the same way.
❖ Notice on the right side of the screen various status fields, Find the block that says "Arming Disable Flags". If you have trouble arming check back on this box, it's got your answer J

Binding and Batteries

❖ You will need your goggles and its power cable, your charged transmitter, and a lipo battery with a XT60 that is fully charged, the DC5 HD and a battery that is charged for it. Also a paperclip or blunt tool to push a recessed button.

❖ I recommend the iFlight Fullsend 1300mah 4S or 6S. Tattu and CNHL. I also highly recommend iSDT Smart chargers (806AC shown). Charges very fast and perfectly balanced, makes using storage mode easy. Saved me a bunch of money, I have a fire proof bag of bad (too low/delta V) batteries to go to the recycle center and thought, well let's try one on this charger? It charged it in 2mins perfect balance!! Stunned. Well I went thru that bag and recovered over a dozen batteries! It was $60 at Pyrodrone and I may buy a second one. Yes. That good.

❖ If you will not be flying the next day or so, only charge your batteries to the Storage level (see your charger's instructions) or always do this - it will serve you well) and place in a fire safe place. Before flight, charge (or balance charge).

After binding…

❖ Once ready to fly, Power your transmitter and safe all switches in the up or off position. Check that the throttle is in fact at zero.

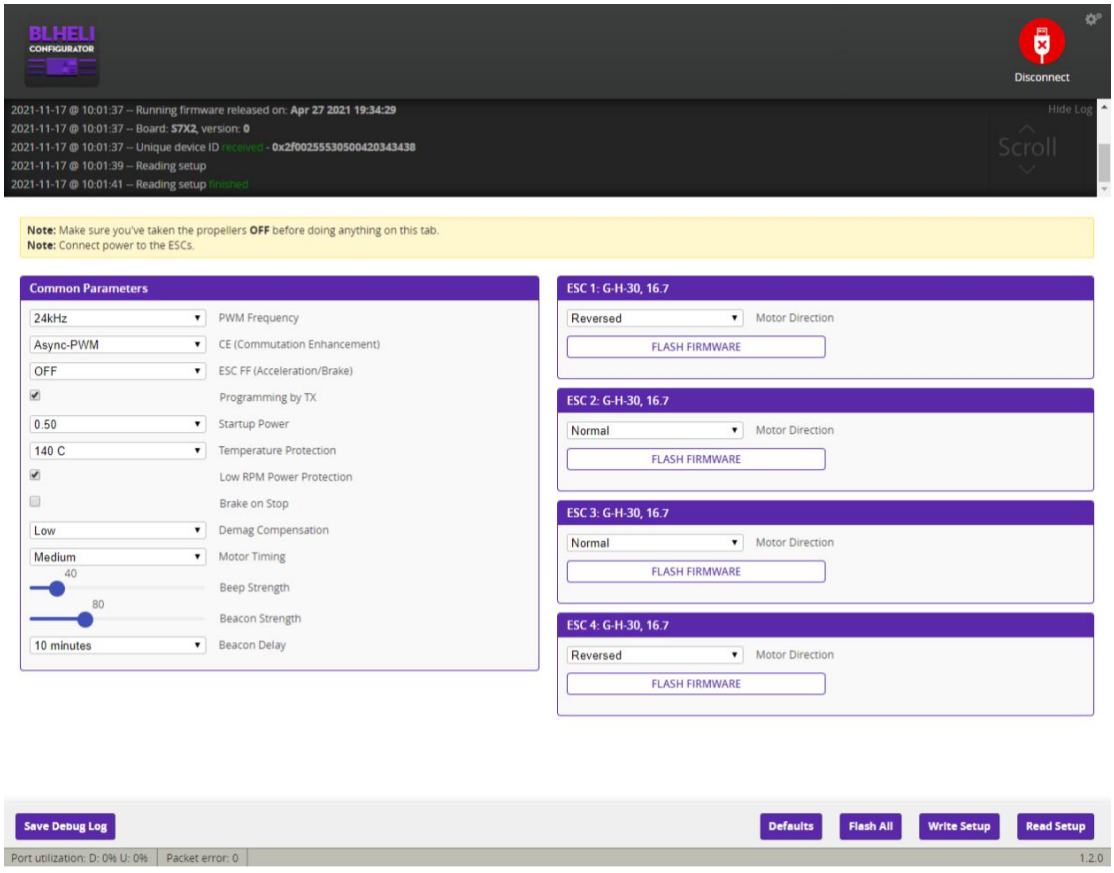
❖ SA is your Arm switch, move it all the way down to arm.

❖ If you don’t have your goggles on put them on (unless just flying line of sight (LOS)) and move SA
to the down or on position. To take off raise the throttle slowly but not too slowly, you want a smooth take off so give it some gas.

❖ To land locate the spot you want to land and come in slow and in steady forward and downward
motion. Land and move throttle to zero and disarm by move switch SA to up or off position, Congratulaions! Don’t forget to disconnect battery from qaud, unplug goggles and turn off transmitter once done flying.

❖ Following this guide is how to do a full setup including how to back up your settings, update the
firmware, configure the ESCs with BLHeli32 Configurator, and in betaflight setup all pages including mode switches, rates, PIDs and RPM filtering and more but you don’t need any of that for now, go fly! #SendIt

Updating Betaflight to the latest version and setting up RPM filtering and Bidirectional Dshot (but first we should check the BLHELIS ESC settings with BLHeliSuite configurator app)



❖ We want to have BLHeliS setup for BiDirectional DShot which requires ver 16.7 or later. Let's check the settings (and these need to be set for new parts) in BLHeliS (from OscarLiang'sexcellent guide on this subject FYI).

❖ Auto Telemetry is optional as is the beep and signal volume for startup and lost craft recovery settings.

❖ PWM Frequency: 48KHz for freestyle; Default (or higher) for racing.

❖ Motor Timing: Auto (or 20-22) for freestyle.

