



AR635 User Guide

AR635 Bedienungsanleitung

Guide de l'utilisateur - AR635

AR635 Guida dell'utente

NOTICE

All instructions, warranties and other collateral documents are subject to change at the sole discretion of Horizon Hobby, Inc. For up-to-date product literature, visit horizonhobby.com and click on the support tab for this product.

Meaning of Special Language

The following terms are used throughout the product literature to indicate various levels of potential harm when operating this product:

NOTICE: Procedures, which if not properly followed, create a possibility of physical property damage AND a little or no possibility of injury.

CAUTION: Procedures, which if not properly followed, create the probability of physical property damage AND a possibility of serious injury.

WARNING: Procedures, which if not properly followed, create the probability of property damage, collateral damage, and serious injury OR create a high probability of superficial injury.



WARNING: Read the ENTIRE instruction manual to become familiar with the features of the product before operating. Failure to operate the product correctly can result in damage to the product, personal property and cause serious injury.

This is a sophisticated hobby product. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this Product in a safe and responsible manner could result in injury or damage to the product or other property. This product is not intended for use by children without direct adult supervision. Do not attempt disassembly, use with incompatible components or augment product in any way without the approval of Horizon Hobby, Inc. This manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or serious injury.



WARNING AGAINST COUNTERFEIT PRODUCTS

Always purchase from a Horizon Hobby, Inc. authorized dealer to ensure authentic high-quality Spektrum product. Horizon Hobby, Inc. disclaims all support and warranty with regards, but not limited to, compatibility and performance of counterfeit products or products claiming compatibility with DSM or Spektrum technology.

Age Recommendation: Not for children under 14 years. This is not a toy.

NOTICE: This product is only intended for use with unmanned, hobby-grade, remote-controlled vehicles and aircraft. Horizon Hobby disclaims all liability outside of the intended purpose and will not provide warranty service related thereto.

WARRANTY REGISTRATION

Visit www.spektrumrc.com/registration today to register your product.

AR635 User Guide

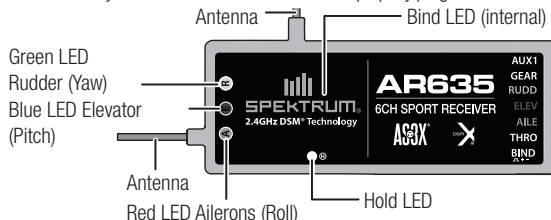
Applications

Park flyer—.90 size Electric Aircraft ONLY.



CAUTION: Do not use the AR635 receiver in nitro, gas or turbine-powered aircraft or in electric aircraft larger than .90-size. Doing so may cause damage to the aircraft and result in property damage or injury.

NOTICE: Always read and follow all instructions to properly program the AS3X system.



Specifications

Type	DSM2/DSMX AS3X receiver
Channels	6
Modulation	DSM2/DSMX
Dimension (WxLxH)	.22 x 56 x 14 mm
Weight	13.2 g
Input Voltage Range	3.5 to 8.5V
Resolution	.2048
Compatibility	All DSM2/DSMX aircraft transmitters

Receiver Operations Checklist

✓	
	1. Prepare your transmitter
	2. Set all servo reversing to Normal, then power off the transmitter.
	3. Bind the transmitter and receiver
	4. Install the receiver in the aircraft
	5. Complete the sensor direction test, then power off the transmitter and receiver.
	6. Adjust the gain values, then power off the receiver.
	Sample Gain set-ups are located at the end of the manual
	7. Complete the control surface direction test
	8. Perform a range test
	9. Fly the aircraft

Component Selection

Servo Selection

Proper servo selection is crucial to the performance of the AS3X stabilization system. We recommend using digital servos, as many analog servos are incompatible with the AR635 receiver. Always choose servos that can provide enough torque for the application. The faster the servo, the better the AS3X system will perform.



WARNING: Many analog servos, as well as poor servo-to-linkage geometry will cause oscillation and unwanted reaction from the receiver, and may result in the aircraft crashing, causing property damage or injury.

Y-Harnesses and Servo Extensions

Do not use amplified Y-harnesses and servo extensions with Spektrum equipment. Only use standard, non-amplified Y-harnesses and servo extensions.

Preparing Your Transmitter

IMPORTANT: Aileron and Elevator Servo Reversing **MUST** be set to Normal when you are programming the receiver and adjusting gain values. If you find that your aircraft requires less control surface throw, you will need to mechanically adjust the control surface linkages.

The AR635 receiver is compatible with both computer and non-computer transmitters.

Three pre-programmed options are available in the receiver.

