GA-250 Micro Gyro Manual

v3.2

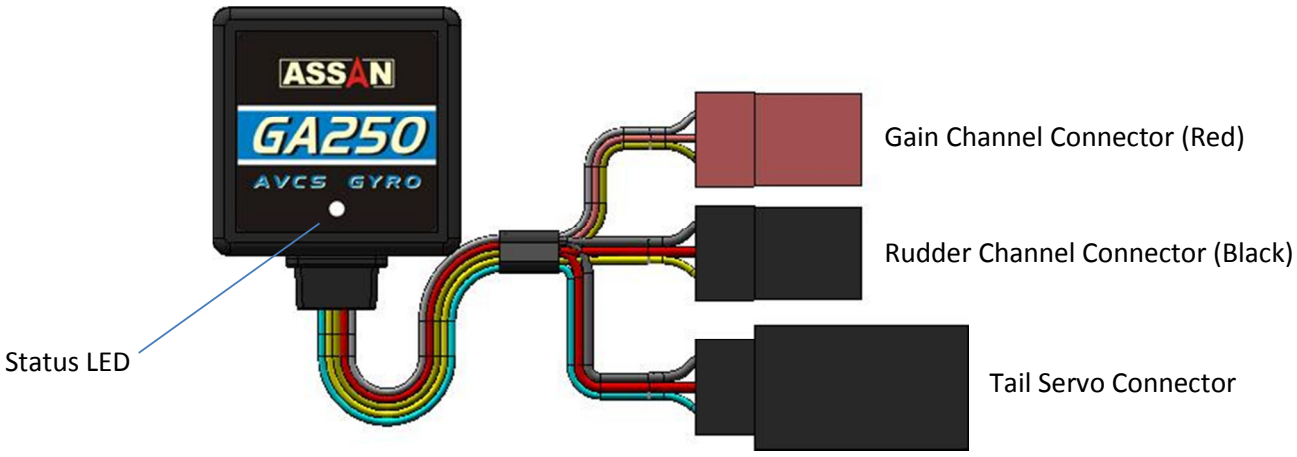
The GA-250 is a high performance advanced AVCS/MEMS gyro, especially designed and optimized for R/C helicopters. It is very small in size and very light weight. It is easy to set up and compatible with a wide range of (digital only) servos. Its head-lock performance is superior, even for hard 3D applications.

Technical Features

- Sensor: MEMS
- System control: AVCS (Angular Vector Control System).
- Dual-gain function: two operational modes can be selected through the transmitter; AVCS mode and Rate mode.
- Compatible with all digital servos, including 1520μS, 760μS and 960μS.

Technical Parameters

1. Operating voltage: DC 3.0V ~ 9.0V
2. Operating current: 20mA (at 5.0V)
3. Operating temperature: -15°C ~ 60°C
4. Dimensions: 21 × 21 × 10mm
5. Weight: 8.0g (including connectors and wires)



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Status Light

	Status light	Description
Operating Mode	Blue Fast Flashing	Gyro calibrating
	Blue Solid	AVCS Mode
	Blue 2 Flashes	AVCS mode, rudder stick not centred
	Light Off	Rate mode
Error Codes	Red Slow Flashing	Gyro is not receiving a gain signal. Please check the wiring and connector
	Blue Slow Flashing	Gyro is not receiving a rudder signal. Please check the wiring and connector

Setting up your gyro for the first time.

Follow the steps below in the specified order to set up your gyro successfully.

- Fix the gyro to your model: please attach the gyro to a stable part of the helicopter with the double sided adhesive tape provided. If used in a high vibration environment, please use the steel plate to help to reduce the influence of vibrations.
- Connect the gyro to the receiver but don't connect the tail servo to the gyro at this time.
- Ensure that the transmitter trims and sub-trims are set to zero and that collective pitch to tail pitch mixing is disabled.
- Power on your Rx and gyro.
- Select the correct servo type as described in the Servo Type Selection section of this guide.
- Power off your gyro.
- Connect the servo to the gyro, and then power the gyro on.
- Follow the manual to set the gyro direction, high servo endpoint and low servo endpoint.
- Quit the set up and switch to operational mode.
- Adjust the gyro gain via your transmitter
- Confirm everything is working correctly and you are ready to fly.

