The JR11X offers sophisticated programming features for three model types: airplanes, helicopters and sailplanes. This manual includes a section of common transmitter features and overall operational information, a section of model-specific programming and an appendix.
**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 http://www.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 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. 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.

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**JR 11X SYSTEM**
WITH SPEKTRUM 2.4GHz DSM TECHNOLOGY
INSTRUCTION AND PROGRAMMING MANUAL

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ADVANCED DIGITAL TRIMS

The 11X features Advanced digital trims. On the Normal display screen, if you move a trim lever or a screen automatically displays the graphic position for the trim being adjusted. The 11X Aligner, Elevator and Rudder trim levers and the right and left rudder features a audible center trim beep. This helps when determining the trim lever’s center position during flight. In addition, the frequency of each trim step changes from full right to full left to define the trim on the three front digital trims. This allows you to be aware of the general trim position audibly without looking at the transmitter. By using the Trim System Function located in the System List, you can adjust the amount of travel per each trim step as needed for your specific application. When you turn the 11X off, the transmitter stores the trim values and recalls them when turned back on.

COMPATIBLE RECEIVERS

Note: The 11X is compatible with all current JR and Spectrum DSM2 aircraft receivers including:
- AR900 5-channel ParkFlyer Receiver
- AR900-6 channel ParkFlyer Receiver
- AR1006-6 3.5 gram ParkFlyer Receiver
- AR1060 6 channel ParkFlyer Receiver/R820 (optional)
- AR6205 5-channel 6.5-gram receiver
- AR6215 5-channel 6-gram receiver
- AR6225 5-channel ParkFlyer receiver
- AR6235 5-channel Carbon Fuse Full Range Receiver
- AR6240 5-channel 2 gram Nanolite Slow and Micro Flyer Receiver
- AR900L 6-channel Receiver
- AR7000 7-channel Full Range Receiver
- AR7005 7-channel High-Speed Receiver
- AR7105/AR7107 7-channel Heli Receiver
- AR6809 5-channel PowerSafe™ Receiver
- AR6809-6 5-channel PowerSafe™ Receiver
- AR6809-7 5-channel PowerSafe™ Receiver
- AR9010 9-channel Carbon Fuse Evolution Receiver
- AR9009 9-channel Carbon Fuse Receiver
- AR8002 12-channel Receiver
- AR6802 12-channel PowerSafe™ Receiver
- AR9822 9-channel PowerSafe™ Receiver
- AR1222 12-channel Receiver
- AR1222 12-channel PowerSafe™ Receiver
- AR9822 9-channel PowerSafe™ Receiver

CAUTION: When using the 11X with slow and park flyer receivers (the AR8000, AR8100, AR100, AR810, AR9010, AR9020, AR9040 and AR8010 when the remote receiver is not connected), you should only fly these receivers in park flyer-type aircraft (small electric airplanes or mini and micro helicopters). Flying receivers designed for park-flyer in larger aircraft could cause a loss of control resulting in damage to property and/or injury.

THE 11X TRANSMITTER AND RECEIVER SPECIFICATIONS AND FEATURES

With Spektrum’s 2.4GHz DSM technology, the JR 11X offers a hassle-free, interference-free superior RF link for your airplane, helicopter or sailplane. The same technology also significantly reduces latency so you have a more responsive, precise connection to your aircraft. All of this means you can fly with confidence and safety when you fly with the 11X.

SYSTEM SPECIFICATIONS

JR 11X Transmitter Features:
- Backlit screen
- Digital 3 × 1 trim (3 digital + 1 analog [throttle trim])
- Dual ball bearings
- Fully integrated 2.4GHz Spektrum™ technology
- Sophisticated programming for three model types: Airplane, Helicopter, Sailplane
- Rolling Selector input
- Flight Mode naming
- 30-model memory
- Patented DualLink™ Technology
- ModelMatch™
- ServoSync™
- Advanced Digital Trims

Transmitter Specifications:
- Model Number: (11X 2.4JPR1100)
- Number of Channels: 11
- Modulation Type: Direct Sequence Spread Spectrum DSM2/DSM1 protocol
- Band: 2.400 to 2.483GHz
- Transmitter Current: 180mA/DSM2; 280mA/DSM1
- Resolution: 2048
- Transmitter Output:
  - 4S Standard 0.1% in 0.021ms
  - 2.5S Standard 0.1% in 0.032ms

Receiver Features:
- Instant QuickConnect™ (with brownout detection) should a receiver battery go below 9.6 volts. Charge the transmitter battery, do not exceed 1.5 amps (1500mA) charge rate or damage to transmitter or battery can occur.
- Always use only compatible NiMH rechargeable batteries. This charger cannot charge batteries such as “heavy duty,” “alkaline battery,” or “mercury battery.”
- Always use a charger that displays the total charge current. Note the number of mAh put into a discharged pack to verify it charges to capacity.

Safety Precautions and Warnings
Failure to exercise caution while using this product and comply with the following warnings could result in product malfunction, electrical issues, excessive heat, fire, and ultimately injury and property damage.
- If the transmitter voltage drops below 9.0 volts or the battery alarm goes off during flight, land immediately and recharge.
- Read all safety precautions and literature prior to use of this product.
- Never leave battery and charger unattended during use.
- Never allow minors to charge packs without adult supervision.
- Never attempt to charge dead or damaged batteries.
- Never charge a battery if the cable has been pinched or shorted.
- Never allow batteries to come in contact with moisture at any time.
- Never charge batteries in extremely hot or cold places (recommended between 50–80 degrees Fahrenheit) or place in direct sunlight.
- Always use compatible NiMH rechargeable batteries. This charger cannot charge batteries such as “heavy duty,” “alkaline battery,” or “mercury battery.”
- Always properly connect charger and battery.
- Always disconnect the battery and charger after charging, and let them cool between charges.
- Always inspect the battery before charging.
- Always terminate all processes and contact Horizon Hobby if the product malfunctions.
- Always monitor battery temperature during charging.
- End charging process if the charger or battery comes hot to the touch or starts to change form during the charge process.

CHARGING

Do’s and Don’ts
- Charge transmitter and receiver battery before flying.
- Check receiver battery charge between each flight using a tester with built-in load.
- Only use charger on JR equipment. Charge plug polarity may be different. Equipment damage can result.
- Do not use other manufacturer’s after-market accessories that plug into the transmitter charging jack. If you doubt polarity compatibility, seek expert advice to avoid possible damage.
- The center pin on all JR transmitters is negative. Therefore, all JR chargers have a negative center pin, not positive.
- Beware of improper connections based on color-coded wire leads—they may not apply.
- ALWAYS connect the center pin of your JR transmitter to the negative pole for correct polarity.

Instructions
1. Plug the charger into the 11X battery port on the right side of the radio.
2. Plug the charger power supply into the wall outlet.

CAUTION: Not following proper sequence of numbers 1 and 2 can cause a state short, which could damage the battery circuitry.
3. For initial charge and any charging of fully discharged battery, charge time is 10–12 hours. Charge time decreases if battery is not fully discharged.
4. Monitor the temperature of battery during charging.
5. After charging, check the voltage of the battery pack by turning system on. Voltage should be just over 11 volts (11.4, approximately but will vary).
6. During first use, battery voltage may drop below 9.6 volts. Charge the battery again to just over 11 volts. Do not overcharge.

Notes
- The 11X battery contains a heat detector. If it senses excessive heat, it shuts off the charger and shows an error on the charger LED.
- The battery voltage does not affect the output of the system as it is regulated internally.
- The 11X charger is not a peak detector charger. If using a fast charger for the transmitter battery, do not exceed 1.5 amps (1500mA) charge rate or damage to transmitter or battery can occur.
- The 11X charger output is DC 11.0V with 110mA as the average charge rate.
- If using a peak detection charger, make sure battery is fully charged. NiMH batteries tend to be repeatedly false peak with peak detection fast chargers. Use a charger that displays the total charge current. Note the number of mAh put into a discharged pack to verify it charges to capacity.

WARNING: Charge only rechargeable batteries. Non-rechargeable batteries may burst causing injury to persons and/or damage to property.

THE JR R921 RECEIVER

The JR R921 incorporates two internal receivers and one remote receiver with an optional second remote receiver. You must plug 1 remote receiver into one of the remote receiver ports for the system to operate and a second remote receiver (optional) into the remaining remote antenna port.

Installing the receivers in different locations throughout the aircraft exposes each receiver to its own RF environment. This greatly improves the ability of the receivers to see the signal in all conditions. This gives a solid RF link, even in an aircraft that contains metallic material (e.g., turbine engines with metal tail pipes, carbon fiber, tuned pipes, etc.) that can weaken the signal.

Installing the R921
Install the main receiver using the same method of a conventional receiver in your aircraft. Typically, wrap the main receiver in protective foil and fasten it in place using rubber bands or hook and loop strips. Alternately in electric models or in jets (low vibration), you can use thick double-sided foam tape to fasten the main receiver in place.

Using double-sided foam tape (servo tape), mount the remote receiver(s) keeping it at least 2 inches away from the primary receiver. Ideally, you should position the antennas perpendicular to each other. 6-, 9-, 12-, 24-, and 36-inch leads are available. A standard installation includes the main receiver mounted conventionally in the fuselage and the remote antennas in the nose (jets) in the top turret deck and even in the tail. The optimum location, especially for sophisticated aircraft, is as far away from any conductive materials as practical. In helicopters, the servo tray generally has enough room to achieve the necessary separation. When needed you can make a mount using clear plastic to position the remote receiver.

Other important installation tips:
1. Mount the servo motors using rubber grommets and brass eyelets to isolate them from vibration. Do not over-tighten the mounting screws, this will negate the vibration absorption effect of the rubber grommets. When mounting, push the brass eyelets from the bottom up in the rubber grommets. By tightening the servo screw securely, you provide the proper security and vibration isolation for your servo.
2. The servo arms must be able to move freely over their entire range of travel. Make sure the control linkages do not bind or impede the movement of any of the servos.
3. Mount all switches away from the engine exhaust and away from any high vibration areas. Make sure the switch operates freely and over its full travel.
BINDING

Binding is necessary to program the receiver to the transmitter so the receiver only recognizes that specific transmitter, ignoring signals from any other sources. If the receiver is not bound to the transmitter, the system will not operate. During binding, the servo’s failsafe positions are stored.

The following sequence describes the binding procedure for the JR R921. All JR and Spektrum DSM aircraft receivers are bound in the same way.

HOW TO BIND

Note: To bind an aircraft with an electronic speed controller that powers the receiver through the throttle channel (BEC), insert the bind plug into the bind port and proceed to Step #2.

1. With the system hooked up as shown, insert the bind plug in the charge plug receptacle. The switch must be a 3-wire type switch (JRPA001 or JRPA004) to enter bind mode through the switch. Plug the switch into the bind port of the receiver. If a 3-wire switch is not available, install the male bind plug directly into the receiver bind receptacle and power the receiver through any other open port to enter bind mode.

2. Power on the receiver. The LEDs on all receivers should be flashing, indicating the receiver is ready to bind.

3. Establish the desired failsafe stick positions: normally low throttle and flight controls neutral.

4. Press and hold the bind button on the back of the transmitter while turning on the power switch. The bind lights on the front and rear of the transmitter should flash and within a few seconds the system should connect. The LEDs on the receivers should go solid, indicating the system has connected.

5. Remove the bind plug from the receiver or switch harness and store in a convenient place.

6. After programming your model, rebind the system so the true low throttle and neutral control surface positions are programmed.

7. When the transmitter is turned on and operating with the system, the amber light on the rear of the transmitter will be on solid. The blue light on the top front of the transmitter will also be on solid indicating the system is outputting signal and operating.

FAILSAFE FUNCTIONS

The JR R921 receiver features two types of failsafe programming: SmartSafe and Preset Failsafe.

SmartSafe

SmartSafe is automatically selected during the standard binding procedure and is ideal for electric aircraft as well as most gas- and glow-powered aircraft.

How SmartSafe Works

1. When the Receiver is Powered On without a Transmitter Signal
   If you turn on the R921 before you turn on the transmitter, SmartSafe prevents the throttle from functioning and drives all other channels to their preset positions.

2. When there is a Loss of Signal in Flight
   If the receiver loses the transmitter’s signal in flight, or any other time after a successful connection has been made, SmartSafe sets the throttle to the position it was in during the binding process. All other channels hold the positions they were in at signal loss.

How to Program the Receiver for SmartSafe

Simply move the throttle to a desired in-flight failsafe position (typically this is the “fly away” in high-performance models by deploying spoilers in sailplanes or putting gas- and glow-powered models into a slight turn at reduced throttle).

Preset Failsafe

Preset Failsafe allows you to set the specific control positions for all channels to go to should you encounter signal loss in flight or at any other time after a successful connection has been made. Preset Failsafe is typically used to prevent “fly aways” in high-performance models by deploying spoilers in sailplanes or putting gas- and glow-powered models into a slight turn at reduced throttle.

