walkera
华科尔

GX02

Users Manual

Contents

1.0 Forword

The gyro GX02 utilizes the AVCS (Angular Vector Control System),and is specially designed for the model helicopter.

2.0 GX02 feature

1 . The sensor and the controller are integrated together. It makes installation easier. The usage of LCD display with adjustable parameter helps pilot an optimal flight.

2 . The GX 02 is of the functions of two servo models: normal and digital. It is convenient to select a servo mode. The performance of gyro is highly relative to the response speed of servo. The higher response speed of your servo is, the more excellent the gyro performs. The GX 02 acquiescently matches WALKERA hi-speed digital servos: either WK-0902 (9g) or WK-7601 (7.6g).

3 . There are two means of gyro sensitivity adjustment: electronic by transmitter or mechanical. The gyro sensitivity setting value will be automatically replaced when an external transmitter is applied to control sensitivity channel.

3.0 Caution before mounting and operation

1. Firmly insert the plug. Loose connection due to vibration will make your helicopter out of control and result in danger.

2. PCM control system is used. If PPM control system is used, the gyro may store wrong neutral message when interference takes place.

3. When mounting the Gyro, please use the attached original double-tape adhesive to stick it on your helicopter in order not to directly transmit the vibration caused by the fuselage to the sensor.

4.When mounting the Gyro, don't tauten the wires.

5. When mounting the Gyro and controller, keep their cases away from any metal parts of your helicopter. In order to decrease the electromagnetic interference, GX02 utilizes the electroconductive case. Touch of the case with any metal parts will cause short circuit.

6. If the GX02 is mounted in a motor-driven helicopter, the sensor should be 10cm away from the motor. The interference, caused by servo, motor and engine revolution controller, may produce wrong operation signal and put a negative effect on the gyro performance.

7. Turn on the power and "INT---" will be shown on the screen of the GX02. Before it disappears (about 3 seconds), don't move the body of your helicopter and the rudder stick of your transmitter. Before flight, check whether or not the servo works properly. If the neutral position of rudder servo is changed, the gyro should re-read the neutral position message of rudder servo under the AVCS mode. The method for reading message: firstly switch the transmitter to the AVCS mode and then turn on the power of gyro, or quickly switch the sensitivity knob at least 3 times in 1 second and make sure the gyro can be freely switched between the AVCS and Normal modes, but the sensitivity knob should be left in the AVCS mode. GX02 will automatically keep the latest neutral position message of rudder servo.

8. Sudden temperature changes will cause the neutral position to change. In the cold winter, for example, your helicopter is moved outdoors from indoors, or in hot summer your helicopter is moved from air conditioned room to outdoors, the ambient temperature your helicopter stayed in will cause big change. Allow your helicopter to stand for 10 minutes and turn on the power after the temperature is stabilized. If the gyro is directly exposed to the sun or is too close to the engine, the temperature will be suddenly raised and effect the neutral position.

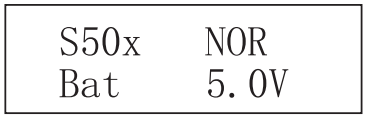
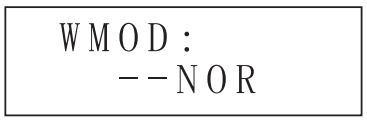
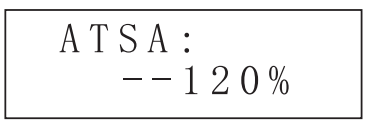
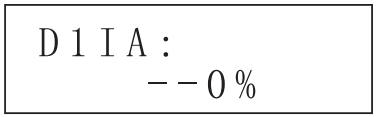
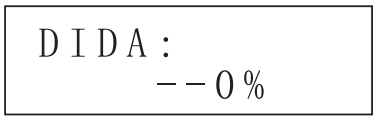
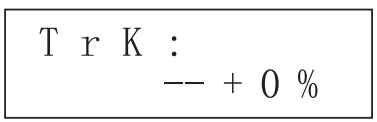
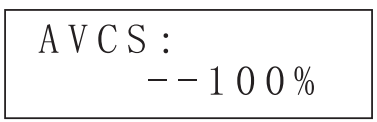
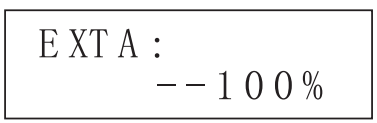
9. Inspect battery volume. When the voltage of receiver battery is lower than 4.0V, "Low Batt" will be flashed on the screen. Please stop flying and charge the battery at once.