❖ This is also where you can change the motor direction, instead of swapping wires at the motor.

Updating Betaflight to the latest version and complete setup including RPM filtering continued…

❖ Next let's save your settings that are different than the default values with the DIFF command in the CLI.

❖ Clear the screen with the button for that and type DIFF (not diff all or dump all, we will be getting the "all" part of the settings after connecting for the first time as don't want to mingle or overwrite them. Good setup hygiene practices ?) and then enter. The command executes (this can be done with the gui now too) now click the button "copy to clipboard". Also click save to file button and save where you can find it again later. But the clipboard is what we need right now.

❖ Next Click the Update Firmware round yellow button in the top right.

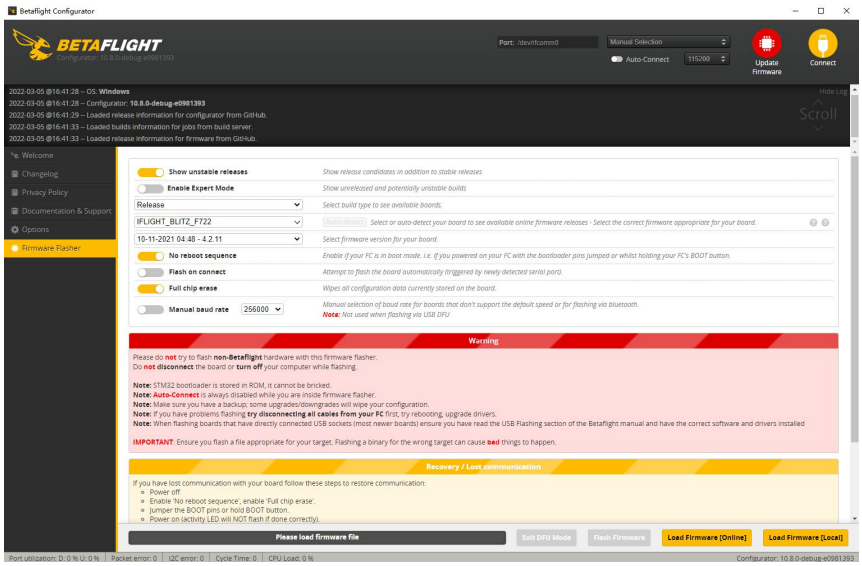
Updating Betaflight to the latest version continued…

❖ You should be in the Firmware Flasher section.

❖ Select the IFF7_TWIN_G (IFRC) target and the latest betaflight (as of today 4.2.11).

❖ Click "Load Firmware online" button.

❖ Click the Flash Firmware button.



Betaflight setup for Nazgul Evoque F5

❖ Just use the Betaflight GUI and configure like this by sliding the bars (also don't forget that save button at the bottom of the page)

name: Nazgul F5X

resources
resource BEEPER 1 C13
resource MOTOR 1 B01
resource MOTOR 2 B00
resource MOTOR 3 C08
resource MOTOR 4 C09
resource MOTOR 5 B06
resource MOTOR 6 B07
resource MOTOR 7 B10
resource MOTOR 8 B11
resource SERVO 1 NONE
resource SERVO 2 NONE
resource SERVO 3 NONE
resource SERVO 4 NONE
resource SERVO 5 NONE
resource SERVO 6 NONE
resource SERVO 7 NONE
resource SERVO 8 NONE
resource PPM 1 A03
resource PWM 1 NONE
resource PWM 2 NONE
resource PWM 3 NONE
resource PWM 4 NONE
resource PWM 5 NONE
resource PWM 6 NONE
resource PWM 7 NONE
resource PWM 8 NONE
resource LED_STRIP 1 A08
resource SERIAL_TX 1 A09
resource SERIAL_TX 2 A02
resource SERIAL_TX 3 C10
resource SERIAL_TX 4 A00
resource SERIAL_TX 5 C12
resource SERIAL_TX 6 C06