How to Program Preset Failsafe Settings

Insert the bind plug and power on the receiver. When the receiver’s LED lights begin to blink (either open it in bind mode, remove the bind plug before binding the transmitter to the receiver). The LED lights on the receiver continue to blink. Move your transmitter’s control sticks and switches to the desired Preset Failsafe positions then turn it on in bind mode. The system should connect in less than 15 seconds.

RANGE TESTING

The Standard Range Testing procedure is recommended for most sport aircraft.

Range Testing

1. With the model resting on the ground, stand 30 paces (approx. 90 feet) away from the model.
2. Face the model with the transmitter in your normal flying position and depress and hold the bind button on the back of the transmitter. This causes reduced power output from the transmitter.
3. You should have total control of the model with the button depressed at 30 paces (90 feet).
4. If control issues exist, call Product Support at 1-877-504-0233 for further assistance.

RECEIVER POWER SYSTEM REQUIREMENTS

The on-board power system must provide adequate power without interruption to the receiver even when the servos are at maximum flight loads. Inadequate power systems that do not provide the necessary minimum voltage to the receiver during flight loads are the number one cause of in-flight failures. Some power system components that affect the ability to properly deliver adequate power include: the selected receiver battery pack (number of cells, capacity, cell type, state of charge), switch harness, battery leads, and if used, the regulator and power bus.

Recommended Power System Guidelines

1. When setting up a large or complex aircraft with multiple high-torque servos, you should use a current and voltmeter (HAN172). Plug the voltmeter in an open channel port in the receiver and, with the system on, load the control surfaces (apply pressure with your hand). Monitor the voltage at the receiver. The voltage should remain above 4.8 volts even when all servos are heavily loaded. The optional Flight Log has a built-in voltmeter and can be used.

2. With the current meter in line with the receiver battery lead, load the control surfaces while monitoring the current. The maximum continuous recommended current for a single heavy-duty servo/battery lead is three amps. Short duration current spikes of up to five amps are acceptable. If your system draws more than these currents, you should use multiple packs with multiple switches and multiple leads plugged into the receiver. While a JR receiver’s minimum operational voltage is 3.5 volts, you should test the system to a minimum acceptable voltage of 4.8 volts during ground testing. This provides headroom to compensate for battery discharging or if the actual flight loads are greater than the ground test loads.

Note: JR’s amplified Y-harness (JRPA133) is for use with Z-PCM only. JR’s non-amplified Y-harness (JRPA135) should be used with PPM, SPCM or DSM/DSM2 systems.

3. If using a regulator, perform the above tests for an extended period of 5 minutes. When current passes through a regulator, heat is generated. This causes the regulator to increase resistance, causing even more heat to build up (thermal runaway). While a regulator may provide adequate power for a short duration, you should test its ability over time. The regulator may not be able to maintain voltage at significant power levels.

4. For really large aircraft or complex models (for example 35% and larger or jets), multiple battery packs with multiple switch harnesses are necessary or, in many cases, one of the commercially available power towers/busses is recommended. No matter what power system you choose, always carry out test #1 above. Make sure the receiver is constantly provided with 4.8 volts or more under all conditions.
The 11X GLID programming is optimized for multi-function sailplanes and offers the highest level of versatility and sophistication. The system has many features including:
- Switch Assignability for channels and functions
- Up to 5 fully programmable Flight Modes
- Flight Mode Naming allows custom naming of each flight mode
- Width system allows custom programming of alarms for various switch and stick positions
- Programmable Servo Speed
- Triple Rates/Exponentials (up to 4 Rates/EXPOs) for Aileron, Elevator, and Rudder in flight modes
- 6 Swashplate Types (normal, 2 servo 180, 3 servo 120, 3 servo 140, 3 servo 90, 4 servo 90)
- Electronic 3D Cyclic Ring prevents overdriving the cyclic servos with combined aileron and elevator commands
- Balanced control alloca

The ACRO mode is for powered fixed-wing aircraft. It contains advanced features designed to assist the pilot in realizing the full potential of the aircraft. These features include:
- Up to 3 flight modes
- Switch and lever assignability
- Triple Rates and Exponentials for Aileron, Elevator and Rudder that can be combined or assigned to flight modes
- 4 programmable Wing Types (Normal, Flaperon, Delta, 4-aileron)
- Differential with two values per channel (Aileron, Dual Rudder, Dual Flap)
- V-tail mixing
- Dual Channels for All Primary Flight Controls and Flaps
- Dual Throttles (With Independent Trims and Throttle Curves)
- Adjustable Trim Rates (10-100 Trim Steps)
- L.S.T. trim – trim can be programmed to affect endpoints or center point only
- Elevator-To-Flap mixing
- Aileron-To-Flap mixing
- Warning system allows custom programming of alarms for various switch and stick positions
- Programmable servo speed
- Triple Rates/Exponentials (up to 4 Rates/EXPOs) for Aileron, Elevator and Rudder in flight modes
- Adjustable Trim Rates (10-100 Trim Steps)
- Governor Mix
- Throttle curves (up to 5) with up to 7 programmable points
- Pitch Curves (up to 6) with up to 7 programmable points
- Gyro System (In Flight mode Gain Selection of up to 6 gains)
- 6 Programmable Mixes (Includes 3 Multi-Point Mixes)
- Programmable Trainer System (Select active Channels for Student Control)
- Timers – up to four (Stopwatch, Countdown, Integrated)
- Servo Monitor (Automatically Renames Channels according to Assignments)
- Pitch Curve mixing for variable pitch props

Heads up: Ensure future antenna safety
Do not attempt to use the antenna to bear any weight, pick up the transmitter by the antenna or alter the antenna in any way. If the transmitter antenna or related components become damaged the output strength can be severely impeded which will likely lead to a crash, injury, and property damage.
The Quick Information Screen appears.

voltage. To display, while on the main information screen rotate the roller until
position, throttle servo output position, current flight mode if activated and battery
previous flight trim. You can change this marker position at any time to mark any

To store the trim positions after a flight:

previously located trim positions at a glance. This feature allows you to return to a

system is set as desired. Next the System Type menu appears. Select the desired

Wing Type menu appears. Select the desired Wing Type setting for your model. If

the Model Name as desired. See page 12 for more information on setting the Model Name. Press OK when the
Model Name is set as desired. Next the Swash Type setting for your model. Next the Gyro Channel setting appears.
Select the channel for the gyro gain you will use for the helicopter. Select RH if you do not wish to use the Gyro function. The Initial Model Setup Guide will now exit and you will be able to adjust any settings as desired.

Select the Type of model desired. After the model type has been selected, the Model Name function will then appear. Enter the Model Name as desired. See page 12 for more information on setting the Model Name. Press OK when the Model Name is set as desired. Next the Swash Type menu appears. Select the desired Swash Type setting for your model. Next the Gyro Channel setting appears. Select the channel for the gyro gain you will use for the helicopter. Select RH if you do not wish to use the Gyro function. The Initial Model Setup Guide will now exit and you will be able to adjust any settings as desired.

TRIM POSITION MEMORY

To enter My List, on the main display screen or in the Function List, highlight and select Edit Mode with the Roller. Highlight and select each menu location
and press enter. System list can also be entered by pressing the enter button while turning on the transmitter. System Mode is where you select models, choose the model type (airplane, helicopter or sailplane) and program other high-level information.

INITIAL MODEL SETUP GUIDE

PREPARING THE 11X TO RECEIVE A MODEL TRANSFER FROM ANOTHER 11X OR SD CARD

1. If receiving a model from another 11X system, and with the other end of the trainer cord plugged into the sending 11X transmitter, press the trainer cord into the receiving 11X system while holding the ENT key.
2. Use the Roller to highlight COPY then press enter to Access Model Copy.
3. Highlight the top model INTERNAL setting. select TRANSFER or SD-CARD.
4. The bottom model setting should be set to INTERNAL. Select the bottom model. Press the roller, and select the model number to transfer the data to.
5. Note: The receiving model name/memory number can not be the currently selected model. To receive a model in the currently selected model name/memory number, go to the model select function and select a different model, then reenter the transfer function and follow the instructions above.
To Select a Model Type
1. In the System List, highlight and select TYPE SELECT.
2. Highlight the desired model type and press the Roller to access the model type.

To Erase a Model Memory
1. In the System List, highlight and select ERASE.
2. Highlight the model to erase, and push the roller down to select it.
3. Highlight ERASE and press the Roller to select ERASE.
4. Repeat for each LONG and SHORT Flight Mode Name as desired.

To Program a Flight Mode Name
1. In the System List, highlight and select F-Mode Name.
2. Highlight the desired flight mode name, then press the Roller to access the list of available characters.
3. Highlight and select the desired character to form the flight mode name. After the character is selected, rotate the Roller to select the next character or press Enter. Repeat until finished and press OK.
4. Repeat for each LONG and SHORT Flight Mode Name as desired.

To Name a Model
1. In the System List, highlight and select Model Name.
2. Position the cursor using the roller (indicates where the next character will be placed) at the beginning of the model name. Press the Roller to obtain a list of available characters.
3. Highlight and select the desired character. After selecting the character, you can highlight and select the next character, or press Enter for the next character. Press Down to move down a line in the character list. Repeat until the model name is completed, and press OK.
4. To adjust the contrast, highlight and select the value next to contrast. Rotate the roller to select the next character, or press Enter.
5. To adjust the backlight, highlight and select the value next to backlight or SOUND MODE. Select backlight or SOUND MODE, then press the Roller to access and change the settings.

To Program a Warning
1. In the System List, highlight and select WARNING.
2. Highlight the desired flight mode, switch position or stick position switch (SPS) then press the roller to turn on/off that function as a warning. It is possible to activate multiple functions as a warning.
3. If you want a throttle stick position as a warning, highlight THRO STRK 0 or 10 and press the roller to activate the throttle stick position. Rotate the roller to select POS and adjust to the desired value for the warning sound.

To Change Transmitter Settings
1. In the System List, highlight and select TX SETTINGS.
2. Highlight the desired function. Select backlight or SOUND MODE, then press the roller to access and change the settings. You can adjust the Sound Mode for the Edit Key volume, Trim volume, Lever volume, Timer volume, and Opening volume.
3. To adjust the contrast, highlight and select the value next to contrast. Rotate the Roller to adjust.

To Program a Flight Mode Name
1. In the System List, highlight and select F-Mode Name.
2. Highlight the desired flight mode character position, then press the Roller to access the list of available characters.
3. Highlight and select the desired character to form the flight mode name. After the character is selected, rotate the Roller to select the next character or press Enter. Repeat until finished and press OK.
4. Repeat for each LONG and SHORT Flight Mode Name as desired.

To Change Transmitter Settings
1. In the System List, highlight and select TX SETTINGS.
2. Highlight the desired function. Select backlight or SOUND MODE, then press the roller to access and change the settings. You can adjust the Sound Mode for the Edit Key volume, Trim volume, Lever volume, Timer volume, and Opening volume.
3. To adjust the contrast, highlight and select the value next to contrast. Rotate the Roller to adjust.
11X USED AS MASTER

If the 11X is being used as the Master, select the channel(s) to be operated by the Slave when the trainer switch is depressed.

When all channel rollers are in the MAST position, NORMAL appears on the display and all channels transfer to the student when the trainer switch is depressed. In this case, you must fully program the model in both the master and the slave transmitters. If the slave system is a 19X030, 19X050, 11X, or 12X, and all channel rollers are in the MAST position, you must leave the slave transmitter in the normal default MASTER setting.

If one or more of the channel rollers are in the SLAVE position, only the throttle,ailerons, elevator, and/or rudder channels are transferred to the Slave transmitter depending on which are set to SLAVE in the Master transmitter. If one or more of the channel rollers are in the SLAVE position, the Master controls all Dual and Expo rates, Gear, and flap positions, and the Slave transmitter need not be programmed for the model. If one or more of the channel rollers are in the SLAV position, the Slave transmitter should be set to SLAVE mode.

When less than all channels are selected as SLAV, PROG RM T appears on the display indicating the Trainer System is programmed to transfer only selected channels.

Note: The Slave transmitter battery must be fully charged and installed and the power switch in the OFF position.

1 Rotate the roller to highlight INH under SW SEL in the lower left corner.
2 Press the roller and select the left or right trim lever to give control to the slave transmitter. The 11X is now ready to be used as the Master.
3 Depress the Left or Right trim lever to transfer control to the student. Control will remain transferred until you release the trim lever.

Your 11X is ready to use as the Slave with all channel rollers in the Master transmitter set to MAST.

11X USED AS SLAVE

If the Master transmitter has one or more of the channel rollers in the SLAV position, highlight and select MASTER. The display switches to SLAVE. A message appears instructing to Connect DSC & POWER off. Make sure the transmitter power switch is OFF and the Trainer cord connected between the two transmitters. The 11X is now ready to use as the Slave with one or more channels selected in the Master Transmitter to SLAV.

