TAROT ZYX-S2 Three-axis Gyro User Manual

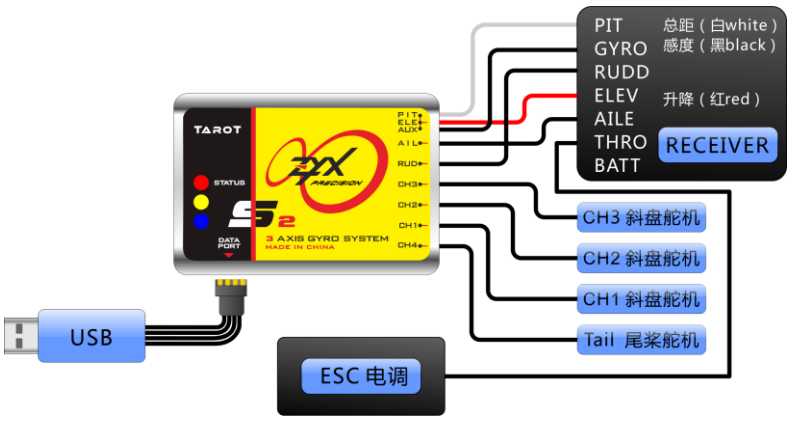
TAROT ZYX-S2 is the newly developed precision three-axis gyro, using new MEMS angular rate sensor and 32-bit microprocessor, new control algorithms and computer setup software, greatly enhance the spin stability , vibration resistance and flight performance. Suitable for all 200-800 size fuel or electric helicopters. Built-in supply voltage detection function, to ensure flight safety. Providing free firmware upgrade. Setup process is very easy, the whole process only takes 3 minutes.

1. Specification

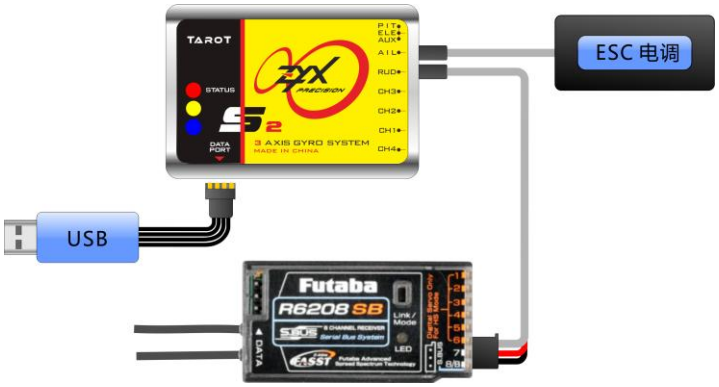
Dimensions: 37.2mm*25.2mm*13mm
Weight: 9.8g
Operating voltage: DC 3.5V-9V
Operating current drain: 40mA
Operating temperature:-15℃~65℃
Maximal angular rate: 2000 degrees/sec
Tail servo compatibility: 1.52ms analog servo, 1.52ms digital servo, 760us digital servo, 960us digital servo
Swash plate servo compatibility: 1.52ms analog servo, 1.52ms digital servo
Receiver compatibility: Conventional receiver, S-BUS, DSMJ, DSM2, DSMX（will support more by firmware upgrade）
Supporting firmware upgrade
Supporting Multi-Blade Rotor Head

2. Connections

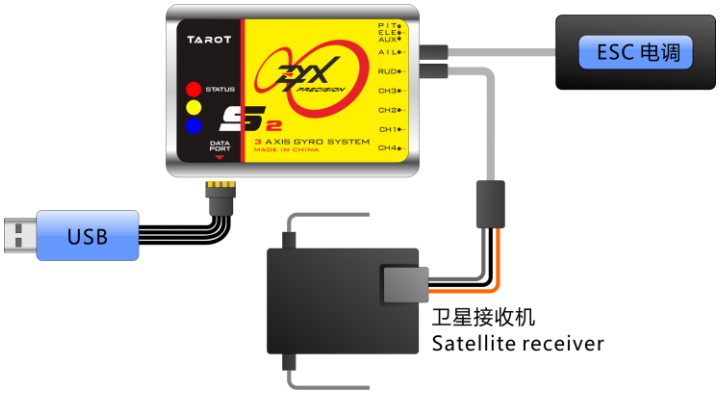
Conventional receiver:



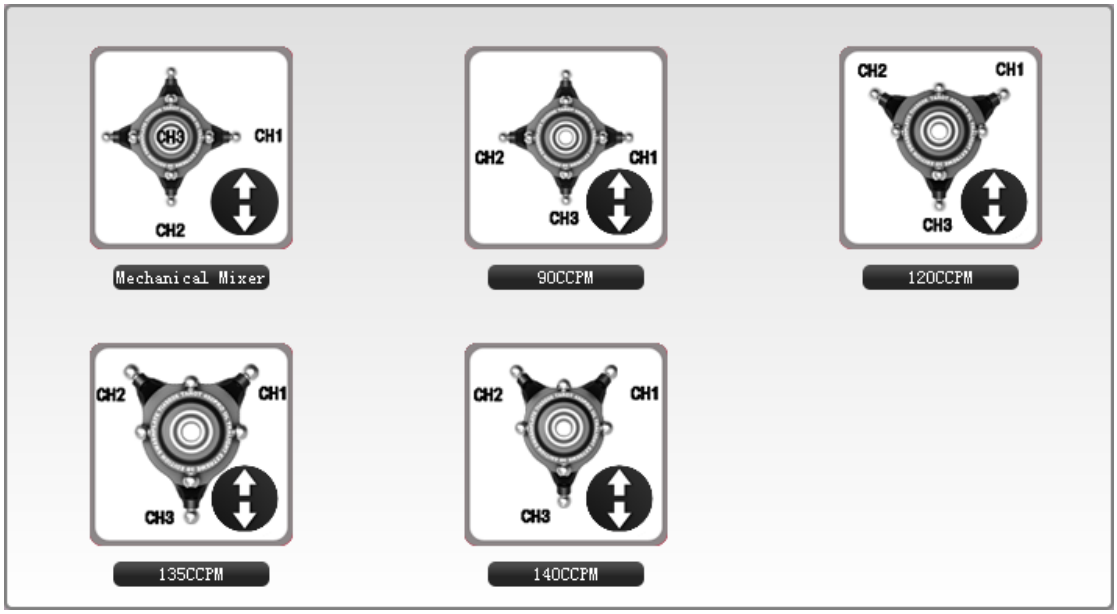
S-BUS receiver(Using standard receiver cable)：



DSMJ、DSM2、DSMX receiver(Requires optional adapter cable):



Connect the tail servo to CH4 and connect swashplate servos to CH1, CH2, CH3 according to the type of the swashplate.



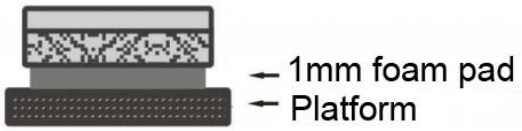
3. LED indication

Steady red	ZYX-S2 is in AVCS mode
Steady blue	ZYX-S2 is in Normal mode
Red ,yellow and blue LED are flashing synchronously	ZYX-S2 is initializing, keep the gyro steady, sticks centered
Red LED is flashing fast Intermittently	ZYX-S2 detects the minimum supply voltage is lower than 3.8V, replace the gyro power supply module or check whether there is servo stuck phenomenon
Yellow LED is flashing slowly	Error occur during RC signal Initialization, check the receiver option and wires, keep the sticks centered, restart the gyro
Blue LED is flashing slowly	Error occur during sensor Initialization, keep the gyro steady and restart the gyro

