The R921 receiver combines two internal receivers and one or two remote receivers, offering the security of up to four receivers for the ultimate in multi-path redundancy. Two internal receivers are located on the main PCB, while a third remote receiver can be plugged into any one of the antenna ports in order for the system to operate. Optionally, a second remote receiver can be plugged into the remaining remote port giving a total of four receivers. By installing and programming two or more remote receivers, each receiver is exposed to its own RF environment, allowing improved path diversity (the ability of the receiver to sense the signal in all conditions).

The R921 features two types of failsafe: SmartSafe™ and Preset Failsafe.

**SmartSafe**
- **Function**: SmartSafe automatically monitors your transmitter and receiver for a loss of power, a power interruption, a low battery, or any other changes that could affect performance.
- **Features**: SmartSafe will automatically revert to the failsafe position when a receiver loses power or is disconnected from the transmitter.
- **Benefits**: SmartSafe helps avoid control loss during short interruptions in power, maintains the LED's on the main receiver and reduces walkie-talkie effects when the model is turned off.

**Preset Failsafe**
- **Function**: Preset Failsafe drives all servos to their preset failsafe positions that were set during binding.
- **Features**: When the transmitter is turned on and after the receiver connects to the transmitter, normal control of all channels are restored. The system will automatically revert to the failsafe position. These two positions are set during the binding process.
- **Benefits**: Preset Failsafe ensures that all servos are returned to their preset failsafe positions in case of power loss or disconnection from the transmitter.

**Features**
- **Battery**: Lithium polymer
- **Current**: 70mA
- **Band**: 2.400 to 2.4835GHz
- **Modulation**: DSM2
- **Number of channels**: 9
- **Protocol**: S-FHSS
- **Output power**: 100mW
- **Accessories**: JPA0317 (pair of tags), JPA0318 (programming tool), JPA0320 (external antenna)

**Specifications**
- **Mounting the Receivers**
  1. #3×6.4 mm screws (2)
  2. #2×6.4 mm screws (4)
  3. Black rubber grommets (2)
  4. JR® R921 receiver

**SmartSafe**
- **Function**: SmartSafe is ideal for most types of electric aircraft and is also recommended for most types of electronic speed controllers. SmartSafe prevents the throttle servo from responding during power interruptions, ensuring that the receiver returns to its preset failsafe position.
- **Features**: SmartSafe helps avoid control loss during short interruptions in power. Normal control is restored when power is restored. SmartSafe also prevents the transmitter from responding during normal operation.
- **Benefits**: SmartSafe ensures that the receiver returns to its preset failsafe position in case of power loss or disconnection from the transmitter.

**Preset Failsafe**
- **Function**: Preset Failsafe drives all servos to their preset failsafe positions that were set during binding.
- **Features**: Preset Failsafe ensures that all servos are returned to their preset failsafe positions in case of power loss or disconnection from the transmitter.
- **Benefits**: Preset Failsafe ensures that all servos are returned to their preset failsafe positions in case of power loss or disconnection from the transmitter.

**R921 Binding Instructions**

1. With the model resting on the ground, stand 30-40 paces (approx. 90° away from the model). Note: Anti-slip mat is recommended.

2. Face the model with your normal flying position and depress and hold the bind button on the back of the transmitter.

3. You should have total control of the model with the button depressed. If this is not the case, move the model to another position.

4. If control issues exist, call the JR Service Center at 1-877-904-0033 for further assistance.

5. Have your helper position the model in various locations (from the primary receiver to the remote receiver for maximum improvement in path diversity. Essentially each receiver uses a different RF environment and this is the main way to maximize the RF link even in aircraft that have substantial conductive materials (i.e., engines, exterior metal panels, carbon fiber, tuned pipes, etc.) which can attenuate the signal.

6. In helicopters, it is generally smarter on the mains with the receiver to achieve the necessary separation. If space is limited, it may be a good idea to use small plastic mounts to lift the receiver off the antenna.

7. Mounting the receiver(s) in a different location(s) from the primary receiver is necessary for maximum improvement in path diversity. Essentially each receiver uses a different RF environment and this is the main way to maximize the RF link even in aircraft that have substantial conductive materials (i.e., engines, exterior metal panels, carbon fiber, tuned pipes, etc.) which can attenuate the signal.

8. The R921 receiver incorporates dual internal receivers and one or two remote receivers, offering the security of up to four receivers for the ultimate in multi-path redundancy. Two internal receivers are located on the main PCB, while a third remote receiver can be plugged into any one of the antenna ports in order for the system to operate. Optionally, a second remote receiver can be plugged into the remaining remote port giving a total of four receivers. By installing and programming two or more remote receivers, each receiver is exposed to its own RF environment, allowing improved path diversity (the ability of the receiver to sense the signal in all conditions).

9. When the transmitter is turned on and after the receiver connects to the transmitter, normal control of all channels are restored. The system will automatically revert to the failsafe position. These two positions are set during the binding process.

10. Preset Failsafe drives all servos to their preset failsafe positions that were set during binding.

11. The R921 features two types of failsafe: SmartSafe™ and Preset Failsafe.

12. The SmartSafe feature automatically monitors your transmitter and receiver for a loss of power, a power interruption, a low battery, or any other changes that could affect performance.

