

- Setup
- Ports
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- Power & Battery
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- PID Tuning
- Receiver
- Modes
- Adjustments
- Servos
- Motors
- OSD
- Sensors
- Tethered Logging
- Blackbox
- CLI

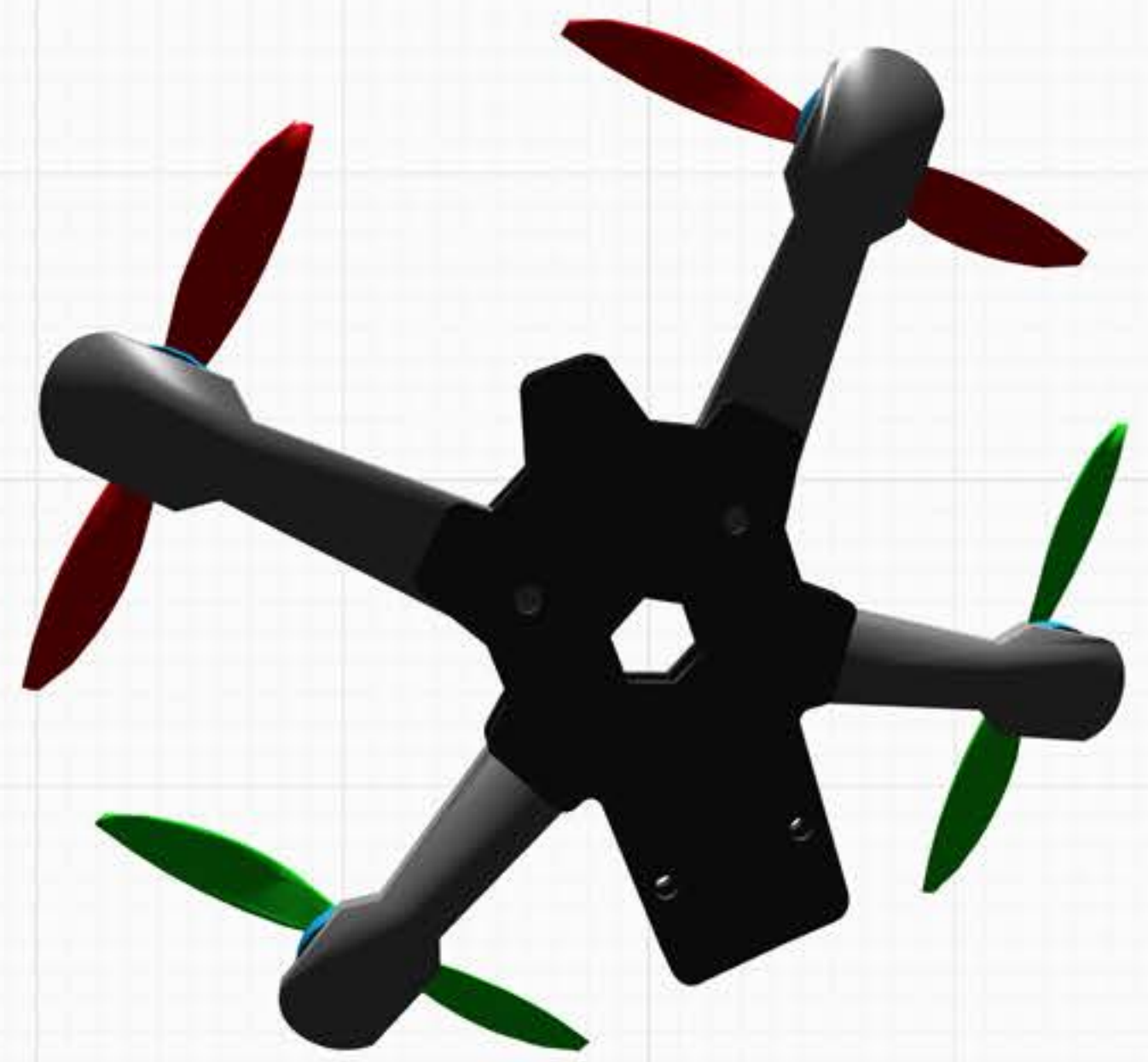
## Setup

WIKI

- Calibrate Accelerometer** Place board or frame on **leveled** surface, proceed with calibration, ensure platform is not moving during calibration period
- Calibrate Magnetometer Move multirotor at least **360** degrees on all axis of rotation, you have 30 seconds to perform this task
- Reset Settings** Restore settings to **default**
- Backup** **Restore** **Backup** your configuration in case of an accident, **CLI** settings are **not** included - See 'dump' cli command

Heading: 44 deg  
 Pitch: 63.2 deg  
 Roll: -54.5 deg

Reset Z axis, offset: 0 deg



Info	
Arming Disable Flags:	3,7,16
Battery voltage:	0.2 V
Capacity drawn:	0 mAh
Current draw:	0.00 A
RSSI:	0 %

GPS	
3D Fix:	
Sats:	
Latitude:	
Longitude:	

Instruments

## Configuration

WIKI

**Note:** Not all combinations of features are valid. When the flight controller firmware detects invalid feature combinations conflicting features will be disabled.  
**Note:** Configure serial ports **before** enabling the features that will use the ports.

