

## Forward Programing on Spektrum Radios and Receivers

1. Remove the propeller.
2. Power up the **transmitter**, then the **Receiver**.
3. Press the Scroll wheel, and scroll down to **Forward Programming**.
4. Press – **Main menu**
5. Scroll to **Other settings** – click, scroll to **Factory reset** – click. Scroll to **Apply** - click. Scroll to **Complete** – click.
6. It should take you back to the **Main Menu**.
7. Scroll to **Gyro Settings** – click.
8. Scroll to **First time setup** – click.
9. Read **Screen**. If the aircraft is setup as described, Scroll to **Next** – click.
10. Read **Instructions**. Scroll to **Next** – click.
11. Set the **model level**, scroll to **continue** – click.
12. Follow **Instructions – set model on its nose** – scroll to **continue** – click.
13. On the next screen, **verify orientation shown matches that of receiver in aircraft**. Scroll to **continue** – click.
14. Next is **Gain Channel select** – this will be a **rotary knob** that will allow in flight adjustment to the gyro. **One axis at a time**. Scroll to **Gain Channel select** – click.
  - a. **Select an unused channel** – scroll until the box under **Gain Channel is highlighted** – click and scroll to an **unused channel** – click to lock in channel
  - b. Scroll to **highlight box under Input** – click – turn **rotary knob on top of transmitter**. Click to lock in selection.
  - c. Click **Next**
  - d. Scroll to **Apply** – click – **receiver will reboot**.
  - e. Click to go back to the **Main Menu**.
15. At the **Main Menu** – scroll to **Gyro Settings** – click.
  - a. Scroll to **F-Mode setup** – click.
  - b. Scroll to **FM Channel** – click.
  - c. Under **FM channel highlight** and click.
  - d. Scroll to an **unused Channel** - Click to lock in.
  - e. Scroll to highlight the **box under input**. Click to active, move the **switch you want for the Gyro**. Click again to lock in.
  - f. Scroll to **Next**, click – **F-Mode Setup** screen appears. **Move the switch you assigned to the gyro. It should switch between 3 flight modes**.
  - g. Hi the **back arrow** – this takes you back to the **Gyro Settings Screen**.
16. Scroll to **AS3X Settings** – click – Scroll to **AS3X Gains** – click. Takes you to **flight modes**. When you move the **gyro switch**, it will change between the **flight modes**. The **factory default gains** will be visible. **40-50-60% on all 3 modes**.
  - a. Move the switch to **flight Mode 3**. This channel or switch position will have **no Gyro stabilization**.
    - i. Scroll to highlight the **Roll gain value (Ailerons)** and click. **Set to zero**.
    - ii. Do the same for the **pitch (Elevator)** – **set to zero**.
    - iii. Do the same for **Yaw (Rudder)** – **set to zero**.
  - b. Move the Switch to **Flight Mode 2**.
    - i. Scroll to highlight the **Roll gain value**. **Set to 100%**. **When we rotate the knob, this is the maximum value of gain that the knob can go to**.
    - ii. **Set the pitch and the yaw to zero**.
  - c. Move the switch to **flight mode 1**.

