bigaole ®

# BGL-6G-AP   Instruction   Manual

Thanks for choosing BGL-6G-AP. It is a small and exquisite 6-aixs auto level flight control system   for fixed wing aircraft with high performance. It has features of auto balance, return back with a button. It supports 3 types of planes: the normal one, flying wing and v-Tail . With latest MEMS technology, The Auto pilot can help the model aircraft   stability, flexibility and reliability, which follow the pilots' operation. The auto balance function could avoid exploding, and return back function could make the flight more relaxed.

1. Specification

Dimensions:	23mm*38mm
Weight:	5.5g
Operatigvoltage:	DC4.8V------6V
Operatingcurrent:	20mA
Servo compatibility:	1.52ms analog servo/1.52ms digital servo
Radio compatibility:	P PM .PCM .2.4G
Operating Temperature:	-15°C---65°C

2. Function and connection
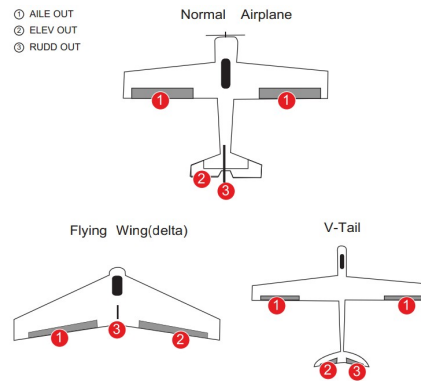
2.1   Connection
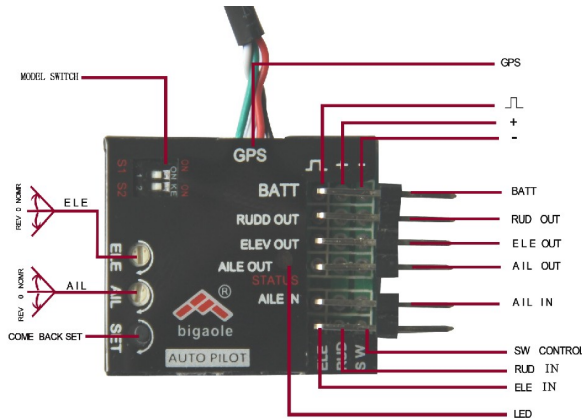
2.2   Model selection

Transmitter setting

Turn on the transmitter and   create a new model,set the trims and sub-trims of   all channels to zero,making that   all mix-function are off.

S1/S2 for corresponding Model

	1	2	Diagram	AILE OUT	ELEV OUT	RUDD OUT
Normal Air plane	0	0		AIL Servo	ELE Servo	RUD Servo
Flying Wing	0	1		Left wing servo	Right wing servo	RUD Servo
v-Tail	1	0		AIL Servo	Left wing servo	Right wing servo
Calibration mode of sensor	1	1		LED flashes rapidly for 10 seconds then LDE Steady on		

① AILE OUT
② ELEV OUT
③ RUDD OUT

Normal   Airplane

Flying Wing(delta)   V-Tail

3.Installation method.

3.1 .The BGL-6G-AP must be installed in a flat and stable platform close to the center of gravity of your plane. The connecting method refers to the following diagram:
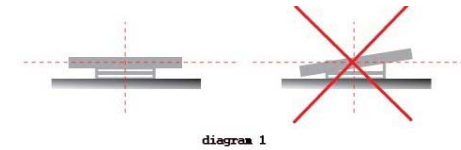

diagram 1

3.2 The BGL -6G-AP must be installed to towards forward in a level platform as showing   : (**Attention: Don't reverse   installation**.)
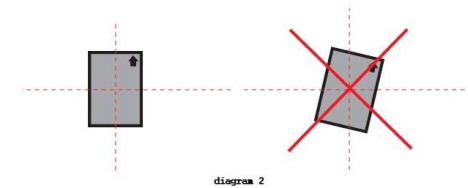

diagram 2

4.Flight Mode

Blance Mode:

The gyro can correct the attitude of flight automatically when the sticks of transmitter don't effect to the airplane.The airplane can keep horizontal automatically under this mode.

GYRO OFF MODE :

The gyro stop to correct the airplane .We can control the airplane just by moving the sticks of transmitter.

Come home automatically Mode:

The default height is the height when the plane begin to come home, the plane will be circled automatically over a circle of radius 50M above the point of return .Only the RUD stick can control the airplane , the ALI and ELE don't effect to the airplane under this mode.The airplane will hover automatically with a certain tilt angel under the function of gyro.

Attention: The wing control surface nearly has no change when toggling between Blance Mode and Gryo Off Mode.But the wing control surface will keep a certain tilt angel automatically to make the airplane hover antomatically remaining a certain lateral attitude.

5. Mode switch

5.1   Without GPS

The SW control signal is assigned to the appropriate channel. "SW" is the switch of changing flight mode. When use 2-section switch, it can   change from Gyro Off Mode into Balance Mode.