### Mixer

Quad X

Motor direction is reversed

### System configuration

**Note:** Make sure your FC is able to operate at these speeds! Check CPU and cyclotime stability. Changing this may require PID re-tuning. TIP: Disable Accelerometer and other sensors to gain more performance.

Enable gyro 32kHz sampling mode

8 kHz Gyro update frequency

2 kHz PID loop frequency

Accelerometer

Barometer (if supported)

Magnetometer (if supported)

### Personalization

UR65 Craft name

### Camera

0 FPV Camera Angle [degrees]

### Receiver

SPI RX support Receiver Mode

**Note:** The SPI RX provider will only work if the required hardware is on board or connected to an SPI bus.

FRSKY\_D SPI Bus Receiver Provider

### Other Features

**Note:** Not all features are supported by all flight controllers. If you enable a specific feature, and it is disabled after you hit 'Save and Reboot', it means that this feature is not supported on your board.

- INFLIGHT\_ACC\_CAL In-flight level calibration
- SERVO\_TILT Servo gimbal
- SOFTSERIAL Enable CPU based serial ports
- SONAR Sonar
- TELEMETRY Telemetry output
- LED\_STRIP Multi-color RGB LED strip support
- DISPLAY OLED Screen Display
- CHANNEL\_FORWARDING Forward aux channels to servo outputs
- TRANSPONDER Race Transponder
- AIRMODE Permanently enable Airmode
- OSD On Screen Display
- ESC\_SENSOR Use KISS/BLHeli\_32 ESC telemetry as sensor
- ANTI\_GRAVITY Temporary boost I-Term on high throttle changes
- DYNAMIC\_FILTER Dynamic gyro notch filtering

### ESC/Motor Features

DSHOT600 ESC/Motor protocol

MOTOR\_STOP Don't spin the motors when armed

4.5 Motor Idle Throttle Value [percent]

### Board and Sensor Alignment

0 Roll Degrees GYRO Alignment Default

0 Pitch Degrees ACCEL Alignment Default

0 Yaw Degrees MAG Alignment Default

### Accelerometer Trim

0 Accelerometer Roll Trim

0 Accelerometer Pitch Trim

### Arming

25 Maximum ARM Angle [degrees]

### RSSI (Signal Strength)

RSSI\_ADC Analog RSSI input

### 3D ESC/Motor Features

3D 3D mode (for use with reversible ESCs)

### GPS

GPS GPS for navigation and telemetry

### Dshot Beacon Configuration

Use Dshot beacon (use motors to sound beeps when disarmed)

Beacon Tone

### Beeper Configuration

- GYRO\_CALIBRATED Beeps when gyro has been calibrated
- RX\_LOST Beeps when TX is turned off or signal lost (repeat until TX is okay)
- RX\_LOST\_LANDING Beeps SOS when armed and TX is turned off or signal lost (autoland/autodisarm)
- DISARMING Beep when disarming the flightcontroller
- ARMING Beep when arming the flightcontroller
- ARMING\_GPS\_FIX Beep a special tone when arming the board and GPS has fix
- BAT\_CRIT\_LOW Longer warning beeps when battery is critically low (repeats)
- BAT\_LOW Warning beeps when battery is getting low (repeats)
- GPS\_STATUS Use the number of beeps to indicate how many GPS satellites were found
- RX\_SET Beeps when aux channel is set for beep
- ACC\_CALIBRATION Accelerometer inflight calibration completed confirmation
- ACC\_CALIBRATION\_FAIL Accelerometer inflight calibration failed
- READY\_BEEP Ring a tone when GPS is locked and ready
- DISARM\_REPEAT Beeps sounded while stick held in disarm position
- ARMED Warning beeps when board is armed with motors off when idle (repeats until board is disarmed or throttle is increased)
- SYSTEM\_INIT Initialisation beeps when board is powered on
- USB Beep when flight controller is powered from USB. Turn this off if you don't want the beeper to be on when on the workbench
- BLACKBOX\_ERASE Beep when blackbox erase completes
- CRASH\_FLIP Beep when crash flip mode is active
- CAM\_CONNECTION\_OPEN Beep when the 5 key camera control is entered
- CAM\_CONNECTION\_CLOSE Beep when the 5 key camera control is exited

