AR9300 User Guide

Spektrum's AR9300 9-channel receiver is designed for carbon fiber aircraft installations. Carbon Fiber can create an RF shielding effect that can significantly reduce radio range when using conventional receivers and antennas. The AR9300 features an antenna design that overcomes RF issues in these critical environments.

The AR9300 receiver features DSM2™ technology and is compatible with all Spektrum™ and JR® aircraft radios that support DSM2 technology including Spektrum DX7, DX6i, DX5e, JR12X, JRX9303, and Spektrum Module Systems.

Note: The AR9300 receiver is not compatible with the Spektrum DX6 parkflyer transmitter.

Features:

- **9-Channel receiver optimized for carbon fiber fuselage installations**
- **Double-stacked design offers compact cross section ideal for sailplanes**
- **Through-the-fuselage, feeder antennas offer superior RF coverage**
- **Includes two internal and one remote receiver. Additional remote receiver optional**
- **Preset failsafe system on all channels optimized for sailplane applications**
- **QuickConnect™ with Brownout Detection**
- **Optional Flight Log (recommended) confirms RF link performance and installation before and during flight**
- **Includes DVD installation and setup video**

Applications
Airplanes with Significant Carbon Structure Including:

Carbon/Composite Sailplanes, Carbon/Composite Jets and Aircraft with significant conductive materials (Carbon, Aluminum or other metals) that could attenuate (weaken) the signal.

Specifications:
Type: DSM2 Full Range Receiver for Carbon Fiber Aircraft
Channels: 9
Modulation: DSM2
Dimension (WxLxH): Main: 20.8 x 40.82 x 19.25mm
Remote: 20.25 x 30.05 x 7.45mm
Weight: 18.23 g (main receiver)
Input Voltage Range: 3.5–9.6V
Resolution: 2048
Compatibility: All DSM2 Aircraft Transmitters and Module Systems
Antenna Length: Main: 203mm (2)
Remote: 203mm (1)

Receiver Installation in Aircraft

Airplanes with significant carbon fiber construction can create an RF shielding effect, reducing range. The AR9300 is designed to overcome these critical RF issues in carbon airplanes by outfitting the aircraft with external antennas when necessary at specific points that will ensure secure RF coverage.

AR9300 installed in a Supra.

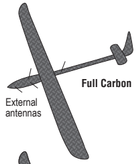
Feeder Antennas

The AR9300 incorporates feeder antennas, which are designed to be easily mounted through the fuselage in carbon airplanes. The main receiver has two 8-inch feeder antennas and the remote receiver has one. Each feeder antenna includes a coaxial portion (which can be thought of as an extension) and an exposed 31mm tip antenna. The last 31mm is the active portion of the antenna.

Step 1. Identifying the Types of Carbon Aircraft
While some sailplanes are full carbon construction, most only use carbon in areas that require extra strength. Many of the latest sailplanes are constructed with 2.4GHz-friendly fuselages meaning that the forward section of the fuselage is constructed from non-conductive materials like fiberglass and Kevlar that don't affect the RF signal. The first step in a proper installation is identifying the type of aircraft which will fall into one of three categories below.

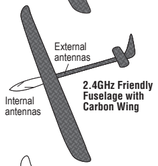
A. Full Carbon
All components of the airplane including the entire fuselage, the wing and tail are constructed of carbon fiber or have a carbon fiber weave throughout the aircraft.

This type of aircraft will require that all antennas be installed externally.



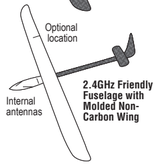
B. 2.4GHz Friendly Fuselage with Carbon Wing
The section forward of the wing is constructed of non-conductive materials like fiberglass, Kevlar, etc. but the wing and possibly the tail section have carbon or carbon weave construction.

Antennas in the nose of this type of aircraft can be installed internally while an antenna installed behind the wing must be mounted externally.



C. 2.4GHz Friendly Fuselage with Molded Non-Carbon Wing
The section forward of the wing and the wing itself is constructed of non-conductive materials like fiberglass, Kevlar, etc. The wing may, however, contain a carbon spar, which is an insignificant volume of carbon to have an effect. The tail section can be either carbon, carbon weave or fiberglass construction.