resource SERIAL_TX 7 NONE
resource SERIAL_TX 8 NONE
resource SERIAL_TX 9 NONE
resource SERIAL_TX 10 NONE
resource SERIAL_RX 1 A10
resource SERIAL_RX 2 A03
resource SERIAL_RX 3 C11
resource SERIAL_RX 4 A01
resource SERIAL_RX 5 D02
resource SERIAL_RX 6 C07
resource SERIAL_RX 7 NONE
resource SERIAL_RX 8 NONE
resource SERIAL_RX 9 NONE
resource SERIAL_RX 10 NONE
resource I2C_SCL 1 B08
resource I2C_SCL 2 NONE
resource I2C_SCL 3 NONE
resource I2C_SCL 4 NONE
resource I2C_SDA 1 B09
resource I2C_SDA 2 NONE
resource I2C_SDA 3 NONE
resource I2C_SDA 4 NONE
resource LED 1 C15
resource LED 2 NONE
resource LED 3 NONE
resource RX_BIND 1 NONE
resource RX_BIND_PLUG 1 NONE
resource SPI_SCK 1 A05
resource SPI_SCK 2 B13
resource SPI_SCK 3 B03
resource SPI_SCK 4 NONE
resource SPI_MISO 1 A06
resource SPI_MISO 2 B14
resource SPI_MISO 3 B04
resource SPI_MISO 4 NONE
resource SPI_MOSI 1 A07
resource SPI_MOSI 2 B15
resource SPI_MOSI 3 B05
resource SPI_MOSI 4 NONE
resource CAMERA_CONTROL 1 NONE
resource ADC_BATT 1 C02
resource ADC_RSSI 1 NONE
resource ADC_CURR 1 C01
resource ADC_EXT 1 NONE

```
resource BARO_CS 1 NONE
resource BARO_EOC 1 NONE
resource BARO_XCLR 1 NONE
resource COMPASS_CS 1 NONE
resource PINIO 1 NONE
resource PINIO 2 NONE
resource PINIO 3 NONE
resource PINIO 4 NONE
resource USB_MSC_PIN 1 NONE
resource FLASH_CS 1 A15
resource OSD_CS 1 B12
resource GYRO_EXTI 1 C04
resource GYRO_EXTI 2 NONE
resource GYRO_CS 1 A04
resource GYRO_CS 2 NONE
resource USB_DETECT 1 B02
resource PULLUP 1 NONE
resource PULLUP 2 NONE
resource PULLUP 3 NONE
resource PULLUP 4 NONE
resource PULLDOWN 1 NONE
resource PULLDOWN 2 NONE
resource PULLDOWN 3 NONE
resource PULLDOWN 4 NONE

# timer
timer B01 AF2
# pin B01: TIM3 CH4 (AF2)
timer B00 AF2
# pin B00: TIM3 CH3 (AF2)
timer C08 AF3
# pin C08: TIM8 CH3 (AF3)
timer C09 AF3
# pin C09: TIM8 CH4 (AF3)
timer B06 AF2
# pin B06: TIM4 CH1 (AF2)
timer B07 AF2
# pin B07: TIM4 CH2 (AF2)
timer B10 AF1
# pin B10: TIM2 CH3 (AF1)
timer B11 AF1
# pin B11: TIM2 CH4 (AF1)
timer A08 AF1
# pin A08: TIM1 CH1 (AF1)
```

```
timer A03 AF2
# pin A03: TIM5 CH4 (AF2)
timer A00 AF2
# pin A00: TIM5 CH1 (AF2)
timer C06 AF3
# pin C06: TIM8 CH1 (AF3)
timer C07 AF3
# pin C07: TIM8 CH2 (AF3)
timer A01 AF1
# pin A01: TIM2 CH2 (AF1)

# dma
dma SPI_TX 1 NONE
dma SPI_TX 2 NONE
dma SPI_TX 3 NONE
dma SPI_TX 4 NONE
dma SPI_RX 1 NONE
dma SPI_RX 2 NONE
dma SPI_RX 3 NONE
dma SPI_RX 4 NONE
dma ADC 1 0
# ADC 1: DMA2 Stream 0 Channel 0
dma ADC 2 NONE
dma ADC 3 NONE
dma UART_TX 1 NONE
dma UART_TX 2 NONE
dma UART_TX 3 NONE
dma UART_TX 4 NONE
dma UART_TX 5 NONE
dma UART_TX 6 NONE
dma UART_TX 7 NONE
dma UART_TX 8 NONE
dma UART_RX 1 NONE
dma UART_RX 2 NONE
dma UART_RX 3 NONE
dma UART_RX 4 NONE
dma UART_RX 5 NONE
dma UART_RX 6 NONE
dma UART_RX 7 NONE
dma UART_RX 8 NONE
dma pin B01 0
# pin B01: DMA1 Stream 2 Channel 5
dma pin B00 0
# pin B00: DMA1 Stream 7 Channel 5
```

```
dma pin C08 1
# pin C08: DMA2 Stream 4 Channel 7
dma pin C09 0
# pin C09: DMA2 Stream 7 Channel 7
dma pin B06 0
# pin B06: DMA1 Stream 0 Channel 2
dma pin B07 0
# pin B07: DMA1 Stream 3 Channel 2
dma pin B10 0
# pin B10: DMA1 Stream 1 Channel 3
dma pin B11 1
# pin B11: DMA1 Stream 6 Channel 3
dma pin A08 0
# pin A08: DMA2 Stream 6 Channel 0
dma pin A03 1
# pin A03: DMA1 Stream 3 Channel 6
dma pin A00 0
# pin A00: DMA1 Stream 2 Channel 6
dma pin C06 0
# pin C06: DMA2 Stream 2 Channel 0
dma pin C07 1
# pin C07: DMA2 Stream 3 Channel 7
dma pin A01 0
# pin A01: DMA1 Stream 6 Channel 3

# mixer
mixer QUADX

mmix reset


# servo
servo 0 1000 2000 1500 100 -1
servo 1 1000 2000 1500 100 -1
servo 2 1000 2000 1500 100 -1
servo 3 1000 2000 1500 100 -1
servo 4 1000 2000 1500 100 -1
servo 5 1000 2000 1500 100 -1
servo 6 1000 2000 1500 100 -1
servo 7 1000 2000 1500 100 -1

# servo mixer
smix reset
```

```
# feature
feature -RX_PPM
feature -INFLIGHT_ACC_CAL
feature -RX_SERIAL
feature -MOTOR_STOP
feature -SERVO_TILT
feature -SOFTSERIAL
feature -GPS
feature -RANGEFINDER
feature -TELEMETRY
feature -3D
feature -RX_PARALLEL_PWM
feature -RX_MSP
feature -RSSI_ADC
feature -LED_STRIP
feature -DISPLAY
feature -OSD
feature -CHANNEL_FORWARDING
feature -TRANSPONDER
feature -AIRMODE
feature -RX_SPI
feature -ESC_SENSOR
feature -ANTI_GRAVITY
feature -DYNAMIC_FILTER
feature RX_SERIAL
feature GPS
feature TELEMETRY
feature LED_STRIP
feature OSD
feature AIRMODE
feature ANTI_GRAVITY
feature DYNAMIC_FILTER

# beeper
beeper GYRO_CALIBRATED
beeper RX_LOST
beeper RX_LOST_LANDING
beeper DISARMING
beeper ARMING
beeper ARMING_GPS_FIX
beeper ARMING_GPS_NO_FIX
beeper BAT_CRIT_LOW
beeper BAT_LOW
```

```
beeper GPS_STATUS
beeper RX_SET
beeper ACC_CALIBRATION
beeper ACC_CALIBRATION_FAIL
beeper READY_BEEP
beeper MULTI_BEEPS
beeper DISARM_REPEAT
beeper ARMED
beeper SYSTEM_INIT
beeper ON_USB
beeper BLACKBOX_ERASE
beeper CRASH_FLIP
beeper CAM_CONNECTION_OPEN
beeper CAM_CONNECTION_CLOSE
beeper RC_SMOOTHING_INIT_FAIL

# beacon
beacon RX_LOST
beacon RX_SET

# map
map AETR1234

# serial
serial 20 1 115200 57600 0 115200
serial 0 8192 115200 57600 0 115200
serial 1 64 115200 57600 0 115200
serial 2 0 115200 57600 0 115200
serial 3 2 115200 115200 0 115200
serial 4 0 115200 57600 0 115200
serial 5 1024 115200 57600 0 115200

# led
led 0 0,0::L:5
led 1 1,0::C:5
led 2 2,0::C:5
led 3 3,0::C:5
led 4 4,0::C:5
led 5 0,0::C:0
led 6 0,0::C:0
led 7 0,0::C:0
led 8 0,0::C:0
led 9 0,0::C:0
led 10 0,0::C:0
```

```
led 11 0,0::C:0
led 12 0,0::C:0
led 13 0,0::C:0
led 14 0,0::C:0
led 15 0,0::C:0
led 16 0,0::C:0
led 17 0,0::C:0
led 18 0,0::C:0
led 19 0,0::C:0
led 20 0,0::C:0
led 21 0,0::C:0
led 22 0,0::C:0
led 23 0,0::C:0
led 24 0,0::C:0
led 25 0,0::C:0
led 26 0,0::C:0
led 27 0,0::C:0
led 28 0,0::C:0
led 29 0,0::C:0
led 30 0,0::C:0
led 31 0,0::C:0

# color
color 0 0,0,0
color 1 0,255,255
color 2 0,0,255
color 3 30,0,255
color 4 60,0,255
color 5 91,0,255
color 6 108,0,255
color 7 150,0,255
color 8 180,0,255
color 9 210,0,255
color 10 240,0,255
color 11 270,0,255
color 12 300,0,255
color 13 330,0,255
color 14 0,0,0
color 15 0,0,0

# mode_color
mode_color 0 0 1
mode_color 0 1 11
mode_color 0 2 2
```