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# PID Tuning

WIKI

Profile: Profile 1  
 Rateprofile: Rateprofile 1

Copy profile values Copy rateprofile values Reset all profile values Show all PIDs

## PID Settings

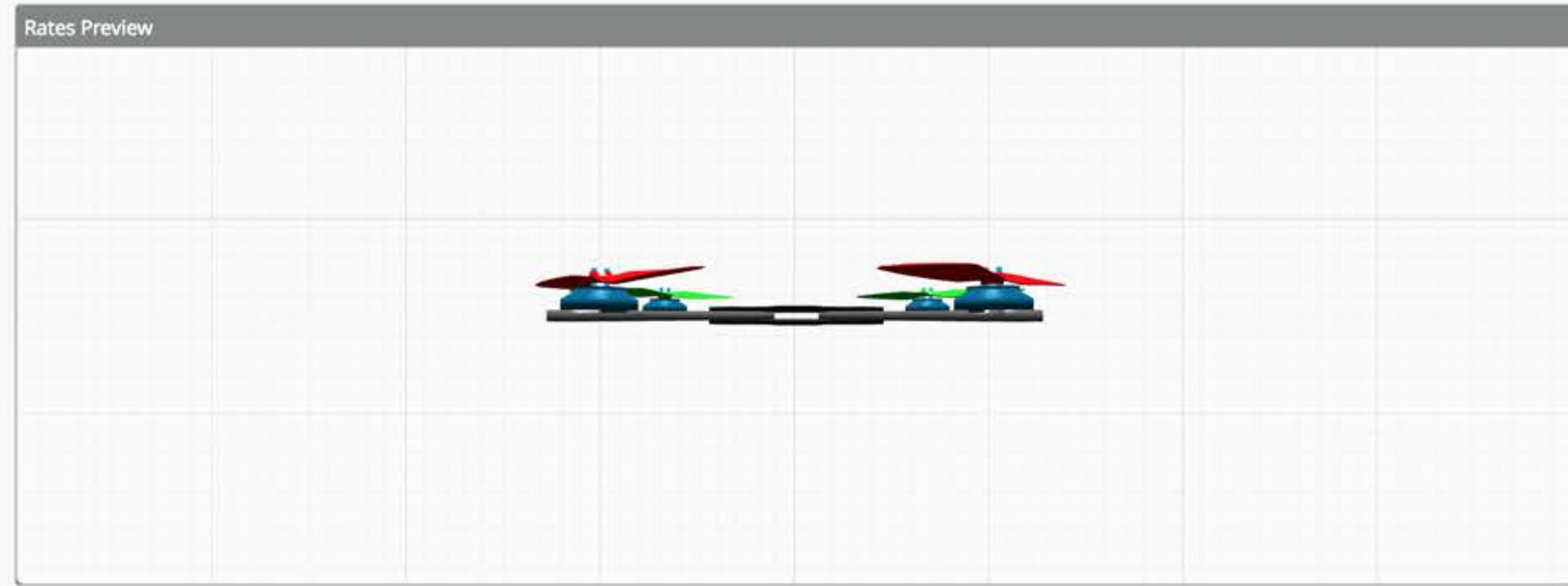
	Proportional	Integral	Derivative	RC Rate	Super Rate	Max Vel [deg/s]	RC Expo
Basic/Acro							
ROLL	40	40	30	2.02	0.70	1541	0.00
PITCH	58	50	35				
YAW	70	40		2.07	0.70	1998	0.00

