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SPEKTRUM®

DX3R

DSM2™ RACING SYSTEM

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INTRODUCTION

Spektrum's DX3R was designed by top level racers to be the ultimate uncompromising racing radio. Featuring DSM2™ 2.4GHz technology, the DX3R offers the fastest possible response rate that's up to four times faster than conventional 75 and 27MHz radio systems. Sophisticated software combined with an easy-to-use one-touch rolling selector makes programming quick and easy. User-programmable switches and buttons allow functions like throttle trim, steering rate, auxiliary channel functions, brakes, timers, steering rate override, and even throttle and steering exponential adjustments to be assigned to any of six programmable switch/button positions. Plus the DX3R can easily be converted for right- or left-handed drivers.

Spektrum™ technology offers a bulletproof radio link that's immune to internal (noisy motors/ESC's, etc.) and external interfering sources. No longer will you have to wait for a frequency or worry about someone else being on the same channel. With Spektrum, when you're ready to race there's nothing stopping you!

MODELMATCH/BINDING

The DX3R features patent pending ModelMatch™. ModelMatch prevents a model from being operated using the wrong model memory. If the wrong model memory is selected, the receiver simply won't respond to the transmitter preventing driving the car using the wrong model memory.

It's necessary to program the receiver to a specific model memory (called binding) so that the receiver will only recognize and respond to that specific model memory. See pages 22–23 for specific details on Binding and ModelMatch.

SYSTEM FEATURES

- DSM2 2.4GHz second-generation technology offers the fastest possible response rate
- One-touch, easy-to-use programming
- Six assignable switches allow functions like timers, on-the-fly expo adjustment, throttle and brake trimmers, steering rate, steering override, etc. to be freely assigned to your preference
- Right- and left-hand compatible
- Programmable Steering Rate override
- On-the-fly throttle and steering exponential adjustments
- All switches can be programmed to operate in either direction
- Three programmable timers: Up, Down and Integrated
- 128 x 64 high-resolution dot-matrix screen
- 30-model memory
- Graphically supported Travel Adjust and Expo curves
- Selectable frame rates of 5.5, 11 and 16.5ms allow fastest possible response with total servo compatibility
- Two programmable mixes
- Adjustable trim steps
- Digital servo monitor displays graphic and digital servo positions
- Displays user name and model name
- Calibration screen allows recalibration of steering and throttle positions for the ultimate in accuracy

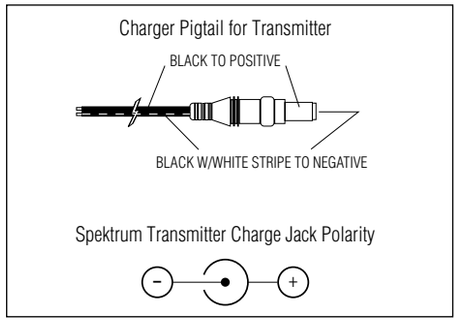
INSTALLING THE BATTERIES

The transmitter requires 4 AA batteries. Brand name alkaline batteries provide over 15 hours of run time. Many racers prefer alkaline batteries over rechargeable batteries, finding it more convenient to simply replace the batteries when depleted rather than taking the time to recharge.

Optional NiMH 1.2-volt AA rechargeable batteries (SPM9525) can also be used. A charge jack located below the on/off switch is provided for convenient recharging with Spektrum's charger SPM9526.

Remove the battery door and install 4 AA batteries, noting that the polarity of each corresponds with the diagram in the battery holder. Replace the battery door.

CHARGING



A charging jack is located just below the on/off switch. If rechargeable batteries are used, they can be conveniently charged without removing them from the transmitter using the charge jack. Use Spektrum's charger (SPM9526) to charge rechargeable batteries in the DX3R.

IMPORTANT: All Spektrum charge jacks are center pin negative. This is the opposite of many chargers. Before using a charger, make sure the connector is center pin negative. This can be done using a voltmeter. Also, unlike conventional radio systems that use eight cells to power the transmitter, the DX3R uses four cells. This is due to the electronics being more efficient. When charging, be sure to use a charger designed for four cells (4.8-volt battery pack). Many racers simply make a harness and use the same charger used to charge their car packs but turn the current rate down to 1 to 2 amps.

