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Community Presets

The below presets are *by the community, for the community*. You will see the BF version the preset is targeted toward and the pilot's name who published their recommended preset(s). We encourage community members to provide their own presets on this page. To do so, you simply need a Github account. Enjoy!

IMPORTANT: These settings are NOT provided or endorsed by the Betaflight project. They are examples that others have found helpful for their particular quad. THEY MAY NOT BE SUITABLE FOR YOUR QUAD! A better use might be to examine similar configurations to yours and get ideas on possible tuning directions rather than blindly copy/pasting someone else's settings. Always test carefully and safely.

To use, simply copy and paste the preset CLI commands into the CLI tab in the Betaflight App. After the paste, type "save" and hit [enter]. That will load the settings of the preset which you can see (mostly) through the Betaflight App tabs.

BF 4.2

Betaflight 4.2 with configurator 10.7 introduces significant and helpful features for tuning, many of which are highly recommended.

These features include VBat Sag Compensation, Feed Forward Interpolation, fixed I-Term Relax operation on Setpoint, and looptime improvements that allow for more stable filtering calculations. Existing features can also be leveraged to produce better performing and more robust tunes, including DMin/Boost Gain & Advance, TPA, and Thrust Linearization

VBat Sag Compensation is a feature which aims to produce consistent motor response across the entire flyable voltage profile of a battery pack, and does this by slightly reducing peak motor outputs from the mixer at high voltage, and increases these values as battery sag comes into play. This is a highly recommended feature,

although if you rely on 'feeling sag' as an indicator to land shortly, or are concerned about damaging batteries, particularly 6-Cell batteries on relatively efficient rigs, you can use values lower than 100 to receive most of the benefits, and also receive a small amount of extra initial 'punch' on fully charged batteries with values such as vbat_sag_comp = 70.

Feed Forward (FF) Interpolation has been improved, which uses a trailing average of 2-4 radio control setpoint samples to set feed-forward input values (which are then multiplied by the FF Gains). For noisier or less consistent RC signals (e.g. FrSky R9), using ff_interpolate_sp = 4 is a significant improvement, while more consistent signals (CRSFShot, AFHDS2A-IBUS, Futaba FASSTer) produce smooth enough traces to use ff_interpolate_sp = 2 (default) values with lower automatic RC_Smoothness values (around 8 is still stable enough for long range capable 7" craft).

I Term Relax now works correctly on Setpoint mode at values below 20. Particularly for large craft, lower values result in reduction or complete elimination of I-Term driven bounceback on flips and rolls.

DMin/Boost tools such as the DMin-Gain and DMin-Advance can be leveraged to increase effective D gains during stick movements (dMin Advance mostly) and propwash (dMin Gain mostly). Values of Gain = 44-55 and Advance values of 80-100 can result in much higher and more consistent D-Term response to damp P-term step responses, while still allowing for lower DMin values during normal flight that does not amplify higher frequency noise.

Thrust_Linear is intended to linearize aspects of thrust delivery (which is typically a quadratic response to throttle position) in order to produce more consistent PID response across the range of throttle inputs. In practical implementations, it is most frequently used as a way to increase PID gains at low throttle to compensate for lower authority craft (low voltage 65mm and 3" lightweight quadcopters, as well as 6-8" quadcopters on smaller motors can benefit from values of thrust_linear from 20-30 in order to remove low-RPM bobbles and instability. Quite often, best results are achieved by simultaneously increasing the TPA (Throttle PID Attenuation - most practically this is a throttle-DTerm-attenuation factor at default) value, and moving the breakpoint higher (e.g. TPA = 0.72-0.78, TPA_Breakpoint = 1270-1420). This combined effect allows for boosted PID response at low throttle values, but does not result in excessive motor heat from amplified D gains at high throttle.

Preferred tuning methods can lean heavily on the Slider functionality in the 10.7 configurator, with many archetypes of copters being fairly quick to tune quickly with sliders based on quick information, following a standard procedure of determining the correct P:D gain ratio, incrementing the P&D Gains until oscillations or trilling sounds are observed (then reducing 1-2 clicks), then finally adjusting FeedForward

through gain sliders and FeedForward Transition (which reduces effective feed forward gain from center point out to the specified value linearly) until desired stick feel is achieved.

Note: The D Ratio tuning slider in the 10.7 Configurator is different from previous versions - moving the slider to the right increases D gains while leaving the P gains as-is. Values of 1.2 on the P:D Balance slider produce gains of P≈D, while 1.0 produces a P:D ratio where D gains are roughly 0.8x of P gains.