4.0 Kit components

Open the box and check the following set contents:

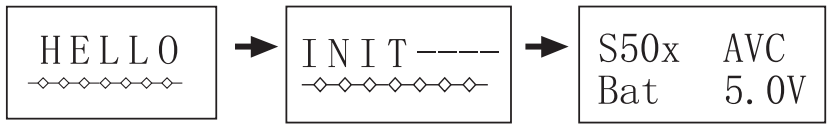
5.0 Identification and function of each part

6.0 GX02 function item

	Screen display sensitivity / mode / voltage
	Gyro direction
	Servo work mode
	Action mode
	Sensitivity of rudder stick action tail (rudder) sensitivity
	Control delay -I
	Control delay -D
	Sensitivity track
	AVCS sensitivity
	Rudder servo extent

7.0 Setting method

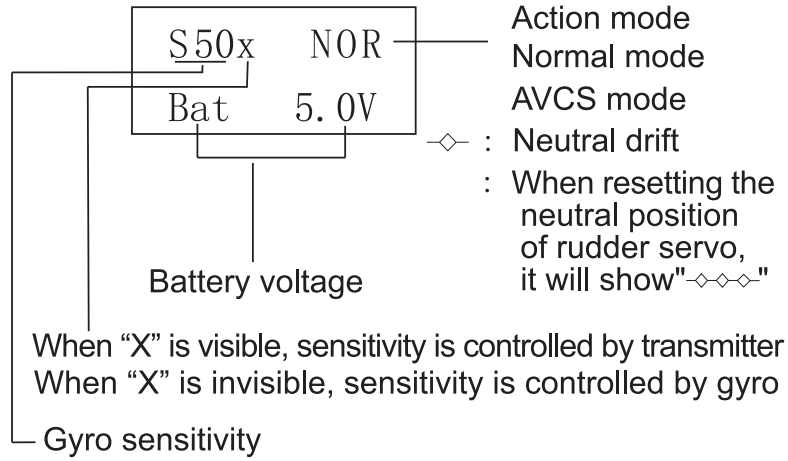
1. Screen display when power on



When the receiver is turned on, the GX02 LCD will simultaneously light. "HELLO" screen will be changed into the initiation screen "INT----" for 3 second. During the initiation process, don't move either the rudder stick of your transmitter or your helicopter. If you move the rudder stick or your helicopter, the gyro may fail to neutrally position.

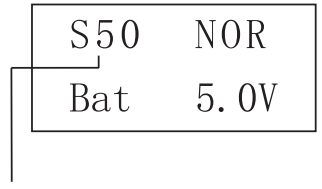
If the receiver doesn't receive the signal, " WALKERA GX-O2 " will be shown on the screen, and please check whether the transmitter is turned on. If the voltage of receiver battery drops to 4.0V, "Low Batt" will be shown on the screen. When this message is appeared, please immediately stop flying.

2. Normal working display



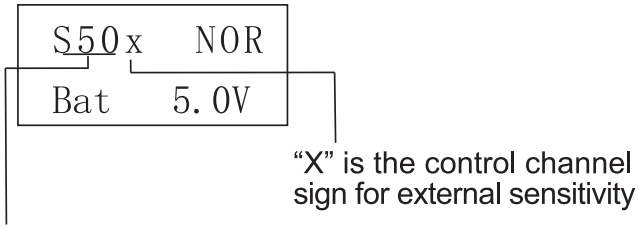
3. Gyro sensitivity

1.sensitivity adjustment via gyro :



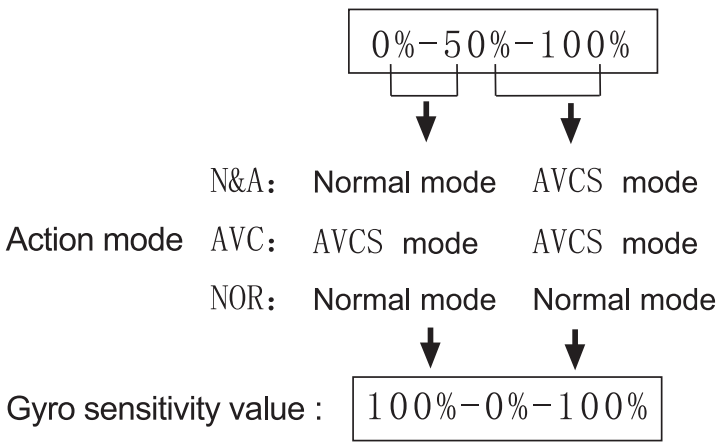
Sensitivity value. This value can be set via pressing the key of Data + -.

