

## The RX3S Orange 3-Axis Flight Stabilizer V2.

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By Bernard Chevalier, France (February 2013).

Translation

The [RX3S OrangeRx V2](#) is a flight stabilizer running on three axes and suitable for any fixed-wing aircraft. It works by automatic corrections and combined routes aileron, elevator and rudder. Thus any countered immediately. The flight became more stable, allows boarding o



The RX3S Orange 3-Axis Flight Stabilizer V2



Original text

Le RX3S OrangeRX V2 est un stabilisateur de vol fonctionnant sur 3 axes et adaptable sur n'importe quel avion à voilure fixe.

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- 2 - How to connect RX3S.
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**1 - Specifications RX3S:** Equipped with a gyro type gyro3-axis MEMS RX3S acts on the 3-axis flight control: roll (aileron), pitch (depth) and yaw (direction) to stabilize the flight of an aircraft . radio controlled fixed wing  
Its application areas are very diverse and varied: piloting assistance for beginners (hand launch, landing ..), the trajectory correction in the wind, the course keeping in fpv, the stabilization aerial view taken from ...  
Version 2 of RX3S has been marketed since late 2012 for \$ 18. On a much smaller than the V1 (saving) size this new version offers features like a very valuable On / Off control from a releasable AUX flight and mixing control surface for Delta (Lift up) equipment or V- tail (V stabilizers for gliders).



The RX3S Orange 3-Axis Flight Stabilizer V2.

### Features :

- Flight stabilization on any fixed-wing aircraft (including V-tail/Delta models).
- Remote ON / OFF: it can be turned on or off in flight via an AUX channel.
- Supports 3D flight without compromising stability.
- Independent adjustment of the gyro gain potentiometers for aileron, elevator and rudder.
- Reversals in direction of servo by switches accessible from the front of the module.
- Compact and lightweight design. [Features](#) :

- Size: 44x26x14mm
- Weight: 10g
- IC: ATMEGA168PA
- Gyro 3-Axis MEMS
- Input Voltage: 4.8-6.0V
- Signal from Receiver: 1520us
- Signal to Power: 1520us
- Manual: no.
- Available in HK: [RX3S OrangeRx V2](#) .
- Essential accessory: [10CM Male to Male Servo Lead](#) .



**2 - How to connect RX3S:** RX3S The module is very easy to use. It takes place between the receiver and servos. He did not need to separate (unlike V1) supply. The "S" at the bottom of the module (see photo) shows the signal and allows to properly guide your connectors do not have keyed. We can reverse the direction of operation of the switch through different channels (RUDD, ALL, ELE ...). The potentionètres used to adjust the gain separately on the three channels.



The gain, inverters tracks, inputs and outputs.

- Inputs (input) from the receiver are marked with:

- AIL: aileron input
- ELE: depth entry.
- RUDD: steering input.
- TO: input control on / off stabilizer (in the gyro to "reverse")

It must connect the receiver channels to the inputs of RX3S using connectors to male / male: [10CM Male to Male Servo Lead](#) . For security, add a connector on the auxiliary (AUX) input to disable the stabilizer from a cross. I advise you to manage your connections because there will be many extensions at the end of the operation.



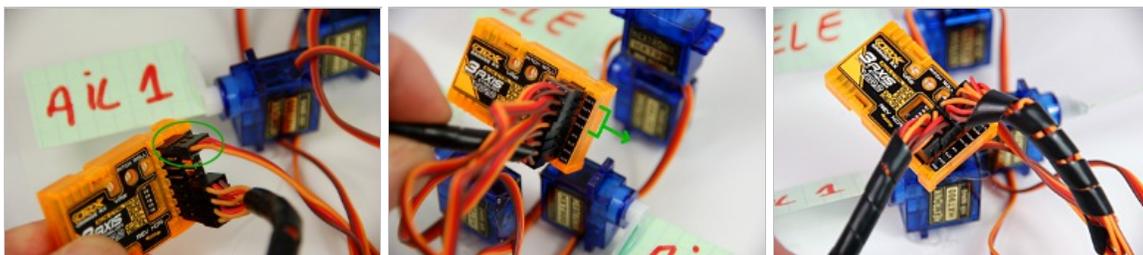
You must connect the receiver channels to input RX3S using connector / male male.

- The outputs (output) to the servos are marked by:

- AIL-L: left aileron servo output.
- ELEV: servo output depth.
- RUDD: steering servo output
- AIL-R: right aileron servo output.