Dynamic Notch Filter ranges are specified by minimum and maximum Hz - if you transport a tune from BF4.1.X to BF4.2, you will need to change the dyn_notch_max_hz value to an actual value in Hertz - recommend setting this value to dyn_notch_max_hz = 350 for most applications.

Pilot: Krunked

About: This is my base tune that i give everyone to try. slight adjustments might be needed but this works GREAT for 99% of pilots. you must be using the below highlighted esc settings and RPM filtering!! F7 = DShot600 8k8k, F4= DShot300 8k4k..
Lots of people complain about 4.2 'wobbles' -- THRUST_LINEAR = 25 is what solves this with the right PD gain... it BOOSTS the PIDs' at 0 throttle, giving low-end authority back, due to the loss of torque from 48khz. but 48khz markedly flies better all around in all of my quads and in all of the people ive had use these settings.

5inch quad base tune. 48khz, 23 timing, demag high, thrust_linear = 25

▸ Krunked's Universal CLI Settings 5inch - Copy/Paste

Pilot: Tehllama

About: Tehllama prefers a racing feel, set up for racing rates that achieves minimum step response latency and maximizes motor temperature overhead. While a sharper tune is possible, for racing setups these carry lots of margin for completing heats on damaged props.

▸ Tehllama's Universal CLI Settings - Copy/Paste

Racing Configurations - RotorBuild Description Links and CLI Copy/Paste Tunes

3" 1105 5500KV 3S on Gemfan 3016-3 (Diatone GTB-339) [F411 on DShot300]

▶ CLI Copy/Paste

3" 1408 4100KV 4S on Gemfan 3052-3

Build Link: [https://rotorbuilds.com/build/18675]

▶ CLI Copy/Paste

5" Neutron-R Hybrid-SX :: 2150KV 6S // 2650KV 5S on Gemfan 51433/51466/51477

Build Link: [https://rotorbuilds.com/build/18676]

Build Link: [https://rotorbuilds.com/build/21176]

▶ CLI Copy/Paste

7" 2408 1622KV 6S // 7" 2507 1500KV 6S // 7" 2408 1900KV 5S

Build Link: [https://rotorbuilds.com/build/21178]

Build Link: [https://rotorbuilds.com/build/10199]

▶ CLI Copy/Paste

Pilot: Furadi

▶ Furadi 5" NBD Infinity CLI Settings - Copy/Paste

▶ Furadi 7" FR-7 NBD Infinity CLI Settings – Copy/Paste

Pilot: JJang FPV

About: 'Responsive but Smooth' feel, set up for 5" normal freestyle(cinematic, juicy and more) with Gopro 6/7/8, 4S battery. There is no propwash at all.

Caution: You should activate 'Bidirectional DShot' for rpm filter and adjust 'idle_min_rpm' about 70% of dshot_idle_rpm or start with '21'.

▶ JJang's PIDs: 5" 4S Normal Freestyle CLI Settings – Copy/Paste

BF 4.1.X

Betaflight 4.1.X with configurator 10.6

Note: the P:D Ratio slider in the 10.6 Configurator is reversed from the later releases – in 10.6 moving the slider to right increases P gains while decreasing D gains, which is not the behavior in the 10.7 Configurator. A value of 0.8 on the PD Balance slider produce gains of P≈D, while 1.0 produces a P:D ratio where D gains are roughly 0.8x of P gains.

There are added features, and a couple of noteworthy bugs present in 4.1.X.

Setup for enabling bidirectional DShot features (RPM filtering, dynamic idle) is simpler in BF4.1.X, as is configuring RC Smoothing using the configurator parameters. With utilizing RPM Notch filters for attenuation of motor noise bands, changes in lowpass filtering (particularly dynamic lowpass filtering) are typically required in order to achieve the substantial improvements possible with RPM filtering.

Feed Forward (FF) Interpolation has been introduced, which uses a trailing average of 2 radio control setpoint samples to set feed-forward input values (which are then multiplied by the FF Gains). For noisier or less consistent RC signals (e.g. FrSky R9), using ff_interpolate_sp = averaged is an improvement, though BF4.2 and later allows for higher numbers of samples to be required (up to 4).

