KINGKONG THUNDER™

12A High-performance Multi-rotor Electronic Speed Controller User Manual

Thanks for purchasing our 12A High-performance Multi-rotor Electronic Speed Controller , improper use or assemble of this product can result in serious injury or even death. Please read this manual carefully before using.

Version 1.0-50701E

Hardware	Micro Controller	Voltage Rating	Cont. Current	Burst Current	High Stability Ceramic Resonator	Aluminium Radiator Fin	BEC
Details	MEGA88A (16Mhz)	2S~4S Lipo	12A	20A (5 seconds max)	√	√	×

Software	Firmware	FW update	PC software	OneShot125	Closed Loop	Bidirectional	Damped Light	Demag compensation	Beacon function
Details	BLHeli	√	√	√	√	√	√	√	√

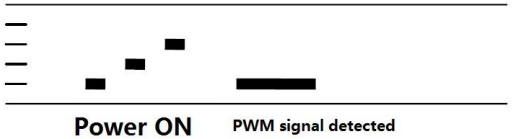
Function (Default)	1	2	3	4	5	6	7	8	9	10	11	12	13	SPECIAL INSTRUCTION
1 – Closed loop P gain	0.13	0.17	0.25	0.38	0.50	0.75	1.00	1.50	**2.00**	3.00	4.00	6.00	8.00	-
2 – Closed loop I gain	0.13	0.17	0.25	0.38	0.50	0.75	1.00	1.50	**2.00**	3.00	4.00	6.00	8.00	-
3 – Closed loop mode	HiRang	MidRang	LoRang	**OFF**	-	-	-	-	-	-	-	-	-	**A**
4 – Multi gain	0.75	0.88	**1.00**	1.12	1.25	-	-	-	-	-	-	-	-	**B**
5 – Low voltage limit (/cell)	**OFF**	3.0V	3.1V	3.2V	3.3V	3.4V	-	-	-	-	-	-	-	-
6 – Startup power	0.031	0.047	0.063	0.094	0.125	0.188	0.25	0.38	0.50	0.75	**1.00**	1.25	1.50	**C**
7 – Commutation timing	Low	Medium Low	Medium	Medium High	High	-	-	-	-	-	-	-	-	**D**
8 – PWM frequency	**High**	Low	Damped Light	-	-	-	-	-	-	-	-	-	-	**E**
9 – Demag compensation	OFF	**Low**	High	-	-	-	-	-	-	-	-	-	-	**F**
10 – Rotation direction	**Normal**	Reversed	Bidirectional	-	-	-	-	-	-	-	-	-	-	**G**
11 – Input PWM polarity	**Positive**	Negative	-	-	-	-	-	-	-	-	-	-	-	-

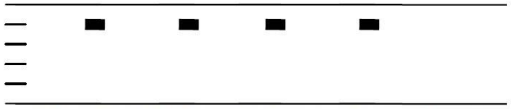
SPECIAL INSTRUCTION	
A	In closed loop mode throttle value while running sets the rpm target of the motor. HiRang=200000RPM max,MidRang=100000RPM max,LoRang=50000RPM max. **DO NOT USE self-locking propeller when enable closed loop mode.**
B	Multi gain scales the power applied to the motor for a given input. A low multi gain will also limit the maximum power to the motor.
C	This parameter use to control maximum power from the very start. **Setting startup power too high can cause excessive loading on ESC or motor**
D	This function used to help optimize motors rotating. Default setting will work fine, but if the motor stutters it can be beneficial to change timing.
E	High PWM frequency is around 16kHz, and low PWM frequency is around 8kHz. Damped light mode always uses high PWM frequency. **DO NOT USE self-locking propeller when enable damped light.**
F	Demag compensation is a feature to protect from motor stalls caused by long winding demagnetization time after commutation. The typical symptom is motor stop or stutter upon quick throttle increase, particularly when running at a low rpm. As described earlier, setting high commutation timing normally helps, but at the cost of efficiency.
G	**DO NOT USE self-locking propeller when enable bidirectional ! Once enable bidirectional, programming function of ESC from signal input will disable, User can only change function from the PC software. Please refer to the《PC software intro》in the end.**
OneShot125	OneShot125 will automatically detected by the ESC upon power up, user do not need change any setting. **The motor maybe a little stutters at low rpms in OneShot125 mode.**
Beacon function	The ESC will start beeping after a given time of zero throttle. This can be very useful for finding lost aircraft.