STICK ALERT

The Stick Alert function gives an audible indication of the throttle stick position. If selected, the transmitter beeps at an adjustable throttle position giving the user an indication of throttle position.

To program the stick alert function:
1  In the System List, highlight and select Stick Alert using the Roller.
2  Highlight and select INH next to THRO STK to activate the function.
3  Highlight and select the value next to PDS to adjust the throttle stick position where the system will beep.
4  Highlight and select SW SEL to select a switch to activate the function if desired. Then select the switch and position selection. You can use this to turn the Stick Alert function on and off by a switch or flight mode in flight.
5  Highlight and select SW SEL to exit the switch selection screen.

FLIGHT MODES (AIRPLANE)

A Flight Mode represents an aircraft configuration (Dual Rate/Expo, program mixes, Aileron Differential, Flap System, Gyro System, etc.) that allows you to do different things by flipping a single switch. Up to 3 flight modes are available in the 11X.

Programming Flight Modes allows you to select a switch position to activate a collection of settings optimized to perform a maneuver. For example, you can set up an aerobatic aircraft so the Flight Mode switch in its 1st position (FM 1) configures the aircraft for precision flying, the 2nd position (FM 2) sets the aircraft up for snap rolls; and the 3rd position (FM 3) sets the aircraft up for aggressive 3D flight. Flight Modes could just as easily represent aircraft settings for Take Off, Flying, and Landing for a turbine-powered jet aircraft.

Most of the functions found in the 11X that are switch selectable including programmable mixes, throttle curves, differential, gyro settings, servo speed, etc. can be assigned to one or more Flight Modes. This allows up to 3 completely different aircraft configurations selectable in-flight using one of six 3-position switches (Flight mode switch, Rudder D/R switch, Flap switch, Elevator D/R switch, Azr 2 switch, Aileron D/R switch, or INH/INH).

You can select and activate Flight Mode switches in the Device SEL function in the System menu. Once Flight Modes are activated, you have a choice of using the Flight Mode switch to select up to 4 Dual Rates and Exponential settings for each of the primary controls (ELEV, AILE, RUDD), or you can control Dual Rates and Exponential settings by 3 individual Dual Rate switches. All other functions activated by a switch can be assigned to 1 or more Flight Modes when Flight Modes are activated.

To Activate Flight Modes

1  From System List, highlight and select Device Select using the Roller.
2  In the Device Select function, using the Roller, highlight and select INH next to FLIGHT MODE. When selected, 7 options appear: (Flight Mode SW, Rudder D/R SW, Flap SW, Elevator D/R SW, Azr 2 SW, Aileron D/R SW, or INH). Highlight and select the desired flight mode switch. Alternatively, once the flight mode switch selection screen is open, you can use the 11X Auto Assign™ function, move the switch you want to use as the flight mode switch to select it. The switch can be any of the 3-position switches.

STICK ALERT

The Stick Alert function gives an audible indication of the throttle stick position. If selected, the transmitter beeps at an adjustable throttle position giving the user an indication of throttle position.

To program the stick alert function:
1  In the System List, highlight and select Stick Alert using the Roller.
2  Highlight and select INH next to THRO STK to activate the function.
3  Highlight and select the value next to PDS to adjust the throttle stick position where the system will beep.
4  Highlight and select SW SEL to select a switch to activate the function if desired. Then select the switch and position selection. You can use this to turn the Stick Alert function on and off by a switch or flight mode in flight.
5  Highlight and select SW SEL to exit the switch selection screen.

DEVICE SELECT

Device Select is used to activate some of the more advanced features of the 11X. The Device SEL function is used to activate/inhibit the following:

• Activate/inhibit the Governor function,
• Activate/inhibit the Gyro function
• Activate/inhibit the PIZ (dual pitch servo) function
• Assign functions and channel to the desired switch knob or lever

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Note: To activate the Governor function, the Governor switch must be set to the Governor position.

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• Activate/inhibit the PIZ (dual pitch servo) function
• Assign functions and channel to the desired switch knob or lever

Note: To activate the Governor function, the Governor switch must be set to the Governor position.

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• Activate/inhibit the Governor function,
• Activate/inhibit the Gyro function
• Activate/inhibit the PIZ (dual pitch servo) function
• Assign functions and channel to the desired switch knob or lever

Note: To activate the Governor function, the Governor switch must be set to the Governor position.

11X USED AS MASTER

If the 11X is being used as the Master, select the channel(s) to be operated by the Slave when the trainer switch is depressed.

When all channel rollers are in the MAST position, NORMAL appears on the display and all channels transfer to the student when the trainer switch is depressed. In this case, you must fully program the Slave transmitter and set it up to fly the model. All programming of the Slave transmitter will be used. Plug the trainer cord into the back of the transmitter leaving the power switch in the OFF position.

1 Rotate the roller to highlight INH under SW SEL in the lower left corner.
2 Press the roller and select the left or right trim lever to give control to the slave transmitter. The 11X is now ready to be used as the Master.
3 Depress the Left or Right trim lever to transfer control to the student. Control will remain transferred until you release the trim lever.

Your 11X is ready to use as the Slave with all channel rollers in the Master transmitter set to MAST.
**WING TYPE**

The Wing Type function provides for 4 different wing types (NORMAL, FLAPERON, DELTA and 4-Aileron). Use NORMAL wing type when using only the Aileron channel to control ailerons, either with 1 servo, or multiple servos connected through a Y-harness to the aileron channel. Use FLAPERON typically when each Aileron is controlled by a separate servo on separate channels and the aircraft has no other flaps. Setting the wing type to FLAPERON also makes the Differential and Elevator-to-Flap mixing functions in the Function List available.

The Wing Type function contains the Twin Engine (Twin E) feature, allowing you to set up a 2nd throttle channel for a second engine, complete with its own independent sub-trim, trim, and travel adjust and separate trim and flaperon curves. Use DELTA for Delta wing aircraft. The Ailerons and elevator are mixed giving roll and pitch control for Delta wing airplanes.

4-AILERON is used in aircraft where two servos operate the right aileron and two servos operate the left aileron. In this configuration each servo is independently adjustable for sub-trim and travel adjust.

Note: Dual ailerons is a function commonly employed for aircraft using two servos and two channels to operate the Ailerons. It provides the ability to utilize Aileron Differential and allows precise independent adjustment of sub-trim and travel adjust for each aileron.

If the aircraft has flaps separate from the Ailerons, Dual aileron wing type and the activation of dual flaps is recommended.

**V-TAIL MIX**

The V-Tail Mix function provides programming for aircraft that have a V-Tail configuration where the 2 tail control surfaces are used for both Elevator and Aileron control.

Flaperon- If using two channels to control the Ailerons and the aircraft does not have separate flaps, select FLAPERON as the wing type. Plug the right Aileron into the Aileron channel (CH2) and plug the left Aileron servo into the FLAP or AUX1 channel (CH6) of the receiver.

**DUAL CHANNELS**

1. To assign a 2 channel to Ailerons, Elevator, Rudder or Flaps, highlight and select INH under the desired channel on the System List. A list of available channels displays.
2. Highlight and select the channel to be the Slave to the control channel represented above it. Plug the 2nd control surface servo into the channel selected as the Slave.
3. INH appears on the Trim Line of the display directly beneath the channel just selected. This means the corresponding digital trim (FLAP TRIM or AUX TRIM) located next to the FLAP and AUX2 switches can be used as additional trims.

DUAL ENGINE

If the aircraft has flaps separate from the Ailerons. If using two aileron channels, activate the Dual aileron channel listed below.

FLIGHT MODES (HELIPOWER)

The 11x allows you to assign flight modes to any three-position switch. The system defaults with the flight mode on the flight mode switch (upper left corner of transmitter). In most cases this position is recommended.

To Assign the Flight Mode to a Switch

1. In Device Select highlight and select FMOD. A screen appears that allows you to move the Flight Mode to the Rudder Dual Rate Switch, Ail D/R, Elev D/R, Aux 2, Flap SW or the Flight Mode Switch.
2. Use the roller to select the desired flight mode switch position. Alternatively, if you have the flight mode switch options displayed, move the switch you would like to use as the flight mode switch.

**TWIN ENGINE**

If the aircraft is equipped with twin engines, you can use the Twin Engine feature (Twin E). For a second throttle channel with an optional separate digital trim, use DELTA for Delta wing aircraft. Plug the right aileron servo into the Elevator channel (CH2) and plug the left aileron servo into the Aileron channel (CH3).

**FLIGHT MODES (HELICOPTER)**

The 11x offers up to 6 separate flight modes. The system defaults to offer 4 flight modes (N, 1, 2, Hold). There are 2 additional flight modes, numbered 3 and 4 you can activate through the Device Select function.

To Activate 2 Additional Flight Modes (Flight Modes 3 and 4)

1. In Device Select highlight and select FMOD. A screen appears that allows you to move the Flight Mode to the Rudder Dual Rate Switch, Ail D/R, Elev D/R, Aux 2, Flap SW or the Flight Mode Switch.
2. Use the roller to select the desired flight mode switch position. Alternatively, if you have the flight mode switch options displayed, move the switch you would like to use as the flight mode switch.

**ACTIVATING EXTRA FLIGHT MODES 3 AND 4**

The 11x Device Select program allows you to activate and assign the Governor and Gyro functions to one of the following channels: GEAR, AUX2, AUX3.

To Use Governor or Gyro Functions

1. Highlight INH next to GEAR or AUX 2. Press the Roller to access INH, AUX 2, or AUX 3. Press the Roller to access INH, AUX2, or AUX3.

**DEACTIVATING CHANNELS**

The 11x provides the ability to inhibit a number of channels. This is useful when auxiliary channels are used for mixing. In this instance, the switch no longer operates the channels allowing them to be used as slave channels. Also, the deactivates channels assume a centered (-1050ms) position needed for mixing.

1. If using GEAR, AUX2 through AUX3 as slave channels, inhibit the corresponding switch by highlighting ACT along the bottom line of the display. Then press the Roller until INH appears under the switches you want to turn off.
The Swashplate Type function enables the 11X to operate six different types of swashplate control systems. The Swashplate options are:

1. Servo NORM standard mechanical mixing type
2. Servo/180°
3. Servo/120° CCPM (most popular)
4. Servo/140° CCPM (JR Vibe 50/90DS)
5. Servo/90° CCPM
6. Servo/90° D/R switch

To Select a Swashplate Type
1. In the System Menu, highlight and select Swashplate Type using the Roller.
2. Highlight and select the displayed swashplate to access the available swashplate types.
3. Select the desired swashplate.

FLIGHT MODES (SAILPLANE)
A Flight Mode represents an aircraft configuration (camber position, trim positions, Dual Rate/Expo settings, program mixes, aileron differential, etc.) that is programmed to optimize the aircraft for a particular task. Up to 5 flight modes are available in the 11X that include Launch, Normal, Reflex, Thermal, and Float.

To Enter the Flight Mode List
1. In System Mode List rotate the Roller until Flight Mode is highlighted. Press the Roller to access the Flight Mode list.
2. If your sailplane has dual elevators, dual rudders or dual flaps, highlight INH and press the Roller to inhibit. Channels 5 through 11 will become available as slave channels, or as momentary switches for a selected channel.

激活和分配基本飞行模式
在出厂默认设置下，所有的飞行模式都是可用的。飞行模式是激活并分配到指定开关位置的，这些位置位于飞行控制的系统菜单中。一旦飞行模式被激活，你可以在飞行模式菜单中选择飞行模式，该飞行模式可以用于控制每个飞行模式的优先级。

在系统模式列表中，将滚轮旋转到飞行模式，然后按下滚轮来激活飞行模式。如果你想使某个飞行模式不可用，可以将其设置为“激活”状态。

DUAL RATE AND EXPONENTIAL

羽翼类型

当你选择一个双率和指数程序时，你可以使用羽翼类型程序（双率，羽翼，减速，飞行模式）来激活V-尾，双翼，双翼，双翼，双翼或双翼。

在选择羽翼类型时，你需要选择双率和指数程序。你可以使用羽翼类型程序来激活V-尾，双翼，双翼，双翼，双翼或双翼。

WINÇ AND AUX FUNCTIONS

你可以在选择一个开关时使用WINÇ和AUX功能。你可以选择WINÇ和AUX功能来激活V-尾，双翼，双翼，双翼，双翼或双翼。

在选择WINÇ和AUX功能时，你需要选择WINÇ，双翼，双翼，双翼，双翼或双翼。

FUNCTION LIST

功能列表

这个功能列表用于组合和调整飞机的功能特性。功能包括Servo Reversing，Travel Adjust，Dual Rate和Expo。你可以使用这些功能来调整飞机的飞行特性。

在选择功能列表时，你需要选择功能列表中的Servo Reversing，Travel Adjust，Dual Rate和Expo。

DUAL RATE AND EXPONENTIAL VALUES

羽翼类型

当你选择一个双率和指数程序时，你可以使用羽翼类型程序（双率，双翼，双翼，双翼，双翼）来激活V-尾，双翼，双翼，双翼，双翼。

在选择羽翼类型时，你需要选择一个双率和指数程序。你可以使用羽翼类型程序来激活V-尾，双翼，双翼，双翼，双翼或双翼。

DUAL RATE AND EXPONENTIAL VALUES

羽翼类型

当你选择一个双率和指数程序时，你可以使用羽翼类型程序（双率，双翼，双翼，双翼，双翼）来激活V-尾，双翼，双翼，双翼，双翼。

在选择羽翼类型时，你需要选择一个双率和指数程序。你可以使用羽翼类型程序来激活V-尾，双翼，双翼，双翼，双翼或双翼。

FLAP STICK DIRECTION

襟翼杆方向

你可以使用襟翼杆方向来激活襟翼杆，从而激活襟翼杆。首先，你需要选择襟翼杆方向。然后，你可以使用襟翼杆方向来激活襟翼杆。

在选择襟翼杆方向时，你需要选择襟翼杆方向。你可以使用襟翼杆方向来激活襟翼杆。
3. Use the Roller to select and change the desired D/R and expo values. To independently adjust D/R and expo values, hold the corresponding control stick in the desired direction while making adjustments.