mode_color 0 3 13
mode_color 0 4 10
mode_color 0 5 3
mode_color 1 0 5
mode_color 1 1 11
mode_color 1 2 3
mode_color 1 3 13
mode_color 1 4 10
mode_color 1 5 3
mode_color 2 0 10
mode_color 2 1 11
mode_color 2 2 4
mode_color 2 3 13
mode_color 2 4 10
mode_color 2 5 3
mode_color 3 0 8
mode_color 3 1 11
mode_color 3 2 4
mode_color 3 3 13
mode_color 3 4 10
mode_color 3 5 3
mode_color 4 0 7
mode_color 4 1 11
mode_color 4 2 3
mode_color 4 3 13
mode_color 4 4 10
mode_color 4 5 3
mode_color 5 0 0
mode_color 5 1 0
mode_color 5 2 0
mode_color 5 3 0
mode_color 5 4 0
mode_color 5 5 0
mode_color 6 0 6
mode_color 6 1 10
mode_color 6 2 1
mode_color 6 3 0
mode_color 6 4 0
mode_color 6 5 2
mode_color 6 6 3
mode_color 6 7 6
mode_color 6 8 0
mode_color 6 9 0
mode_color 6 10 0

```
mode_color 7 0 3

# aux
aux 0 0 0 1700 2100 0 0
aux 1 1 1 900 2100 0 0
aux 2 0 0 900 900 0 0
aux 3 0 0 900 900 0 0
aux 4 0 0 900 900 0 0
aux 5 0 0 900 900 0 0
aux 6 0 0 900 900 0 0
aux 7 0 0 900 900 0 0
aux 8 0 0 900 900 0 0
aux 9 0 0 900 900 0 0
aux 10 0 0 900 900 0 0
aux 11 0 0 900 900 0 0
aux 12 0 0 900 900 0 0
aux 13 0 0 900 900 0 0
aux 14 0 0 900 900 0 0
aux 15 0 0 900 900 0 0
aux 16 0 0 900 900 0 0
aux 17 0 0 900 900 0 0
aux 18 0 0 900 900 0 0
aux 19 0 0 900 900 0 0

# adjrange
adjrange 0 0 0 900 900 0 0 0 0
adjrange 1 0 0 900 900 0 0 0 0
adjrange 2 0 0 900 900 0 0 0 0
adjrange 3 0 0 900 900 0 0 0 0
adjrange 4 0 0 900 900 0 0 0 0
adjrange 5 0 0 900 900 0 0 0 0
adjrange 6 0 0 900 900 0 0 0 0
adjrange 7 0 0 900 900 0 0 0 0
adjrange 8 0 0 900 900 0 0 0 0
adjrange 9 0 0 900 900 0 0 0 0
adjrange 10 0 0 900 900 0 0 0 0
adjrange 11 0 0 900 900 0 0 0 0
adjrange 12 0 0 900 900 0 0 0 0
adjrange 13 0 0 900 900 0 0 0 0
adjrange 14 0 0 900 900 0 0 0 0
adjrange 15 0 0 900 900 0 0 0 0
adjrange 16 0 0 900 900 0 0 0 0
adjrange 17 0 0 900 900 0 0 0 0
adjrange 18 0 0 900 900 0 0 0 0
```

```
adjrange 19 0 0 900 900 0 0 0 0
adjrange 20 0 0 900 900 0 0 0 0
adjrange 21 0 0 900 900 0 0 0 0
adjrange 22 0 0 900 900 0 0 0 0
adjrange 23 0 0 900 900 0 0 0 0
adjrange 24 0 0 900 900 0 0 0 0
adjrange 25 0 0 900 900 0 0 0 0
adjrange 26 0 0 900 900 0 0 0 0
adjrange 27 0 0 900 900 0 0 0 0
adjrange 28 0 0 900 900 0 0 0 0
adjrange 29 0 0 900 900 0 0 0 0

# rxrange
rxrange 0 1000 2000
rxrange 1 1000 2000
rxrange 2 1000 2000
rxrange 3 1000 2000

# vtxtable
vtxtable bands 5
vtxtable channels 8
vtxtable band 1 BOSCAM_A A CUSTOM    5865 5845 5825 5805 5785 5765 5745 5725
vtxtable band 2 BOSCAM_B B CUSTOM    5733 5752 5771 5790 5809 5828 5847 5866
vtxtable band 3 BOSCAM_E E CUSTOM    5705 5685 5665        0 5885 5905        0        0
vtxtable band 4 FATSHARK F CUSTOM    5740 5760 5780 5800 5820 5840 5860 5880
vtxtable band 5 RACEBAND R CUSTOM    5658 5695 5732 5769 5806 5843 5880 5917
vtxtable powerlevels 5
vtxtable powervalues 25 100 200 400 600
vtxtable powerlabels 25 100 200 400 600

# vtx
vtx 0 0 0 0 0 900 900
vtx 1 0 0 0 0 900 900
vtx 2 0 0 0 0 900 900
vtx 3 0 0 0 0 900 900
vtx 4 0 0 0 0 900 900
vtx 5 0 0 0 0 900 900
vtx 6 0 0 0 0 900 900
vtx 7 0 0 0 0 900 900
vtx 8 0 0 0 0 900 900
vtx 9 0 0 0 0 900 900

# rxfail
rxfail 0 a
```

```
rxfail 1 a
rxfail 2 a
rxfail 3 a
rxfail 4 h
rxfail 5 h
rxfail 6 h
rxfail 7 h
rxfail 8 h
rxfail 9 h
rxfail 10 h
rxfail 11 h
rxfail 12 h
rxfail 13 h
rxfail 14 h
rxfail 15 h
rxfail 16 h
rxfail 17 h

# master
set gyro_hardware_lpf = NORMAL
set gyro_lowpass_type = PT1
set gyro_lowpass_hz = 200
set gyro_lowpass2_type = PT1
set gyro_lowpass2_hz = 325
set gyro_notch1_hz = 0
set gyro_notch1_cutoff = 0
set gyro_notch2_hz = 0
set gyro_notch2_cutoff = 0
set gyro_calib_duration = 125
set gyro_calib_noise_limit = 48
set gyro_offset_yaw = 0
set gyro_overflow_detect = ALL
set yaw_spin_recovery = AUTO
set yaw_spin_threshold = 1950
set gyro_to_use = FIRST
set dyn_notch_width_percent = 0
set dyn_notch_q = 120
set dyn_notch_min_hz = 150
set dyn_notch_max_hz = 400
set dyn_lpf_gyro_min_hz = 260
set dyn_lpf_gyro_max_hz = 650
set gyro_filter_debug_axis = ROLL
set acc_hardware = AUTO
set acc_lpf_hz = 10
```

```
set acc_trim_pitch = 0
set acc_trim_roll = 0
set acc_calibration = 18,-20,209,1
set align_mag = DEFAULT
set mag_align_roll = 0
set mag_align_pitch = 0
set mag_align_yaw = 0
set mag_bustype = I2C
set mag_i2c_device = 1
set mag_i2c_address = 0
set mag_spi_device = 0
set mag_hardware = NONE
set mag_declination = 0
set mag_calibration = 0,0,0
set baro_bustype = I2C
set baro_spi_device = 0
set baro_i2c_device = 1
set baro_i2c_address = 0
set baro_hardware = NONE
set baro_tab_size = 21
set baro_noise_lpf = 600
set baro_cf_vel = 985
set mid_rc = 1500
set min_check = 1020
set max_check = 1900
set rssi_channel = 0
set rssi_src_frame_errors = OFF
set rssi_scale = 100
set rssi_offset = 0
set rssi_invert = OFF
set rssi_src_frame_lpf_period = 30
set rc_interp = AUTO
set rc_interp_ch = RPYT
set rc_interp_int = 19
set rc_smoothing_type = FILTER
set rc_smoothing_input_hz = 0
set rc_smoothing_derivative_hz = 0
set rc_smoothing_debug_axis = ROLL
set rc_smoothing_input_type = BIQUAD
set rc_smoothing_derivative_type = AUTO
set rc_smoothing_auto_smoothness = 10
set fpv_mix_degrees = 0
set max_aux_channels = 14
set serialrx_provider = CRSF
```