Please check the following table:

Flight Model	Range of switch	Signal Pulse Width	LED Status
Gyro Off	Less	1500US	Steady on
Balance	More	1500US	Steady on

5.2 With GPS

The SW control signal is assigned to the appropriate channel. "SW" is the switch of changing flight mode. When use 3-section switch , There are three modes corresponding. Please refer to the following table:

Flight Model	Range of switch	Signal Pulse Width	LED Status
Come home automatically	Less	1250US	Flashes slowly
Gyro Off	Middle	1250US--1750US	Flashes slowly
Blance	More	1750US	Flashes slowly

6. Setting method of autopilot calibration and return

6.1 without GPS

Turn the switch 1 and 2 to the "ON" position to initialize when you use the 6G-AP first . LED flashes rapidly for 10 seconds after power on. When the LED is steady on, Initialization is ok , Then cut off the power and turn the switch S1 and S2 into corresponding flying type. Power on again and the LED is steady on .

6.2. with GPS

A. **Communication recognition**

GPS access autopilot,Turn the switch 1 and 2 to the "ON" position.then powered ,GPS and auto pilot communicate automatically,when the red LED of auto pilot changes from quick flashing to solid Red,at last turn to slow flashing.GPS lit by a blue LED-change from solid blue to flashing,which means that autopilot and GPS has been achieved communication recognition successfully.

B. **Calibration**

Press the "set" button for 3 seconds, and then the RED LED changes from flash to solid RED at last blink . it means autopilot calibration is successful.

C. **Set point of return**

Turn the switch into corresponding flying type.set the point of return :
When it is connected with power, long press the Setting button for three seconds or more, the REDLED lights change from blink to Steady at last blink, which means that the setting of current return point is OK.

Attention: When the GPS signal is lost or GPS connection is off, the mode is automatically changed to Balance Mode to ensure the safety of the airplane.

7. Adjusting method

7.1 The knobs of ALE, ELE contains two functions: Gyro gain Direction, Gyro gain range.

7.1.1 Feedback Direction: the upper part is NOMR ,and the lower part is REV

7.1.2 Gyro compensation range : The Gain Margin is minimum in the centre of the knobs . .clockwish to increase and anti-clockwise to reduce in the NOMR part , anti-clockwise to increase and clockwise to reduce in the REV part.
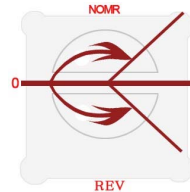

7.2 Gyro gain Direction Verifiaction

Please adjust the direction and range of the two channels :AIL,ELE
At the balance mode, pick up the aircraft around the pitch axis and the roll axis to check if the direction and range is correct. Adjust the screw correspond to AIL and ELE to the optimal position.

Gyro Gain Correction Diagram

1.Rotaing the plane around pith axis .check the correction of gain for elevator as showing in the diagram 1 and 2
2.Rotaing the plane around roll axis .check the correction of gain for aileron as showing in the diagram 3 and 4.
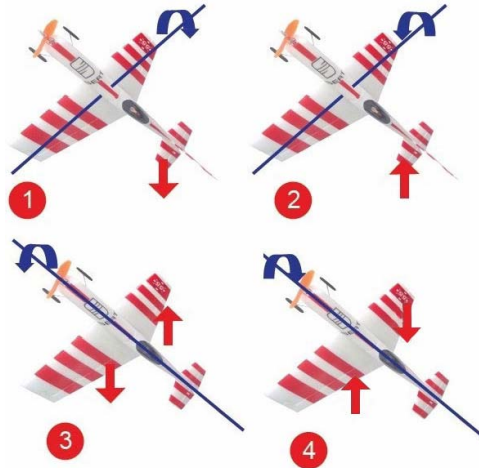
7.3. Under the Gyro closed model or balance model, adjust the forward and reverse of AIL/ELE/RUD, to make the directional control is the same as sensitivity-responding direction.

7.4.Adjust the connecting rod length, and make the angle of rudder into right position.

7.5 **Attention**: If the plane flies unstable, indoor and outdoor temperatures vary considerably, in the balance model the servo-surface deviates slightly,

you should go back to the gyro initialization model to reelectrify to verify its initialization data

8. Troubleshooting

8.1 **Airplane swings regularly, rapidly and alternately.**
Decrease the sensitivity of gyro.

8.2 **Airplane swings irregularly**
Use the soft foam double sides adhesive tape to set the Gyro, in this way, it can decrease the vibration of engine and airframe.

8.3 **Airplane rotates irregularly, side tumbling or overturning after taking off.**
Check if the feedback direction of the 2 aixs (AIL and ELE)of gyroscope are correct .And check if the channel control direction of the ALI ,ELE and RUD are correct by moving the sticks
separately.

8.4 **Rotate on a direction slowly and continually**
Check if the rudder installation is level, if not ,adjust the servo's center and reinitialize the gyro.