**AUTO FUNCTION**

The AUTO function automatically selects Dual Rate and Expo settings in each flight mode. Highlight the desired flight mode position to edit under AUTO and push the roller down to select. The selected D/R and EXP setting(s) for that control surface (for the selected flight mode: PO through PD) will be used. Each primary control (aileron, elevator, and rudder) has its own AUTO setting. This allows the rates to be different for each flight mode and each primary control surface.

**LIMIT ADJUST**

The Limit Adjust function allows the adjustment of the maximum travel possible for each channel in independent directions. This prevents any channel from being overdriven on the model as limit adjust overrides features like Travel Adjust.

**SERVO REVERSING**

The servo reverse function allows the direction of each servo to be selected.

To Program Servo Reverse

1. Highlight and select Reverse SW in the Function List to obtain the servo reverse function.
2. Use the Roller to highlight and select the channels to reverse. Pressing the Roller toggles the control between Normal and Reverse.

**THROTTLE CURVES**

Programmable throttle curves allow you to manipulate the throttle response (stick position vs. throttle output), optimizing it for various maneuvers like torque rolls. You can adjust programmable throttle with the Throttle Curve function. Two programmable throttle curves are available - Pos0 and Pos1.

2. If you need to have 2 throttle curves, use the Roller to highlight SW SELECT and push the roller down to access Switch Select. If you have only one servo speed, then all selectable switch positions in this screen should be PO. If you want two servo speeds, assign the desired switch to change the servo speed to P1. Return to the main screen.
3. If you want a single set of servo speeds, make sure the display shows Pos0. If it does not, select Pos1 and change it to Pos0. Highlight and select the channel and direction for each servo to be adjusted.
4. After you select a direction for a servo, you can set the servo speed. With the 11X, servos can travel from 176 seconds for 60 degrees of rotation to 15.0 seconds for 60 degrees of rotation. Adjust the speed of each servo until obtaining the desired speed.
5. If you want to set different speeds in different directions that are Flight Mode or switch selectable, set one set of values to NORM for all channels. You can then set the slowest speed for all servos by selecting the position (Pos0 or Pos1) with the NORM values. Highlight and select Pos0 and change it to Pos1. Highlight and select the channel and direction for each servo you need to adjust.
6. When you select a direction for a servo, you can set the servo speed so the servos travel at the desired slower rate. Switch between Pos0 and Pos1 to view and adjust the 2 sets of values for each servo.

**THROTTLE CURVES**

The 11X offers up to five (5) separate throttle curves with up to eight adjustable points per curve. This function allows you to customize the throttle curve to maximize engine performance at any particular pitch setting. Once the throttle curves are established, you can activate each in flight using the 3-position flight mode switch. If you activated the additional 2 flight modes (numbers 3 and 4) in Device Select, you will use an additional switch to activate these modes. Two additional throttle curves will be available.

The Flight mode switch offers three selectable positions:

- **N (Normal)**
- **1=Stunt**
- **2=Stunt 2**
- **3=Stunt 3** (optional)
- **4=Stunt 4** (optional)

The N (Normal) position is used as the hover throttle curve. Positions 1 and 2 (Stunt and Stunt 2) are typically used for forward flight and 3D maneuvers. Optional Flight modes 3 and 4 are designed for use with aerobatic maneuvers and forward flight.

**Accessing the Throttle Curve Function**

1. In function mode, the Roller highlights the Throttle Curve function, then press the Roller. ALL SERVOS HOLD will display. Press YES or NO to access the throttle curve screen.
2. Move the flight mode switch to the desired position to select the flight mode you will program. The flight mode will display in the upper left corner of the screen.
3. Move the Roller and highlight the desired throttle point to be adjusted.
The roller to access the point value, then roll the roller to increase and decrease the point value.

4. To set throttle curves for flight modes, switch the flight mode to the desired position, the screen will change to that flight mode.
5. Highlight the pitch point you want to adjust and press the roller. Rotate the roller to adjust that point on the pitch curve.
6. To add a point move throttle stick to the desired position until STOR appears on the left bottom of the screen. Pressing STOR will save a new point at that position.

**Note:** To eliminate a point, press ERASE (bottom left of the screen) when the point is highlighted.

### Vertical Line

The vertical line on the graph shows the current throttle channel position. When the throttle channel is turned fully in one direction, the line is to the extreme left over Point-L. When it is at neutral, it is centered over Point-1 and when fully deflected in the other direction, the cursor is at the extreme right of the graph over Point-H. Where the vertical line intersects the CurveLine over a given point, the roller on the graph defines the pitch servo's position, which is equal to the value assigned to that point.

### Graph

The graph illustrates the pitch curve. The X-Axis (horizontal plane) represents throttle channel movement. The Y-Axis (vertical plane) represents the throttle servo movement.

### Points You Can Add and Adjust

The Pitch Curve defaults to three points (L, 1, and H). You can add up to four additional points. To add a point, move the throttle stick to the desired position until STOR appears on the left bottom of the screen. Press STOR to save a new point at that position.

**Note:** To eliminate a point, highlight it then press ERASE (bottom left of the screen).

### Exponential

The Exponential function blends the Curve between the points on the graph to provide a smooth response. It defaults to OFF. To turn it on and smooth the mixing curve, highlight and select ON. It will toggle between ON and OFF.

### Pitch Channel Position

The pitch servo position next to OUT at the bottom left of the screen displays in values from 0 to +100. It represents the servo travel corresponding to the present Throttle Channel position.

### Throttle Channel Position

The throttle channel position appears on the bottom line of the display next to INL. It displays in values from 0 to +100 with 50 being the center or neutral position. It represents the present Throttle channel position.

### Switch Select

There are numerous switches that can switch between Pos0 and Pos1. Note: If the upper and lower settings for Pos0 or Pos1 are left at 0%, the mixer can be turned on and off with the switch. In addition, if Flight Modes are activated in the Device Select function, flight mode switches may be selected. You can also use Switch positions (GPS) to select between Pos0 and Pos1.

To choose a switch that selects between the Pos0 and Pos1 values, highlight and select the switch name. It will toggle between Pos0 and Pos1.

### Switch Select

- **FLAP**
  - The FLAP values correspond with how far the flaps deflect when in the NORM, MID, and LAND positions. Generally, the NORM position represents normal flying when the flaps are fully retracted. The MID position is typically used for half flaps and LAND for full flaps.
    1. With the flap switch in its uppermost (Normal) position (no flaps deployed), scroll to the NORM parameter under FLAP on the display. Select the value with the roller and adjust its value to bring the flaps to their normal flying position (no flaps deployed.)
    2. With the flap switch in the MID position, scroll to MID under FLAP on the display and select it. Adjust the desired percentage to deflect the flaps to the desired amount.
    3. Put the flap switch in the lowermost LAND position. Scroll to LAND under FLAP on the display and select it. Adjust the percentage to deflect the flaps to the desired position.

- **FLAP SYSTEM**
  - The FLAP System features a three-position Flap System with Elevator and Aileron compensation, programmable Delay, and an Auto Land feature. It allows you to program the flaps to three different positions, normally full flap, half flap and no flap or fully retracted position.
    1. With the flap switch in its uppermost position (no flaps deployed), scroll to the FLAP parameter under FLAP on the display. Select the value with the roller and adjust its value to bring the flaps to their normal flying position (no flaps deployed.)
    2. With the flap switch in the MID position, select FLAP under FLAP on the display and select it. Adjust the desired percentage to deflect the flaps to the desired amount.
    3. Put the flap switch in the lowermost LAND position. Select FLAP under FLAP on the display and select it. Adjust the percentage to deflect the flaps to the desired position.

- **ELEV – ELEVATOR COMPENSATION**
  - The ELEV values represent the Elevator deflection that occurs when the Flaps are deployed to their various positions. It requires some trial and error to obtain the exact values. Once properly adjusted, the aircraft will assume the proper pitch attitude for all flap positions.
    1. Adjust the Elevator compensation values (ELEV) as desired for each switch position as you adjusted the flaps above.

- **AILE – AILERON COMPENSATION**
  - The AILE values represent the Aileron deflection that occurs when the Flaps are deployed to their various positions. It requires some trial and error to arrive at the exact values. Once properly adjusted, the aircraft will assume the proper roll attitude for all flap positions.
    1. Adjust the Aileron compensation values (AILE) as desired for each switch position as you adjusted the flaps above.

- **FLIGHT MODES**
  - If you activated Flight Modes in the Device Select function, FM0, FM1 and FM2 appear along the right side of the Flap System display representing the 3 Flight Modes. You must assign each of the Flight Modes one of the Flap values (NORM, MID, or LAND). When that Flight Mode is selected during flight, the Flaps display to that position. SW is also an option. When SW is selected, flap operation is controlled by the Flap switch when in that Flight Mode.
    1. If you did not activate Flight Modes, skip this portion of the Flap System.
      1. For each Flight Mode, highlight and select FM0-FM2 and select either a switch that selects between the Pos0 and Pos1 values.

### Current Point Setting

This list shows the setting for each of the 7 adjustable points (Point-L, 1, 2, 3, 4, 5, H). The value of each point determines where the point positions vertically on the graph, dictating the Pitch servo position relative to the throttle. You can set the point values from 0 to +100.

To change a point value, highlight and select the Point Name to the left of the point value, then adjust the desired value.

To reset original settings, highlight a point value then press CLR.
**DELAY**

The delay feature determines how long it takes for the flaps and rudder to reach their positions. When the delay function is enabled, the 11X automatically times the flaps and rudder to reach their positions at the same time after the throttle is released, regardless of the flap deployment angle.

1. Highlight and select Del in the Function List to obtain the delay function.

2. Select and enter the desired value for Delay.

3. If a single Delay setting will be on all of the time, highlight and select Pos0 and Pos1 and set the desired percentage of the delay.

**SNAP ROLL**

The 11X offers a snap roll-off function that cancels a roll when the nose of the aircraft is pointed upwards.

1. Select STICK POS from the Function List.

2. Highlight and select INH in the lower right corner of the screen under SNAP ROLL.

3. Enter the desired setting for Snap Roll.

**DIFFERENTIAL**

The 11X offers a differential function that allows you to adjust the amount of rudder deflection. By programming aileron to rudder mix in the same direction the airplane moves, you can reverse the direction.

1. Highlight and select AIL-RUD in the Function List to obtain the Aileron-to-Rudder mix.

2. Select and enter the values in the POS0 settings if using only 1 setting.

3. If 2 settings are desired, highlight SW SEL and select a switch. Select and enter the desired values for POS0 and POS1.

**AILERON TO RUDDER**

The 11X features a programmable Aileron-to-Rudder mix. This mix causes the rudder to deflect when the ailerons are moved. This is useful for some types of aircraft that have adverse yaw. Right aileron results in a left yaw.

1. Highlight and select ELE-FLP in the Function List.

2. Highlight and select INH for the desired channel.

3. Highlight and select S.ROLLØ to enter Snap Roll.

4. Scroll down to the bottom line of the display to select the Flight Mode and/or switch(s) to turn the mix on and off.

**AILERON-TO-FLAP MIX**

The 11X offers a programmable Aileron-to-Flap mix. This mix causes the flaps to move in unison with the ailerons. The function gives added roll response by mixing ailerons to flaps so the entire trailing edge functions as an aileron.

1. In the Function List, highlight and select AIL-FLAP.

2. Select and enter the values in the POS0 settings if using only 1 setting.

3. If 2 settings are desired, highlight SW SEL and select a switch. Select and enter the desired values for POS0 and POS1.

**ELEVATOR TO FLAP**

The 11X offers a programmable Elevator-to-Flap mix. This mix causes the flaps to move in unison with the elevator. This function gives added roll response by mixing elevator to flaps so the entire trailing edge functions as an elevator.

1. Highlight and select ELE-FLP in the Function List.

2. Highlight and select INH for the desired channel.

3. Highlight and select S.ROLLØ to enter Snap Roll.

4. Scroll down to the bottom line of the display to select the Flight Mode and/or switch(s) to turn the mix on and off.
HOVERING THROTTLE

Hovering Throttle increases or decreases the servo output via the trimmer or knob for the selected points set for the throttle curve. You can use the hovering throttle trimmer/knob to shift the curve upward or downward in order to advance or reduce rpm in hover. You can activate the HDV function at each point by selecting ON under HDV.

Note: The Hovering Throttle has no effect on flight mode switch positions 123,4 or Hold.

ACCESSING THE THROTTLE CURVE

To access the throttle curve screen:
1. In function mode use the Roller to highlight the Throttle Curve function, then press to access. ALL SERVOS HOLD will display.
2. Move the flight mode switch to the desired position to select the throttle mode you will program. The flight mode will display in the upper left corner of the screen.
3. Move the Roller and highlight the point you want to adjust. Press the Roller to access the point value. Then roll the Roller to increase and decrease the point value.
4. To set a throttle curve for flight modes, switch the flight mode to the desired position, and the screen will change to that flight mode.
5. Highlight the desired point pitch you want to adjust and press the roller. Rotate the roller to adjust the position of the curve.
6. To add a point move the throttle stick to the desired position until STOP appears on the left bottom of the screen. Press STOP to save a new point at that position.

Note: To eliminate a point, press ERAS (bottom left of the screen) when the point will be highlighted.

TAIL CURVE - ACCESSING THE TAIL CURVE FUNCTION

The Tail Curve function provides a smooth response. The default value is OFF. To turn it on and smooth the pitch curve, highlight and select OFF and it will toggle to ON.

| NORM | 
|---|---|---|---|---|---|---|---|
| P-9 | 90 | P-10 | 100 |

Note: The Tail Curve function can be used in conjunction with other curves (e.g., Pitch Curve) to provide additional control over the tail movement.

ACCESSING THE TAIL CURVE FUNCTION

1. In function mode use the Roller to highlight the Tail Curve function, then press to access. ALL SERVOS HOLD will display.
2. Move the flight mode switch to the desired position to select the flight mode you will program. The flight mode will display in the upper left corner of the screen.
3. Move the Roller and highlight the desired point you wish to adjust. Press the Roller to access the point value. Then roll the Roller to increase and decrease the point value.
4. To set tail curves for flight modes, switch the flight mode to the desired position, and the screen will change to that flight mode.
5. Highlight the point you want to adjust and press the roller. Rotate the roller to adjust that point on the tail curve.
6. To add a point move the throttle stick to the desired position until STOP appears on the left bottom of the screen. Press STOP to save a new point at that position.

Note: To eliminate a point, press ERAS (bottom left of the screen) when the point will be highlighted.

HOVERING PITCH

Hovering Pitch increases or decreases the servo output via the trimmer or knob for the selected points set for the pitch curve. You can use the hovering pitch trimmer/knob to shift the curve upward or downward in order to advance or reduce pitch in hover.

Note: The Hovering Pitch has no effect on flight mode switch positions 123,4 or Hold.

ACCESSING THE PITCH CURVE FUNCTION

1. In function mode use the Roller to highlight the Pitch Curve function, then press to access. ALL SERVOS HOLD will display. Press YES or NO to access the Pitch curve screen.
2. Move the flight mode switch to the desired position to select the flight mode you will program. The flight mode will display in the upper left corner of the screen.
3. Move the Roller and highlight the point you want to adjust. Press the Roller to access the point value. Then roll the Roller to increase or decrease the point value.
4. To set pitch curves for flight modes, switch the flight mode to the desired position, and the screen will change to that flight mode.
5. Highlight the desired point pitch you want to adjust and press the roller. Rotate the roller to adjust the point on the pitch curve.
6. To add a point move the throttle stick to the desired position until STOP appears on the left bottom of the screen. Press STOP to save a new point at that position.

Note: To eliminate a point, press ERAS (bottom left of the screen) when the point will be highlighted.

HOVERING THROTTLE

Hovering Throttle is used to control the throttle output by adjusting the trimmer or knob. It allows for a smooth response during flight. The default value is OFF. To turn it on and provide a smooth response, select ON.

THROTTLE HOLD

The Throttle Hold function holds the throttle output position in a specific position when the throttle hold switch is activated. It allows for full pitch and cyclic control. To activate, set the gain value to 0.5 and the Hold Delay value to 1 second.

Note: The Throttle Hold function requires setting the Holding Throttle value before it can be activated.

HOLD DELAY

The Hold Delay function allows the throttle servo’s movement to slow when you switch from Throttle Hold back to a previous flight mode. It helps to prevent overshoot when transitioning modes. The Hold Delay switch is located on the throttle control system.

Note: The Hold Delay function can be set to 0-10 seconds for a smooth transition between modes.

HOVERING THROTTLE

Hovering Throttle is used to control the throttle output by adjusting the trimmer or knob. It allows for a smooth response during flight. The default value is OFF. To turn it on and provide a smooth response, select ON.

Note: Hovering Throttle is particularly useful for aerobatic maneuvers and forward flight.

EXPERIMENTAL

The Experimental function allows for additional settings that may be used to fine-tune the airplane's performance. This function is available in certain flight modes and can be accessed through the Experimental menu.

Note: Experimental settings should be used with caution as they may affect the aircraft's stability.

GYRO SENSOR

The Gyro Sensor function allows for the control of the airplane's response to the gyroscope. It provides a smooth response during flight. The default value is OFF. To turn it on and provide a smooth response, select ON.

Note: Gyro Sensor settings can be adjusted to suit the airplane's performance requirements.

STICK AUTO

The Stick Auto function allows for smooth stick input to the airplane's control surfaces. It is activated automatically when the Throttle Hold switch is activated. The default value is OFF. To turn it on and provide a smooth response, select ON.

Note: Stick Auto should be used with caution as it can affect the airplane's responsiveness.

ACCESSING THE GYRO SENSOR FUNCTION

1. Highlight and select Gyro Sensor in the Function List to access the Gyro Sensor screen.
2. To select the desired switch, select Gyro on the screen.
3. The Gyro Sensor function can be activated by pressing the Roller to select the desired switch.
4. The Gyro Sensor function can be deactivated by pressing the Roller again.

Note: Gyro Sensor settings should be adjusted to suit the airplane's performance requirements.

ACCESSING THE THROTTLE HOLD FUNCTION

1. Highlight and select Throttle Hold in the Function List to access the Throttle Hold screen.
2. The Throttle Hold function can be activated by pressing the Roller to select the desired switch.
3. The Throttle Hold function can be deactivated by pressing the Roller again.

Note: Throttle Hold should be used with caution as it can affect the airplane's responsiveness.

ACCESSING THE TAIL CURVE FUNCTION

1. Highlight and select Tail Curve in the Function List to access the Tail Curve screen.
2. The Tail Curve function can be activated by pressing the Roller to select the desired switch.
3. The Tail Curve function can be deactivated by pressing the Roller again.

Note: Tail Curve should be used with caution as it can affect the airplane's responsiveness.

ACCESSING THE HOVERING PITCH FUNCTION

1. Highlight and select Hovering Pitch in the Function List to access the Hovering Pitch screen.
2. The Hovering Pitch function can be activated by pressing the Roller to select the desired switch.
3. The Hovering Pitch function can be deactivated by pressing the Roller again.

Note: Hovering Pitch should be used with caution as it can affect the airplane's responsiveness.

ACCESSING THE HOVERING THROTTLE FUNCTION

1. Highlight and select Hovering Throttle in the Function List to access the Hovering Throttle screen.
2. The Hovering Throttle function can be activated by pressing the Roller to select the desired switch.
3. The Hovering Throttle function can be deactivated by pressing the Roller again.

Note: Hovering Throttle should be used with caution as it can affect the airplane's responsiveness.

ACCESSING THE THROTTLE HOLD FUNCTION

1. Highlight and select Throttle Hold in the Function List to access the Throttle Hold screen.
2. The Throttle Hold function can be activated by pressing the Roller to select the desired switch.
3. The Throttle Hold function can be deactivated by pressing the Roller again.

Note: Throttle Hold should be used with caution as it can affect the airplane's responsiveness.

ACCESSING THE EXPERIMENTAL FUNCTION

1. Highlight and select Experimental in the Function List to access the Experimental screen.
2. The Experimental function can be activated by pressing the Roller to select the desired switch.
3. The Experimental function can be deactivated by pressing the Roller again.

Note: Experimental settings should be adjusted to suit the airplane's performance requirements.

ACCESSING THE GYRO SENSOR FUNCTION

1. Highlight and select Gyro Sensor in the Function List to access the Gyro Sensor screen.
2. The Gyro Sensor function can be activated by pressing the Roller to select the desired switch.
3. The Gyro Sensor function can be deactivated by pressing the Roller again.

Note: Gyro Sensor settings should be adjusted to suit the airplane's performance requirements.

ACCESSING THE HOVERING PITCH FUNCTION

1. Highlight and select Hovering Pitch in the Function List to access the Hovering Pitch screen.
2. The Hovering Pitch function can be activated by pressing the Roller to select the desired switch.
3. The Hovering Pitch function can be deactivated by pressing the Roller again.

Note: Hovering Pitch should be used with caution as it can affect the airplane's responsiveness.

ACCESSING THE HOVERING THROTTLE FUNCTION

1. Highlight and select Hovering Throttle in the Function List to access the Hovering Throttle screen.
2. The Hovering Throttle function can be activated by pressing the Roller to select the desired switch.
3. The Hovering Throttle function can be deactivated by pressing the Roller again.

Note: Hovering Throttle should be used with caution as it can affect the airplane's responsiveness.

ACCESSING THE EXPERIMENTAL FUNCTION

1. Highlight and select Experimental in the Function List to access the Experimental screen.
2. The Experimental function can be activated by pressing the Roller to select the desired switch.
3. The Experimental function can be deactivated by pressing the Roller again.

Note: Experimental settings should be adjusted to suit the airplane's performance requirements.

ACCESSING THE GYRO SENSOR FUNCTION

1. Highlight and select Gyro Sensor in the Function List to access the Gyro Sensor screen.
2. The Gyro Sensor function can be activated by pressing the Roller to select the desired switch.
3. The Gyro Sensor function can be deactivated by pressing the Roller again.

Note: Gyro Sensor settings should be adjusted to suit the airplane's performance requirements.

ACCESSING THE HOVERING PITCH FUNCTION

1. Highlight and select Hovering Pitch in the Function List to access the Hovering Pitch screen.
2. The Hovering Pitch function can be activated by pressing the Roller to select the desired switch.
3. The Hovering Pitch function can be deactivated by pressing the Roller again.

Note: Hovering Pitch should be used with caution as it can affect the airplane's responsiveness.

ACCESSING THE HOVERING THROTTLE FUNCTION

1. Highlight and select Hovering Throttle in the Function List to access the Hovering Throttle screen.
2. The Hovering Throttle function can be activated by pressing the Roller to select the desired switch.
3. The Hovering Throttle function can be deactivated by pressing the Roller again.

Note: Hovering Throttle should be used with caution as it can affect the airplane's responsiveness.
When active, the 3D electronic cyclic ring prevents the cyclic servos (aileron, 3D eLeCTRONIC CyCLIC RING) input that results in slight roll output by mixing elevator to opposite aileron. You can select a – (negative) value. The adjustment range is from -125 to +125% pitch) increase travel when the pitch stick is moved. However, aileron or elevator servos cease to function effectively, turning off the trim function. The Flap and Aux servos are adjustable from 0 to 200 and can be turned on or off. To add a delay on throttling up and when throttling down. Both delays are adjustable from 0 to 2 seconds. To add a delay on throttling up and when throttling down. Both delays are adjustable from 0 to 2 seconds. To add a delay on throttling up and when throttling down. Both delays are adjustable from 0 to 2 seconds.

To Access the Function
1 Rotate the Roller until Moto System is highlighted. Press the Roller to access the Motor System menu.
2 Rotate the Roller to highlight desired flight mode or switch, then press the Roller to access on or off.
3 Adjust the motor value to achieve the desired throttle position for that flight mode or switch.

Note: The AND function requires all selected switches to be On in order to activate the Motor System function. IF AND is left OR, only one of the selected switches needs to be On to activate the Motor System function.

Motor System

Note: This function is only available when the motor is programmed to the spoiler stick in the Device Select menu. The Motor System feature allows the spoiler stick to be used for multiple functions. In one mode (Launch Mode, for example) you can use it as a proportional throttle for an electric motor. Switching to another mode (Float), you can use the spoiler stick as landing flaps. When the Motor System mix is on, the Motor System program holds the throttle in the desired position, usually motor off.