Similarly so you must connect the outputs of the RX3S servos control surfaces (just like a receiver). You have 2 outputs for fins, but depending on your configuration you may need to use a single (with a Y).

To use a Delta or V-tail mixer simply switch the corresponding switch. On your radio useless select the same mix, the RX3S that support. The radio must be set to a normal aircraft program.



You have 2 outputs for fins, but depending on your configuration you may need to use a single (with a Y) . .



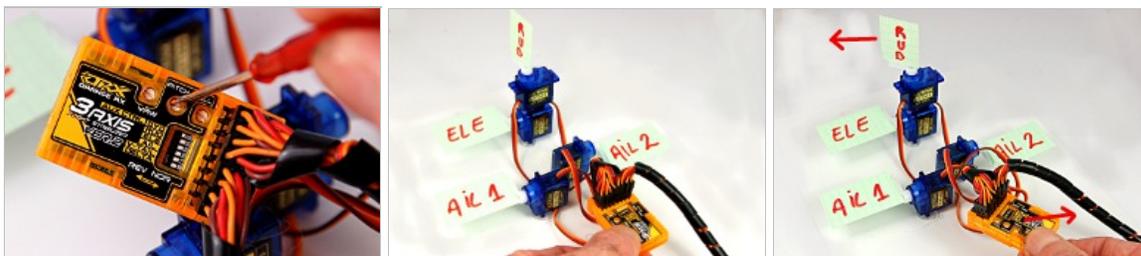
**3 - Installation, adjustment and operation of RX3S:** The RX3S is easy to use. It is small and light, quickly found its place in the body and has little impact on the flying qualities of the aircraft (wing loading). Follow a few basic rules.

- How to install RX3S? Install RX3S in the body to a location with low (not before the battery ;) Here are some tips:
  - as close as possible to the receiver. You can minimize the size of the connectors (extension male / male 10cm for example).
  - as far as the motor / controller pair out of the main source of noise.
  - horizontal as possible to ease the adjustments and corrections gyro.
  - attach a vibration support (velcro, hard foam ..).
  - Be sure to keep easy access to potentiometers for not having to disassemble everything each time you want to change the gain.
- Remote ON / OFF: The stabilizer can be activated or deactivated in flight. You just have to connect the AUX input on your radio channel that you can activate with a cross. It should also switch the first switch (AUX CTRL | GYRO) left. You will be able to take off without the assistance of rx3s then activate the air once or reverse.

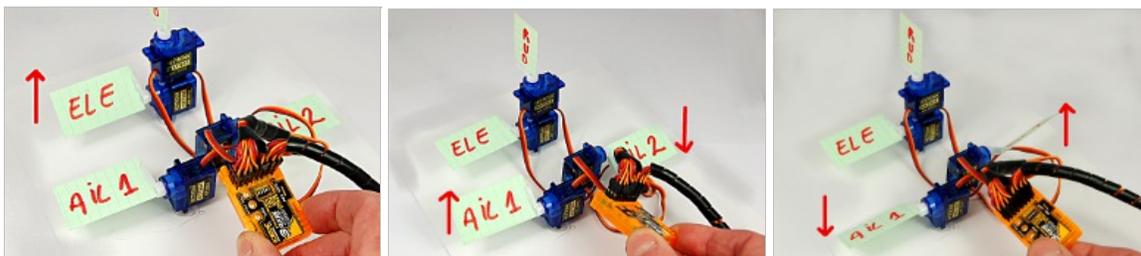


Easy installation with Velcro RX3S here on Bixler 2. Roll correction on the right wing.

- Operation RX3S. The RX3S does not need specific power. Once you connect your drive battery will be powered by the receiver (red LED) and correct the deviations of trajectories on three axes. As you can see from the photos, the rudders are in opposition to bring the unit back on course. They involved a short time (before returning to neutral) and even stronger than the gain. This can not be exaggerated corrections and did not induce oscillatory behavior in flight. The correction is repeated as many times as needed with a frequency related to the required gain.



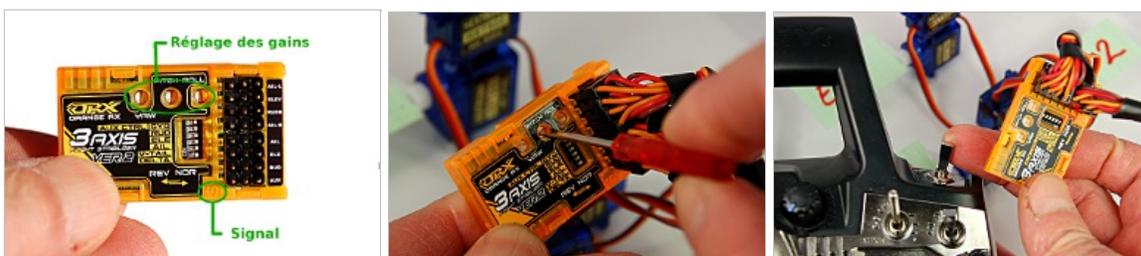
Once you connect your battery propulsion it will be powered by the receiver (red LED) and correct the deviations of trajectories on three axes.