set serialrx_inverted = OFF
set spektrum_sat_bind = 0
set spektrum_sat_bind_autoreset = ON
set srxl2_unit_id = 1
set srxl2_baud_fast = ON
set sbus_baud_fast = OFF
set crsf_use_rx_snr = OFF
set airmode_start_throttle_percent = 25
set rx_min_usec = 885
set rx_max_usec = 2115
set serialrx_halfduplex = OFF
set adc_device = 1
set adc_vrefint_calibration = 0
set adc_tempsensor_calibration30 = 0
set adc_tempsensor_calibration110 = 0
set input_filtering_mode = OFF
set blackbox_p_ratio = 16
set blackbox_device = SPIFLASH
set blackbox_record_acc = ON
set blackbox_mode = NORMAL
set min_throttle = 1070
set max_throttle = 2000
set min_command = 1000
set dshot_idle_value = 600
set dshot_burst = AUTO
set dshot_bidir = OFF
set dshot_bitbang = OFF
set dshot_bitbang_timer = AUTO
set use_unsynced_pwm = OFF
set motor_pwm_protocol = DSHOT600
set motor_pwm_rate = 480
set motor_pwm_inversion = OFF
set motor_poles = 14
set thr_corr_value = 0
set thr_corr_angle = 800
set failsafe_delay = 4
set failsafe_off_delay = 10
set failsafe_throttle = 1000
set failsafe_switch_mode = STAGE1
set failsafe_throttle_low_delay = 100
set failsafe_procedure = DROP
set failsafe_recovery_delay = 20
set failsafe_stick_threshold = 30
set align_board_roll = 0