To Access Motor System
1 Rotate the Roller until Moto System is highlighted. Press the Roller to access the Motor System menu.
2 Rotate the Roller to highlight desired flight mode or switch, then press the Roller to access on or off.
3 Adjust the motor value to achieve the desired throttle position for that flight mode or switch.

Note: The AND function requires all selected switches to be On in order to activate the Motor System function. IF AND is left OR, only one of the selected switches needs to be On to activate the Motor System function.

L.S.T. TRIM (LIMITED STANDARD TRIM)

The L.S.T. trim feature has two options: L.S.T. and normal. In normal, when making changes using the aileron, elevator or rudder digital trim, the center as well as the endpoints is affected by the trim values. The right trim causes the center, the right endpoint and the left endpoint to all shift to the right. When L.S.T. is activated, only the center position is trimmed. The center is shifted to the right but the endpoints are not affected. This is useful for aircraft that have a hard stop endpoint to prevent over-travel caused by trim or if it’s desired to have trim changes not affect the total roll pitch or yaw rate.

To Adjust the Trim Rates
1 Highlight and select Trim System in the Function List to acquire the Trim System function.
2 Highlight and select the trim that is to be changed and use the Roller to set a value of –10 (1 – 10, –10). Note:

The Flap and AUX trims are adjustable from 0 to 200 and can be turned on or off by selecting On or Off.

To Select other channels as desired.

SLIDE CAMBER

The Slide Camber function adjusts the up and down flap travel when using the Flap Lever (default) or whatever switch you selected to operate the flaps in Device Select. Each flight mode activated in Device Select will display with an ON under Moment for either or both trimmers. When set to 0, the trim levers cease to function effectively, turning off the trim function. The Flap and Aux trimmers are adjustable from 0 to 200 and can be turned on/off. When adjusted to above 100% the trimmers function as a two- or three-position switch. Reducing the value increases the number of output positions.

The trimmers can also be set to function as a momentary switch by selecting ON under Moment for either or both trimmers. When adjusting the digital trims (AIL, ELEV, RUDD), the total trim travel does not change — only the number of increments (beeps) changes, which makes for finer or coarser trim movements. When adjusting the analog throttle trim, however, the total trim travel is actually reduced when set to less than 100%. Use a fairly coarse setting, such as the factory default 4, when testing a flying model for the first flights in order to be able to trim it quickly, use a finer setting, such as 3+1, for final precision trimming.

Note:

Flap values are available for each active flight mode, and you can independently adjust the values up and down.

To Access the Slide Camber Function
1 Highlight and select Slide Camber in the Function List

To Select the L.S.T. Trim Function
1 Highlight and select the L.S.T. or NORM setting next to the desired channel (AIL, ELEV or RUDD) and press the roller to select L.S.T. or NORM.
2 Repeat for other channels as desired.

Note:

The AND function requires all selected switches to be On in order to activate the Motor System function. IF AND is left OR, only one of the selected switches need be On to activate the Motor System function.

To add a delay when the motor is throttling up and when throttling down. Both delays are adjustable from 0 to 2 seconds. To add a delay on throttling up and when throttling down. Both delays are adjustable from 0 to 2 seconds. To add a delay on throttling up and when throttling down. Both delays are adjustable from 0 to 2 seconds.

CAMBER PRESET

The Camber Preset system allows preset camber adjustments for each programmed flight mode for the right and left ailerons, the right and left flaps, and it activated the right and left tip ailerons. It also allows you to adjust the preset camber setting that is automatically selected with each flight mode. The available Delay function causes the smooth transition of the control surfaces from one flight mode to the next. Plus, a Break function is available that reduces the camber at a preset elevator stick position. Flap and Flap trim steps are also adjustable in the Camber Preset system.

The Camber Preset system combines two mixes in one screen. Mixes include Flap-to-Flap mix, Flap-to-Elevator mix, Aileron-to-Flap mix, and Aileron-to-Tip aileron mix. If the tip ailerons are activated in the wing type function. The flap lever-offset position is programmable allowing pilots to choose the neutral position. You can program the flap functions to one of many different
The provided offset (Brake Start POS) allows the user’s preference for the neutral position. You can assign each to several different switches or flight modes. The Landing Mode mixes the spoilers, flaperons, flap, and tip ailerons (if selected in the Wing Type menu). Two values are available for all desired flight modes.

To Access the Camber Preset system
1. In the Function List rotate the Roller until Camber Preset is highlighted. Press the Roller to access the Camber Preset menu.
2. If you wish to program a Brake point with elevator input (reduces camber with elevator input), highlight Elevator and program the desired Elevator Offset. This value establishes the point at which the reduction of camber occurs.
3. Rotate the Roller to highlight the desired value then press the Roller to access this for all desired flight modes and control surface positions.
4. If desired, you can program a delay that smoothly transitions the control positions when changing from one flight mode to the next. The adjust range is from 0 to 5.0 seconds or hold.

LANDING MODE

The Landing Mode mixes the spoilers, flaperons, flap, and tip ailerons (if equipped) and elevator to the spoiler (throttle) stick. Two values are available for all desired flight modes.

To Access the Camber Preset system
1. In the Function List rotate the Roller until Camber Preset is highlighted. Press the Roller to access the Camber Preset menu.
2. If you wish to program a Brake point with elevator input (reduces camber with elevator input), highlight Elevator and program the desired Elevator Offset. This value establishes the point at which the reduction of camber occurs.
3. Rotate the Roller to highlight the desired value then press the Roller to access this for all desired flight modes and control surface positions.
4. If desired, you can program a delay that smoothly transitions the control positions when changing from one flight mode to the next. The adjust range is from 0 to 5.0 seconds or hold.

DIFFERENTIAL

The 11X Differential function reduces the travel of the aileron that deflects downward without affecting the aileron that travels upward, and, therefore, can eliminate adverse yaw tendencies in rolling maneuvers. Differential is also available for the Rudder and Flap channels if Dual Rudder and/or Dual Flap is selected in the Wing Type menu.

The Aileron Differential function provides independent differentials for each flight mode. A Break feature adjusts the point at which the differential begins based on the Spoiler Stick.

To Use the Differential Function
1. Highlight and select Differential in the Function List to obtain the Differential display.
2. Select the desired Flight Mode and set the Aileron differential as desired. A positive value causes the downward aileron to travel less while a negative value causes the upward aileron to travel less (negative differential).
3. If you want to use a Break to activate the Differential based on Spoiler Stick position, select the Break value for each Flight Mode and adjust as desired. Adjust the value so the differential begins where desired on the Spoiler Stick.
4. Repeat steps 1 and 2 for the Rudder and Flap channels if activated. Dual Rudder and Dual Flap must be selected in the Wing Type menu for Rudder and Flap Differential to be available.

AILERON-TO-RUDDER MIX

Aileron-to-Rudder Mix causes the rudder to move in unison with the ailerons. You can use it to reduce adverse yaw and improve turning/handling characteristics. You can independently adjust Aileron-to-Rudder Mix values right and left for each of the 5 flight modes.

To Access Aileron-to-Rudder Mix
1. In the Function List rotate the Roller until AL-RUD is highlighted. Press the Roller to access the Aileron-to-Rudder Mix menu.
2. Rotate the Roller to highlight the desired value corresponding to the flight mode and desired direction. Press the Roller to access that value. With the flight mode switch in the corresponding mode, give an aileron command and rotate the Roller to achieve the desired rudder value. Press the Roller to store the value.
3. You can program Elevator and rudder break points. They reduce the aileron-to-rudder differential if the elevator or rudder stick is displaced.

SNAP-FLAP MIX

The Snap-Flap mix gives several degrees of down flap when up elevator is applied. This gives more pitch authority than would elevator alone. Snap-Flap mix values are available for each active flight mode and can be independently adjusted up and down.

An offset is available that allows the programming of snap-flaps. With snap-flaps, there is no flap mixing during small-to-medium up-elevator inputs. However, at the offset point of up-elevator, the flaps are mixed to give down flap, causing greater upward authority.

Flight Tip: Snap-Flap is commonly used by slope racers to improve high-speed performance. In thermal situations, it increases maneuverability for tight thermal turns.

To Access Snap-Flap Mix
1. In the Function List, rotate the Roller until Snap-Flap is highlighted. Press the Roller to access the Snap-Flap Mix menu.
2. If you choose to program snap-flaps, the offset adjustment range is -200 to +200. Negative values move the offset in the up-elevation direction.

Rudder-to-Spoiler Mix

The Rudder-to-Spoiler mix causes the spoiler to move in unison with rudder. You can independently adjust Rudder-to-Spoiler Mix values for each of the 5 flight modes.

Flight Tip: You can use this mix to improve turning/handling characteristics, especially on landings.

To Access Rudder-to-Spoiler Mix
1. In the Function List rotate the Roller until RUDD-SPOR is highlighted. Press the Roller to access the Rudder-to-Spoiler Mix menu.
2. Rotate the Roller to highlight the desired value corresponding to the flight mode. Press the Roller to access that value. With the flight mode switch in the corresponding mode, give a rudder command and rotate the Roller to achieve the desired spoiler mix value. Press the Roller to store the value.

INTRODUCTION TO MIXERS

The 11X provides 3 Standard programmable mixes (PROG. MX1 - PROG.MX3) and 3 Multi-Point or Curve programmable mixes (PROG.MX4 - PROG.MX6). Programmable mixers are programmed to cause a second channel to react to input to the primary channel or to cause a channel to be controlled by moving a switch or lever. The primary channel is called the Master channel, while the channel that reacts to the Master is called the Slave channel. Programmable mixes are used to activate specific aircraft functions like smoke systems, speed brakes, sneaker nose gear, bomb drops, idle-up, etc. or to alter flight characteristics. For example, you can program down elevator at low throttle for aerobatic aircraft such that the aircraft tracks perfectly on the down line at low throttle.

Multi-Point (or Curve) Mixing provides the ability to program a custom curve that the Slave channel follows as it reacts to the Master channel’s input. Multi-Point mixes are different from Normal Mixes in that Normal Mixing results in a restricted movement of the Slave channel in relation to the Master. With Multi-Point Mixing you can adjust up to 7 points to control the position of the Slave channel, providing the ability to custom tailor the output of that channel. Mixes are fully programmable, allowing any of the 11 channels to be Master, Slave or both (a channel can be mixed to itself). You can also use trimmers and levers as a master and for programming a proportional channel to be operated via a trimmer or lever. Additionally programmable mixes can always be on, or can be turned off and on via a programmed switch. Stick position or flight mode. The Snap/Roll...
FUNCTIONS OF THE STANDARD PROGRAMMABLE MIXER

The 11X has 3 standard programmable mixers that allow linear mixing of a Master channel to a Slave channel. The standard mixers are Prog.Mix 1, Mix 2, and Mix 3.

These mixes provide two sets of mixing values named Pos0 and Pos1. If one set of values is set to 0%, you can turn the mix off and on with a stick, switch, or lever. Each set of mixing values has 2 percentages to accommodate movement of the Master channel in both directions. This is shown in the illustration below with an upper and lower percentage for both Pos0 and Pos1.

You can set a mix to always be on by setting Pos0 values only and not selecting the Master channel in both directions. This is shown in the illustration below with a 100% offset.

MIX VALUES

To enter Pos0 values, highlight and select Pos0. Move the Master channel control in one direction and set the percentage. Then move the Master channel control in the other direction and set its value.

To enter Pos1 values, highlight and select Pos1. Move the Master channel control in one direction and set the percentage. Then move the Master channel control in the other direction and set its value.

SLAVE CHANNEL - (STD. PROG MIXER)

The Slave channel is the secondary receiving channel and moves according to the program mix in relation to the Master channel. The default for both the Master and the Slave channel is THR0.

Highlight and select the Slave parameter to obtain a list of channels. Then select the Slave channel from the list. The list contains each of the 11 channels in the system and CANCEL.

SWITCH POSITION

The left side of the Programmable mix screen displays the available switch options. If you want a switch to control the mix, either on/off or have two mix values, highlight and select the desired switch(es) and select position 0 or 1. Each standard programmable mixer has two positions – Pos0 and Pos1 and each position has 2 percentages (upper and lower) to accommodate mixing when the Master is moved in both directions. Note that Pos1 has priority over Pos0.

OFFSET

Offset defines the position where the mixer changes direction. The Offset defaults to center position of 0 and is most commonly used. If a 0 Offset, if the Rudder is Master, moving the rudder stick to the left of center causes a mix in one direction while moving the rudder stick to the right of center causes a mix in the other direction. Directions correspond to the upper and lower percentages for Pos0 and Pos1 settings. The amount of mix and actual direction the slave moves is determined by the Pos0/Pos1 settings. Offset applies to both Pos0 and Pos1 settings.

To change Offset, highlight and select Offset and adjust with a positive (+) or negative (-) value. A positive percentage moves the offset in one direction from center while a negative percentage moves it in the other direction from center.