- Sport Aircraft, All Transmitters
- 3D Aircraft, Non-Computer Transmitter
- 3D Aircraft, Computer Transmitter

Each receiver mode stores gain values for both high and low rates.

Sport Aircraft

1. Create a blank model memory in your transmitter (Computer Transmitters Only).
2. Center all trims and subtrims to neutral.
3. Make sure all servo reversing is set to Normal (N).
4. Set the Throttle, Aileron, Elevator and Rudder travel adjust values to 100%. Using a travel adjust value other than 100% will affect the tuning and performance of the AS3X system (Computer Transmitters Only).
5. Power off the transmitter.

3D Aircraft

The designation of computer and non-computer transmitter is determined by the travel adjust capabilities of the transmitter.

Non-Computer Transmitters: Spektrum DX4e, DX5e

Computer Transmitters: All other Spektrum aircraft transmitters and module systems

3D Aircraft, Non-Computer Transmitter

1. Make sure all trims are centered at neutral.
2. Make sure all servo reversing is set to Normal (N).
3. Enable Exponential (if available).
4. Use high rates when you are flying.

3D Aircraft, Computer Transmitter

1. Create a blank model memory in your transmitter.
2. Center all trims and subtrims at neutral.
3. Make sure all servo reversing is set to Normal (N).
4. Set the Throttle, Aileron, Elevator and Rudder travel adjust values to 125%. Using a travel adjust value other than 125% will affect the tuning and performance of the AS3X system.
5. Power off the transmitter.

Receiver Dual Rates

The AR635 receiver includes pre-programmed dual rate values that cannot be adjusted. We recommend setting your TRANSMITTER dual rate values to 100% for both high and low rates. Any TRANSMITTER Dual Rate or Expo values you select will be used in addition to the pre-programmed values.

For example, if you select 75% low rate in your transmitter, the actual value will be 75% of the low rate value in the receiver.

If you need to adjust the transmitter dual rate, you can do so, as long as the value is between 50%–100%.

IMPORTANT: Transmitter dual rate values must be between 50% and 100% for the AS3X system to work correctly. Remember, 50% in the transmitter is equal to 50% of the receiver dual rate.

Changing Between High and Low Dual Rates (Flight Modes)

The AR635 receiver uses the Gear channel (Channel 5) to change between High and Low Rates (Flight Modes). If you are using a Spektrum DX4e transmitter, you will use the ACT/AUX switch to change between High and Low Rates.

- Low Rate (Gear switch 0)
- High Rate (Gear switch 1)

Sport Aircraft

We recommend using higher gain values for Gear Down (slower air speed). Use lower gain values for Gear Up (faster air speed).

3D Aircraft

We recommend using higher gain values for 3D Flight (Slower air speed and larger control surface throws). Use lower gain values for General Flight (Faster air speed and smaller control surface throws). If you notice the control throws on the aircraft are less than you would expect, move the Gear switch to the opposite position and check the control throws again.



CAUTION: The AR635 applies gain values to both High and Low Rates (Switch positions 0). You **MUST** adjust and confirm the gain settings in **BOTH** switch positions. Failure to do so may result in the aircraft crashing.

Exponential

We recommend starting with 20% exponential on Aileron, Elevator and Rudder. Adjust the exponential value to match your flying style.

Binding the Transmitter and Receiver

You must bind the receiver to the transmitter before the receiver will operate. Binding is the process of programming the receiver to recognize the GUID (Globally Unique Identifier) code of a single specific transmitter. To bind the AR635 receiver to a DSM2 or DSMX transmitter:

1. Insert the bind plug in the BIND port on the receiver.
 2. Power on the receiver. The receiver can be powered through any open port. The orange bind LED on the receiver flashes rapidly to indicate the receiver is in bind mode.
- Attention:** To bind the receiver using an electronic speed control (ESC), insert the bind plug into the BIND port in the receiver and the ESC lead into the throttle (THRO) port.
3. Keep the plane motionless for 5 seconds.
 4. Move the throttle stick to the low throttle position.
 5. Put your transmitter in Bind Mode. The system connects within a few seconds. Once connected, the orange LED light turns solid and the AR635 receiver begins the calibration process (Green, Blue and Red LED lights flash).
 6. Remove the bind plug from the BIND port on the receiver before you power off the receiver and transmitter.
 7. Set up your model, then rebind the system so the true low throttle position is set in the failsafe. Store the bind plug in a convenient place.



CAUTION: Always remove the bind plug to prevent the system from entering bind mode the next time you power on the receiver. Failure to complete this step could result in the aircraft crashing or personal injury.