2. set by transmitter (usually by AUX2) :



Coincidence relation with transmitter setting and gyro sensitivity :

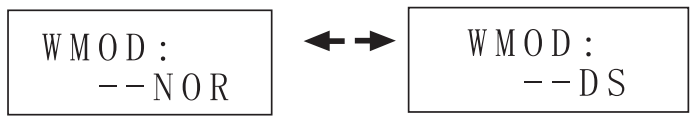
The value of GYRO RUDD D/R :



4. Gyro action direction

The gyro action direction is grouped into NOR and REV. There is an easy way to check whether the gyro action direction is correct: lift up your helicopter and move the head leftwards, and the rudder servo bellcrank should move to the rightwards; if the rudder servo bellcrank moves in a wrong way, press DATA + or - to change the movement direction of your gyro.

5. Servo work mode



Set the flight mode as NOR or DS.

1. NOR – suitable for normal (analogy) servo
2. DS – suitable for digital rudder servo

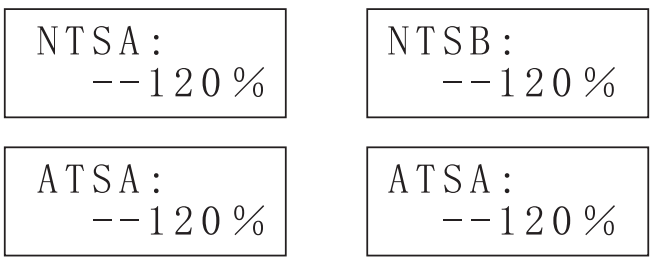
Notice: that normal (analog) servo is used in DS model will result in serious damage.

6. Action mode

The action mode of GX02 is grouped into N&A, NOR, and AVC, respectively.

Notice: N & A mode will be in effect only when gyro sensitivity is controlled by transmitter.

7. The sensitivity of the rudder stick

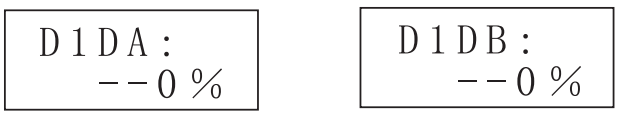


The adjustable range of the rudder stick is ranged from 28-250%. The factory default value is ATS: 120%; NTS: 130%. In the normal mode, NTS is shown on the screen; in the lock mode, ATS is appeared. The sensitivity of both normal and lock modes are independently adjustable. The A and B on the screen stand for he leftward and rightward direction of the rudder servo, respectively. The sensitivities of both leftward and rightward directionsare independently adjustable.

8. Control delay -I

Set the control delay time of the rudder stick moving from neutral position to leftward and rightward directions. Both the leftward and rightward directions are adjustable. The adjustable range is from 0 to 100%. The factory default value is set at 0%.

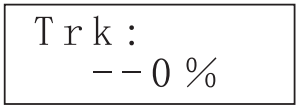
9. Control delay -D



Set the control delay time of the rudder stick moving from neutral position to leftward and rightward directions. Both the leftward and rightward directions are adjustable. The adjustable range is from 0 to 100%. The factory default value is set at 0%.

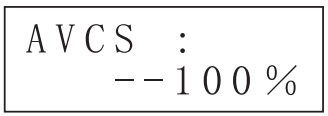
Notice: items 8) and 9) usually match with low speed servo. Please tune the sensitivity to “0” when matched with high speed servos such as digital servo WK-7601or WK-0902.