4. Gyro mounting

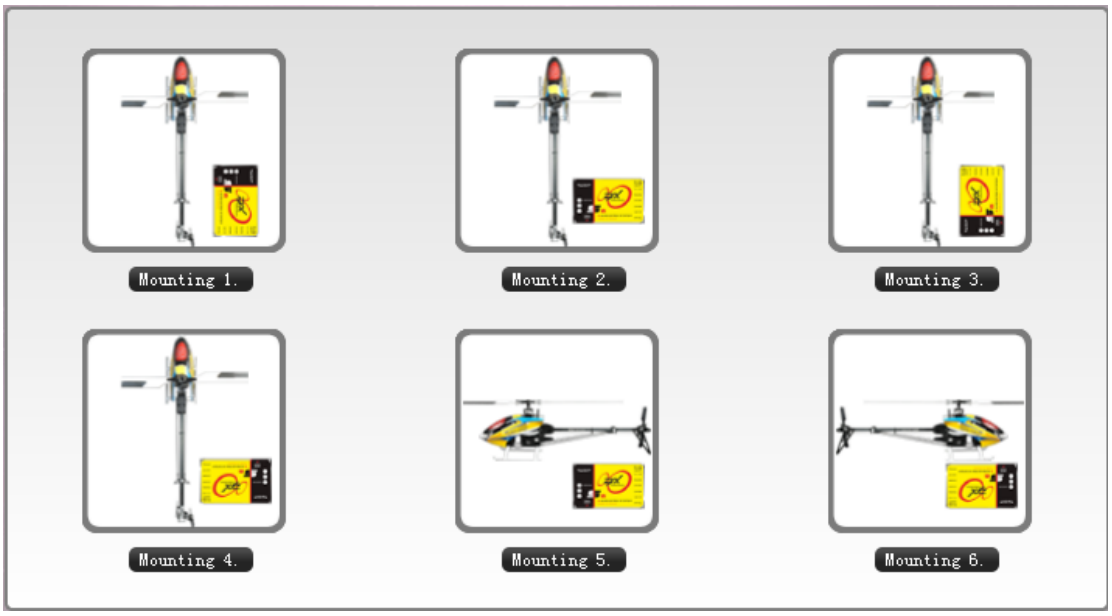
ZYX-S2 should be mounted to a steady platform which is perpendicular to the main shaft and far away from the engine and other electric devices.

ZYX-S2 has good vibration resistance, mounting on a conventional electric or fuel helicopter by a 1mm foam pad only. Relax the cable of gyro. Do not allow the gyro case to touch other parts of the helicopter.



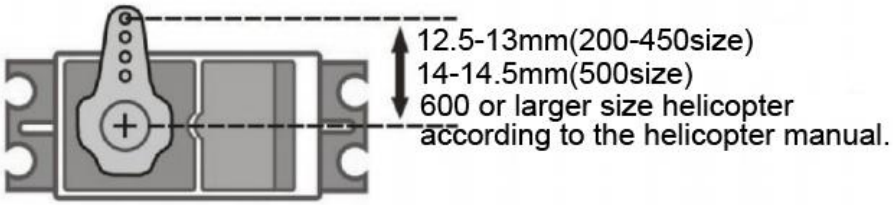
If the helicopter has very strong vibration, you can cut a 3mm rubber foam pad to 8mm * 8mm size, stick to the four corners of the gyro, and then stick to the helicopter platform.

There are six directions can be selected for mounting ZYX-S2:

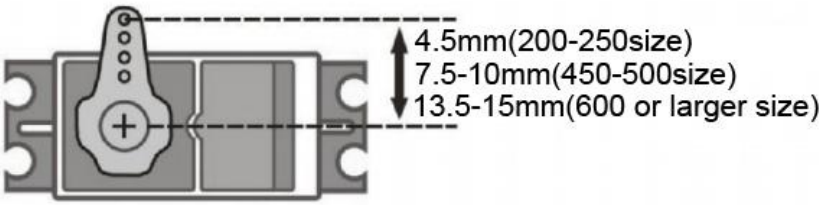


5. Installation of servo horns and linkages

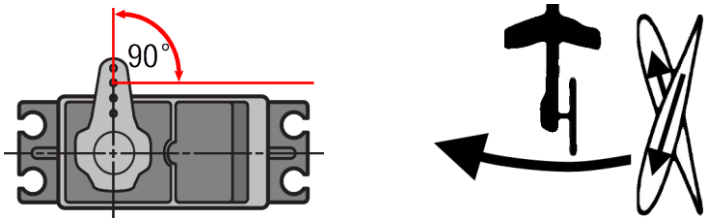
Make sure all the mechanical parts of the rotor head, the swashplate and the tail rotor are installed correctly, all parts can move smoothly, and all the servos are installed firmly.
Mount control balls to swashplate servo horns. We recommend the distance from the ball to center is: 12.5-13mm (200-450size), 14-14.5mm (500size), 600 or larger size helicopter according to the helicopter manual.