Preface This is only a brief description, if you want more info, go to this link https://github.com/bitdump/BLHeli. It is detailed in 《BLHeli manual Atmel Rev.13x.PDF》

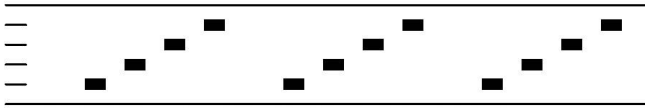
Throttle calibration & entering programming mode

Throttle above midstick then power on will start throttle calibration.

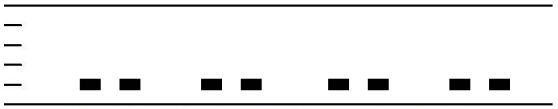




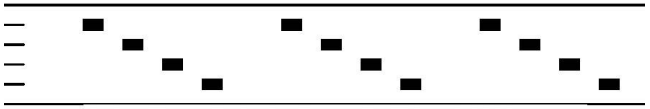
When throttle is above midstick (measuring max throttle)



If throttle is above midstick for 3 seconds, this beep sequence indicates that max throttle has been stored



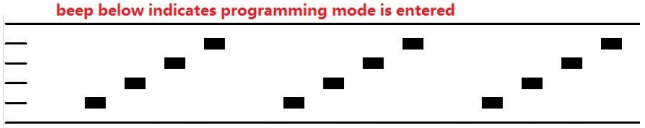
When throttle is below midstick (measuring min throttle)



If throttle is below midstick for 3 seconds,this beep sequence indicates that min throttle has been stored

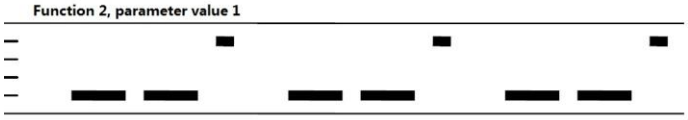
At this point throttle calibration values are stored. You may remove power from the ESC, if you just wanted to do a throttle calibration and not enter programming mode.

If you want enter programming mode, full throttle then this beep below indicates programming mode is entered



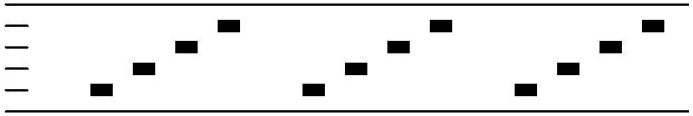
Programming mode

...etc...



...etc...

If the throttle stick is moved to zero during one of the above sequences, the parameter value of that function is selected and stored. And you will hear this sound.



The ESC then resets itself.

Jump to the next function If the throttle stick is moved below max (but not to zero), the current parameter will be skipped, and programming will proceed to the next parameter. This way it is possible to access the later parameters without going through all the beeps. It is generally a good idea to go to full throttle again before selecting a parameter, to make sure you have selected the right parameter. Throttle is read in the 1 second pause between the function/parameter beeps.

Load all functions default If the throttle stick is never moved to zero, the ESC will load the defaults and then reset itself after the last parameter value of the last function. This is a convenient way of setting all parameters to defaults.

PC software intro Our product support PC software named BLHeliSuit, user can use PWM plug for modify the function or update firmware of ESC on PC. BLHeliSuit only support windows OS now. Use BLHeliSuit need our adapter, which can be purchased separately. Because different ESC have different bootloader and hardware, also BLHeliSuit support a lot of adapter, user need searching information on BLHeli and BLHeliSuit website if do not use our original adapter. For detailed use instructions please refer to 《KINGKONG BLHeili ESC PC Software and Adapter User Guide》.

Programming parameters that can only be accessed from configuration software (BLHeliSuit):

1. Throttle center value for bidirectional operation with PPM.
2. Beep strength, beacon strength and beacon delay.
3. Programming by TX. If disabled, the TX can not be used to change parameter values (default is enabled).

Other information	
BLHeli website	https://github.com/bitdump/BLHeli
BLHeliSuit download	https://www.mediafire.com/folder/dx6kfaasyo24l/BLHeliSuite
BLHeli hardware type of this ESC	BlueSeries_12A
Bootloader type of this ESC	BLHeli bootloader （512bytes 19200bps Fixed）
Document update	http://pan.baidu.com/s/1sjsmE65

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