10. Sensitivity track



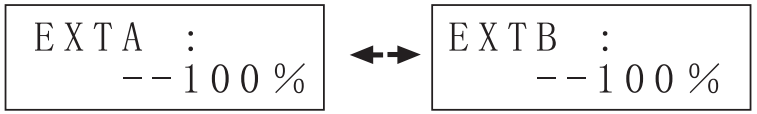
Adjust the brake track of the rudder servo from leftward or rightward rotation to stop. The adjustable range is from - 20 to + 20%. The factory default setting is 0%. Let's take an example below. Given your helicopter firstly keeps turning left. If you stop rotation, the rudder servo will produce hunting effect; or your helicopter keeps turning rightward. If you stop rotation, the rudder servo will produce tail drift. Please increase the Trk positive value. Otherwise, please increase the Trk negative value.

11. AVCS sensitivity



Adjust the handle feeling of the rudder servo control in the lock mode. The adjustable range is from 75 to 125%. The factory presetting value is 100%.

12. Extent of the rudder servo



Adjust the maximal travel of the rudder servo. A and B stand for leftward and rightward directions, respectively. The factory presetting value is 100%. When adjusting the value, please fully push up the rudder stick and then press and hold the DATA "+" or "-" key to adjust the maximal travel of rudder servo and assure the rudder servo is not out of the maximal movement range of the tail rotor sliding sleeve.

Notice: if the above picture is appeared on the screen, the gyro will lose the function and should be returned to the initiation menu.

13. Gyro sensitivity adjustment via transmitter

13.1 Via transmitter to switch the gyro action mode: AVCS or NOR and adjust the gyro sensitivity.

Take the WK-0703 transmitter as an example. Select the GX02 action mode as N & A. Press EXT and ENT of the WK-0703 to access the Func. Menu, and then press ENT to enter MODEL. Select GYRO via pressing UP or DN. Press ENT again to access the submenu. Press +.R to select RUDD. D/R. Press DN to move the cursor to position 0: press L.- or +.R to adjust the data among 50 - 100% (corresponding to the sensitivity of gyro ranged from 0 - 100% in the AVCS mode),.It is optimal to adjust the sensitivity

value as 30-20% (gyro sensitivity set as 40-60%) during the first flight.Then press DN to move the cursor to the position 1: press L.- or +.R to adjust the data among 0 - 50% (corresponding to the sensitivity of gyro ranged from 100 - 0% in the NORmal mode). It is optimal to adjust the sensitivity value as 70-80% (gyro sensitivity set as 40-60%) during the first flight so that the gyro sensitivity can be swithched by AUX/GYRO switch in the transmitter.

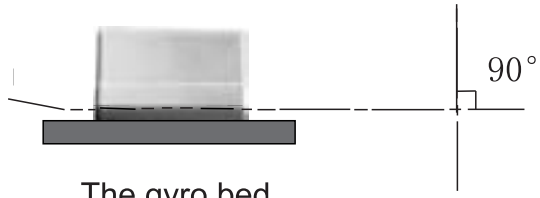
13.2 Via the flight mode switch in the transmitter to switch the AVCS or NOR mode, and via transmitter to adjust the gyro sensitivity.

Take the WK-0703 transmitter again as an example. Select the GX02 action mode as N & A. Press EXT and ENT to enter Func. Menu, and then press ENT again to access MODEL. Press UP or DN to select GYRO and press ENT to enter. Press +.Rto select AUTO, and then press DN to move the cursor to the position 0: press L.- or +.R to adjust the data among 50 - 100% (corresponding the sensitivity of gyro ranged from 0 - 100% in the AVCS mode); press DN to move the cursor to the position 1: press L. - or +.R to adjust the data among 0 - 50% (corresponding to the sensitivity of gyro ranged from 0 - 100% in the NORmal mode). Press DN to move the cursor to NORM, and press L.- or +.R to adjust the value to 0; press DN to move the cursor to STNT, and press L.- or +. R to adjust the value to 1. Then you can use the flight mode in the transmitter to freely switch the gyro action mode and adjust the gyro sensitivity.

※When the GX02 action mode is set as AVCS or NOR, all the above actions can just change the gyro sensitivity, but cannot switch the mode.