Servo Type Selection

The GA-250 was designed to work with all modern digital tail servos. **DO NOT** use analogue tail servos!! There are different types of digital servos and incorrect settings may damage your servo and possibly loss of tail control during flight. So please, make sure that this step is done **FIRST!**

To access the servo configuration mode, do the following: power on your gyro and when the status light flashes blue, toggle the gain switch on your transmitter three times or more in quick succession (ending in AVCS). You are now in Servo Type Setting mode. By pulling the rudder stick left or right, you alter the servo type. The number of red flashes indicates the currently selected servo type.

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Operation	Use the rudder stick to change the servo type				
Status Light	●		●●	●●●	●●●●
Type	1520µS / 333Hz		760µS / 560Hz	1520µS / 250Hz	960µS / 333Hz
Model List (not a complete list)	Futaba S9253 Futaba S9254 Futaba S9257 Futaba S9650 Futaba S3153 Futaba S3154 Futaba BLS254 JR 8900G JR 3400G JR 3500G Airtronics 94758 Airtronics 94761	Align DS410 Align DS420 Align DS510 Align DS520 Align DS610 Align DS620 Align DS650 HiTec 5925MG HiTec 6965HB HiTec HSG-5084MG Ino-Lab HG-D261HB Sanwa ERG-WRX Robbe FS61BB	Futaba BLS251 Futaba S9251 Futaba S9256 MKS DS8910 MKS BLS980	JR 2700G JR 8700G JR 810G Sky HDS-577 Sky HDS-877	LogicTech 6100G LogicTech 3100G HiTec HSG-5083MG

Note: if your digital tail servo is not listed in the above table, please ask your supplier or visit the manufacturer's website to get support information. Incorrect settings may damage the servo or may result in loss of tail control during flight.

After you've selected the correct servo type, you can exit the Servo Type Selection mode by simply powering off the gyro.

Configuration

Once you've connected your tail servo to the gyro, power on your system and wait for the gyro to calibrate. Now follow the instructions below to adjust the gyro direction, right limit (high servo endpoint) and left limit (low servo endpoint) parameters.

Note: The number of blue flashes indicates which configuration mode you are in and the number of red flashes indicates the chosen parameter.

Step 1: Gyro Direction Reversing

Push your transmitter's rudder stick to the left or right, and toggle the gain switch three times or more in quick succession (ending in AVCS) until your gyro's status light gives a combination of blue and red flashes, then release your rudder stick to neutral.

You are now in the gyro direction reversing configuration mode.

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Operation	Use the rudder stick to change the direction of the gyro	
Status Light		
Gyro Direction	Normal (default setting)	Reversed

The gyro has two operation directions, Normal and Reverse. If you rotate the helicopter at least 90 degrees counter-clockwise, the gyro should attempt to counter the rotation to maintain the helicopter's heading. The gyro should now have moved the tail blades in the same manner as if right rudder was applied. If this is the case, the direction of the gyro is correct. If the gyro didn't react as described above, please change the parameter.

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!

Step 2: Adjust First Limit (High Servo Endpoint)

When the gyro direction has been set correctly, toggling the gain switch to Rate and AVCS once again, will take you into the Adjust First Limit (High Servo Endpoint) configuration mode. Using the rudder stick adjust the servo position until you achieve maximum tail rotor pitch without binding on the mechanical limits. When satisfied, toggle the gain switch to Rate and AVCS once again to the next configuration mode.

Status Light	
Increase/Decrease	Use the rudder stick to increase/decrease limit

Step 3: Adjust Second Limit (Low Servo Endpoint)

Now, you are into the Adjust Second Limit (Low Servo Endpoint) configuration mode. Just like the First Limit (High Servo Endpoint) configuration mode, use your rudder stick to adjust the servo position for maximum tail pitch without binding.

Status Light	
Increase/Decrease	Use the rudder stick to increase/decrease limit

Now you completed all the settings, you need to exit the configuration mode. By toggling the gain switch to Rate and AVCS three or more times in quick succession (ending in AVCS), your gyro will return to normal operational mode. If you toggle the gain switch once again, you will return to Gyro Direction Reversing configuration mode.

Note 1: At any point in the configuration mode, you can exit the configuration mode by toggling the gain switch three or more times in quick succession (ending in AVCS).

Note 2: In normal operational mode, if you need to recalibrate the gyro at any time, you can toggle the gain switch three or more times in quick succession (ending in AVCS).

Have Fun!