Mount control ball to tail servo horn. We recommend the distance from the ball to center is: 4.5mm (200-250size), 7.5-10mm (450-500size), 13.5-15mm(600 or larger size) .



Install the horn to tail servo temporarily, adjust the horn position to make it perpendicular to the linkage, then set the tail pitch to be approximately 8°in the direction that compensates the main rotor torque by adjusting the linkage length.

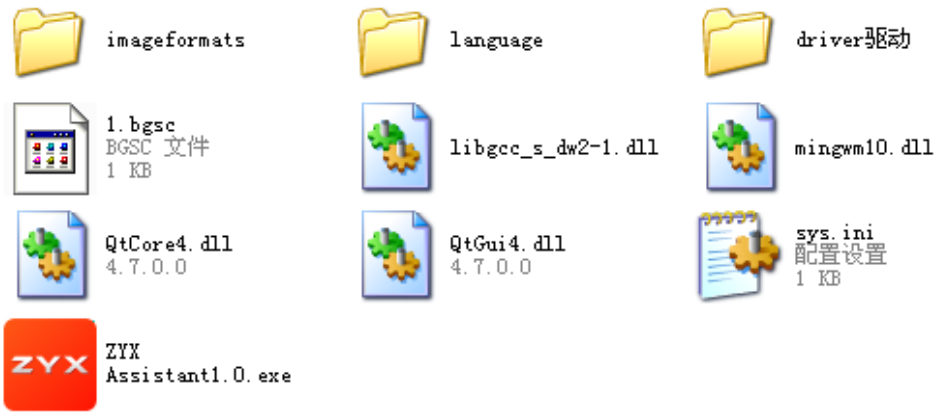


Notice: Don't connect servos to the gyro until finishing the servo type configuration.

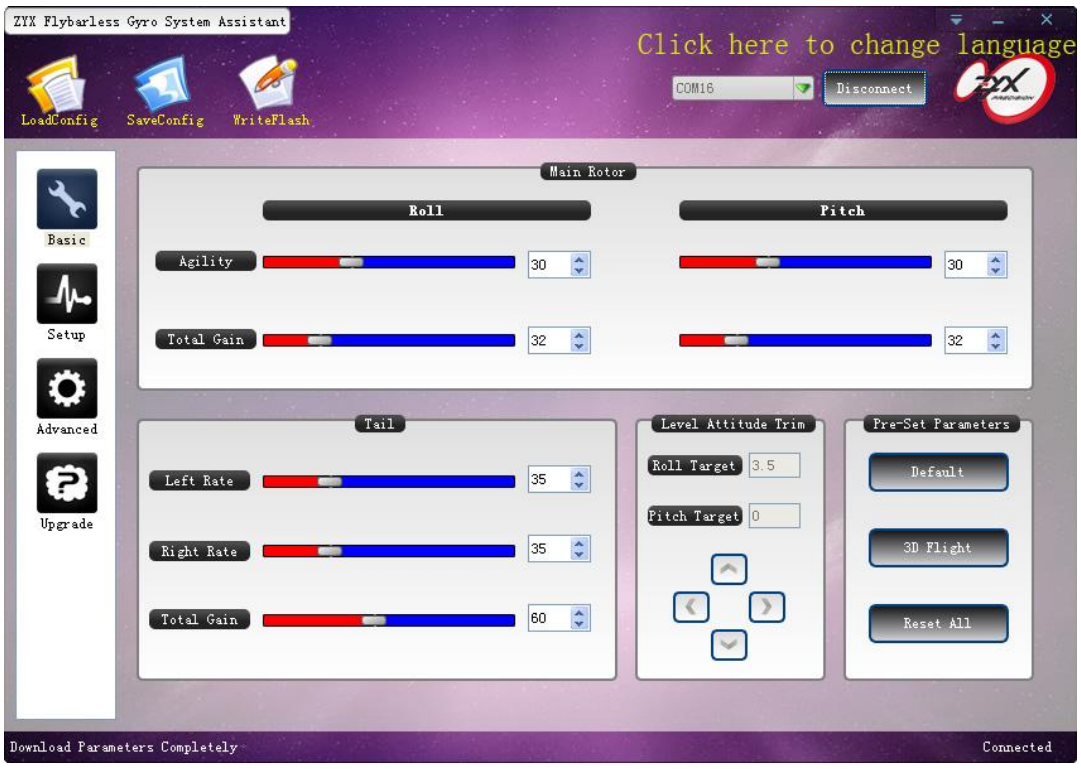
6. PC software installation and setup

Notice: If you use ZYX-S2 for the first time, you must connect ZYX-S2 to PC software, and setup your helicopter. If you don't do this, may put your servos and helicopter at risk!
PC Software download address: www.0577mx.com