MULTI-POINT PROGRAMMABLE MIXER

There are 3 Multi-Point Programmable Mixers in the 11X – Prog. Mix 4 through Prog. Mix 6. They differ from standard mixes because they allow non-linear mix response from the Master to the Slave. They use up to 7 points to define the position of the slave channel in relation to the Master channel at up to 8 selectable points. As the Master reaches each point, the Slave response position can be defined independently of other points.

To enter Pos0 values, highlight and select Pos0. Move the Master channel control (stick, lever or switch) in one direction and set the percentage. Then move the Master channel control in the other direction and set its value.

Pos0 settings are identical to the Pos0 settings. They determine how far, and in which direction, the slave channel moves when the master is moved above and below the offset and the switch is in position to select Pos0 values.

To enter Pos1 values, highlight and select Pos1. Move the Master channel control (stick, lever or switch) in one direction and set the percentage. Then move the Master channel control in the other direction and set its value.

TO INHIBIT A MIX

Highlight either the Master or Slave and press the CLR button to completely disable a mix.

GRAPH

The graph illustrates the mixing curve. The x-axis (horizontal plane) represents the Master channel movement. The y-axis (vertical plane) represents the Slave servo position relative to the Master. The default value is OFF. To turn it on and smooth the mixing curve, highlight and select OFF. It will toggle to ON.

CURRENT POINT SETTING

This list shows the setting for each of the 7 adjustable points (Point 1, 2, 3, 4, 5, 6, 7). The value of each point determines where the point is positioned vertically on the graph, dictating the Slave servo position relative to the Master. You can set the point values from -100 to +100. A value of 0 indicates the Slave's center or neutral position. The overall travel of the slave channel is affected by the Travel settings described in the TRVL ADJ function.

To change the value for a point, highlight and select the Point Name to the left of the point to change. Then dial in the desired value. Pressing the CLR button when a point value is highlighted resets the point to original settings.

VERTICAL LINE

The Vertical line on the graph shows the Master channel position. When you deflect the Master channel fully in one direction, the line is to the extreme left or right of Point L. At neutral, the Master channel is in the center over Point 0. When fully deflected in the other direction, the cursor is at the extreme right of the graph at Point H. When the vertical line intersects, the CurveLine over a given point defines the Slave servo position, which is equal to the value assigned to that point.

POINTS YOU CAN ADD AND ADJUST

Curve mixes default to three points (L, 1 and H). You can add up to four additional points. To add a point, move the Master channel in the desired position until STOP appears on the left bottom of the screen. Press STOP to save a new point at that position.

To eliminate a point, press ERASE (bottom left of the screen) when the point is highlighted by moving the master channel.

EXPO NENTIAL FUNCTION

The Exponential function blends the Curve between the points on the graph to provide a smooth response. The default value is OFF. To turn it on and smooth the mixing curve, highlight and select OFF. It will toggle to ON.
SLAVE CHANNEL POSITION

The Slave servo position next to OUT at the bottom left of the screen displays values from -100 to +100. 0 is neutral or center. This position represents the servo travel that corresponds to the present Master channel position.

MASTER CHANNEL POSITION

The Master channel position displays on the bottom line of the screen next to IN. 0 is expressed in values from 0 to 100. 50 is center or neutral. This position represents the present Master channel position.

MIX TO THROTTLE

The 11X Cyclic-to-Throttle function adds throttle to prevent main rotor rpm decay that results from load changes placed upon the engine when aileron, elevator or rudder is given. The most common use for Cyclic-to-Throttle mixing is for Stunt Modes. This allows the main rotor rpm to remain consistent throughout aerobatic and 3D maneuvers. Normally, Cyclic-to-Throttle mixing is not used in Hover (Normal) mode since control inputs are generally small and much less aggressive.

Note: If you are using a Governor for rpm control, it is not necessary to use the Cyclic-to-Throttle Mixing. Further, all values should be set at the factory default position (0%).

Program the Cyclic-to-Throttle Function

1. In Function mode highlight the Mix-Thro function. Press the Roller to access the Mix-Thro screen.
2. Highlight the value you want to adjust, then press to open the options box. Rotate the Roller to adjust the value needed.

To Program the Throttle Hold Function

You can use the Flight Mode Delay function to delay the transition from a stunt mode to normal flight mode. The delay function slows the selected channel's changes that are caused by switching from a stunt mode to normal flight mode. Some of those changes include throttle curves, pitch curves, Dual Rates, etc.

To Program a F-Mode Delay

1. Highlight and select F-Mode Delay using the Roller in the Function List.
2. Highlight and select RH next to the desired channel to apply a delay.
3. Rotate the roller to adjust the setting from 0mH to 6.2 seconds.

SELECTING THE DESIRED FLIGHT MODES FOR CYCLIC-TO-THROTTLE MIXING

The 11X allows you to select the specific flight modes in which the Cyclic-to-Throttle mixing will be active. The factory default position is ON for all flight modes, which is not recommended in most cases. The Cyclic-to-Throttle mix is generally used for Stunt (flight) modes only, so it will be necessary to select the Cyclic-to-Throttle mixing for the desired flight modes.

1. Move the Roller to highlight the SW SEL for each of the Cyclic-to-Throttle mixer boxes.
2. Press the Roller to open the Flight Mode options box. Highlight the desired flight mode to be set (NRM, ST1, ST2, ST3, ST4, GEAR). Press the Roller to turn the mixing on or off for each of the active flight modes.

F-MODE DELAY

You can use the Flight Mode Delay function to delay the transition from a stunt mode to normal flight mode. The delay function slows the selected channel's changes that are caused by switching from a stunt mode to normal flight mode. Some of those changes include throttle curves, pitch curves, Dual Rates, etc.

To Program a Flight Mode Delay

1. Highlight and select F-Mode Delay using the Roller in the Function List.
2. Highlight and select RH next to the desired channel to apply a delay.
3. Rotate the roller to adjust the setting from 0mH to 6.2 seconds.

TRIM SYSTEM

The Trim System function allows the adjustment of the 11X trim levers. The standard digital trims are adjustable from 0–10 with 10 being the coarsest adjustment and 0 being trim off. Adjusting the digital trim values has no effect on the total trim travel, but affects the resolution of each trim input. When the value is set to 10, each click of trim adjusts the servo output by 10ms and there are only 10 trim increments from center to each end. When set to 5, the output is changed from 1000ms per trim stop and there are 20 trim increments from center to each end. When set to 1, each click of trim adjusts the servo output by 1ms and there are 100 trim increments. When set to 0 the trim levers cease to function effectively, turning off the trim function.

When adjusting the analog throttle trim, however, the total trim travel is actually reduced to a less than 100% value when set to less than 10. Use a fairly coarse setting, such as the factory default 4, when first flying a model for the first time in order to be able to trim it quickly. Use a finer setting, such as 3–1, for final precision trimming. Also in the Trim System function if flight modes are active, you can select the trim modes to be common, the same set of trims in every flight mode, or select FMOD to have a different set of trims for each flight mode. You can set the Trim to use either AUX2 or AUX3.

L.S.T. TRIM (LIMITED STANDARD TRIM)

The L.S.T. trim feature has two options: L.S.T. and normal. In normal, when making trim changes using the aileron, elevator or rudder digital trims, the center and endpoints are affected by the trim values. The right trim causes the center, right endpoint and left endpoint to all shift to the right. When L.S.T. is activated, only the center position is trimmed. The center is shifted to the right but the endpoints are not affected. This is useful for aircraft that have a hard stop endpoint to prevent over-trim caused by trim or it's desired to have trim changes not affect the total roll pitch or yaw rate.

To Adjust the Trim Rates

1. Highlight and select Trim System in the Function List to acquire the Trim System function.
2. Highlight and select the trim you want to change. Use the roller to set a value of 1–10 (1 = finest, 10 = coarsest).
3. Repeat for other trims as desired.
To Program the Idle Adjust Function
1. Highlight and select SW SEL under IDLE ADJUST on the screen.
2. Rotate the roller to select the switch and switch position desired. Press to select.
3. Highlight SW SEL to exit the switch selection menu.
4. Highlight and select +0 under the Idle Adjust and rotate the roller to adjust the idle position as desired.

To Program the Idle Adjust Function
1. Highlight and select SW SEL under IDLE ADJUST on the screen.
2. Rotate the roller to select the switch and switch position desired. Press to select.
3. Highlight SW SEL to exit the switch selection menu.
4. Highlight and select +0 under the Idle Adjust and rotate the roller to adjust the idle position as desired.

BALANCE

The Balance function allows you to adjust the servo outputs of dual channels. This is useful when two servos are used to drive a single surface (e.g., two aileron servos used to drive one aileron) and the linkage geometry of each servo is slightly different (typical with a tapered aileron).

If you mix both servos in a linear fashion, binding occurs throughout the control range due to linkage geometry inaccuracies. The Balance function allows you to adjust the servo output of the master servo at 5 points throughout the range, compensating for any linkage geometry inaccuracies.

Think of Balance as a curve mix that allows you to independently adjust the master channels at seven different points. This allows a perfect bind-free setup throughout the control stroke.

To Program the Balance Function
Note: Balance is available in the Function List only if Flaperon, Delta or 4-Aileron is selected in the Wing Type or if any of the dual functions (e.g., dual elevator, dual rudder, etc.) are activated in Wing Type.

1. Highlight and select Balance in the Function List.
2. Highlight and select the channel you wish to adjust on the left side of the screen.
3. The Balance screen displays functions that are programmed in the Wing Type. If Flaperon is only programmed, only one aileron channel appears in the balance screen. If 4-Ailerons are selected, then three aileron channels appear in the balance screen. This also applies to the dual elevator and rudder functions.
4. Using the roller, highlight the desired position and press the roller to access the value. Rotate the roller to change the selected output position. The range is +50 to -50. Repeat this for all positions until no binding occurs throughout control travel or the left versus right travel is matched. Point P-2 adjusts that channel’s neutral point; points P-1 and P-3 adjust that channel’s 100% travel adjustment point; points P-1 and P-4 adjust the selected channel’s 150% travel adjustment point.
5. If Expo is desired, highlight OFF under EXP and press the roller to select ON. Expo will apply a curve response between the points selected.

STICK POSITION SWITCH

The Stick Position Switch function allows the throttle, aileron elevator or rudder stick positions to turn on/off mix, change throttle curves, change differential rates, start a timer and other functions. For example, this would be a smoke system that turns off below 25% throttle to prevent low throttle flames. Two stick position programs are available and you can assign one or more to various mixes or functions. The stick position that turns the Stick Position switch on/off is selectable as well as the direction to turn on/off. Also, a symmetrical option is available that allows the function to be turned on with a programmed equal right or left (up or down) stick position.

To Program a Stick Position Switch
1. Highlight and select Stick POS SW using the Roller in the Function List.
2. Highlight the desired Stick Position switch function (PSP5 or PSP1) and press the roller.
3. Select the desired channel to trigger the stick position (Throttle, Aileron, Elevator, and Rudder).
4. Rotate the roller to select POS and adjust to the value you wish to have the mix function turn on/off (0 = center, L100 = Left full stick travel, etc.). ON/OFF displays at the top of the screen and when moving the stick, it indicates the function is working.
5. Use the roller to select ON and select Low/High or Right/Lft to turn on/off the stick. You can now program the center to turn on or off by selecting the ON and highlighting Low/High or Right/Lft.
6. The available symmetrical function allows you to turn the stick position on/off by moving the stick in either direction. You must first program a value in the POS, then highlight the SYM and activate it using the roller.

MIX MONITOR

The Mix Monitor screen displays all the mixes, dual channels, wing types and snap roll functions. This screen is a convenient way to determine which functions are activated.

To access the Mix Monitor Screen, highlight and select MIX MONITOR in the Function List to obtain the Mix Monitor display.
FREQUENTLY ASKED QUESTIONS ON SPEKTRUM 2.4GHz

Your DSM2 equipped 2.4GHz system is intuitive to operate, functioning nearly identically to FM systems. Following are a few common questions from customers:

Q: After I've bound the receiver to my transmitter, which do I turn on first when I want to fly?
A: Either one. Every DSM 2.4GHz transmitter has a GUID (Globally Unique Identifier) code imbedded in its signal. When you bind a DSM receiver to your transmitter, this GUID code is stored in the receiver. If you turn the receiver on before the transmitter, you don't have to worry about it responding to another transmitter. The receiver will inhibit throttle output and drive all controls to preset positions while it waits for a signal from the transmitter with the same GUID code it has stored.

If a DSM transmitter is turned on first you can expect it to connect within 6 seconds of powering on the receiver.

Q: Sometimes the system takes longer to connect or doesn't connect at all. Why?
A: In order for a DSM system to connect, the receiver must receive a large number of uninterrupted signal packets from the transmitter. This process takes just a few seconds, but if the transmitter is too close to the receiver (within 4 feet) or near metal objects it may detect its own reflected 2.4GHz energy as "noise," which can delay or prevent connection.

If this happens make sure you are a sufficient distance from metal objects and the receiver itself before you power up and try again.