Receiver Installation

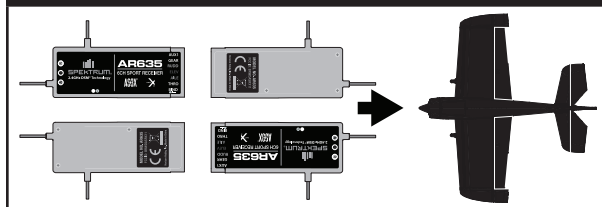
You can install the receiver under the canopy or in the bottom of the fuselage, as long as the servo pins point toward the nose or tail of the aircraft.

IMPORTANT: The AR635 receiver does not support dual servo mixing (dual elevator, dual rudder, elevon or flaperon). If your aircraft requires dual elevator, rudder or aileron servos, you will need to use a Y-harness.

Attention: For optimum RF link performance, position the antennas so they are perpendicular to each other. Doing so provides the best signal reception in flight.

1. Locate a flat spot inside the fuselage where you can install the receiver. The spot must be large enough to make contact with the entire base of the receiver case. Add or remove material in the fuselage as necessary.
2. Apply high-quality, double-sided foam tape to the receiver case and press the receiver case against the radio tray. The receiver must be mounted securely to prevent it from moving in flight.
3. Connect the servos to the receiver.

ONLY install the receiver into your aircraft in the following orientations.



Selecting the Transmitter Type

IMPORTANT: Aileron and Elevator Reversing **MUST** be set to Normal to access the programming menus.

Before programming the AR635 receiver, you must program the receiver for the transmitter type you want to use:

- Sport Aircraft, All Transmitters
- 3D Aircraft, Computer Transmitter
- 3D Aircraft, Non-Computer Transmitter



WARNING: ALWAYS remove the propeller before programming the receiver. Each time you save a selection, the receiver will exit the programming menu and activate the ESC.

Sport Aircraft

1. Power on your transmitter.
2. Move the throttle stick to the middle (1/2 throttle) position.
3. Hold full Left Aileron and full Up Elevator while powering on the receiver (as shown in Figure 1). After 5 seconds, the Green, Red and Blue LEDs in the receiver turn solid, then begin flashing.
4. Release the transmitter sticks.
5. Center both sticks, then move the throttle to the off position to save the selection. The ESC will regain control.


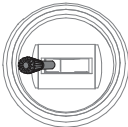


(Figure 1)

Entering Transmitter Type by Stick Combination:		
All Transmitters: Sport IMPORTANT: Aileron and Elevator Reversing must be set to Normal/Normal during receiver programming and gain adjustment.	Mode 1	
	Mode 2	

3D Aircraft, Non-Computer Transmitter

1. Power on your transmitter.
2. Move the throttle stick to the middle (1/2 throttle) position.
3. Hold full Left Aileron and full Down Elevator while powering on the receiver (as shown in Figure 2). After 5 seconds, the Red and Blue LEDs in the receiver flash.
4. Release the transmitter sticks.
5. Center both sticks, then move the throttle to the off position to save the selection.


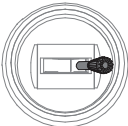

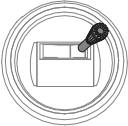
(Figure 2)

Entering Transmitter Type by Stick Combination:			
3D Aircraft: Non-Computer Transmitters	Mode 1		
			
IMPORTANT: Aileron and Elevator Reversing must be set to Normal/Normal	Mode 2		

3D Aircraft, Computer Transmitter

1. Power on your transmitter.
2. Move the throttle stick to the middle (1/2 throttle) position.
3. Hold full Right Aileron and full Down Elevator while powering on the receiver (as shown in Figure 3). After 5 seconds, the Blue and Green LEDs in the receiver turn flash.
4. Release the transmitter sticks.
5. Center both sticks, then move the throttle to the off position to save the selection.

(Figure 3)

Entering Transmitter Type by Stick Combination:			
3D Aircraft: Computer Transmitters:	Mode 1		
			
IMPORTANT: Aileron and Elevator Reversing must be set to Normal/Norma	Mode 2		

Checking the Sensor Control Direction

It is extremely important to make sure the sensors are compensating in the correct direction. Before adjusting any gain values, you must check the sensor direction and make note of any sensors that need to be reversed.



CAUTION: Failure to complete these steps could result in the aircraft crashing, property damage or personal injury.