set align_board_pitch = 0
set align_board_yaw = 0
set gimbal_mode = NORMAL
set bat_capacity = 0
set vbat_max_cell_voltage = 422
set vbat_full_cell_voltage = 410
set vbat_min_cell_voltage = 330
set vbat_warning_cell_voltage = 350
set vbat_hysteresis = 1
set current_meter = ADC
set battery_meter = ADC
set vbat_detect_cell_voltage = 300
set use_vbat_alerts = ON
set use_cbat_alerts = OFF
set cbat_alert_percent = 10
set vbat_cutoff_percent = 100
set force_battery_cell_count = 0
set vbat_display_lpf_period = 30
set vbat_sag_lpf_period = 2
set ibat_lpf_period = 10
set vbat_duration_for_warning = 0
set vbat_duration_for_critical = 0
set vbat_scale = 110
set vbat_divider = 10
set vbat_multiplier = 1
set ibata_scale = 180
set ibata_offset = 0
set ibatv_scale = 0
set ibatv_offset = 0
set beeper_inversion = ON
set beeper_od = OFF
set beeper_frequency = 0
set beeper_dshot_beacon_tone = 1
set yaw_motors_reversed = ON
set crashflip_motor_percent = 0
set crashflip_expo = 35
set 3d_deadband_low = 1406
set 3d_deadband_high = 1514
set 3d_neutral = 1460
set 3d_deadband_throttle = 50
set 3d_limit_low = 1000
set 3d_limit_high = 2000
set 3d_switched_mode = OFF
set servo_center_pulse = 1500

set servo_pwm_rate = 50
set servo_lowpass_hz = 0
set tri_unarmed_servo = ON
set channel_forwarding_start = 4
set reboot_character = 82
set serial_update_rate_hz = 100
set imu_dcm_kp = 2500
set imu_dcm_ki = 0
set small_angle = 180
set auto_disarm_delay = 5
set gyro_cal_on_first_arm = OFF
set gps_provider = UBLOX
set gps_sbas_mode = NONE
set gps_sbas_integrity = OFF
set gps_auto_config = ON
set gps_auto_baud = OFF
set gps_ublox_use_galileo = OFF
set gps_ublox_mode = AIRBORNE
set gps_set_home_point_once = OFF
set gps_use_3d_speed = OFF
set gps_rescue_angle = 32
set gps_rescue_initial_alt = 50
set gps_rescue_descent_dist = 200
set gps_rescue_landing_alt = 5
set gps_rescue_landing_dist = 10
set gps_rescue_ground_speed = 2000
set gps_rescue_throttle_p = 150
set gps_rescue_throttle_i = 20
set gps_rescue_throttle_d = 50
set gps_rescue_velocity_p = 80
set gps_rescue_velocity_i = 20
set gps_rescue_velocity_d = 15
set gps_rescue_yaw_p = 40
set gps_rescue_throttle_min = 1100
set gps_rescue_throttle_max = 1600
set gps_rescue_ascend_rate = 500
set gps_rescue_descend_rate = 150
set gps_rescue_throttle_hover = 1280
set gps_rescue_sanity_checks = RESCUE_SANITY_ON
set gps_rescue_min_sats = 8
set gps_rescue_min_dth = 100
set gps_rescue_allow_arming_without_fix = OFF
set gps_rescue_alt_mode = MAX_ALT
set gps_rescue_use_mag = ON

set deadband = 4
set yaw_deadband = 4
set yaw_control_reversed = OFF
set pid_process_denom = 1
set runaway_takeoff_prevention = ON
set runaway_takeoff_deactivate_delay = 500
set runaway_takeoff_deactivate_throttle_percent = 20
set thrust_linear = 0
set transient_throttle_limit = 0
set tlm_inverted = OFF
set tlm_halfduplex = ON
set frsky_default_lat = 0
set frsky_default_long = 0
set frsky_gps_format = 0
set frsky_unit = IMPERIAL
set frsky_vfas_precision = 0
set hott_alarm_int = 5
set pid_in_tlm = OFF
set report_cell_voltage = OFF
set ibus_sensor = 1,2,3,0,0,0,0,0,0,0,0,0,0,0
set mavlink_mah_as_heading_divisor = 0
set telemetry_disabled_voltage = OFF
set telemetry_disabled_current = OFF
set telemetry_disabled_fuel = OFF
set telemetry_disabled_mode = OFF
set telemetry_disabled_acc_x = OFF
set telemetry_disabled_acc_y = OFF
set telemetry_disabled_acc_z = OFF
set telemetry_disabled_pitch = OFF
set telemetry_disabled_roll = OFF
set telemetry_disabled_heading = OFF
set telemetry_disabled_altitude = OFF
set telemetry_disabled_vario = OFF
set telemetry_disabled_lat_long = OFF
set telemetry_disabled_ground_speed = OFF
set telemetry_disabled_distance = OFF
set telemetry_disabled_esc_current = ON
set telemetry_disabled_esc_voltage = ON
set telemetry_disabled_esc_rpm = ON
set telemetry_disabled_esc_temperature = ON
set telemetry_disabled_temperature = OFF
set ledstrip_visual_beeper = OFF
set ledstrip_visual_beeper_color = WHITE
set ledstrip_grb_rgb = GRB

```
set ledstrip_profile = STATUS
set ledstrip_race_color = ORANGE
set ledstrip_beacon_color = WHITE
set ledstrip_beacon_period_ms = 500
set ledstrip_beacon_percent = 50
set ledstrip_beacon_armed_only = OFF
set osd_units = METRIC
set osd_warn_arming_disable = ON
set osd_warn_batt_not_full = ON
set osd_warn_batt_warning = ON
set osd_warn_batt_critical = ON
set osd_warn_visual_beeper = ON
set osd_warn_crash_flip = ON
set osd_warn_esc_fail = ON
set osd_warn_core_temp = OFF
set osd_warn_rc_smoothing = ON
set osd_warn_fail_safe = ON
set osd_warn_launch_control = ON
set osd_warn_no_gps_rescue = ON
set osd_warn_gps_rescue_disabled = ON
set osd_warn_rssi = ON
set osd_warn_link_quality = ON
set osd_warn_rssi_dbm = OFF
set osd_warn_over_cap = OFF
set osd_rssi_alarm = 20
set osd_link_quality_alarm = 80
set osd_rssi_dbm_alarm = -60
set osd_cap_alarm = 2200
set osd_alt_alarm = 100
set osd_distance_alarm = 0
set osd_esc_temp_alarm = -128
set osd_esc_rpm_alarm = -1
set osd_esc_current_alarm = -1
set osd_core_temp_alarm = 70
set osd_ah_max_pit = 20
set osd_ah_max_rol = 40
set osd_ah_invert = OFF
set osd_logo_on_arming = OFF
set osd_logo_on_arming_duration = 5
set osd_tim1 = 2560
set osd_tim2 = 2561
set osd_vbat_pos = 234
set osd_rssi_pos = 2358
set osd_link_quality_pos = 2326
```

