



HITEC SPECTRA 2.4GHz Module Instruction

version 3.0 v3.00(0)

• Risk of explosion exists if battery is replaced by an incorrect type. Dispose of the used battery according to the instructions.

European CE notice to users and product statements:

This product is CE marked according to the provisions of the R&TTE Directive(99/5/EC). Hereby, HITEC RCD Inc, declares that this product is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC. For further information, please contact <http://www.hitecrad.co.kr>



FCC notice to users and product statements:

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES.

Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause an undesired operation.

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

• FRANCE Frequency Range : 2.4056GHz~ 2.4482GHz

CE06780

2.4GHz-2.4835GHz Band for use in : AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, GR, HU, IE, IT, LT, LU, LV, MT, NL, PL, PT, RO, SE, SI, SK, 2.4GHz-2.45GHz Band for use in : FR

Made in the Philippines

Introduction

Thank you for your purchase of the Hitec Adaptive Frequency Hopping Spread Spectrum (AFHSS) 2.4GHz module and receiver system. This manual contains the complete directions on how to use the Spectra 2.4GHz module and Hitec's telemetry & non-telemetry receivers, version v3.00(0) or higher. We encourage you to review the entire manual before using these products.

Service & Support

Hitec Customer Service

Help is available from Hitec customer service through phone support and e-mail inquiries.

Our US office is generally open Monday thru Friday, 8:00AM to 4:30PM PST. These hours and days may vary by season. Every attempt is made to answer all incoming service calls. Should you get our voice mail, leave your name and number and a staff member will return your call.

Hitec Website

Make plans to visit the Hitec website, www.hitecrad.com, on a regular basis. Not only is it full of specs and other information about the entire Hitec product line, our website's FAQ pages will eventually hold valuable information and program updates about the Spectra 2.4 module and Optima series of receivers.

The On-Line Community

One of the benefits of the extensive R/C online community is the vast wealth of archived knowledge available. Hitec sponsors forums on most of the popular R/C websites where a Hitec staff member or representative tries to answer all manner of product related questions. Bringing together strangers with common interests is proving to be one of the greatest gifts of the internet. If past history is any guide to the future, we are certain forums will be started about the Hitec 2.4 system and several are certain to stand out as valuable archives of information.

Warranty and Non-Warranty Service

All Hitec products carry a two year from date-of-purchase warranty against manufacturer's defects. Our trained and professional service representative will determine if the item will be repaired or replaced. To provide all the necessary information we need to administrate your repair, visit our website at www.hitecrad.com and download the repair form, fill it out and send in your item for repair.

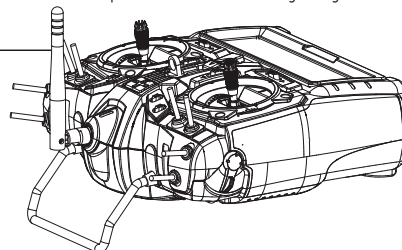
Hitec Service
12115 Paine St. Poway CA 92064
1-858-748-6948
E-mail: service@hitecrad.com



Warning!

1. For maximum performance, it is recommended to position the antenna at a 90 degree angle as shown in the picture below.

Recommended Position



- The receiver antenna should not be placed near the engine, metal parts or high current batteries.
- When using a large number of high-power digital servos in a model, it is highly recommended to use the SPC feature to insure the receiver always gets the power it needs in high load conditions. If not, use the system with enough receiver battery capacity.
- There could be a possible time delay in receiving telemetry data from the HTS-SS (sensor-station) depending on the conditions in the area you fly.



Warning

* When the SPECTRA 2.4 module is used for Futaba® radios, the PPM mode is required to be activated for proper work.

* Futaba is a registered trademark of Futaba Denshi Kogyo Kabushiki Kaisha Corporation of Japan.

Spectra 2.4 Module Features

AFHSS 2.4GHz Telemetric Module

Stock # 28315

1. Dual Blue and Red Status Indicator LED's

- Indicates the set-up process codes and current status of the module.

2. Function Button

- Used for linking the module to a receiver, entering the power down mode for range checks and switching system to the Scan / Normal Mode set-up.