Here correction on the depth and on the fins.

- Adjusting the gyro gain is due to the potentiometers. Preset to 50% for soft stabilization, they are adjustable (up or down) for each channel to get the desired response.
  - YAW (Yaw): vertical axis.
  - PITCH (pitch): transverse axis.
  - ROLL (roll ): longitudinal axis

Be the first flight with these settings, set at altitude safety and enable the stabilizer. Observe the behavior of the device on its three axes. Ask and increase the gain on the ways that needs it. Beware, if the gain is too high, the device becomes uncontrollable. It must then disengage the stabilizer to regain control. Ask the unit and adjust the settings. A good compromise is found when maximum stabilization effect is achieved without oscillatory phenomena or loss of control.



Potentiometers allow adjustment of the gyro gain. Remote ON / OFF: it can be enabled or disabled from an international flight.



**4 - Conclusions:** The electronic control between more in our devices. Lower prices and miniaturization have dropped the latest barriers to its use. With a very low selling price (\$ 18) and relative ease of use, RX3S is a valuable aid in steering.

- What are these applications? Beginners can draw some benefit with soft settings. It makes the hand launching, landing and windy, it helps reduce the effect of wind gusts pop. It also automatically compensate the action pull-up shutters. Lovers of aerial photographs and the FPV appreciate it because it helps keep the straighter and a constant altitude.
- Is it easy to install? Yes very easy so it is small, only multiple connectors required may pose problems on very small devices.
- Is it easy to adjust? Fairly easy to adjust thanks to the knobs but it requires extensive testing where to put the device each time. Each channel further requires a special setting in relation to the surface of the control surface.
- Is it effective? Quite effective when properly adjusted. It is totally transparent to the orders of the rubber sleeves and larger deviations of trajectories. But this is not an autopilot and stabilization is not perfect. You can not put the radio or texting or go get a coffee ... The adjustment range seems quite satisfactory gains without any time to be extensive (fine tuning).
- There are risks? Yes there is a risk of losing control of the aircraft when the gains are too large. Hence the need to take time to proceed gradually, care settings and must be used to disengage the inter action of the stabilizer to regain control of the aircraft in case of problems.

• There are disadvantages? The servos are in high demand by the stabilizer (life?), Some servos (too slow) may interfere with its action. Ground a phenomenon may appear wobble (servos are solicited continuously). By connecting the AUX channel will reduce and even suppressed, this disadvantage. when it is set incorrectly, the phenomena parasites can make the plane impilotable (oscillations stall.) There is only one output for both fins have can not use mixes or differential. Finally, note that I have not tried the RX3S aerobatics or 3D.



Very handy and lightweight.



**5 - Summary: Pros and cons:**

Of	Against
<ul style="list-style-type: none"> <li>Very attractive price.</li> <li>Very handy and lightweight.</li> <li>On / Off Function from a triggered AUX flight.</li> <li>Easy to install on a plane.</li> <li>Effective gain settings.</li> <li>Removes the biggest swerve.</li> <li>Effectively fights against the wind.</li> <li>Improves stability and aerial photography.</li> <li>Piloting assistance for FPV flight.</li> <li>Completely transparent with respect to orders sleeves.</li> <li>Contributes to a quieter drive.</li> <li>Facilitates hand launched.</li> <li>Very light, no impact on the wing loading.</li> </ul>	<ul style="list-style-type: none"> <li>No manual (at the product).</li> <li>Insufficient signal on the housing (1).</li> <li>Conservation course is not perfect.</li> <li>Light wiggling servo break (2).</li> <li>Risk of loss of control in case of too high gain (3).</li> <li>One output for both ailerons.</li> <li>We can not have aileron differential (4), or mixes.</li> </ul>

(1) inputs and outputs are not even mentioned.  
 (2) reduced if you connect the AUX port.  
 (3) where the value of using the AUX channel to disengage in flight.  
 (4) on gliders.



**6 - the links rx3s\_orange\_v2** ▶ 1 result (s)



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