

3 Axis Brushless Gimbal Controller Manual

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When you receive your 3 axis controller board from dys.hk in the packet will be the following items









the main controller



some cables

to connect your controller 1st connect the sensor to the main board as shown here



Please not that you<u>DONT</u> connect the INT pin this is <u>NOT</u> requied therefor connect :

<u>Sensor</u>		<u>Main controller</u>
SCL	to	SCL
SDA	to	SDA
+5v	to	+5v
GND	to	GND



Connect the 3rd axis board to the main controller please attach the following way

As you can see in the picture above the 1st ground pin is not connected and is not required, once you have connected the wires in this way you then connect the corresponding wires to the same pins on the main controller board

	main controller
to	SCL
to	SDA
to	+BAT
to	GND
	to to

next connect your battery leads (please note these are NOT supplied)



Now your board is all ready to be added to your gimbal if you only have the 2 axis controller board then you will have to disregard the 3rd axis add-on board part of this manual.

To configure you controller board you will need to down load the following GUI listed on this page <a href="http://www.simplebgc.com/eng/downloads/">http://www.simplebgc.com/eng/downloads/</a>

when you have downloaded and installed the GUI you can click on the icon and it will load up



SimpleBGC GUI V2.2 02	Statement of the local division of the local			
File Language Help				
Connection		Profile		
Con	Connect		×	Rename
Board: not connected	Firmware: -	Load	Save	http://www.simplebgc.com
Basic Advanced RC Settings	Follow mode Menu	Button Realtime Data	a Firmware u	
PID Controller	Motor Configurati			
PID		POWER INVERT	NUM.POLES	
ROLL 00 00 00	ROLL		0	
PITCH 0 0 0 0	PITCH		0	0.0 0.0
YAW 0 0 0 0 0	YAW		0	
				STATE PROVIDENCE
External FC Gain	Sensor			
ROLL 0	Axis TOP	🗴 🤝 RIGHT	XV	ROLL
	_] Skip Gyro	calibration at startup		ROLL
AUTO				1.1.1. 0.0 0.0 LAND
				STATE REPORT
USE DEFAULTS				
		Cycle time:	I2C errors: 0	PITCH
				PITCH
				0.0 0.0
				0.0 0.0 M

The first thing that has to be done before we start to configure the controller is you have to balance the camera on the gimbal, if you fail to do this properly then you will have issues when trying to set up the controller

Next we will connect you controller board to the computer via a usb lead (*not supplied*), select the port at the top and then click connect when you do this for the 1st time you will see that you need to calibrate the accelerometers as seen in this screen

🖆 SimpleBGC GUI v2.2 b2					
File Language Help					
Connection		Profile			
COM4 V Disconnect		Profile 1	$\sim$	Rename	
Board: version 1.0+3a Firmwa	re: 2.2 b2	Load	Save	http://www.simplebgc.com	
Basic Advanced RC Settings Follow	mode Menu Bu	tton Realtime Data	a Firmware u T		
PID Controller	Motor Configuration				
P I D	PC	WER INVERT	NUM.POLES		
ROLL 10 🗘 0.1 🗘 5 🗘	ROLL	50 🗘 🗌	14 🗸		
PITCH 10 0.1 5 5	PITCH	50 🗘 🛄	14	0.0 0.0	
YAW 10 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	YAW	50	14 📉		
		AU	то	A A A A A A A A A A A A A A A A A A A	
External FC Gain	Sensor				
ROLL 0	Axis TOP	Z V RIGHT	XV	ROLL	
РІТСН 0	_  Skip Gyro ca	libration at startup		ROLL	
AUTO	CALIB.AC	CAL	IB.GYRO	17.1 16.6	
				deland a	
				AN THE PROPERTY OF	
USE DEFAULTS		READ	WRITE		
Accelerometer is not calibrated		Cycle time:	i70 I2C errors: 136	- PIT	
Simple calibration: Level sensor horisontally as precise as possible, and than press "CALIB_ACC". For more precise					
six-points calibration see instruction manual					
Parameters successfully loaded from board.					

🕌 SimpleBGC GUI v2.2 b2					
File Language Help					
Connection		Profile			
COM4 V Disconnect		Profile 1		$\sim$	Rename
Board: version 1.0+3a Firmwa	re: 2.2 b2	Load.		Save	http://www.simplebgc.com
					-
Basic Advanced RC Settings Follow r			me Data 💦 F	irmware u 🖪 🕨	
PID Controller	Motor Configuration				
P I D ROLL 100 010 50	ROLL		ERT NUM.PC	_	w   E
	PITCH		14	=	
	L		14		0.0 3.1
YAW 10 0.1 0.1 5 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	YAW	50	14		
			AUTO		STATE MERINE
External FC Gain	Sensor				
ROLL 0	Axis TOP	Z 🗸 RIG	HT X N	/	ROLL
PITCH 0	Skip Gyro c	alibration at startu			ROLL
AUTO	CALIB.A		CALIB.GYR0		-0.9 0.2
					C. C. C. C. N. V. V.
					A STATE PRIME
USE DEFAULTS		READ		WRITE	
		Cycle	time: 582 I20	errors: 3523	РІТСН
					PITCH
					0.4 0.2
					441.1.1.1
Accelerometer calibtation started.					

click the CALIBACC button making sure the sensor is flat and level the led will blink for 3 seconds. You will notice that the red writing then disappears as seen in this screen