set osd_rssi_dbm_pos = 299
set osd_tim_1_pos = 234
set osd_tim_2_pos = 2421
set osd_remaining_time_estimate_pos = 234
set osd_flymode_pos = 2381
set osd_anti_gravity_pos = 234
set osd_g_force_pos = 234
set osd_throttle_pos = 234
set osd_vtx_channel_pos = 2389
set osd_crosshairs_pos = 205
set osd_ah_sbar_pos = 206
set osd_ah_pos = 78
set osd_current_pos = 2369
set osd_mah_drawn_pos = 2401
set osd_motor_diag_pos = 234
set osd_craft_name_pos = 2410
set osd_display_name_pos = 234
set osd_gps_speed_pos = 342
set osd_gps_lon_pos = 234
set osd_gps_lat_pos = 234
set osd_gps_sats_pos = 2294
set osd_home_dir_pos = 2347
set osd_home_dist_pos = 2350
set osd_flight_dist_pos = 234
set osd_compass_bar_pos = 234
set osd_altitude_pos = 341
set osd_pid_roll_pos = 234
set osd_pid_pitch_pos = 234
set osd_pid_yaw_pos = 234
set osd_debug_pos = 234
set osd_power_pos = 234
set osd_pidrate_profile_pos = 234
set osd_warnings_pos = 14570
set osd_avg_cell_voltage_pos = 2337
set osd_pit_ang_pos = 234
set osd_rol_ang_pos = 234
set osd_battery_usage_pos = 234
set osd_disarmed_pos = 2304
set osd_nheading_pos = 234
set osd_nvario_pos = 234
set osd_esc_tmp_pos = 234
set osd_esc_rpm_pos = 234
set osd_esc_rpm_freq_pos = 234
set osd_rtc_date_time_pos = 234

```
set osd_adjustment_range_pos = 234
set osd_flip_arrow_pos = 234
set osd_core_temp_pos = 234
set osd_log_status_pos = 234
set osd_stick_overlay_left_pos = 234
set osd_stick_overlay_right_pos = 234
set osd_stick_overlay_radio_mode = 2
set osd_rate_profile_name_pos = 234
set osd_pid_profile_name_pos = 234
set osd_profile_name_pos = 234
set osd_rcchannels_pos = 234
set osd_camera_frame_pos = 35
set osd_efficiency_pos = 234
set osd_stat_rtc_date_time = OFF
set osd_stat_tim_1 = OFF
set osd_stat_tim_2 = ON
set osd_stat_max_spd = ON
set osd_stat_max_dist = OFF
set osd_stat_min_batt = ON
set osd_stat_endbatt = OFF
set osd_stat_battery = OFF
set osd_stat_min_rssi = ON
set osd_stat_max_curr = ON
set osd_stat_used_mah = ON
set osd_stat_max_alt = OFF
set osd_stat_bbox = ON
set osd_stat_bb_no = ON
set osd_stat_max_g_force = OFF
set osd_stat_max_esc_temp = OFF
set osd_stat_max_esc_rpm = OFF
set osd_stat_min_link_quality = OFF
set osd_stat_flight_dist = OFF
set osd_stat_max_fft = OFF
set osd_stat_total_flights = OFF
set osd_stat_total_time = OFF
set osd_stat_total_dist = OFF
set osd_stat_min_rssi_dbm = OFF
set osd_profile = 1
set osd_profile_1_name = -
set osd_profile_2_name = -
set osd_profile_3_name = -
set osd_gps_sats_show_hdop = OFF
set osd_displayport_device = AUTO
set osd_rcchannels = -1,-1,-1,-1
```

set osd_camera_frame_width = 24
set osd_camera_frame_height = 11
set task_statistics = ON
set debug_mode = GYRO_SCALED
set rate_6pos_switch = OFF
set cpu_overclock = OFF
set pwr_on_arm_grace = 5
set scheduler_optimize_rate = AUTO
set enable_stick_arming = OFF
set vtx_band = 5
set vtx_channel = 3
set vtx_power = 1
set vtx_low_power_disarm = OFF
set vtx_freq = 5732
set vtx_pit_mode_freq = 0
set vtx_halfduplex = ON
set vcd_video_system = AUTO
set vcd_h_offset = 0
set vcd_v_offset = 0
set max7456_clock = DEFAULT
set max7456_spi_bus = 2
set max7456_preinit_opu = OFF
set displayport_msp_col_adjust = 0
set displayport_msp_row_adjust = 0
set displayport_msp_serial = -1
set displayport_msp_attrs = 0,0,0,0
set displayport_msp_use_device_blink = OFF
set displayport_max7456_col_adjust = 0
set displayport_max7456_row_adjust = 0
set displayport_max7456_inv = OFF
set displayport_max7456_blk = 0
set displayport_max7456_wht = 2
set esc_sensor_halfduplex = OFF
set esc_sensor_current_offset = 0
set led_inversion = 0
set dashboard_i2c_bus = 0
set dashboard_i2c_addr = 60
set camera_control_mode = HARDWARE_PWM
set camera_control_ref_voltage = 330
set camera_control_key_delay = 180
set camera_control_internal_resistance = 470
set camera_control_button_resistance = 450,270,150,68,0
set camera_control_inverted = OFF
set pinio_config = 1,1,1,1