3. Sensor Data Output and System Update Connector Port

- A three-pin servo connector port is featured on the Spectra 2.4GHz module allowing you to upgrade the device software as well as download any information recorded when using Hitec's AFHSS 2.4GHz optional on-board sensors. This port also interfaces with our new telemetry system sensor station, allowing real-time data display on the ground when flying with the Aurora 9 transmitter.

4. Adjustable Omni-Directional Antenna

- The Spectra 2.4GHz antenna is an omni-directional antenna which can transmit and receive the transmitter and receiver data.

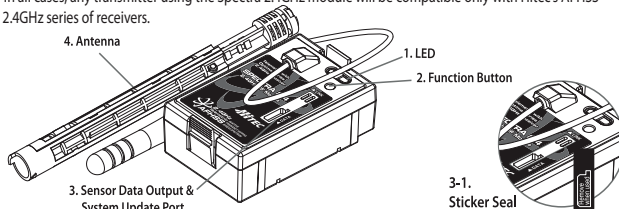
For the best reception, refer to the set-up example picture in the above Warning box.

5. Compatible Transmitters

- The Spectra 2.4GHz module and antenna can be used with the following Hitec transmitters:

Aurora 9, Eclipse 7, Optic 6, and all future Hitec module-type transmitters

- In all cases, any transmitter using the Spectra 2.4GHz module will be compatible only with Hitec's AFHSS 2.4GHz series of receivers.



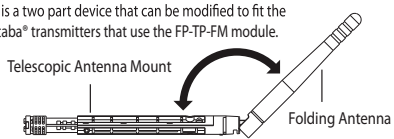
- Except for the Aurora 9 and future Hitec models, all other transmitters' modulations must be set up as PPM

Transmitter Antenna Installation

The antenna provided with your system is a two part device that can be modified to fit the Hitec Eclipse 7, Optic 6, Aurora 9 and Futaba® transmitters that use the FP-TP-FM module.

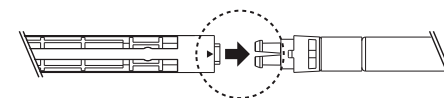
Telescopic Antenna Mount

Folding Antenna



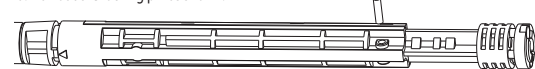
1. Disassemble the Telescopic Antenna Mount and Folding Antenna

- The first step is to "snap" the antenna apart. The lower part should be adjusted prior to the installation into your transmitter, while the upper part connects to the module with the wire installed in step 4.
- Note how to hold the antenna and where it separates. Grasp the two pieces and gently pull them apart.

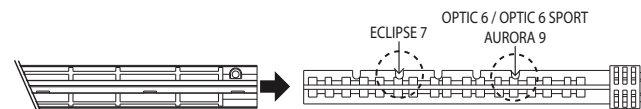


2. Adjusting the length of the lower antenna mount.

- Pull out the locking pin as shown.



- Adjust the length of the telescopic antenna mount to fit your transmitter and slide the locking pin back in. See the graphic below for guidance on where to place the pin on your transmitter.



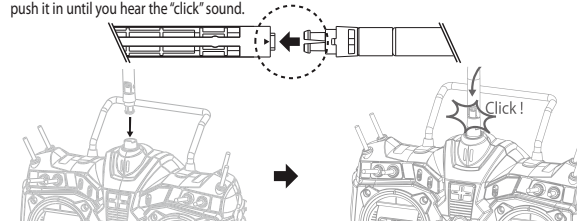
3. How to install the antenna mount into the transmitter

- Insert the telescopic antenna mount into the transmitter and turn it clockwise until it is screwed into the transmitter.
- Note the position of the antenna mount top "rotation stopper". Adjust the stopper as shown.