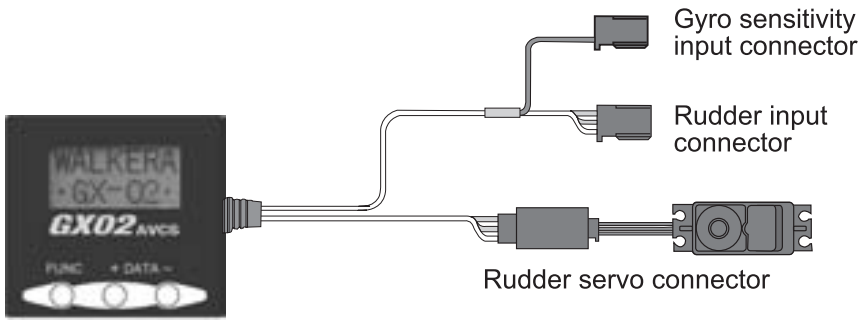
8.0 Gyro Mounting

When mounting the sensor, please use the double-tape adhesive in the kit components. Mount the senor at the center of the double-tape adhesive. The double-tape can relieve vibration. Please routinely check the double-tape adhesive and keep it clean. When mounting the sensor,keep the bottom of the gyro is vertical to the main rotor shaft axial direction.



The gyro bed

9.0 Connection diagram



GX02 controller

10.0 Select the gyro action mode

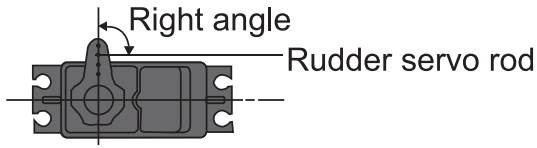
Switch the gyro from the normal mode to the AVCS mode, please choose N&A.

Choose NOR for the normal mode.
Choose AVC for the lock mode.

AMOD N&A
AMOD AVC
AMOD NOR

11.0 Length adjustment of the rudder servo rod

Refer to the helicopter user manual to set the length of the rudder servo bellcrank. If you set up the rudder servo rod in the normal mode, please select the suited bellcrank and assure it is perpendicular to the rod.Then adjust the rudder trim of the transmitter to fine adjust the bellcrank is perpendicular to the rod. Move the rudder stick leftward and rightward to check whether the rudder servo is working in a correct direction. If the direction is wrong, please reverse the rudder servo direction via the transmitter.



12.0 Confirm the gyro action direction

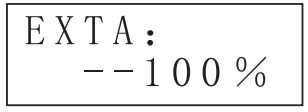
If you move your helicopter head leftwards and the rudder servo bellcrank moves to the head direction (rightwards), the gyro action direction is correct. If the gyro works in a wrong direction, please alter the GDir set value.

GDir: --REV

Notice: if the gyro action direction is set wrong, your helicopter will auto rotate at high speed and result in damage to pilot or properties. Please correctly set the action direction before operate.

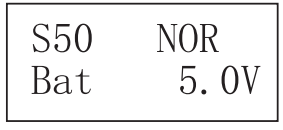
13.0 Adjust the maximal travel of the rudder servo

Fully move the rudder stick of your transmitter to the left or right, and maximize the rudder servo travel. Press DATA + or - to maximize the rudder servo travel under the condition that the rudder servo travel is not out of movement range of the tail rotor sliding sleeve. Too small rudder servo travel will limit the gyro performance.



14.0 Adjust the gyro sensitivity

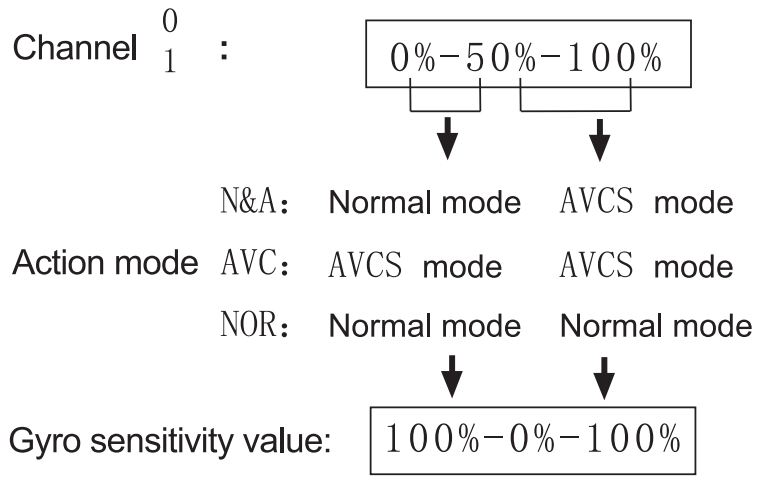
1 . The default sensitivity value (NOR/ AVC) of GX 02 is set as 50%, and the factory default action mode is NOR. If the transmitter used is without the sensitivity switch function, please connect the gyro sensitivity connector to an idle channel of the receiver.