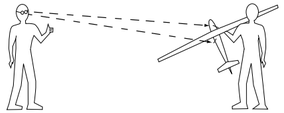
All antenna can be mounted internally forward of the wing in this type of aircraft.



Step 2. Determining Antenna Mounting Positions

After determining the type of aircraft from the list above, use the above illustrations as a guideline as to where the feeder antennas should be mounted. The goal is to mount the antennas in a location such that at least two will always be in the RF visual line of sight of the transmitter (i.e. not blocked by carbon fiber structures) in all attitudes. This can easily be visualized by having a helper stand about 20 feet away and rotate the airplane in all attitudes confirming that in all positions there is a direct line between you and at least two receiver antennas that aren't blocked by carbon fiber structure.

Note: If you have a full carbon sailplane, it is highly recommended that an optional fourth receiver with feeder antenna be installed. Carbon Fuselage Remote (SPM9546)

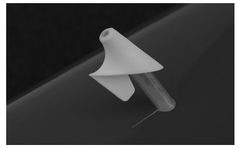


Step 3. Installing the Receivers

Install the Main receiver in the normal position recommended by the airplanes' manufacturer, noting that the data/bind port should be easily accessible as a flight log will be used to confirm RF link performance. Double-sided tape or foam can be used to secure the main receiver in place. Using double-sided servo tape mount the remote receiver(s) within 3 inches from where you intend on having the antennas exit the fuselage.

Step 4. Mounting the Antennas

Three 2.4GHz Antenna Exit Guides (SPM6824) antenna mounts (with tubes) are included to make external mounting easy. To install the antenna mount, drill a 1/8-inch hole in the desired antenna mounting position; then, using a hobby knife slot the hole as shown.



Insert the tube in the mount; then using medium CA, glue the mount and tube in place in the fuselage. Trim the tube to length inside the fuselage if necessary. Now slide the feeder antenna through the tube until the 31mm tip completely exits the mount. Using a drop of CA, glue the antenna to the mount making sure that the 31mm active portion of the antenna tip is fully exposed.

Note: If the antenna is to be mounted internally (in the front of a 2.4GHz friendly fuselage) the coax can be taped into position. Be sure the 31mm tip is located at least 2 inches from any significant carbon structure and from the battery.

Step 5. Plugging in the Servo Leads

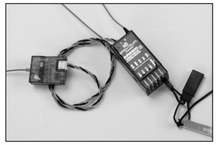
Plug the servo leads into the appropriate servo ports in the receiver noting the polarity of the servo connector. Note that the signal wire (orange for JR servos) faces toward the center of the receiver. Consult your radio's manual for specific detail as to which servo plugs connect into which servo port channel.

Step 6. Binding the Receiver

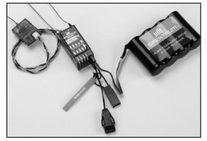
Binding

The AR9300 must be bound to the transmitter before it will operate. Binding is the process of teaching the receiver the specific code of the transmitter so it will only connect to that specific transmitter.

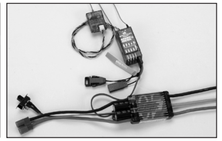
1. To bind an AR9300 to a DSM2 transmitter, insert the bind plug in the BATT/BIND port on the receiver.



2. Power the receiver. Note that the LED on the receiver should be flashing, indicating that the receiver is in bind mode and ready to be bound to the transmitter.



Shown using a separate receiver pack. (Battery can be plugged into any open port.)



When binding through an ESC, the ESC's lead must be plugged into the port operating the motor, typically the gear or AUX2 channel. The servo monitor is helpful in determining which channel is being used.

3. Move the sticks and switches on the transmitter to the desired failsafe positions (normally mid flap for dethermalizing).

4. Follow the procedures of your specific transmitter to enter Bind Mode, the system will connect within a few seconds. Once connected, the LED on the receiver will go solid indicating the system is connected.
5. Remove the bind plug from the BATT/BIND port on the receiver before you power off the transmitter and store it in a convenient place.

IMPORTANT: Remove the bind plug to prevent the system from entering bind mode the next time the power is turned on.

Step 7. Radio Setup and Programming

Following the instructions in your radio manual, program your airplane.

Step 8. Rebinding the Receiver

After you've programmed your model, it's important to rebind the system so the true failsafe control surface positions are set.

Step 9. Ground Range Testing and Verification with Flight Log

Advanced Range Testing Using a Flight Log

In airplanes that have significant carbon fiber construction it is imperative to first do a ground range check using a flight log. This ground range check will confirm that the internal and remote receivers are operating optimally and that the antennas are properly mounted in a position that will give positive RF coverage in all attitudes. This Advanced Range Check allows the RF performance of each receiver and the positions of each antenna to be verified and to optimize the locations of the antennas.

Advanced Range Test

1. Plug a Flight Log (SPM9540) into the data port in the AR9300. If the port is being used for the battery, a Y-harness can be used or plug the battery into any other unused port.
2. Turn on the system (Tx and Rx).
3. Advance the Flight Log until F- frame losses are displayed by pressing the button on the Flight Log.
3. Have a helper hold your aircraft while observing the Flight Log data.
4. Standing 30 paces away from the model, face the model with the transmitter in your normal flying position and put your transmitter into range test mode. This causes reduced power output from the transmitter.
5. Have your helper position the model covering all orientations (nose up, nose down, nose toward the Tx, nose away from the Tx, etc.) while your helper watches the Flight Log noting any correlation between the aircraft's orientation and frame losses. Do this for one minute. The timer on the transmitter can be used here.
6. After one minute release the range test button and read the data from the Flight Log. A successful installation will yield the following:
0 - holds, less than 20 Frame Losses
It's common to see high values on individual receivers as the carbon structure can block the signal in various orientations. What is important is that at least two receivers are receiving well at all times. If more than 20 frame losses or any holds occur redo the test noting the aircraft orientation when the fades and holds occur. This will allow you to change and optimize the antenna position(s) to a better location.

Step 10. Short Test Flight Verification with Flight Log

When the system tests successfully as directed above, it's time for a short near test flight. This first flight should be close (less than 500 ft and about five minutes). After the flight, land your aircraft nearby (less than 60 ft away)* and check the Flight Log data. Again a successful flight will result in 0 holds and less than 20 Frame losses. Extend the flight distance and times checking the Flight Log data after every flight until you are confident with the results. Many pilots choose to mount the Flight Log in the airplane making data checking convenient.
*If the sailplane is landed more than 60 feet from the transmitter the system may experience higher than normal frame losses and holds. This is because the antennas are within inches of the ground and the signal can be blocked by the ground causing RF link degradation. Note that when landing more than 60 feet from yourself, high flight log values are normal.

Important: Y-Harnesses and Servo Extensions

When using a Y-harness or servo extensions in your installation, it's important to use standard non-amplified Y-harnesses and servo extensions as this can/will cause the servos to operate erratically or not function at all. Amplified Y-harnesses were developed several years ago to boost the signal for some older PCM systems and should not be used with Spektrum equipment. Note that when converting an existing model to Spektrum be certain that all amplified Y-harnesses and/or servo extensions are replaced with conventional non-amplified versions.

Preset Failsafe
The AR9300 features Preset failsafe only. Preset Failsafe is ideal for sailplanes, allowing the aircraft to automatically dethermalize if signal is lost. With Preset Failsafe, when signal is lost all channels go to their preset failsafe positions (normally mid flap) preventing a flyaway.

- Prevents flyaways should the signal be lost
- Eliminates the possibility of over-driving servos

Receiver Power Only
- When the receiver only is turned on (no transmitter signal is present), all channels have no output signal, to avoid overdriving the servos and linkages.

Note: Some analog servos may drift slightly during power-up even though no signal is present. This is normal.

After Connection

- When the transmitter is turned on and after the receiver connects to the transmitter, normal control of all channels occurs.
- After the system makes a connection, if loss of signal occurs Preset Failsafe drives all servos to their preset failsafe positions set during binding.

Receiver Power System Requirements

Inadequate power systems that are unable to provide the necessary minimum voltage to the receiver during flight have become the number one cause of in-flight failures. Some of the power system components that affect the ability to properly deliver adequate power include

- Receiver battery pack (number of cells, capacity, cell type, state of charge)
- The switch harness, battery leads, servo leads, regulators etc.

The AR9300 has a minimum operational voltage of 3.5 volts; it is highly recommended the power system be tested per the guidelines below.

Recommended Power System Test Guidelines

If a questionable power system is being used (e.g. small or old battery that may not support high-current draw, etc.), it is recommended that a voltmeter be used to perform the following tests.

Note: The Spektrum Flight Log (SPM9540) is the perfect tool to perform the test below.

Plug the Flight Log into an open channel port in the receiver and with the system on, load the control surfaces (apply pressure with your hand) while monitoring the voltage at the receiver. The voltage should remain above 4.8 volts even when all servos are heavily loaded.

Note: The latest generations of Nickel-Metal Hydride batteries incorporate a new chemistry mandated to be more environmentally friendly. These batteries when charged with peak detection fast chargers have tendencies to false peak (not fully charge) repeatedly. These include all brands of NiMH batteries. If using NiMH packs, be especially cautious when charging, making absolutely sure that the battery is fully charged. It is recommended to use a charger that can display total charge capacity. Note the number of mAh put into a discharged pack to verify it has been charged to full capacity.

QuickConnect™ With Brownout Detection

Your AR9300 features QuickConnect with Brownout Detection.

- Should an interruption of power occur (brownout), the system will reconnect immediately when power is restored (QuickConnect).
- The LED on the receiver will flash slowly indicating a power interruption (brownout) has occurred.
- Brownouts can be caused by an inadequate power supply (weak battery or regulator), a loose connector, a bad switch, an inadequate BEC when using an electronic speed controller, etc.
- Brownouts occur when the receiver voltage drops below 3.5 volts thus interrupting control as the servos and receiver require a minimum of 3.5 volts to operate.

How QuickConnect With Brownout Detection Works

- When the receiver voltage drops below 3.5 volts the system drops out (ceases to operate).
- When power is restored the receiver immediately attempts to reconnect to the last two frequencies that it was connected to.
- If the two frequencies are present (the transmitter was left on), the system reconnects typically in about 4/100 of a second.

QuickConnect with Brownout Detection is designed to allow you to fly safely through most short-duration power interruptions; however, the root cause of these interruptions must be corrected before the next flight to prevent catastrophic safety issues.

Note: If a brownout occurs in flight it is vital that the cause of the brownout be determined and corrected.

Flight Log (SPM9540 Optional)

The Flight Log is compatible with the AR9300. The Flight Log displays overall RF link performance as well as the individual internal and external receiver link data. Additionally it displays receiver voltage.

Using the Flight Log

After a flight and before turning off the receiver or transmitter, plug the Flight Log into the Data port on the AR9300. The screen will automatically display voltage e.g. 6v2= 6.2 volts.

Note: When the voltage reaches 4.8 volts or less, the screen will flash indicating low voltage.

Press the button to display the following information:

A – Antenna fades on internal antenna A
B – Antenna fades on internal antenna B
L – Antenna fades on the left external antenna
R – Antenna fades on the right external antenna
F – Frame loss
H – Holds

Note: – – – (three dashed lines) will appear if the antenna is not attached

Antenna fades—represents the loss of a bit of information on that specific antenna.
In a carbon aircraft it's not uncommon to have antenna fades maxed out. This is due to the fact that individual antennas may be blocked at times during flight by carbon structure. What's important is that at least two antennas are receiving good information at all times.

Frame loss—represents simultaneous antenna fades on all attached receivers. If the RF link is performing optimally, frame losses per flight should be less than 20 in a five minute flight. A hold occurs when 45 consecutive frame losses occur. This takes about one second. If a hold occurs during a flight, it's important to evaluate the system, moving the antennas to different locations and/or checking to be sure the transmitter and receivers are all working correctly.

Note: The Flight Log can be plugged in, attached and left in the model using double-sided tape. Mounting the Flight Log conveniently inside the fusalage is recommended.

Tips on Using Spektrum 2.4GHz

ModelMatch™
Some Spektrum and JR transmitters offer a patent pending feature called ModelMatch. ModelMatch prevents the possibility of operating a model using the wrong model memory, potentially preventing a crash. With ModelMatch each model memory has its own unique code (GUID) and during the binding process the code is programmed into the receiver. Later, when the system is turned on, the receiver will only connect to the transmitter if the corresponding model memory is programmed on screen.

Note: If at any time you turn on the system and it fails to connect, check to be sure the correct model memory is selected in the transmitter. Please note that the Spektrum Aircraft Modules do not have ModelMatch.

While your DSM equipped 2.4GHz system is intuitive to operate, functioning nearly identically to 72MHz systems, following are a few common questions from customers.

1. Q: Which do I turn on first, the transmitter or the receiver?
A: *If the receiver is turned on first*—no servo outputs are present so all servos remain in their position and if an Electronic Speed Control is being used, it won't arm. When the transmitter is then turned on the transmitter scans the 2.4GHz band and acquires two open channels. Then the receiver that was previously bound to the transmitter scans the band and finds the GUID (Globally Unique Identifier code) stored during binding. The system then connects and operates normally.
If the transmitter is turned on first—the transmitter scans the 2.4GHz band and acquires two open channels. The receiver scans the 2.4GHz band looking for the previously stored GUID and when it locates the specific GUID code and confirms uncorrupted repeatable packet information, the system connects and normal operation takes place. Typically this takes 2 to 6 seconds.

2. Q: Sometimes the system takes longer to connect and sometimes it doesn't connect at all?
A: In order for the system to connect (after the receiver is bound) the receiver must receive a large number of consecutive uninterrupted perfect packets from the transmitter in order to connect. This process is purposely critical of the environment ensuring that it's safe to fly when the system does connect. If the transmitter is too close to the receiver (less than 4 ft.) or if the transmitter is located near metal objects (metal Tx case, the bed of a truck, the top of a metal work bench, etc.) connection will take longer and in some cases connection will not occur as the system is receiving reflected 2.4GHz energy from itself and is interpreting this as unfriendly noise. Moving the system away from metal objects or moving the transmitter away from the receiver and powering the system again will cause a connection to occur. This only happens during the initial connection. Once connected the system is locked in and should a loss of signal occur (failsafe) the system connects immediately (4ms) when signal is regained.

3. Q: I've heard that the DSM system is less tolerant of low voltage. Is that correct?
A: All DSM receivers have an operational voltage range of 3.5 to 9.6 volts. With most systems this is not a problem as in fact most servos cease to operate at around 3.8 volts. When using multiple high-current draw servos with a single or inadequate battery/power source, heavy momentary loads can cause the voltage to dip below this 3.5-volt threshold thus causing the entire system (servos and receiver) to brown out. When the voltage drops below the low voltage threshold (3.5 volts), the DSM receiver must reboot (go through the startup process of scanning the band and finding the transmitter) and this can take several seconds. Please read the receiver power requirement section as this explains how to test for and prevent this occurrence.

4. Q: Sometimes my receiver loses its bind and won't connect requiring rebinding. What happens if the bind is lost in flight?
A: The receiver will never lose its bind unless it's instructed to. It's important to understand that during the binding process the receiver not only learns the GUID (code) of the transmitter but the transmitter learns and stores the type of receiver that it's bound to. If the transmitter is placed into bind mode, the transmitter looks for the binding protocol signal from a receiver. If no signal is present, the transmitter no longer has the correct information to connect to a specific receiver and in essence the transmitter has been "unbound" from the receiver. We've had several DX7 customers that use transmitter stands or trays that unknowingly depress the bind button and the system is then turned on losing the necessary information to allow the connection to take place. We've also had DX7 customers that didn't fully understand the range test process and pushed the bind button before turning on the transmitter also causing the system to "lose its bind."

Age Recommendation: 14 years or over. This is not a toy. This product is not intended for use by children without direct adult supervision.

Warranty Period

Exclusive Warranty- Horizon Hobby, Inc., (Horizon) warranties that the Products purchased (the "Product") will be free from defects in materials and workmanship for a period of 1 year from the date of purchase by the Purchaser.

Limited Warranty

(a) This warranty is limited to the original Purchaser ("Purchaser") and is not transferable. REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE PURCHASER. This warranty covers only those Products purchased from an authorized Horizon dealer. Third party transactions are not covered by this warranty. Proof of purchase is required for warranty claims. Further, Horizon reserves the right to change or modify this warranty without notice and disclaims all other warranties, express or implied.

(b) Limitations- HORIZON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCT. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE.