4. Assembling the folding antenna top

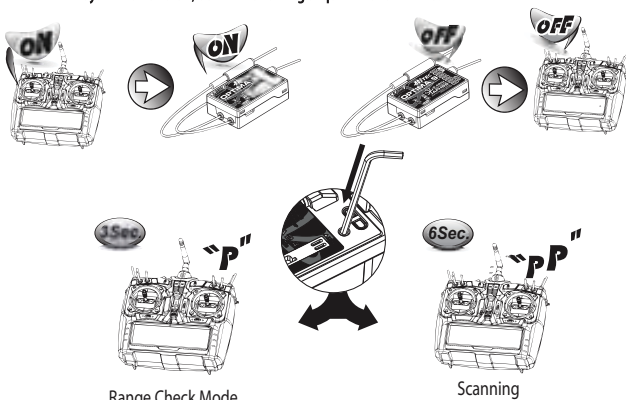
- Snap the top of the antenna back into the mount as pictured below, push it in until you hear the "click" sound.



General Use Guidelines

General Use Guidelines

To turn the system on and off, use the following sequence at all times:

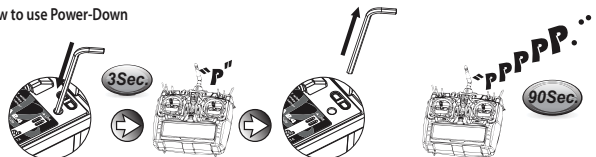


Range Check Function

It is critical that before each flight session you perform a range check that confirms the signal between the receiver and transmitter is appropriate. Unlike the FM/PPM or PCM signal radios, 2.4GHz systems use a fixed shorter, stubby transmitter antenna known as a rubber duck antenna. So, the traditional method of range check, lowering the transmitter antenna, is not applicable.

The Hitec 2.4GHz System uses a power-down mode to reduce the transmitter signal strength. Once the power-down mode is activated, it runs for about 90 seconds, effectively shortening the range to 30 meters or 100 feet. During this power-down mode, you should test the effective range by walking away from the secured aircraft and carrying the transmitter to a minimum distance of approx. 30 meters or 100 feet.

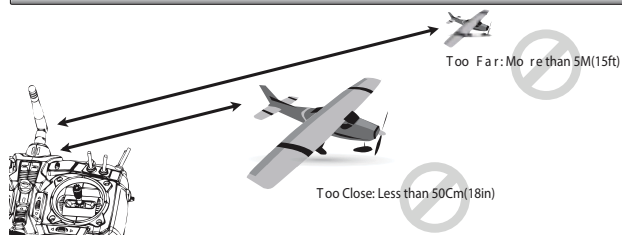
How to use Power-Down



Warning

- Before each flying session, confirm the radio system is working properly.
- Before the engine or motor is started, turn on the system as explained above. Make sure all the servos and control surfaces are working properly.
- If any control surface is not moving properly, do not fly the aircraft until the problem is solved.
- If you are unable to accomplish a successful range check of 30 meters or 100 feet, DO NOT ATTEMPT TO FLY.

Link Guidelines



Note

- Link must be done within 15ft.(5m) of the transmitter and receiver.
- Transmitter and receiver need to be at least 18in.(50cm) from each other to link properly.

Link (ID-Setup or Bind)

Your Hitec AFHSS system uses a communication protocol that links and binds the Hitec 2.4GHz receiver to your transmitter. Once the receiver and module are "bound," no other transmitter can interfere with your receiver during its operation. In the case of multiple model memory transmitters, you can bind as many Hitec 2.4GHz receivers to your transmitter, one per model memory as necessary. Each module and receiver set is paired at the factory for your convenience.

Use one of the following binding methods to bind additional Hitec 2.4GHz receivers to your transmitter.

Non-telemetry RXs (MINIMA & MICRO Series)

1 Press and hold the button on the module, and turn on the transmitter.

2 Release the link button.

3 Check if the BLUE LED is blinking. If the RED LED is blinking, press the link button for 2 sec., so that the LED changes to BLUE.

4 Press and hold the link button on the receiver and turn on the power.

5 Both RED and BLUE LEDs will blink rapidly to find the transmitter signal. Release the link button when the RED LED on the receiver glows steady.

6 When the link is completed, the BLUE LED on the module will blink while the BLUE LED on the receiver glows steady.

7 To save the setting, please reboot both the transmitter and receiver.

When they are turned on again, the RED LED on the module (or radio) and the BLUE LED on the receiver will glow steady.