Q: Is it true that DSM systems are less tolerant of low voltage?
A: All DSM receivers require at least 3.5V to operate normally. Most servos cease to operate below 3.8V. Using multiple high-voltage servos, however, with an inadequate power supply can allow voltage to momentarily drop below 3.5V. This will cause the receiver to "brown out" and reconnect.

Recently manufactured JR and Spektrum DSM receivers feature QuickConnect technology that will reconnect the system within a quarter of a second should a brownout occur. In addition, the receiver's LED will flash, indicating a brownout has occurred. If after landing you notice your DSM receiver's LED is flashing, make sure you have adequate power before you fly again.

Q: Sometimes when I power on my DSM system I notice the receiver won't connect and it needs to be rebound to the transmitter. Can this happen in flight?
A: No. A DSM receiver cannot be unbound from its transmitter without specific action by the user.

You can accidentally unbind a receiver by inadvertently pressing the bind button on your transmitter when you turn it on. This causes the transmitter to go into bind mode. If this happens and the transmitter doesn't detect a binding signal from the receiver it can cause the receiver to be unbound. Some transmitter stands can cause the bind button to be depressed during power up, but these instances are extremely rare.

If you forget to connect, chances are much greater that it's the result of one of the following conditions and not because the receiver is unbound.

1. You've selected the wrong model memory.
2. The transmitter is too close to conductive material to connect (see FAQ #2).

Q: How important is it that I test my system using a Spektrum Flight Log?
A: All 2.4GHz signals, not just DSM, are affected by proximity to conductive materials such as carbon fiber or metal. Few RTF and ARF sport airplanes or helicopters use enough of these kinds of materials for it to be an issue. However, you're flying a sophisticated model that uses a lot of conductive materials in its construction, a Flight Log can be helpful. The information it collects when you fly will help you determine the optimum location for your receiver so you can minimize the effects of these materials on your signal performance. For more details on the Flight Log and how it works, visit SpektrumRC.com.

Servo Precautions
• Do not lubricate servo gears or motors.
• Do not overload retract servos during retracted or extended conditions.
• Make sure they are able to travel their full deflection. Overloading or stalling a servo can cause excessive current drain.
• Make sure all servos move freely through their rotations and no linkages hang up or bind. A binding control linkage can cause a servo to draw excessive current.
• A stalled servo can drain a battery pack in a matter of minutes.
• Correct any control surface "buzz" or "flutter" as soon as it is noticed in flight, as this condition can destroy the feedback potentiometer in the servo. It may be extremely dangerous to ignore such "buzz" or "flutter."
• Use the supplied rubber grommets and brass servo eyelets when mounting your servos. Do not over-tighten the servo mounting screws, as this negates the dampening effect of the rubber grommets.
• Ensure the servo horn is securely fastened to the servo. Use only the servo arm screws provided; the size is different from other manufacturers.
• Discontinue to use servo arms when they become "yellowed" or discolored. Such servo arms may be brittle and can snap at any time, possibly causing the aircraft to crash.
• Check all related mounting screws and linkages frequently. Aircraft often vibrate, causing linkages and screws to loosen.

General Notes
Radio controlled models are a great source of pleasure. Unfortunately, they can also pose a potential hazard if not operated and maintained properly.

It is imperative to install your radio control system correctly. Additionally, your level of piloting competency must be high enough to ensure that you are able to control your aircraft under all conditions. If you are a newcomer to radio controlled flying, please seek help from an experienced pilot or your local hobby store.

Safety, Precautions, and Warnings
As the user of this product, you are solely responsible for operating it in a manner that does not endanger yourself and others or result in damage to the product or the property of others. Carefully follow the directions and warnings for this and any optional support equipment (chargers, rechargeable battery packs, etc.) that you use. This model is controlled by a radio signal that is subject to interference from many sources outside your control. This interference can cause momentary loss of control so it is necessary to always keep a safe distance in all directions around your model, as this margin will help to avoid collisions or injury.

Always operate your model in an open area away from cars, traffic, or people.
• Avoid operating your model in the street where injury or damage can occur.
• Never operate the model out into the street or populated areas for any reason.
• Never operate your model with low transmitter batteries.
• Carefully follow the directions and warnings for this and any optional support equipment (chargers, rechargeable battery packs, etc.) that you use.
• Keep all chemicals, small parts and anything electrical out of the reach of children.
• Moisture causes damage to electronics. Avoid water exposure to all equipment not specifically designed and protected for this purpose.

Safety Do's and Don'ts for Pilots
• Ensure that your batteries have been properly charged prior to your initial flight.
• Keep track of the time the system is turned on so you will know how long you can safely operate your system.
• Perform a ground range check prior to the initial flight of the day. See the "Daily Flight Checks Section" for information.
• Check all control surfaces prior to each takeoff.
• Do not fly your model near spectators, parking areas or any other area that could result in injury to people or damage of property.
• Do not fly during adverse weather conditions. Poor visibility can cause disorientation and loss of control of your aircraft. Strong winds can cause similar problems.
• Do not point the transmitter antenna directly toward the model. The radiation pattern from the tip of the antenna is inherently low.
• Do not take chances. If at any time during flight you observe any erratic or abnormal operation, land immediately and do not resume flight until the cause of the problem has been ascertained and corrected. Safety can never be taken lightly.

Federal Aviation Administration

Purpose
This advisory outlines safety standards for operations of model aircraft. We encourage voluntary compliance with these standards.

Background
Attention has been drawn to the increase in model aircraft operating. There is a need for added caution when operating free flight and radio controlled craft in order to avoid creating a noise nuisance or a potential hazard to full-scale aircraft and persons and/or property on the surface.

Operating Standards
Modelers generally are concerned with safety and exercise good judgment when flying model aircraft. However, in the interest of safer skies, we encourage operators of radio controlled and free flight models to comply with the following standards:

General Information
a. Exercise vigilance in locating full-scale aircraft (get help if possible) so as not to create a collision hazard.
b. Select an operating site at sufficient distance from populated areas so you do not create a noise problem or a potential hazard.
c. Do not fly higher than 400 feet above the surface.
d. Always operate more than three miles from the boundary of an airport unless you are given permission to be closer by the appropriate air traffic control facility in the case of an airport for which a control zone has been designated or by the airport manager in the case of other airports.
e. Do not hesitate to ask for assistance in complying with these guidelines at the airport traffic control tower or air route traffic center nearest the site of your proposed operation.

Information Provided By
Director, Air Traffic Service Federal Aviation Administration, Washington, D.C.

Daily Flight Checks
1. Check the battery voltage on both the transmitter and the receiver battery packs. Do not fly below 4.3V on the transmitter or below 9V on the receiver. Make sure that the switch harness moves freely in both directions.
2. Check all hardware (linkages, screws, nuts, and bolts) prior to each day's flight. Be sure that binding does not occur and that all parts are properly secured.
3. Ensure that all surfaces are moving in the proper manner.
4. Perform a ground range check before each day's flying session.
5. Prior to starting your aircraft, turn off your transmitter, then turn it back on. Do this each time you start your aircraft. If any critical switches are on or damaged, the transmitter alarm will warn you at this time.
6. Check that all trim levers are in the proper location.
7. All servo pigtails and switch harness plugs should be secured in the receiver. Make sure that the switch harness moves freely in both directions.

WARRANTY AND REPAIR POLICY

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 3 (three) years from the date of purchase by the Purchaser. Horizon reserves the right to change or modify this warranty without notice and disclaims all other warranties, express or implied.

3 YEAR LIMITED WARRANTY
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).

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.

(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).

WARRANTY SERVICES

QUESTIONS, ASSISTANCE, AND REPAIRS
Your local hobby store and/or place of purchase cannot provide warranty support or repair. Once assembled, 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 a Product Support representative. You may also find information on our website at www.horizonhobby.com.

INSPECTION OR REPAIRS
If this Product needs to be inspected or repaired, please use the Horizon Online Repair 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 Repair Request is available at www.horizonhobby.com or www.horizonhobby.com under the Repairs tab. 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 repair. You will be asked to provide 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, and a brief summary of the problem upon submission. 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.

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

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 1/2 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. By submitting any item to Horizon for inspection or repair, you are agreeing to Horizon’s Terms and Conditions found on our website under the Repairs tab. Please note: non-warranty repair is only available on electronics and model engines.

Notice: Electronics and engines requiring inspection or repair should be shipped to the following address:
Horizon Service Center
4105 Fieldstone Road
Champaign, Illinois 61822, USA

All other Products requiring warranty inspection or repair should be shipped to the following address:
Horizon Product Support
4105 Fieldstone Road
Champaign, Illinois 61822, USA

Please call 877-504-0233 with any questions or concerns regarding this product or warranty.
APPENDIX

FLIGHT LOG JRPA145 - OPTIONAL FOR JR R921 RECEIVER

The Flight Log is compatible with the JR R921 receiver and many other compatible receivers. The Flight Log displays overall RF link performance as well as the individual internal and external receiver link data. Additionally it displays receiver voltage. After a flight and before turning off the receiver or transmitter, plug the Flight Log into the Data port on the receiver. The screen automatically displays voltage e.g., 6v6~6.2 volts.

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

Using the Flight Log

Press the button to display the following information:

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

Antenna fades—represents the loss of a bit of information on that specific antenna. It's typical to have as many as 50 to 100 antenna fades during a flight. If any single antenna experiences over 500 fades in a single flight, reposition the antenna in the aircraft to optimize the RF link.

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.

Holds are indicated when 45 consecutive frame losses occur. This takes about one second. If a hold occurs during a flight, it's important to re-evaluate the system. Move the transmitter to different locations and/or check to be sure the transmitter and receivers are working correctly.

Note: You can use a servo extension to plug the Flight Log in without having to remove the aircraft's hatch or canopy. 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, mounting the Flight Log conveniently to the side frame.

ADVANCED RANGE TESTING

Advanced Range Testing Using a Flight Log

For sophisticated aircraft that contain significant amounts of conductive materials (e.g., turbine-powered jets, some types of scale aircraft, aircraft with carbon fuselages, etc.) the following advanced range check confirms internal and remote receivers are operating optimally and the receiver installation is optimized for the specific aircraft. Before each flying session, and especially with a new model, it's important to perform a range check. The 11X incorporates a range testing system which, when the bind button on the transmitter is pressed and held, reduces the output power, allowing a range check.

Plug a Flight Log (optional, JRPA145) into the data port in the receiver and turn on the system (Tx and Rx). Advance the Flight Log until F-frame losses display by pressing the button on the flight log.

Have a helper hold your aircraft while observing the Flight Log data. Stand 30paces away from the model and helper. Face the model with the transmitter in your normal flying position and depress and hold the bind button on the back of the transmitter. This causes reduced power output from the transmitter.

Have your helper position the model in various orientations (nose up, nose down, nose toward the transmitter, nose away from the transmitter, etc.) while watching the Flight Log. Note any correlation between the aircraft’s orientation and Frame Losses. Do this for 1 minute. You can use the timer on the transmitter.

For giant-scale aircraft, tip the airplane up on its nose and rotate it 360 degrees for one minute then record the data. Next place the airplane on its wheels and do a second test rotating the aircraft in all directions for one minute. After one minute release the bind button. A successful range check will have less than ten recorded frame losses.

Scrolling the Flight Log through the Antenna fades (A, B, L, R) allows you to evaluate the performance of each receiver. Antenna fades should be relatively uniform. If a specific antenna is experiencing a high degree of fades, then that antenna should be moved to a different location.

A successful Advanced test yields the following:

- H - Holds
- F - Less than 10 frame losses
- A, B, R, L - Frame losses will typically be less than 100.

It's important to compare the relative frame losses. If a particular receiver has a significantly higher frame loss value (2X to 3X), redo the test. If the same results occur, move the offending receiver to a different location.

CONTROL STICK TENSION ADJUSTMENT

Stick tension adjustments are accessible by removing the back half of the transmitter case. Remove the 6 screws with a medium Phillips screwdriver, then carefully pull the back half of the transmitter case off gently. Set the case to the side using care to not damage the wires. Using a small Phillips screwdriver, adjust each gimbal’s tension screw for the desired tension (counterclockwise to loosen stick tension, clockwise to tighten stick tension).

1. Elevator
2. Aileron
3. Rudder
4. Throttle Tension Adjustment

Control Stick Length

Use a 2mm Allen wrench to unlock the setscrew to adjust the stick length. Turn the wrench counterclockwise to loosen the screw. Then, turn the stick clockwise to shorten or counterclockwise to lengthen the overall stick length. After the control stick length has been adjusted to suit your flying style, tighten the 2mm setscrew. If you desire longer sticks, JR offers a stick (JRPA647) approximately one inch longer than standard, and has various length anodized aluminum stick ends available (JRPA040-JRPA145). These stick ends are crafted from bar stock aluminum, and are available at your local JR dealer.

Neck Strap Attachment

The face of the 11X transmitter has an eyelet for connecting a Neck Strap.