Check the sensor control direction

- | |
|---|
| 1. Move the throttle stick to full idle/off, then power on your transmitter. |
| 2. Power on the receiver. |
| 3. Slightly increase the throttle until the motor shaft starts to turn, then lower the throttle to the OFF position. |
| 4. Rudder: Pick up the airplane with the tail pointing toward you and quickly move the nose to the left. The rudder should move to the right. If the rudder moves to the left, you will need to reverse the sensor direction. |
| 5. Aileron: Roll the airplane to the right. The right aileron should move down. If the right aileron moves up, you will need to reverse the sensor direction. |
| 6. Elevator: Point the nose of the aircraft down. The elevator should move up. If the elevator moves down, you will need to reverse the sensor direction. |
| 7. Move the Gear switch to the opposite position and repeat Steps 2–4, noting any sensors that need to be reversed. |

Adjusting the Gain Values

IMPORTANT: Aileron and Elevator Reversing MUST be set to Normal to access the programming menus. During gain adjustment, the Throttle channel is inactive. Power is still supplied to the Aileron, Elevator and Rudder servos.



WARNING: ALWAYS remove the propeller before programming the receiver. If you have not removed the propeller yet, STOP. Power off the aircraft and remove the propeller before continuing with the receiver programming.

To enter the Gain Control Menu:

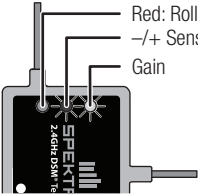
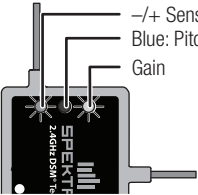
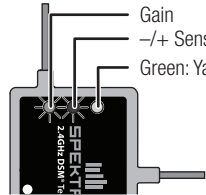
1. Power on your transmitter.
2. Move the throttle stick to the middle (1/2 throttle) position.
3. Hold full Right Aileron and full Up Elevator while powering on the receiver (as shown in Figure 4). After 5 seconds, the Green, Red and Blue LEDs in the receiver flash, indicating the channel, gain value and sensor direction.
4. The Throttle MUST remain at the middle position during programming. Release the Aileron and Elevator sticks, leaving the Throttle in the middle position.

(Figure 4)

Entering Gain Control by Stick Combination:				
Aileron/Elevator Reversing		Mode 1		
Aileron	Elevator			
Normal	Normal	Mode 2		

“Sample Aircraft Gain Settings” are located at the back of this manual.

Gain Setup: LEDs

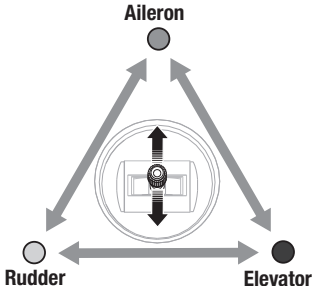



●	Red: Roll (Aileron)	 <p>Red: Roll (Aileron) -/+ Sensing Gain</p>
●	Blue: Pitch (Elevator)	 <p>-/+ Sensing Blue: Pitch (Elevator) Gain</p>
●	Green: Yaw (Rudder)	 <p>Gain -/+ Sensing Green: Yaw (Rudder)</p>

To adjust the gain values:

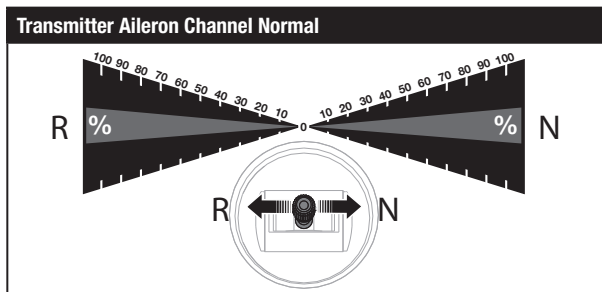
1. Move the Elevator stick up or down to select the gain axis you want to adjust.

- Red (A) LED: Aileron (Roll)
- Blue (E) LED: Elevator (Pitch)
- Green (R) LED: Rudder (Yaw)

The selected axis LED will turn solid and the other LEDs will flash.

Elevator Stick	LEDs	
 <p style="text-align: center;">Aileron</p> <p>Rudder Elevator</p>		Red (A) LED: Aileron (Roll)
		Blue (E) LED: Elevator (Pitch)
		Green (R) LED: Rudder (Yaw)

2. Move the Aileron stick left or right to adjust the gain. The gain adjusts by 10% each time you move the Aileron stick and return it to center. The Gain LED flashes faster as you increase the gain and slower as you reduce the gain.



100% to 10% (Reversed)

Moving the Aileron stick to the left increases the gain. Moving the stick to the right reduces the gain. The sensor LED flashes rapidly.

0%

Gain is OFF (Gain LED is OFF, Sensor LED flashes rapidly, Axis LED is solid).

10% to 100% (Normal)

Moving the Aileron stick to the right increases the gain. Moving the stick to the left reduces the gain. The sensor LED flashes 3 times per second.