WARNING: Charge only rechargeable batteries. Non-rechargeable batteries may burst causing injury to persons and/or damage to property, and they may cause fire. Dry location use only.

IDENTIFYING BUTTONS, SWITCHES AND CONTROLS

1: Antenna
2: LCD Screen
3: Switch D/Steering Trim
4: Switch E/Brake
5: Button F/Timer
6: Charge Jack
7: Switch A/Throttle Trim
8: Switch B/Steering Trim
9: Switch C/Aux 3 Linear
10: Rolling Selector
11: Battery Door
12: On/Off Switch
13: Throttle Trigger
14: Steering Wheel
15: Steering Tension Adjustment

Note: The switches listed above are the factory default functions assigned to each switch. Each switch can be programmed to one of ten functions including:

- Inhibit
- Aux 3-channel, 3-position (for reverse, neutral and forward transmissions)
- Aux 3-channel, 2-position (for reverse and forward transmissions)
- Aux 3-channel, linear (for mixture control)
- Brake (adjustable full brake position)
- Throttle exponential (allows on-the-fly throttle expo adjustments)
- Throttle trim (coast brake position)
- Steering override (overrides steering rate when activated)
- Steering exponential (allows on-the-fly steering adjustments)
- Steering Rate
- Steering Trim

See page 28 for system information and assignments for more details.

STEERING TENSION ADJUSTMENT

Steering tension is adjusted via the recessed screw located below the steering wheel (see Steering Tension Adjustment on the previous page). Using a small Phillips screwdriver, turning the screw clockwise increases steering tension while turning the screw counterclockwise reduces steering tension.

BINDING

In order to operate, the receiver must be bound to the transmitter. Binding is the process of teaching the receiver the specific transmitter's code called GUID (Globally Unique Identifier). When a receiver is bound to a transmitter/model memory, the receiver will only respond to that specific transmitter/model memory (see ModelMatch).

MODELMATCH

The DX3R features patent pending ModelMatch technology that prevents operating a model using the wrong model memory. During the binding process, the receiver actually stores the code that is assigned to the specific model that is currently selected in the transmitter. For example: if the model that is selected in the transmitter is model #3, when a receiver is bound to that transmitter, the receiver will only operate when model #3 is selected. If another model memory is selected (model #5 for example) the receiver will not connect. If model #3 is again selected in the transmitter, the receiver bound to model #3 will connect. ModelMatch prevents operating a model using the wrong model memory.

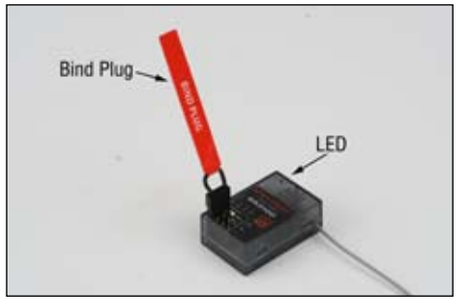
FAILSAFE

Failsafe positions are also set during binding. In the unlikely event that the radio link is lost during use, the receiver will drive the servos to their preprogrammed failsafe positions (normally full brakes and straight steering). If the receiver is turned on prior to turning on the transmitter, the receiver will enter the failsafe mode, driving the servos to their preset failsafe positions. When the transmitter is turned on, normal control is resumed. Failsafe servo positions are set during binding (see binding a receiver below).

CALIBRATION

The DX3R can be recalibrated to ensure the potentiometers exactly correlate with the software providing the ultimate in accuracy. Instructions on calibrating the radio are on page 26; however, note that if calibration is not properly done the radio will not function. If after calibration the steering or throttle does not function properly (the travel is reduced or no servo travel) it will be necessary to recalibrate the transmitter.

BINDING A RECEIVER



Note: The SR3100 operates in DSM2 mode and is compatible with transmitters that utilize DSM2 protocol.