(c) Purchaser Remedy- Horizon's sole obligation hereunder shall be that Horizon will, at its option, (i) repair or (ii) replace, any Product determined by Horizon to be defective. In the event of a defect, these are the Purchaser's exclusive remedies. Horizon reserves the right to inspect any and all equipment involved in a warranty claim. Repair or replacement decisions are at the sole discretion of Horizon. This warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or modification of or to any part of the Product. This warranty does not cover damage due to improper installation, operation, maintenance, or attempted repair by anyone other than Horizon. Return of any goods by Purchaser must be approved in writing by Horizon before shipment.

Damage Limits

HORIZON SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCT, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY. 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 this Product, you are advised to return this 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).

Safety Precautions

This is a sophisticated hobby Product and not a toy. 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. The Product 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 injury.

Questions, Assistance, and Repairs

Your local hobby store and/or place of purchase cannot provide warranty support or repair. Once assembly, setup or use of the Product has been started, you must contact 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 direct your email to productsupport@horizonhobby.com, or call 877.504.0233 toll free to speak to the Product Support department.

Inspection or Repairs

If this Product needs to be inspected or repaired, please call for a Return Merchandise Authorization (RMA). 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. A Service Repair Request is available at www.horizonhobby.com on the "Support" tab. If you do not have internet access, please include a letter with your complete name, street address, email address and phone number where you can be reached during business days, your RMA number, a list of the included items, method of payment for any non-warranty expenses and a brief summary of the problem. Your original sales receipt must also be included for warranty consideration. Be sure your name, address, and RMA number are clearly written on the outside of the shipping carton.

Warranty Inspection and Repairs

To receive warranty service, you must include your original sales receipt verifying the proof-of-purchase date. Provided warranty conditions have been met, your Product will be repaired or replaced free of charge. Repair or replacement decisions are at the sole discretion of Horizon Hobby.

Non-Warranty Repairs

Should your repair not be covered by warranty the repair 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 repair you are agreeing to payment of the repair without notification. Repair estimates are available upon request. You must include this request with your repair. Non-warranty repair estimates will be billed a minimum of ½ hour of labor. In addition you will be billed for return freight. Please advise us of your preferred method of payment. Horizon accepts money orders and cashiers checks, as well as Visa, MasterCard, American Express, and Discover cards. If you choose to pay by credit card, please include your credit card number and expiration date. Any repair left unpaid or unclaimed after 90 days will be considered abandoned and will be disposed of accordingly. Please note: non-warranty repair is only available on electronics and model engines.

Electronics and engines requiring inspection or repair should be shipped to the following address:

Horizon Service Center
4105 Fieldstone Road
Champaign, Illinois 61822

All other Products requiring warranty inspection or repair should be shipped to the following address:

Horizon Product Support
4105 Fieldstone Road
Champaign, Illinois 61822

Please call 877-504-0233 or e-mail us at productsupport@horizonhobby.com with any questions or concerns regarding this product or warranty.

European Union:

Electronics and engines requiring inspection or repair should be shipped to one of the following addresses:

Horizon Hobby UK
Units 1-4 Ployters Rd
Staple Tye, Harlow
Essex CM18 7NS
United Kingdom

Please call +44 (0) 1279 641 097 or email sales@horizonhobby.co.uk
with any questions or concerns regarding this product or warranty.

Horizon Technischer Service
Hamburger Str. 10
25335 Elmshorn
Germany

Please call +49 4121 46199 66 or email service@horizonhobby.de
with any questions or concerns regarding this product or warranty.

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.

CE Compliance information for the European Union

Declaration of Conformity

(in accordance with ISO/IEC 17050-1)

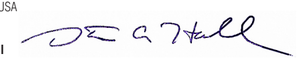
No. HH20081231

Product(s):	AR9300 Receiver
Item Number(s):	SPMAR9300

The object of declaration described above is 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 v.1.6.1 General EMC requirements for Radio equipment
EN 301 489-17 v.1.2.1

Signed for and on behalf of:
Horizon Hobby, Inc.
Champaign, IL USA
Dec 31, 2008



Steven A. Hall
Vice President
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 collection 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.

US patent number 7,391,320. Other patents pending.

Printed 1/09 14899