To reverse the sensor direction

Reduce the gain until the Gain LED is OFF. Continue moving the Aileron stick to increase gain in the opposite direction.

Example: The Elevator gain is set to 80%, but the Elevator moves in the wrong direction when you point the nose of the aircraft down. The Sensor LED is flashing 3 times per second.

Move the Aileron stick to the left and return it to center until the Sensor LED flashes rapidly and the Gain LED is OFF.

Move the Aileron stick to the left and return it to center 8 times. The gain value is now 80% in the opposite direction. When you point the nose of the aircraft down, the Elevator moves up.

3. After you have adjusted all 3 axes, move the Gear switch to the opposite position. Repeat steps 1 and 2.
4. Center both sticks, then move the throttle to the off position to save the selection. The ESC arm and you will regain throttle control.

Testing the Servo Controls

After you finish programming the AR635 receiver, you must perform a servo control test before flight. Make sure all servo controls move in the correct direction when you move the transmitter sticks. If any controls are reversed, change the servo reversing in the transmitter.

IMPORTANT: If you need to adjust the sensor gain in the future, you **MUST** change the servo reversing to Normal on the Aileron and Elevator channels. Always perform a control test in both Gear switch positions after you adjust the gain.

Additional Receiver Information

Hold Indicator

The hold indicator (**H**) is a red LED that shows the number of times (holds) that the receiver lost signal from the transmitter.

If the receiver records a hold (enters failsafe), the hold indicator flashes the number of holds. For example, if the hold indicator flashes 3 times then pauses, the receiver went into hold (lost transmitter signal) 3 times.

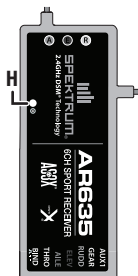
The receiver can record a hold both in-flight and on the ground. If you are programming the receiver and you power off the transmitter, the receiver will register a hold. Check the hold indicator frequently during the first several flights. If the hold indicator flashes after a flight, do not fly again until you correct the problem.

- Reposition the antennas and perform a range check until the receiver completes the range check with no holds.
- Confirm that the receiver has adequate power supply from the receiver.

To reset the hold indicator, turn the receiver power off, then back on.

Information Storage

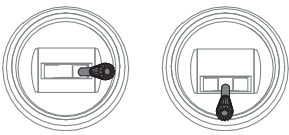
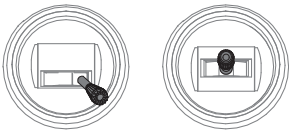
When the user enters the gain menu, each axis will show gain values previously entered. If the unit is new and has never been programmed, it will show the default setting. The gain value of each axis remains the same value that was previously entered. In this way, each axis of any of the two Flight Modes can be changed at any time. For example, if the gain value for pitch in the 3D flight mode needs to be changed, enter the menu and push the elevator as many times as needed until the pitch light is solid, then use aileron to change the existing value. When that value is adjusted, throttle fully down and exit the menu. All other gain settings remain as they were.



Factory Default Gain Settings

To access to factory default gain settings of the AR635, a transmitter stick combination must be used. With the transmitter powered ON, hold full right rudder in combination with throttle full down, then power ON the receiver. After 5 seconds, the red and green LEDs will flash, indicating all gain values have been restored to default settings. Release the rudder stick.

See the figure below for stick combinations:

Restore Gain to Factory Default Stick Combination:				
Throttle / Rudder Reversing		Mode 1		
Throttle	Rudder			
N	N	Mode 2		

EXIT MENU: Move the controls to neutral, then throttle fully down to exit the menu. The ESC will regain control.

Default Gain Value: Sport Aircraft			
	Aileron	Elevator	Rudder
Gear up (Gear SW Pos 1)	70%	70%	70%
Gear Down (Gear SW Pos 0)	70%	70%	70%

Default Gain Values: 3D Aircraft			
	Aileron	Elevator	Rudder
3D Flight (Gear SW Pos 1)	80%	80%	90%
General Flight (Gear SW Pos 0)	40%	20%	30%

Initializing the AR635

1. Once the AR635 receiver has been programmed and the correct sensing direction has been selected, it is very important to power off the receiver, then power it back on to initialize the sensors.
2. Place the aircraft on the ground out of the wind, then power the receiver ON.
3. Ensure the aircraft is immobile for 5 seconds so the AS3X system initializes correctly.

Attention: The AS3X system will not activate until the throttle stick or trim is increased for the first time.

The AS3X system will not activate until the throttle stick or trim is increased for the first time. Once the AS3X is active, the control surfaces may move rapidly on the aircraft. This is normal. AS3X will remain active until the AR635 is powered off.



CAUTION: Always complete a control direction test with the transmitter and make sure the sensors are correcting in the proper directions when you roll, yaw, and pitch the aircraft.

The three LEDs will indicate the gain value for each specific axis by the rate of the blinking light. High gain is represented by a more frequent blinking LED, low gain by a less frequent blinking. At zero gain the LED is OFF.

Adjusting the gain at the airfield

Always take off with a VERY conservative gain. Slowly increase gain until you reach the oscillation point. From that point, back off a step or two and you should be in the ideal gain value. When flying a brand new airplane, always takeoff with the flight mode set at General Flight. Partially increase the airspeed (increase throttle) until you see if the plane oscillates.

If you see oscillation, immediately reduce airspeed/throttle. Once you detect oscillation, identify what axis needs to have the gain adjusted. If it's a windy day, take the wind factor in consideration (plane speed is relative to the air and not to ground). Once you get this process right for General Flight Mode, do the same exercise with the 3D mode.

Set your 3D mode gain higher, perhaps only to fly up to 1/2 to 3/4 airspeed. This will give the AS3X system more authority for corrections.

AR635 Power System Requirements

All receivers require uninterrupted power. AS3X demands more current from the servos due to the “non-stop” activity. During even a short duration power interruption/brownout, the AS3X sensor must reboot and re-initialize.



CAUTION: If a power interruption/brownout occurs during flight, a crash will occur. It is your responsibility to ensure the AR635 has sufficient power without interruption.

Some of the power system components that affect the ability to properly deliver adequate power include:

- Only use this receiver with AS3X-compatible ESCs.
- The ESC’s BEC capability to deliver current to the receiver when load is placed on the servos. This is the #1 cause of power interruptions in electric powered aircraft. Use only AS3X-friendly ESCs.
- The switch harness, battery leads, servo leads, regulators, etc.
- Receiver battery pack (number of cells, capacity, cell type, state of charge).

The AR635 has a minimum operational voltage of 3.5 volts; it is highly recommended the power system be tested per the following guidelines.

Recommended Power System Test Guidelines

Perform the following test with a voltmeter or servo current meter (HAN172). Plug the Servo Current Meter (HAN172) into the Bind port in the receiver and, with the system on, rapidly move the control sticks (stir the sticks) with no load on the servos for 3 minutes. Monitor the voltage at the receiver. It is important to rapidly move the control sticks for 3 minutes. If a voltage regulator becomes hot, it can lose its ability to supply current. An alternate method is to power on the system and load the servos by applying pressure to the control surfaces with your hand for 3 minutes. The voltage should remain above 4.8 volts in both cases.

SmartSafe™ Failsafe

SmartSafe technology is a safety feature on the throttle channel only that offers the following benefits:

- Prevents electric motors from operating when the receiver only is turned on (no transmitter signal present)
- Prevents the speed controller from arming until the throttle is moved to low throttle position after connection is made
- Powers off electric motors and reduces gas/glow engines to idle if signal is lost (must bind the receiver at throttle off or idle position).
- If throttle is at any position other than low, the ESC won't arm
- If connection is lost in flight, SmartSafe technology sets the throttle to the position it was in during the binding process (normally low throttle or idle).

How to Program SmartSafe Failsafe

SmartSafe is automatically set when the system is bound. It's important to have the throttle stick in the low position to store low throttle settings during binding.



CAUTION: For electric aircraft, always remove the propeller from the motor before testing the failsafe.

Range Testing

Before each flying session, and especially with a new model, perform a range check. All Spektrum aircraft transmitters incorporate a range testing system which, when activated, reduces the output power, allowing a range check.

- | |
|--|
| 1. With the model on the ground and the motor off, stand 30 paces (approx. 90 feet/28 meters) away from the model. |
| 2. Face the model with the transmitter in your normal flying position and place your transmitter into range check mode. This causes reduced power output from the transmitter. |
| 3. You should have total control of the model in range test mode at 30 paces (approx. 90 feet/28 meters) |
| 4. If control issues exist, call the Horizon Product Support office. |

Sample Aircraft Gain Settings

ParkZone® T-28			
Sport Aircraft	Aileron	Elevator	Rudder
Low Rate Gains	-100%	-100%	+100%
Hi Rate Gains	-100%	-100%	+100%

ParkZone® F4U-1A Corsair			
Sport Aircraft	Aileron	Elevator	Rudder
Low Rate Gains (Gear DOWN)	+100%	-100%	+100%
Hi Rate Gains (Gear UP)	+100%	-100%	+100%

E-flite® Carbon-Z™ Yak 54			
3D Aircraft	Aileron	Elevator	Rudder
Low Rate Gains	-20%	+10%	-40%
Hi Rate Gains	-60%	+70%	-80%

ParkZone® VisionAire™			
3D Aircraft	Aileron	Elevator	Rudder
Low Rate Gains	+40%	+20%	+30%
Hi Rate Gains	+80%	+80%	+90%

2.4GHz Troubleshooting Guide

AS3X

Problem	Possible Cause	Solution
Oscillation	Flying over recommended airspeed in 3D mode	Switch to GF mode
	Damaged propeller	Replace propeller
	Imbalanced propeller	Balance the propeller
	Motor vibration	Replace parts or correctly align all parts and tighten fasteners as needed
	Loose receiver	Align and secure receiver in fuselage
	Loose aircraft controls	Tighten or otherwise secure parts (servo, arm, linkage, horn and control surface)
	Flight condition variations.	Adjust gain to current flight conditions (wind, updrafts, local conditions (altitude above sea level, humidity, temperature, etc.))
	Worn parts	Adjust gain to compensate for parts wear or replace worn parts (especially propeller, pivot points or servo).
	Irregular servo rotation	Replace servo.
	Incorrect transmitter type (computerized or non-computerized) assigned in receiver	Assign correct transmitter type in the receiver.
	If oscillation persists	Decrease gain.
Trim change when flight mode is switched	Trim is not at neutral	If you adjust trim more than 8 clicks, adjust the clevis to remove trim.
	Sub-trim is not at neutral	No Sub-trim is allowed. Adjust the servo arm or the clevis.
Incorrect response to the AS3X Control Direction Test.	Incorrect direction settings in the receiver, which can cause a crash	DO NOT fly. Correct the direction settings (refer to the receiver manual), then fly.

1-YEAR LIMITED WARRANTY

What this Warranty Covers - Horizon Hobby, Inc., (Horizon) warrants to the original purchaser that the product purchased (the "Product") will be free from defects in materials and workmanship for a period of 1 year from the date of purchase.

What is Not Covered - This warranty is not transferable and does not cover (i) cosmetic damage, (ii) damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or due to improper use, installation, operation or maintenance, (iii) modification of or to any part of the Product, (iv) attempted service by anyone other than a Horizon Hobby authorized service center, (v) Product not purchased from an authorized Horizon dealer, or (vi) Product not compliant with applicable technical regulations.

OTHER THAN THE EXPRESS WARRANTY ABOVE, HORIZON MAKES NO OTHER WARRANTY OR REPRESENTATION, AND HEREBY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE.

Purchaser's Remedy - Horizon's sole obligation and purchaser's sole and exclusive remedy shall be that Horizon will, at its option, either (i) service, or (ii) replace, any Product determined by Horizon to be defective. Horizon reserves the right to inspect any and all Product(s) involved in a warranty claim. Service or replacement decisions are at the sole discretion of Horizon. Proof of purchase is required for all warranty claims. SERVICE OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY.

Limitation of Liability - HORIZON SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY, REGARDLESS OF WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY OR ANY OTHER THEORY OF LIABILITY, EVEN IF HORIZON HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Further, in no event shall the liability of Horizon exceed the individual price of the Product on which liability is asserted. As Horizon has no control over use, setup, final assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability. If you as the purchaser or user are not prepared to accept the liability associated with the use of the Product, purchaser is advised to return the Product immediately in new and unused condition to the place of purchase.

Law - These terms are governed by Illinois law (without regard to conflict of law principals). This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Horizon reserves the right to change or modify this warranty at any time without notice.

WARRANTY SERVICES

Questions, Assistance, and Services - our local hobby store and/or place of purchase cannot provide warranty support or service. Once assembly, setup or use of the Product has been started, you must contact your local distributor or Horizon directly. This will enable Horizon to better answer your questions and service you in the event that you may need any assistance. For questions or assistance, please visit our website

at www.horizonhobby.com, submit a Product Support Inquiry at <https://horizonhobby.quickbase.com/db/bghj7ey8c?a=GenNewRecord>, or call the toll free telephone number referenced in the Warranty and Service Contact Information section to speak with a Product Support representative.