Angle/Horizon		Strength	Transition
Angle		80	
Horizon		50	75
		Angle Limit	
		60	

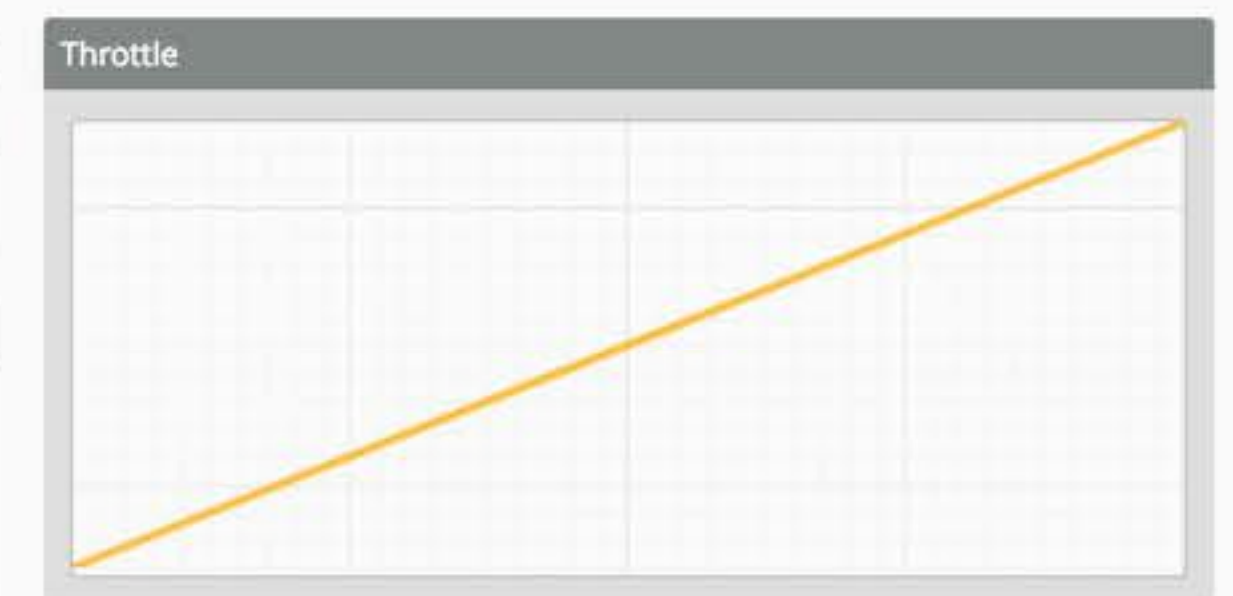
**PID Controller Settings**

0: D Setpoint Weight  
 1: D Setpoint transition  
 Vbat PID Compensation

Anti Gravity Gain: 1  
 Anti Gravity Threshold: 350



Throttle MID: 0.50  
 Throttle EXPO: 0.00



TPA: 0.10  
 TPA Breakpoint: 1650

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## PID Tuning

WIKI

Profile: Profile 1

Rateprofile: Rateprofile 1

Copy profile values Copy rateprofile values Reset all profile values Show all PIDs

PID Settings Filter Settings

**Tuning tips**  
**IMPORTANT:** It is important to verify motor temperatures during first flights. The higher the filter value gets the better it may fly, but you also will get more noise into the motors. Default value of 100Hz is optimal, but for noiser setups you can try lowering Dterm filter to 50Hz and possibly also the gyro filter.

Profile independent Filter Settings		
Gyro Lowpass Filters		
<input checked="" type="checkbox"/>	90	Gyro Lowpass 1 Cutoff Frequency [Hz]
	PT1	Gyro Lowpass 1 Filter Type
Gyro Notch Filters		
<input checked="" type="checkbox"/>	400	Gyro Notch Filter 1 Center Frequency [Hz]
	300	Gyro Notch Filter 1 Cutoff Frequency [Hz]
<input checked="" type="checkbox"/>	200	Gyro Notch Filter 2 Center Frequency [Hz]
	100	Gyro Notch Filter 2 Cutoff Frequency [Hz]

Profile dependent Filter Settings		
D Term Lowpass Filters		
<input checked="" type="checkbox"/>	100	D Term Lowpass 1 Cutoff Frequency [Hz]
	BIQUAD	D Term Lowpass 1 Filter Type
D Term Notch Filters		
<input checked="" type="checkbox"/>	260	D Term Notch Filter Center Frequency [Hz]
	160	D Term Notch Filter Cutoff Frequency [Hz]
Yaw Lowpass Filters		
<input type="checkbox"/>	0	Yaw Lowpass Cutoff Frequency [Hz]

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## Receiver

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Please read receiver chapter of the documentation. Configure serial port (if required), receiver mode (serial/ppm/pwm), provider (for serial receivers), bind receiver, set channel map, configure channel endpoints/range on TX so that all channels go from ~1000 to ~2000. Set midpoint (default 1500), trim channels to 1500, configure stick deadband, verify behaviour when TX is off or out of range.  
**IMPORTANT:** Before flying read failsafe chapter of documentation and configure failsafe.

Roll [A]	<input type="text" value="1500"/>
Pitch [E]	<input type="text" value="1500"/>
Yaw [R]	<input type="text" value="1500"/>
Throttle [T]	<input type="text" value="885"/>
AUX 1	<input type="text" value="1275"/>
AUX 2	<input type="text" value="1500"/>
AUX 3	<input type="text" value="1500"/>
AUX 4	<input type="text" value="1500"/>

Channel Map:  RSSI Channel:

'Stick Low' Threshold:  Stick Center:  'Stick High' Threshold:

RC Deadband:  Yaw Deadband:  3D Throttle Deadband:

RC Interpolation:

