

GA510 V2.0 AVCS Gyro Instructions Manual

GA510 is a high-performance AVCS gyro specially designed and optimized for your 3D RC helicopter. Equipped with LCD display, it has the characteristics easy setting, practical functions, wide scope of applicable servos and superior head-lock performance. V2.0 is depend on the original version but take a remarkable improvement.

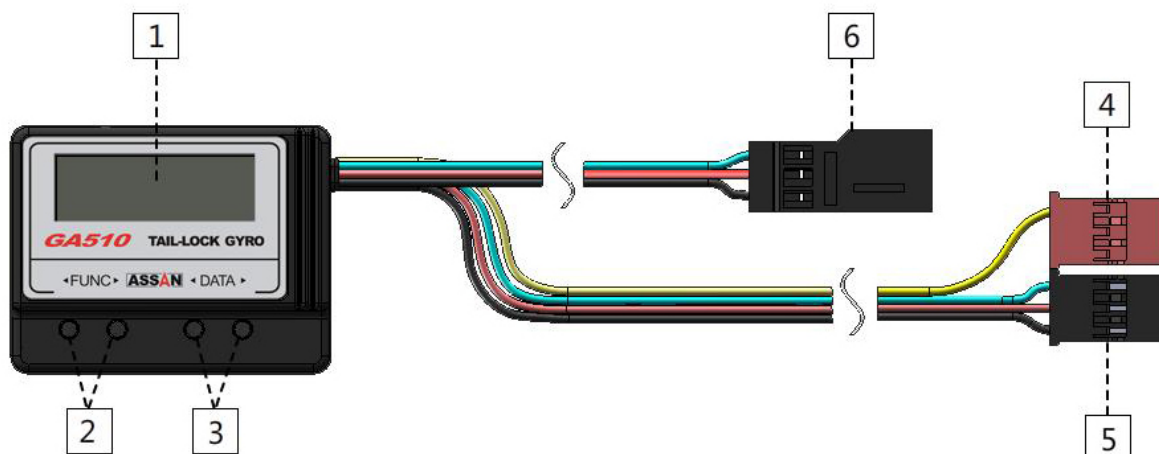
Technical Features

- ✧ Sensor: high quality piezo gyroscope .
- ✧ System control: AVCS (Angular Vector Control System).
- ✧ Dual-gain function: two operational modes can be selected through the transmitter: AVCS mode and normal mode.
- ✧ LCD display: set data display and operation status monitoring
- ✧ Multiple servo compatibility: digital servos, include most of the 1520us, 760us and 960us narrow-pulse servos.

Technical Parameters

1. Operating voltage: DC 3.3 ~ 8.4V
2. Operating current: 40mA
3. Operating temperature: -5°C ~ 60°C
4. Dimensions: 38 × 30 × 17 mm
5. Weight: 20g

Components Functions



1. LCD: the normal screen display the operation status, include gain, rudder value and receiver voltage. while at set up screen,perform date will display.
2. “◀FUNC” and “FUNC▶” : keep pressing any key for 3 sec at normal screen to enter the setup screen. Then, “◀FUNC” to scroll down, “FUNC▶” to scroll up. Press both at the same time to recall to normal screen.

3. “◀DATA” and “DATA▶” : those key are used to set the data. Increase or decrease.
4. Gain channel plug(red): connect to receiver’s gain channel.
5. Tail servo channel plug(black): connect to receiver’s rudder channel.
6. Tail servo joint: connect to the digital tail servo.

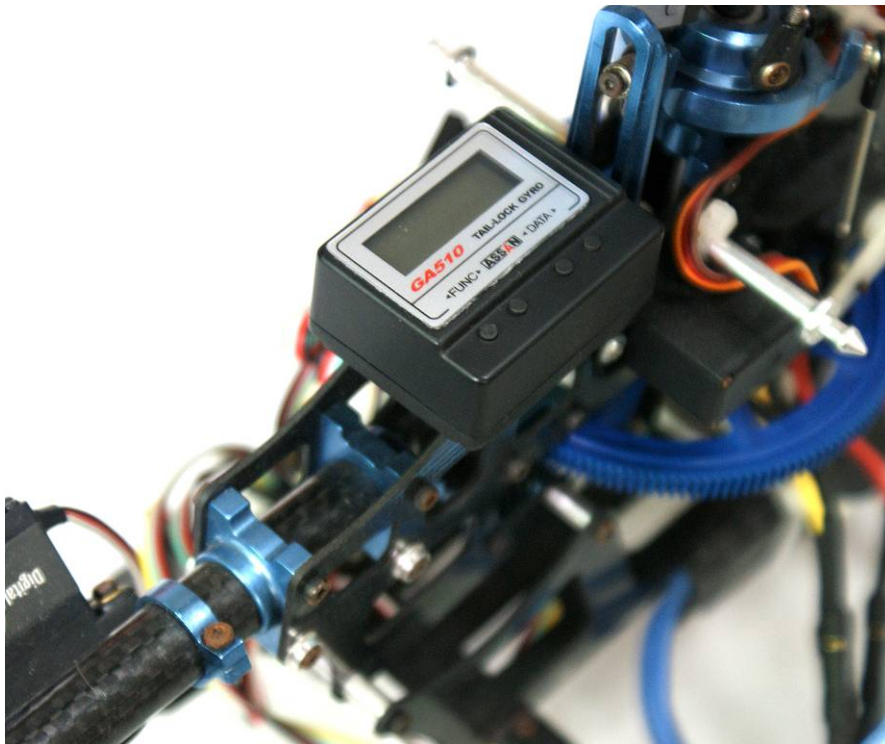
Installation

When installing GA510 AVCS Gyro, please stick the gyro to the stable place of the helicopter with the double-sided adhesive tape. If there is a high vibration environment, please plus a steel plate to help to reduce the influence. The gyro shall be installed accurately perpendicular to the main shaft of the helicopter (see the figure below). GA510 shall be kept at least 10cm away from the main motor. And do not install the gyro at the exhaust outlet or any place of heat in order to avoid any possible disturbance.

Then,connect the GA510 to receiver,but don’t connect the servo at this time.

Ensure that the transmitter trims and sub trims are set to zero and that collective pitch to tail pitch mixing is disable.

Power on your transmitter and receiver. Selected the correct servo type. Only after this, you can connect your digital tail servo in.



Display and Setting

1. Power on

Turn on the transmitter then power on the receiver, GA510 will display the following interfaces in sequence. When displaying the second interface, the screen will blink, which indicates that the system is in initialization. The normal screen display AVCS mode or NORMAL mode depend on your radio's status. Attention, until normal screen appeared, don't move rudder stick, gyro or helicopter, otherwise the setting could be mistake.



2. Error

If any failure occurs during the power-on process, the following error prompt will pop out:



The tail servo channel is not connected properly or the transmitter is not turned on. Please check the connection of the signal wire between the gyro and the rudder channel of the receiver, or turn on the transmitter.

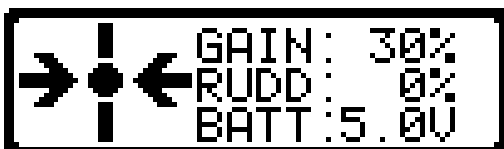


The gain channel is not connected properly. Please check the connection of the signal wire between the gyro and the gain channel of the receiver.



Internal error in gyro. If the problem cannot be fixed after cutting off the power and restart the equipment again, please return the gyro to the manufacturer for repair.

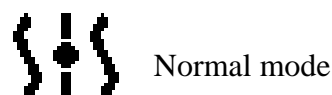
3. Normal screen



Gain data
Rudder data
Receiver voltage

Operation mode

There are two operation modes:



4. Entering setting

Press “◀FUNC” or “FUNC▶” at normal screen for 3 sec. to enter the setting screen, then select the items by this two keys. GA510 gyro has the following configuration items:

- | | |
|----------------------------|---|
| GY Direction
Set:Normal | 1) Gyro direction selection |
| Servo Type
1520us/250Hz | 2) Servo type selection |
| Servo Center
Trim:0 | 3) Servo center trim setting |
| Servo High
Limit:100 | 4) Servo high limit adjustment |
| Servo Low
Limit:100 | 5) Servo low limit adjustment |
| Deadband
Val:3 | 6) Stick dead band setting |
| Rudder Stick
Gain:100 | 7) Stick gain setting |
| Acceleration
Porfie:20 | 8) Acceleration porfile setting |
| Deceleration
Porfie:20 | 9) Deceleration porfile setting |
| CLW Stop
Gain:100 | 10) Clockwise stop gain setting |
| CCW Stop
Gain:100 | 11) Counter-Clockwise stop gain setting |
| Rudder Exp
AVCS:-50 | 12) AVCS mode stick curve adjustment |
| Rudder Exp
Normal:50 | 13) Normal mode stick curve adjustment |
| LCD Contrast
Level:10 | 14) LCD contrast adjustment |

5. Setting

1) Gyro direction selection

GY Direction
Set:Normal

The gyro has two move directions, Normal and Reverse. If the rudder servo moves to the left when the nose of the helicopter moves to the right, the direction of the gyro is correct. If its not correct, please change the setting.

The step above is critical. If the gyro direction is wrong, the helicopter may yaw at high speed and cause an extremely dangerous situation when taking off!