- i. Set the **roll, pitch and yaw to 100%**. We want check the aircraft and make sure **the stabilization is setup correctly** and the surfaces are moving in the correct direction to stabilize the aircraft.
  - ii. Hit the **back arrow button** until you are back at the **Main Flight Screen**.
  - iii. Run the **throttle to just over 25% and then back to zero**: this **activated the AX3X**. **Rotate the gain knob to 100%. Clockwise till it stops**. Move the wings up and down, the tail right to left, and the body up and down, and verify that all surfaces are moving in the correct direction – they need to move in the direction that counteract the rotation.
  - iv. Scroll to **Forward programing**, scroll to **Gyro Settings** – click.
  - v. Scroll to **AS3X Settings** - click, scroll to **AS3X Gains** - click.
  - vi. Scroll to **Roll, reset value to 0%**
  - vii. Do the same for **Pitch and Yaw – set to 0%**.
  - viii. Click on the **back arrow button** to return to the **AS3X Setting screen**.
- 17. Scroll down to **Fixed/Adjustable Gain** – click.
  - a. Move your switch to **Flight mode 3**. This is the **Flight mode we want to remain at zero – no Gyro**.
    - i. Scroll down and **change all settings** from **adjustable to fixed**. If you don't change it to fixed, it will take the values from the knob. The good news is, we set the Roll, the Pitch, and the Yaw to zero. So even if you forget to do this, the **values will still stay a zero**.
      - 1. Do the same for **Flight mode 1**.
    - ii. Move your switch to **Flight mode 2**. This will be our **high-speed flight gyro setting**. Maximum stability at full throttle.
      - 1. **Leave Roll "Adjustable"** – we will set this value in flight using the knob.
      - 2. Set the **pitch and yaw to fixed**.
    - iii. Move your switch to **Flight mode 1**.
      - 1. **Set all values to fixed**.
- 18. Before we fly, **we want to check and test our settings**. Hit the back button. This takes us to **AS3X Settings**.
  - a. **Verify Gain settings on all three switch settings**. Click on **AS3X gain**. Move **Gyro switch**. **Verify values**. Only **FM 2 should show roll at 100%, everything else 0%**.
  - b. Exit forward programming by pressing the back button until you are at the **main screen- Flight Screen**.
- 19. Before taking off, we need **to verify the knob will adjust the gain on the Ailerons only**.
  - a. Turn the **knob clockwise** till it stops: **this is 100% gain**.
  - b. Run the **throttle to just over 25% and then back to zero**: this **activated the AX3X**. Move the wings up and down and **verify the ailerons are moving in the correct direction** – they need to move in the direction that counteract the rotation.
  - c. Turn the **knob counter-clockwise** till it stops. **This sets the gain to zero. Rotate the wings, there should be no movement of the ailerons**.
- 20. With the **gain on the ailerons set to zero, take off**.
  - a. Once in flight, get high and fly level at low to medium power, (we are setting the gyro up for high-speed flight) **rotate the knob a small amount**. Then **slowly move the throttle to full power**. If the plane **begins to oscillate, cut the power**. Turn the knob back a little, and move the throttle to full power. If it doesn't oscillate and you're happy with the way it flies, **don't move the knob and land the plane. This is close to the maximum gain setting for high-speed flight. We want use this value or less. Don't move the knob, as this will change the value**.
  - b. Cut power to the motor.
- 21. Go to the **Forward programming menu**: push the scroll bar down, scroll to **Forward programming** – push to select.
  - a. If you have not cut power to the motor, it will not allow you to enter forward programming – you will get a warning screen – **"Throttle cut off."**

- b. Go to **Gyro settings** - click.
  - c. Go to **AS3X Settings**. - click.
  - d. Make sure the **switch that changes the gyro setting has not changed. In this case the middle switch position.**
  - e. Scroll down to **“Capture Gyro Gains.”** - click. The Screen **“Capture Gyro Gains”** appears.
  - f. You will see some **value** in the **“Roll”** position. **This is the gain value that you set using the rotating knob.**
  - g. You can **change that value by rotating the knob. This value can be changed later, anytime manually.**
  - h. Scroll down to **“Capture Gyro Gains”** this will capture all the gains you see on your screen, the Roll, the Pitch and the Yaw. The **Pitch and Yaw for now are zero.** Click to capture gains.
  - i. A new screen appears. **All 3 axis’s have now been set to fixed.**
22. Next, we are going to **repeat the same process**, except this time we will set the **pitch gain values.**
- a. Hit the **back arrow button.**
  - b. Scroll down to **Fixed /Adjustable gains**, highlight and click.
  - c. The **gyro switch need to be in the same location as before, in this case the middle position, FM 2.**
  - d. Scroll down and change the **Pitch** from **fixed to adjustable.** Click once to change.
  - e. Hit the back arrow button.
  - f. Highlight and click on **AX3S gains.**
    - i. Scroll down to **pitch and change the value to 100%.** This is the **maximum value of gain** that can be **set using the rotating knob.** The Roll should have the gain values captured in the previous flight. **The Yaw – zero.**
    - ii. Hit the back arrow button until you are at the **main flight screen.**
    - iii. Power the aircraft to **just over 25% to Activate the AS3X.**
23. Before taking off, we need to **verify the knob will adjust the gain on the Elevator only.**
- a. Turn the **knob clockwise till it stops: this is 100% gain.**
  - b. Run the **throttle to just over 25%** and then back to zero: **this activated the AX3X. Move the tail up and down and verify the elevator is moving in the correct direction** – it needs to move in the direction that counteract the rotation.
  - c. Turn the **knob counter-clockwise till it stops. This sets the gain to zero.** Rotate the tail up and down, there **should be no movement of the elevator.**
24. With the gain on the **elevator set to zero, take off.**
- a. Once in flight, get high and **fly level at low to medium power**, (we are setting the gyro up for high-speed flight) **rotate the knob a small amount.** Then **slowly move the throttle to full power. If the plane begins to oscillate, cut the power.** Turn the knob back a little, and move the throttle to full power. If it doesn’t oscillate and you’re happy with the way it flies, don’t move the knob and land the plane. This is close to the maximum gain setting for high-speed flight. We want use this value or less. **Don’t move the knob, as this will change the value.**
  - b. Cut power to the motor.
25. Go to **the Forward programming menu:** push the scroll bar down, scroll to **Forward Programming** – push to select.
- a. If you have not cut power to the motor, it will not allow you to enter **Forward Programming** – you will get a warning screen – **“Throttle cut off.”**
  - b. Go to **Gyro settings** - click.
  - c. Go to **AS3X Settings**. - click.
  - d. Make sure the switch that changes the gyro setting has not changed. In this case the middle switch position.
  - e. Scroll down to **“Capture Gyro Gains”** - click. The Screen **“Capture Gyro Gains”** appears.
  - f. You will see **some value in the “Pitch” position.** This is the **gain value that you set using the rotating knob.**
  - g. You can **change that value by rotating the knob.** This value can be change later, anytime manually.