1. With the receiver off, insert the bind plug into the Batt/ Bind port in the receiver.
2. Power up the receiver. If using an electronic speed controller the lead should be plugged into the throttle port and the switch turned on. If a receiver battery pack is used, plug the battery lead into any open port noting the polarity.
3. Turn on the transmitter and make sure the transmitter is in the desired model number that you intend to use.
4. Press the rolling selector to access the List screen.
5. Rotate the roller to highlight the Bind screen and press the roller to access this screen.

6. Rotate the roller to highlight BIND.
7. With the steering wheel, throttle stick and Aux channel (if applicable) in the desired preset failsafe positions, press the roller to initiate the bind process and to store the failsafe positions. BIND will flash for a few seconds then the transmitter will beep, indicating the process is complete. The LED on the receiver should now be solid, indicating a successful bind has taken place.
8. Remove the bind plug and store it in a convenient place.

Note: The only time it's necessary to do a rebind is if different failsafe positions are desired or if the receiver is to be bound to a different model memory.

Note: Some Spektrum receivers like the SR3000 use a bind button rather than a bind plug. The binding process is the same with this receiver; however, instead of inserting the plug before powering up the receiver, press and hold the bind button while powering up the receiver to enter bind mode.

RECEIVER COMPATIBILITY

The DX3R features DSM2 technology but is also compatible with Spektrum DSM surface receivers and Spektrum Marine receivers. When the fastest response rate is desired, using the system with a DSM2 receiver like the SR3100 is recommended as this combination gives the lowest possible latency/quickest response rate. During the binding process the transmitter actually "learns" the receiver type (DSM, DSM2 or Marine) and configures itself to transmit that protocol.

COMPATIBLE SPEKTRUM RECEIVERS

DSM2

SR3100- 3-channel DSM2 Pro - SPMSR3100

SR3520- 3-channel DSM2 Micro Pro - SPMSR3520

DSM

SR3000- 3-channel Standard - SPM1200

SR3001- 3-channel Pro-Model - SPM1205

SR3500- 3-channel Micro Race - SPM1210

SR300- 3-channel Sport - SPMSR300

SR3300T- 3-channel with Telemetry - SPMSR3300T

Marine

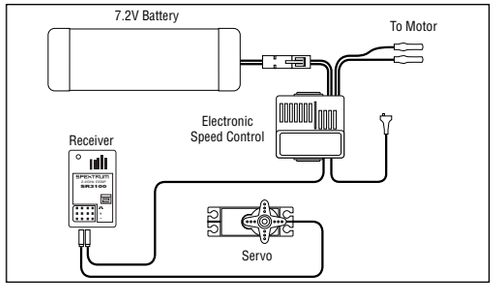
MR3000 - Marine Receiver - SPMMR3000

Note: The SR3000HRS (model # SPM1202) receiver is designed to be used with Spektrum's Futaba HRS compatible module system only and is not compatible with the DX3R.

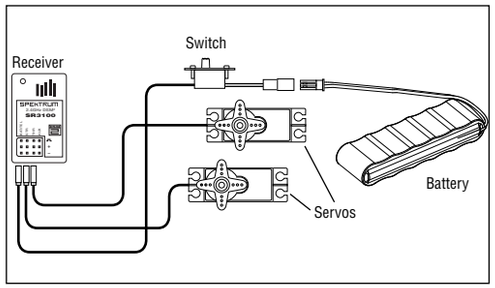
Note: Marine compatible DX3R transmitters can be identified by the following logo located on the back of the transmitter.

RECEIVER CONNECTION AND INSTALLATION

Typical Electric Installation



Typical Gas Installation



RECEIVER POWER SYSTEM REQUIREMENTS

Inadequate or intermittent power to the receiver that is unable to provide the necessary minimum voltage during operation is the number one cause of control failures with Spektrum systems. Some of the power system components that affect the ability to properly deliver adequate power include:

- Receiver battery pack (number of cells, battery construction quality, connector and state of charge)
- The ESC's capability to deliver current to the receiver and servos in electric vehicles
- The switch harness, battery leads, servo leads, regulators etc.

All Spektrum receivers have a minimum operational voltage of 3.5 volts. If the voltage drops below 3.5 volts, the system will cease control until power is regained.

RECOMMENDED POWER SYSTEM TEST GUIDELINES

If a questionable power system is being used (e.g. small or old battery, ESC that may not have a BEC that will support the servo's current draw, etc.), it is recommended that a voltmeter be used to perform the following test.

Plug the voltmeter into an open channel port in the receiver and with the system on, load the servos (apply pressure with your hand) while monitoring the voltage at the receiver. The voltage should remain above 4.8 volts even when all servos are loaded. For gas vehicles, tap and twist the Rx battery pack while watching the voltmeter. Some battery packs have poorly welded tabs that give only intermittent power. Such a defect will show up during shock and vibration, so this test will verify that the battery construction is good.

TYPICAL RANGE

Your system's range can vary greatly due to your installation and the environment. In most cases you should be able to have full control of your vehicle to the limits of sight (about 300 ft with a 1/10-scale car). If range issues exist your installation can be optimized by extending the receiver's antenna as vertically as possible locating it as high in the vehicle as practical and also by routing the antenna away from any onboard electronics.

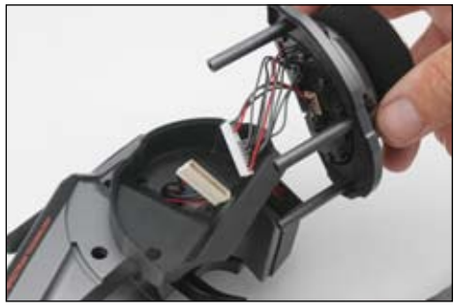
CHANGING TO LEFT-HANDED CONFIGURATION

The DX3R is shipped set up for right-handed use but can easily be switched to a left-handed configuration. All the parts necessary to convert to left-handed, including the grip plates, the back cover and the front shell, are included. A 3/32-inch hex wrench and a small Phillips screwdriver will be needed.

1. Remove the batteries from the transmitter. This prevents the possibility of accidentally causing a short during the conversion.

2. Carefully remove the grip cover by prying with your fingers at the forward edge of the rubber grip.

3. Using a 3/32-inch hex wrench, remove the three screws on the front of the steering housing as shown.



4. Carefully remove the steering mechanism and unplug the steering connector. Also remove the backplate.

5. Using a small Phillips screwdriver, remove the four Phillips screws (two per side) that fasten the grip plates in place and remove the grip plate that doesn't have the buttons attached.

6. Carefully pull out the grip plate that contains buttons D, E and F. Using a Phillips screwdriver remove the PC board and backplate from the grip plate. Note the positions of the three buttons.

7. Transfer the three buttons (D,E and F) to the other "handed" grip plate noting that the buttons fit in a specific direction so that they fit the external contour of the grip plate.

8. Carefully screw the PC board and backplate in place and test that all buttons are depressing properly.

9. Place both grip plates in place and fasten them using four Phillips screws (two per side).

10. Push the steering wheel connector through the transmitter case to the opposite side.

11. Select the opposite "handed" steering shell and pass the steering wheel mechanism connector through the hole in the shell.

12. Connect the steering wheel mechanism connector to the connector from the transmitter being sure the connection is tight. Note correct polarity.

13. Fit the other handed backplate in place and secure the steering wheel assembly in place using the three long cap head screws.

14. Fit the grip in place and reinstall the batteries. Note that the buttons D and E now work in reverse. It will be necessary to change the direction of these switches in the System menu (see page 28).

USING THE ROLLING SELECTOR

The Rolling Selector is pressed to access functions and rolled to select specific features or to change settings or values. Pressing and holding the rolling selector for more than three seconds returns the display to the main screen.

The DX3R features one-touch programming utilizing a Rolling Selector. The Rolling Selector has three functions.

1: Pressing the Rolling Selector - enters the selected function

2: Rolling the Rolling Selector - highlights functions or changes settings and values when selected.