Then the gyro sensitivity can be tuned by pressing the key DATE“+”or “—”of the GX 02 controller.

2 .Gyro sensitivity adjustment via transmitter: Please connect the sensitivity signal wire to Aux2, and enter the setting item GYRO-RUDD D/R of transmitter. Then adjust the corresponding figure of “0” or “1” item. Its value related with the gyro sensitivity shows as

The value of GYRO RUDD D/R

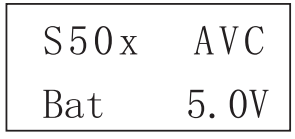


If the receiver is not equipped with channel used for controlling sensitivity, an idle channel which is capable of adjusting travel can be exploited to set the gyro.

Notice: Make sure that the transmitter is switched to 70-80% and the actual value of the corresponding gyro sensitivity to 40-60% in your first flight.

15.0 Check the transmitter's setting value

Check the setting values in the AVCS mode and assure that the neutral position is not shifted. Set all the rudder mixing functions at INH. Set all the rudder trims at the same position. Set all the rudder servo travel (ATV) at 100% in various flight modes. The "AVC", which appears on the screen, stands for the neutral position is normal, and —◇— shows the rudder trim should be adjusted till the "AVC" appears again on the screen.



16.0 Adjustment during flight

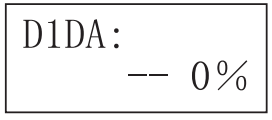
Switch the gyro sensitivity switch of your transmitter to the AVCS mode and then turn on your transmitter and receiver, respectively. Before the "INT" disappears on the screen, don't move your helicopter or rudder stick.

Switch your gyro to the normal mode to test the hovering function and adjust the neutral position of the gyro. Adjust the rudder trim and reset the neutral position. When the neutral position of the rudder servo is changed, please readjust the length of the rudder servo rod. In the AVCS mode, the gyro will automatically set the neutral position of the rudder servo and you don't need adjust the length of the rudder servo rod.

If a fine adjustment is made on the rudder trim, the GX02 will re-read the data of the neutral position. Please operate according to the following process: quickly switch the gyro sensitivity switch of your transmitter 3 times (within one second), and make the gyro switch between the AVCS and the normal mode. when the"—◇—◇—◇—" symbol is shown on the screen, the data of neutral position have been saved. During the operation process, don't move the rudder stick. GX02 saves and upgrades the data only in the AVCS mode. Via sensitivity adjustment,

When adjusting sensitivity value, it is more reasonable for you to set transmitter as 70-80% and gyro sensitivity as 45-60%, by means of which the hunting effect will not occur in hovering flight and in altitude flight. Please lower the sensitivity of gyro if hunting effect takes place.

Please make the rudder servo's bellcrank longer if you don't think 100% sensitivity is enough and inspect the actual sensitivity in the working display of GX02. Please tune the rudder's response in the hovering and altitude flight via transmitter. Never tune the TRV (servo travel) setting value because the trim will vary due to the change of TRV setting value. If you find that the response of rudder servo in AVCS is inconsistent with that of rudder in normal model, please adjust it through the function item of "the Sensitivity of the Rudder Controlling Stick". And adjust the helicopter to the state of stationary from that of rotating leftward and rightward via the function items of "Control Delay" and "Sensitivity Track".



Please appropriately tune the sensitivity before coming to adjust this due to the effect that the sensitivity of gyro exerts influence on the helicopter rotating leftward or rightward to static station.

servo via the GX 02 function item--"AVCS Sensitivity". If you want to use the rudder mixing in the normal mode, please set the transmitter to a station in which it is of rudder mixing function only in normal mode. Never use rudder mixing in AVCS mode.

Please stop flying if you find that the rudder is drifting slowly toward one side in AVCS mode. And re-initiate the neutral position of gyro when helicopter completely stops rotation.

WALKERA

R/C WALKERA PRODUCT

The specifications of the R/C Product may be altered without notice.