- h. Scroll down to **“Capture Gyro Gains”** this will capture all the gains you see on your screen, the Roll, the Pitch and the Yaw. The Yaw for now are zero. **Click to capture gains.**
  - i. A new screen appears. **All 3 axis’s have now been set to fixed.**
26. Next, we are going to repeat the same process, except this time we will set the **Yaw gain values.**
- a. **Hit the back arrow button.**
  - b. Scroll down to **Fixed /Adjustable gains**, highlight and click.
  - c. The **gyro switch need to be in the same location as before, in this case the middle position, FM 2.**
  - d. Scroll down and change the **Yaw from fixed to adjustable.** Click once to change.
  - e. **Hit the back arrow button.**
  - f. Highlight and click on **AX3S gains.**
    - i. Scroll down to **Yaw** and change the **value to 100%.** This is the **maximum value of gain that can be set using the rotating knob.** The Roll and Pitch should have the **gain values captured in the previous flights.**
    - ii. Hit the **back arrow button** until you are at the **main flight screen.**
    - iii. Power the aircraft to **just over 25% to Activate the AS3X.**
27. Before taking off, we need to **verify the knob** will adjust the **gain on the Rudder only.**
- a. Turn the **knob clockwise till it stops: this is 100% gain.**
  - b. Run the **throttle to just over 25%** and then back to zero: **this activated the AX3X.** Move the tail right and left and verify the rudder is moving in the correct direction – it needs to move in the direction that counteract the rotation.
  - c. **Turn the knob counter clockwise till it stops. This sets the gain to zero.** Rotate the tail up and down, there should be **no movement of the rudder.**
28. With the **gain on the rudder set to zero, take off.**
- a. Once in flight, get high and fly level at full power, (we are setting the gyro up for high-speed flight) rotate the knob until you see the plane begin to oscillate, turn the knob back slightly to stop the oscillation. This is the maximum gain setting for high-speed flight. We want use this value or less. Don’t move the knob, as this will change the value.
  - b. Land the plane.
  - c. Cut power to the motor.
29. Go to the **Forward programming menu:** push the scroll bar down, scroll to Forward programming – push to select.
- a. If you have not cut power to the motor, it will not allow you to enter forward programming – you will get a warning screen – **“Throttle cut off.”**
  - b. Go to **Gyro settings** - click.
  - c. Go to **AS3X Settings** - click.
  - d. Make sure the switch that changes the gyro setting has not changed. In this case the middle switch position.
  - e. Scroll down to **“Capture Gyro Gains.”** Highlight and click. The Screen **“Capture Gyro Gains”** appears.
  - f. You will see some value in the **“Yaw”** position. **This is the gain value that you set using the rotating knob.**
  - g. You can change that value by rotating the knob. This value can be change later, anytime manually.
  - h. Scroll down to **“Capture Gyro Gains”** this will capture all the gains you see on your screen, the Roll, the Pitch and the Yaw. Click to capture gains.
  - i. A new screen appears. **All 3 axis’s have now been set to fixed.**
  - j. The Gyro is now set for **high-speed flight** on this switch position.
  - k. All 3 axis’s have been setup.