Install the USB driver on your computer first. You must select the appropriate driver according to your computer operating system.



Plug the USB adapter to the DATA PORT of ZYX-S2, and then connect to PC. Open ZYX Assistant1.0.exe, the interface of this program is in the following figure.



Disconnect the ESC and motor, turn on the transmitter, power on the helicopter and ZYX-S2. Select COM port in the software, and click “Connect”. The status bar should show “Download Parameters Completely”, this means ZYX-S2 has been connected to the software successfully. Click “Setup”, and setup your helicopter step by step.

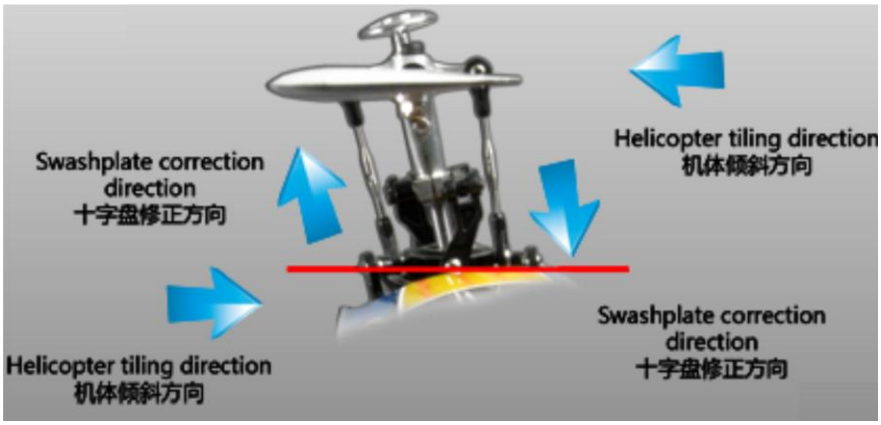
Notice: The parameters in ”Advanced” menu do not need to be changed generally, “Basic” menu is enough for 3D flight.

If you are a experienced pilot, you can adjust ”Advanced” menu to obtain the desired feeling.

7. Check before first flight

Disconnect the ESC and motor, power on the transmitter and the helicopter, move all the stick to check the servo direction.

Pick up helicopter and rotate it around its 3 axis, check the Gyro Compensation Direction.



8. FAQ

Tail oscillate quickly (tail wag, hunting).

•Make sure the helicopter is in good mechanical condition. All shafts must absolutely straight. Make sure the tail rotor pushrod is straight.

•Decrease the tail rotor gyro gain.

•Slow down the rotor speed.

Helicopter swing randomly.

•Make sure the helicopter is in good mechanical condition. All shafts must absolutely straight. Limit the vibration as low as possible.

•Slow down the rotor speed.

•Use 3mm rubber foam pad to stick the gyro.

Rotate uncontrollable.

•Check the mounting direction of gyro.

•Check the Gyro Compensation Direction.

•Move all the sticks to check the servo direction.

Rotate on a direction slowly and continually, drift.

keep the sticks centered, keep the gyro steady, restart the gyro.

Helicopter is not stable enough

Increase the total gain of main rotor.

The main rotor is oscillate quickly

Decrease the total gain of main rotor.

Red LED is flashing fast Intermittently

ZYX-S2 detects the minimum supply voltage is lower than 3.8V, replace the gyro power supply module or check whether there is servo stuck phenomenon.

Yellow LED is flashing slowly

Error occur during RC signal Initialization, please check the receiver option and wires, keep the sticks centered, restart the gyro.

Blue LED is flashing slowly

Error occur during sensor Initialization, keep the gyro steady and restart the gyro.