13. The SmartSafe feature will automatically revert to the failsafe position when a receiver loses power or is disconnected from the transmitter.

14. The SmartSafe feature helps avoid control loss during short interruptions in power, maintains the LED's on the main receiver and reduces walkie-talkie effects when the model is turned off.

15. The Preset Failsafe feature drives all servos to their preset failsafe positions that were set during binding.

16. The Preset Failsafe feature ensures that all servos are returned to their preset failsafe positions in case of power loss or disconnection from the transmitter.

17. The Preset Failsafe feature helps prevent the transmitter from responding during normal operation.

18. The Preset Failsafe feature prevents the throttle servo from responding during power interruptions, ensuring that the receiver returns to its preset failsafe position in case of power loss or disconnection from the transmitter.

19. The Preset Failsafe feature ensures that all servos are returned to their preset failsafe positions in case of power loss or disconnection from the transmitter.

20. The Preset Failsafe feature helps avoid control loss during short interruptions in power. Normal control is restored when power is restored. SmartSafe also prevents the transmitter from responding during normal operation.

21. The Preset Failsafe feature ensures that all servos are returned to their preset failsafe positions in case of power loss or disconnection from the transmitter.

22. The Preset Failsafe feature helps avoid control loss during short interruptions in power. Normal control is restored when power is restored. SmartSafe also prevents the transmitter from responding during normal operation.

23. The Preset Failsafe feature ensures that all servos are returned to their preset failsafe positions in case of power loss or disconnection from the transmitter.
Flight Log (JRP145)—Optional for R921 Receiver

Antenna fades—represents the loss of a bit of information that specific antenna.

Typically it's normal to have as many as 50 to 100 antenna fades in a flight.

If any single antenna experiences over 500 fades in a single flight, the antenna should be repositioned in the vicinity of the R921.

Frame loss—represents simultaneous antenna fades on all attached receivers. If the IF is performing optimally, frame losses per flight should be less than 20.

A hold occurs when 45 continuous (one after the other) frame loss occurs.

This takes about one second. A hold occurs during a flight, it's important to re-evaluate the system, moving the antennas to different locations and checking to be sure the transmitter and receivers are all working correctly.

Note: A service session can be used to allow this Flight Log to more conveniently be plugged in without having to remove the aircraft’s battery or charge. On some models, the Flight Log can be plugged in, attached and left on the model using double-sided tape. This is common with helicopters, meaning the Flight Log conveniently in this side the vehicle.

Receiver Power System Requirements

With all radio installations, it is vital that the onboard power system provides adequate power without interruptions to the receiver even when the system is fully loaded (varies with maximum flight loads). This becomes especially critical with giant-scale models that utilize multiple high frequency high power systems. Insulate power systems that are unable to provide the necessary minimum voltage to the receiver during flight loads have become the number one cause of flight failures. Some of the power system components that afford the ability to properly deliver adequate power include: the selected receiver battery pack (number of cells, capacity, cell type, status of charge), switch harness, battery pack (number of cells, power bus (3 pack)).

When R921’s receiver minimum operational voltage is 3.5 volts, it is highly recommended the system be tested the guidelines below to a minimum acceptable voltage of 4.8 volts during ground testing. This will provide a fail-safe to prevent battery discharging while testing or shutting the actual flight loads greater than the ground test loads.

Recommended Power System Guidelines

1. When setting up large or complex aircraft with multiple high torque servos, it's highly recommended a current and voltage capable (900-1600mA) be used. Plug the battery in 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. This voltage should remain above 4.8 volts even when all servos are heavily loaded.

The optional Flight Log has a built-in volumeter and can be used to perform this test.

2. With the current motor loads with the receiver battery load, load the control surfaces (apply pressure with your hand) while monitoring the current. This maximum continuous current recommended current for a single heavy-duty servo/motor battery load three times while short duration current spikes of five times are acceptable. Consequently, if your system draws more than three amps continuous or five amps for short duration spikes, a single battery pack with a single switch harness plugged into the receiver for power will be inadequate. It will be necessary to use multiple packs of the same capacity with multiple switches and multiple leads plugged into the receiver.

3. If using a regulator, it’s important that the above tests are done for an extended period of 5 minutes. When current passes through a regulator, heat is generated and this heat causes the regulator to increase resistance, which in turn causes even more heat to build up (thermal runaway).

While a regulator may provide adequate power for a short duration, it's important to test it ability over time as the regulator may not be able to maintain adequate voltage power level.

For really large aircraft or complex models (for example 50% and larger), multiple battery packs with multiple power buses may be necessary. In any case, one of the commercially available power boxes/busses is recommended. No matter what power systems you choose, always carry and test #2 above making sure that the receiver is constantly powered by 4.8 volts or more under all conditions.

For really large aircraft or complex models (for example 50% and larger), multiple battery packs with multiple power buses may be necessary. In any case, one of the commercially available power boxes/busses is recommended. No matter what power systems you choose, always carry and test #2 above making sure that the receiver is constantly powered by 4.8 volts or more under all conditions.

The latest generation of Nickel Metal Hydride batteries incorporates a new chemistry mandated to be more environmentally friendly. These batteries, when charged with peak detection fast chargers, tend to balance to full charge without excessively further charging. These include all brands of Ni-MH batteries. If using Ni-MH 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 cells put into a discharged pack to verify it has been charged to full capacity.