The I-Term Relax mode in Setpoint does not achieve any effective values below 20 - for larger craft where lower iTermRelax values are needed or tuning strategies that rely on removing I term involvement to tune P/D Ratios and gain, shift this to Gyro (in 4.2 and later, you can use Setpoint again).

VBat PID Compensation is often helpful for tuning flights, and is a recommended setting when conducting blackbox logging, or if craft authority as battery voltage approaches sag points is important. This has been effectively replaced by VBAT Sag compensation in BF4.2 releases.

Preferred tuning methods can lean heavily on the Slider functionality in the 10.6 configurator, with many archetypes of copters being fairly quick to tune quickly with sliders based on quick information, following a standard procedure of determining the correct P:D gain ratio, incrementing the P&D Gains until oscillations or trilling sounds are observed (then reducing 1-2 clicks), then finally adjusting FeedForward through gain sliders and FeedForward Transition (which reduces effective feed forward gain from center point out to the specified value linearly) until desired stick feel is achieved.

Running higher Yaw P gains is entirely possible, although sliders do not allow this behavior – the defaults in BF4.2 (using the same effective PID gains) allow for running Yaw P Gains equal to Roll P gains, and works very well for most craft, so do not be concerned if during the tuning process higher Yaw P gains are required, you should proceed to increase those gains until matching Roll P gains without concerns.

BF 4.0.X

Back to 4.0.x Defaults

This will take your setup back to BF 4.0.x defaults

▶ CLI Copy\Paste

Pilot: UAV TECH

ALWAYS CHECK YOUR MOTOR TEMPS AFTER A SHORT 15 SECOND FORWARD FLIGHT

WARNING: If your mechanical/electrical issues are not addressed (most of the time those are the issues folks have), the below settings may require heavier filtering and lower PID gains (the BF default). Heavier filtering and lower PID gains can provide for cooler motors, but also has worse flight performance.

A clean build is when a spectrograph of the RAW gyro noise trace (Debug_Mode=Gyro_Scaled) on a FULL & HARD flight looks like the below or

better:

![https://github.com/spatzengr/UAVtech-Resources/blob/master/Gyro_Raw%20Noise%20Profiles/Clean/Nova%20on%20BF4.0.png]

"Better" means the spektrograph lines are lower or have more well defined peaks. An important factor is the dip in raw motor vibrations ("noise") from 80 to 200hz.

Brushless Whoop Class (based on Mobula 7 w/ 2s)

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2" - 3" Quad - 11xx-12xx Motors

`(in coordination with George Hartmann)`

▸ CLI Copy\Paste

3" Quad - 14xx-15xx Motors

`(in coordination with George Hartmann)`

▸ CLI Copy\Paste

5" Quad - Setpoint Tracker - Lower Cutoffs Filters (more filtering)

For: 650g to 725g AUW Kwads | 1000 to 1100 deg/sec rates.

Kwads with Noise between 50hz and 200hz

▸ CLI Copy\Paste

5" Quad - Setpoint Tracker - Higher Cutoffs Filters (less filtering)

For: 650g to 725g AUW Kwads | 1000 to 1100 deg/sec rates.

Kwads with NO Noise between 50hz and 200hz

Requires a quad with NO noise issues from 50hz to 200hz! So, if you are not sure, use the above first and if that goes well try these settings next.

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6"/7" Quads

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X-Class [IN PROGRESS!!!]

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PID Tuning Preset

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Pilot: RipperDrone

5" Quad (5s-6s)

> ▸ CLI Copy\Paste

Pilot: CUDA KEER

3" toothfairy with Emax RS1306b BF4.2

Floss 2.1 hybrid with Hyperlite 2207 1922kv BF4.2 race rig

6" Floss 2.1 with Hyperlite 2207 1922kv BF4.0 race rig

5" Massive Droner with T-Motor F60pro II

Pilot: TehLlama

6" Neutron-R with BrotherHobby R6 2207 Race Rig

Build Details

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REVERT 4.0.x DEFAULTS TO AN OLDER VERSION OF BETAFLIGHT DEFAULTS

These are presets to apply to BF 4.0.x to get the defaults of an older versions of Betaflight. This WILL give you the same flight experience as an older release if that is what you like, but want the new features of BF 4.0.x.

Revert to BF 3.5.X

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Revert to BF 3.4.X

> ▶ CLI Copy\Paste

Revert to BF 3.2.x & 3.3.X (they were the same)

> ▶ CLI Copy\Paste

Youtube

▶ Joshua Bardwell

▶ Ivan Efimov

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