set pinio_box = 255,255,255,255
set usb_hid_cdc = OFF
set usb_msc_pin_pullup = ON
set flash_spi_bus = 3
set rcdevice_init_dev_attempts = 6
set rcdevice_init_dev_attempt_interval = 1000
set rcdevice_protocol_version = 0
set rcdevice_feature = 0
set gyro_1_bustype = SPI
set gyro_1_spibus = 1
set gyro_1_i2cBus = 0
set gyro_1_i2c_address = 0
set gyro_1_sensor_align = CW0
set gyro_1_align_roll = 0
set gyro_1_align_pitch = 0
set gyro_1_align_yaw = 0
set gyro_2_bustype = SPI
set gyro_2_spibus = 0
set gyro_2_i2cBus = 0
set gyro_2_i2c_address = 0
set gyro_2_sensor_align = CW0
set gyro_2_align_roll = 0
set gyro_2_align_pitch = 0
set gyro_2_align_yaw = 0
set mco2_on_pc9 = OFF
set timezone_offset_minutes = 0
set gyro_rpm_notch_harmonics = 3
set gyro_rpm_notch_q = 500
set gyro_rpm_notch_min = 100
set dterm_rpm_notch_harmonics = 0
set dterm_rpm_notch_q = 500
set dterm_rpm_notch_min = 100
set rpm_notch_lpf = 150
set stats = OFF
set stats_total_flights = 0
set stats_total_time_s = 0
set stats_total_dist_m = 0
set name = Nazgul F5X
set display_name = -
set position_alt_source = DEFAULT
set box_user_1_name = -
set box_user_2_name = -
set box_user_3_name = -
set box_user_4_name = -

```
# profile 0
set profile_name = -
set dyn_lpf_dterm_min_hz = 84
set dyn_lpf_dterm_max_hz = 204
set dyn_lpf_dterm_curve_expo = 5
set dterm_lowpass_type = PT1
set dterm_lowpass_hz = 150
set dterm_lowpass2_type = PT1
set dterm_lowpass2_hz = 180
set dterm_notch_hz = 0
set dterm_notch_cutoff = 0
set vbat_pid_gain = OFF
set vbat_sag_compensation = 0
set pid_at_min_throttle = ON
set anti_gravity_mode = SMOOTH
set anti_gravity_threshold = 250
set anti_gravity_gain = 5500
set feedforward_transition = 40
set acc_limit_yaw = 0
set acc_limit = 0
set crash_dthreshold = 50
set crash_gthreshold = 400
set crash_setpoint_threshold = 350
set crash_time = 500
set crash_delay = 0
set crash_recovery_angle = 10
set crash_recovery_rate = 100
set crash_limit_yaw = 200
set crash_recovery = OFF
set iterm_rotation = OFF
set iterm_relax = RP
set iterm_relax_type = SETPOINT
set iterm_relax_cutoff = 10
set iterm_windup = 100
set iterm_limit = 400
set pidsum_limit = 500
set pidsum_limit_yaw = 400
set yaw_lowpass_hz = 70
set throttle_boost = 5
set throttle_boost_cutoff = 15
set acro_trainer_angle_limit = 20
set acro_trainer_lookahead_ms = 50
set acro_trainer_debug_axis = ROLL
```

set acro_trainer_gain = 75
set p_pitch = 64
set i_pitch = 99
set d_pitch = 48
set f_pitch = 120
set p_roll = 62
set i_roll = 94
set d_roll = 45
set f_roll = 115
set p_yaw = 52
set i_yaw = 99
set d_yaw = 0
set f_yaw = 110
set angle_level_strength = 50
set horizon_level_strength = 50
set horizon_transition = 75
set level_limit = 55
set horizon_tilt_effect = 75
set horizon_tilt_expert_mode = OFF
set abs_control_gain = 0
set abs_control_limit = 90
set abs_control_error_limit = 20
set abs_control_cutoff = 11
set use_integrated_yaw = OFF
set integrated_yaw_relax = 200
set d_min_roll = 32
set d_min_pitch = 35
set d_min_yaw = 0
set d_min_boost_gain = 37
set d_min_advance = 20
set motor_output_limit = 100
set auto_profile_cell_count = 0
set launch_control_mode = NORMAL
set launch_trigger_allow_reset = ON
set launch_trigger_throttle_percent = 20
set launch_angle_limit = 0
set launch_control_gain = 40
set ff_interpolate_sp = AVERAGED_2
set ff_spike_limit = 60
set ff_max_rate_limit = 100
set ff_smooth_factor = 37
set ff_boost = 15
set idle_min_rpm = 0
set idle_adjustment_speed = 50

```
set idle_p = 50
set idle_pid_limit = 200
set idle_max_increase = 150
set level_race_mode = OFF

# rateprofile 0
set rateprofile_name = -
set thr_mid = 50
set thr_expo = 0
set rates_type = ACTUAL
set roll_rc_rate = 19
set pitch_rc_rate = 19
set yaw_rc_rate = 19
set roll_expo = 60
set pitch_expo = 60
set yaw_expo = 60
set roll_srate = 90
set pitch_srate = 90
set yaw_srate = 90
set tpa_rate = 60
set tpa_breakpoint = 1280
set tpa_mode = D
set throttle_limit_type = OFF
set throttle_limit_percent = 100
set roll_rate_limit = 1998
set pitch_rate_limit = 1998
set yaw_rate_limit = 1998

# end the command batch
batch end
```

Save

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

RF Exposure Information

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.