2) Servo type selection

Servo Type
1520us/250Hz

The tail servo can be classified in 4 different types according to the frame rate and pulse width, which are 1520us/250Hz, 1520us/333Hz, 760us/560Hz and 960us/333Hz. See the table below. If the tail servo you are using is not included in the table, please selected according to the frame rate and pulse width provided by the manufacturer. Be careful that the incorrect setting may cause the damage of the servo or reduce the performance of the servo!

1520us / 250Hz	1520us / 333Hz		760us / 560Hz	960us / 333Hz
JR 2700G	Futaba S9253	Align DS410	Futaba BLS251	LogicTech 6100G
JR 8700G	Futaba S9254	Align DS420	Futaba S9251	LogicTech 3100G
JR 810G	Futaba S9257	Align DS510	Futaba S9256	Hitec
Sky HDS-577	Futaba S9650	Align DS520	MKS DS8910	HSG-5083MG
Sky HDS-877	Futaba S3153	Align DS610	MKS BLS980	
	Futaba S3154	Align DS620		
	Futaba BLS254	Align DS650		
	JR 8900G	Hitec 5925MG		
	JR 3400G	Hitec 6965HB		
	JR 3500G	Hitec 5083MG		
	Airtronics 94758	Sanwa		
		ERG-WRX		
	Airtronics 94761	Robbe FS61BB		

3) Servo center trim

Servo Center
Trim:0

It is recommended to adjust the servo position in mechanical on helicopter at the first. The optimum mechanical setup is essential for get the best performance. After the center position is basically appropriate, minimum trimmer adjusted with this function. Avoid the big adjustment on the center trim. The adjustable range is -100%-100%.

4) Servo high limit adjustment

Servo High
Limit:100

Pull the rudder stick to high end position, then adjust this value to make the servo reach the highest position of the tail pitch sliding sleeve, and make sure there no clamping stagnation occurs in the process. The adjustable range is 30%-145%.

5) Servo low limit adjustment

Servo Low
Limit:100

Pull the rudder stick to low end position, then adjust this value to make the servo reach the lowest position of the tail pitch sliding sleeve, and make sure there no clamping stagnation occurs in the process. The adjustable range is 30%-145%.

6) Rudder stick dead band adjustment

Deadband
Val:3

By adjust this value, the rudder stick will not deliver within the range of the set values. This feature is helpful in aerobatics as it reduce the accuracy of stick centring required.The pilot should adjust the value by his own experience and control feelings. The adjustment range of this value is 3%-100%.

7) Rudder stick gain adjustment

Rudder Stick
Gain:100

Adjusted this value, the helicopter response movement's sensitivity to the stick's movement will change. The higher the value, the more aggressive to rudder stick changes movents. The adjustment range is 50%-150%.

8) Acceleration profile adjustment

Acceleration
Porfile:20

The parameter of acceleration change the time cost of the helicopter up to the designated pirouette speed. The lower the value, the longer time will take. The range of adjustment is 1-20.

9) Deceleration profile adjustment

Deceleration
Porfile:20

The parameter of deceleration change the time cost of the helicopter to decelerate to the designated pirouette speed. The lower the value, the longer time will take. The range of adjustment is 1-20.

10) Clockwise stop gain adjustment

CLW Stop
Gain:100

Adjusted the value, the braking force changed at clockwise stop. The higher the value, the harder the braking effect and the shorter time need in pirouette stop. The lower the value, the softer the braking effect and the longer time need in pirouette stop. The range of adjustment is 50%-200%.

11) Counter-clockwise stop gain adjustment

CCW Stop
Gain:100

Adjusted the value, the braking force changed in counter-clockwise stop. The higher the value, the harder the braking effect and the shorter time need in pirouette stop. The lower the value, the softer the braking effect and the longer time need in pirouette stop. The range of adjustment is 50%-200%.

12) AVCS mode rudder stick curve adjustment

Rudder Exp
AVCS:-50

By adjusting this value, the reaction curve of the rudder stick can be changed. The range of adjustment is -100%-100%.

13) Normal mode rudder stick curve adjustment

Rudder Exp
Normal:50

By adjusting this value, the reaction curve of the rudder stick can be changed. The range of adjustment is -100%-100%.

14) LCD contrast adjustment

LCD Contrast
Level:10

By adjusting this value, the contrast of the LCD can be changed. The range of adjustment is 0-18.

6. Default setting

Load Default
Yes No

Keep pressing “◀FUNC” and “FUNC▶” at the same time then start up the gyro, the "Load Default" interface will appear. Press “◀DATA” to select Yes and all the settings will load the factory default values and then the initiation will start. Or press “DATA▶” to select No keep the present settings and then the initiation will start .

Have Fun!

ASSAN Electronic Control Technology Co., Ltd.