Telemetry RXs (OPTIMA Series)

3 Check if the RED LED is blinking. If the BLUE LED is blinking, press the link button for 2 sec., so that the LED changes to RED.

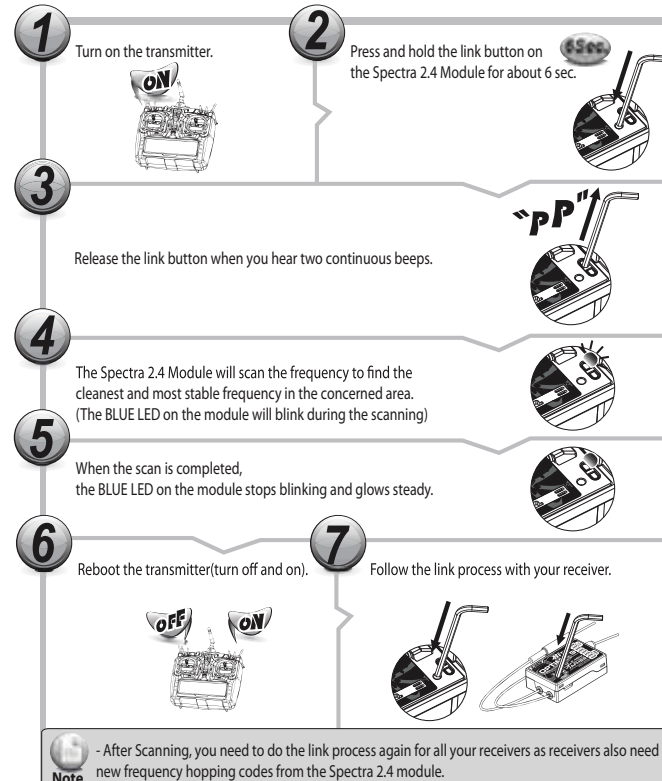
5 Release the link button.

6 When the link is completed, the BLUE LED on the module will blink while the RED LED on the module glows steady. For the receiver, both BLUE & RED LEDs will glow steady.

When they are turned on again, you will hear a continuous beep sound. Both the RED LEDs on the module and receiver will glow steady in normal status.

Scanning Function

The SmartScan is a unique function of Hitec's AFHSS 2.4GHz technology to provide the user with the cleanest & the most stable frequency channels in certain crowded 2.4GHz environments. From the firmware Ver.3.0 of the Spectra 2.4 module, you can utilize "Scan" function more conveniently without complexity (previously, Hitec's 2.4GHz system was operated with two different modes: Normal and Scan mode which was a bit complicated to use). The following explains how to use the Scanning function properly.



Telemetry System

The Hitec Spectra 2.4GHz module and Optima series of receivers feature full telemetry capabilities (except for the Optima 6) and include a Low Receiver Battery Warning as a basic function.

I. Basic Function: Low On-Board Battery Warning - for All Optima Receivers

When the Optima series of receivers are powered up, it will automatically detect the battery voltage level and recognize between 4-cell or 5-cell NiMH and NiCd batteries (4-cell < 5.8V < 5-cell). If a 2-cell LiPo battery is being used, you can customize the battery warning level by using our HPP-22 program.

- When the battery level is safe (4-cell > 4.5V, 5-cell > 5.6V), no changes will appear to the LED lights.
- When the battery level is low (4-cell < 4.5V, 5-cell < 5.6V), the BLUE LED glows constantly and the RED LED blinks fast. Three continuous beeps from the module serve as a low receiver battery warning. Upon hearing the beeps, we advise you to land at once.

II. Optional Functions: GPS, FUEL, TEMP, O-RPM, M-RPM, VOLT, Amp Sensors - Applicable for Optima 7 & 9 Only

- More devices will be available in the future. Check the Hitec website at www.hitecrd.com for more up-to-date information.



Warning

- Low Battery Warning function is only for your reference. The actual battery level could be different. Battery Memory Effects such as Lazy Battery Effect or Battery Memory could affect the Low Battery Warning function.
- When the 2.4GHz system and HV servos are used together, we strongly recommend using fully-charged, large capacity battery packs and you must constantly monitor the battery status.