Inspection or Services - If this Product needs to be inspected or serviced and is compliant in the country you live and use the Product in, please use the Horizon Online Service Request submission process found on our website or call Horizon to obtain a Return Merchandise Authorization (RMA) number. Pack the Product securely using a shipping carton. Please note that original boxes may be included, but are not designed to withstand the rigors of shipping without additional protection. Ship via a carrier that provides tracking and insurance for lost or damaged parcels, as Horizon is not responsible for merchandise until it arrives and is accepted at our facility. An Online Service Request is available at http://www.horizonhobby.com/content/_service-center_render-service-center. If you do not have internet access, please contact Horizon Product Support to obtain a RMA number along with instructions for submitting your product for service. When calling Horizon, you will be asked to provide your complete name, street address, email address and phone number where you can be reached during business hours. When sending product into Horizon, please include your RMA number, a list of the included items, and a brief summary of the problem. A copy of your original sales receipt must be included for warranty consideration. Be sure your name, address, and RMA number are clearly written on the outside of the shipping carton.

NOTICE: Do not ship LiPo batteries to Horizon. If you have any issue with a LiPo battery, please contact the appropriate Horizon Product Support office.

Warranty Requirements - For Warranty consideration, you must include your original sales receipt verifying the proof-of-purchase date. Provided warranty conditions have been met, your Product will be serviced or replaced free of charge. Service or replacement decisions are at the sole discretion of Horizon.

Non-Warranty Service - Should your service not be covered by warranty, service will be completed and payment will be required without notification or estimate of the expense unless the expense exceeds 50% of the retail purchase cost. By submitting the item for service you are agreeing to payment of the service without notification. Service estimates are available upon request. You must include this request with your item submitted for service. Non-warranty service estimates will be billed a minimum of ½ hour of labor. In addition you will be billed for return freight. Horizon accepts money orders and cashier's checks, as well as Visa, MasterCard, American Express, and Discover cards. By submitting any item to Horizon for service, you are agreeing to Horizon's Terms and Conditions found on our website http://www.horizonhobby.com/content/_service-center_render-service-center.

ATTENTION: Horizon service is limited to Product compliant in the country of use and ownership. If received, a non-compliant Product will not be serviced. Further, the sender will be responsible for arranging return shipment of the un-serviced Product, through a carrier of the sender's choice and at the sender's expense. Horizon will hold non-compliant Product for a period of 60 days from notification, after which it will be discarded.

Warranty and Service Contact Information

Country of Purchase	Horizon Hobby	Contact Information	Address
United States of America	Horizon Service Center (Repairs)	servicecenter.horizon-hobby.com/Request-Form/	4105 Fieldstone Rd Champaign, Illinois, 61822 USA
	Horizon Product Support (Product Technical Asst.)	www.quickbase.com/db/bghj7ey8c?a=GenNewRecord	
		888-959-2305	
	Sales	sales@horizonhobby.com 888-959-2305	
United Kingdom	Service/ Parts/Sales: Horizon Hobby Limited	sales@horizonhobby.co.uk +44 (0) 1279 641 097	Units 1–4, Ployters Rd, Staple Tye Harlow, Essex, CM18 7NS, United Kingdom
Germany	Horizon Technischer Service	service@horizonhobby.de	Christian-Junge-Straße 1 25337 Elmshorn, Germany
	Sales: Horizon Hobby GmbH	+49 (0) 4121 2655 100	
France	Service/ Parts/Sales: Horizon Hobby SAS	infofrance@horizonhobby.com +33 (0) 1 60 18 34 90	11 Rue Georges Charpak 77127 Lieusaint, France
China	Service/ Parts/Sales: Horizon Hobby – China	info@horizonhobby.com.cn +86 (021) 5180 9868	Room 506, No. 97 Changshou Rd. Shanghai, China 200060

FCC Information

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 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.

This product contains a radio transmitter with wireless technology which has been tested and found to be compliant with the applicable regulations governing a radio transmitter in the 2.400GHz to 2.4835GHz frequency range.

Compliance Information for the European Union

CE Declaration of Conformity (in accordance with ISO/IEC 17050-1)

No. HH2012092702

Product(s): SPM DSMX 6Ch AS3X Receiver

Item Number(s): SPMAR635

The objects of declaration described above are in conformity with the requirements of the specifications listed below, following the provisions of the European R&TTE directive 1999/5/EC:

EN 301 489-1 V1.7.1: 2006

EN 301 489-17 V1.3.2: 2008

Signed for and on behalf of:

Horizon Hobby, Inc.

Champaign, IL USA

September 27, 2012

Steven A. Hall

Executive Vice President and Chief Operating Officer

International Operations and Risk Management

Horizon Hobby, Inc.



Instructions for disposal of WEEE by users in the European Union

This product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collections point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the product.



SPEKTRUM®

© 2013 Horizon Hobby, Inc. AS3X, DSM2, DSMX, JR, SmartSafe and the Horizon Hobby logo are trademarks or registered trademarks of Horizon Hobby, Inc. The Spektrum trademark is used with permission of Bachmann Industries.

Revised 08/13

37268.1