Next step is to do the advanced calibration of your sensor, this is achieved by fixing the sensor to a box then click the CALIB ACC and wait for 3 sec until the light stops flashing and then move the box on to its next side and click CALIB ACC and wait for 3 sec until ALL 6 sides have been done. This will help holding the horizon when in Yaw rotation. Next we need to tell the main controller that there is a 3rd axis board attached to the main controller, to do this you need to select the Advanced Tab and under motor outputs select the YAW and a dropdown menu will appear default is disabled

SimpleBGC GUI v2.2 b2			
File Language Help			
Connection		Profile	
COM4 💙 Di	sconnect	Profile 1	Rename
Board: version 1.0+3a	Firmware: 2.2 b2	Load Save	http://www.simplebgc.com
Basic Advanced RC Settings	Follow mode Menu Bu	itton Realtime Data Firmware u	
AHRS	Timings		
Gyro trust 100 🗘	Serial port speed:	115200	
Accelerations compensation	PWM frequency:	LOW (noisy)	
Motor outputs	RC Sub-Trim		1.4 0.1
ROLL: ROLL out 🗸	ROLL trim: 0 🗘	AUTO	STURED
PITCH: PITCH out	PITCH trim: 0	Deadband around center:	STATE A
Sensor disabled	YAW trim: 0	15 🗘	
ROLL out	Expo curve: 0		ROLL
Gyro LPF PITCH out			0.0 0.0
_ I2C pullups enable			Cold and a start
			STITTI
USE DEFAULTS		READ WRITE	
		Cycle time: 562 I2C errors: 5564	РІТСН
			PITCH
Current profile successfully written to board.			

you need to change this to YAW ext.board and then click Write BUTTON to save your settings (you need to do this every time you change something)

next if your motors are noisy then please do the following , go to the Advanced Tab and under PWM Frequency select HIGH (Silent) from the dropdown menu and click WRITE to save your settings (you need to do this every time you change something)

🛃 SimpleBGC GUI v2.2 b2			
File Language Help			
Connection		Profile	
COM4 💙 Dis		Profile 1	Rename
Board: version 1.0+3a	Firmware: 2.2 b2	Load Save	<u>http://www.simplebgc.com<mark>e</mark></u>
Basic Advanced RC Settings	Follow mode Menu Bu	tton Realtime Data Firmware u	
AHRS	Timings		
Gyro trust 100 🗘	Serial port speed:	115200	w / E
Accelerations compensation	PWM frequency:	LOW (noisy)	
Motor outputs	RC Sub-Trim	LOW (noisy) HIGH (silent)	12.5 0.0
ROLL: ROLL out	ROLL trim: 0	AUTO	
PITCH: PITCH out	PITCH trim: 0	Deadband around center:	STILL PRE
YAW: YAW ext.board	YAW trim: 0	15 🖕	
Sensor	Expo curve: 0		ROLL
Gyro LPF 0 ♀			1.6 0.0
☐ I2C pullups enable			Contraction of the
			STREEP BO
USE DEFAULTS		READ WRITE	State Hard
		Cycle time: 758 I2C errors: 0	
Setup PWM frequency used to drive motors. Sile	nt (high frog) mode draine more	nower from botton, and is a bit loss precise	PITCH
than the noisy (low-freq) mode.	an (ingn ney) mode diains more	ponor nom vallely and is a bit less predse	1.1 0.1 1.1 N
Parameters successfully loaded from board.			

**NOTE:** that in all of the above images there were some **I2C** errors showing in red this is normal and will show until you have connected a motor and power from a battery then they will disappear.

when you have connected all your motors to the controller you can test the motors with the following, Motor Configuration just click AUTO and watch your gimbal move on its own and it should select the amount of poles that you have in each motor. This is not always the case but is close for the DYS brushless gimbal motors you have 22 Poles and it will select if INVERT (motor wires wrong way round) nothing to worry about. If you find that the motor is jumping then remove the tick from that motor and see if that stops it.



## here are some setting to get you going for the brushless gimbal from DYS

🛃 SimpleBGC GUI v2.2 b2				
File Language Help				
Connection	F	Profile		
COM4 Disconnect		Profile 1		Rename
		Load	Save	h H == 10
Board: version 1.0+3a Firmwa	are: 2.2 b2			http://www.simplebgc.com
Basic Advanced RC Settings Follow	mode Menu Butto	n Realtime Data	a Firmware u 💷	
PID Controller	Motor Configuration			
P I D	POW	ER INVERT	NUM.POLES	
ROLL 13 🗘 0.2 🗘 17 🔪	ROLL 110		22 🔹	
PITCH 12 🗘 0.11 🗘 9 🗘	PITCH 90	D 🗘 🛛 🔽	22 🗘	1.1 0.1
YAW 18 🗘 0.23 🗘 17 🔪	YAW 89	• <b>·</b>	22 🔪	
		AU	то	AND THE PARTY OF
External FC Gain	Sensor			
		z 🗸 RIGHT		ROLL
	Skip Gyro calibi		x 🗸	ROLL
	CALIB.ACC		B.GYRO	1.8 0.1
	CALIB.ACC		B.OTRO	Contraction and the second
				STATIC P
USE DEFAULTS		READ	WRITE	
		Cycle time:	05 I2C errors: 0	РІТСН
				PITCH
				1.1 0.2
Current profile successfully written to board.				

## Manual by G. Miller 3rd Axis controller & Gimbal from www.DYS.HK