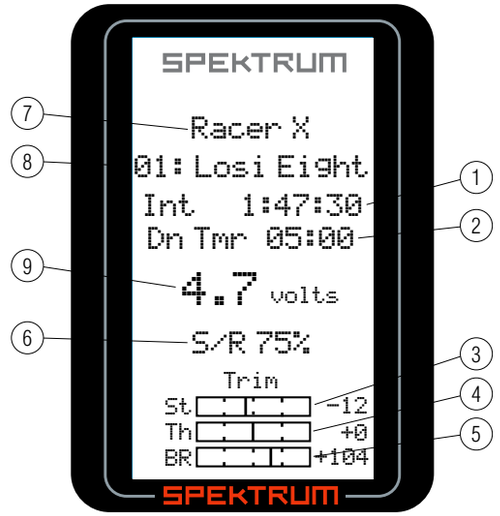
3: Pressing and holding the rolling selector for more than 3 seconds from any screen - returns the display to the Main Screen.

Programming is very intuitive and always starts with a press, then a roll, then a press, roll and so on. Most find that within a few minutes they're able to easily program their car without reading the instructions. However, to realize the full benefit of the programming, it's recommended that the manual be read.

Most racers find it's most convenient to use their thumb when making programming changes, as this allows for one-handed programming, even allowing the car to be run in one hand while making programming adjustments in the other.

Note: Each individual page from this point is dedicated to a single specific programming function.

MAIN SCREEN



The information displayed on the screen is as follows.

1: Timer A
2: Timer B
3: Steering Trim
4: Throttle Trim
5: Brake Trim
6: Steering Rate
7: User Name
8: Model number and name
9: Transmitter (Tx) voltage (flashes and alarm sounds when low battery is reached)

The main screen displays pertinent information about the selected model like trim and steering rate positions, timers, the model selected, battery voltage, etc. It's recommended that during driving/racing the main screen be displayed.

TO ACCESS THE MAIN SCREEN

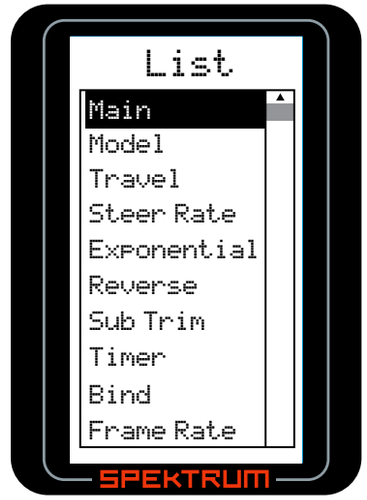
Any time the transmitter is turned on the main screen will appear.

From the List screen, the first function at the top of the List screen is Main. Using the roller, highlight the Main function and press the roller to access the Main screen.

From any screen, pressing and holding the roller for more than three seconds will return the display to the Main screen.

Note: When the battery voltage drops below the preset value in the System function (preset to 4.0 volts), an alarm will sound and the voltage reading will flash.

LIST



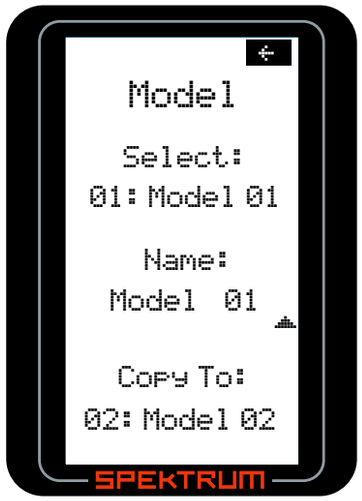
The List screen displays all the available functions. The desired function can be accessed by highlighting it using the roller. When highlighted, press the roller to enter the function.

TO ACCESS THE LIST SCREEN

From the main screen, pressing the roller will access the List screen.

From any other screen, an arrow ← is located at the top of each of the programming screens. This is a back arrow and highlighting this arrow with the roller and then pressing the roller will return the List screen.

MODEL



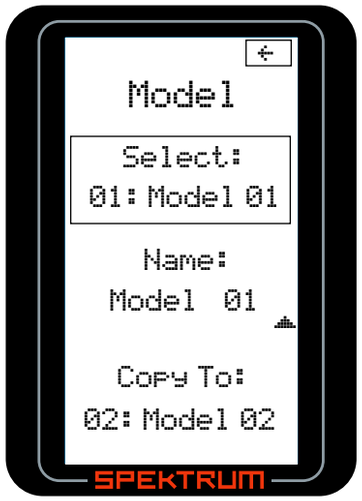
The Model screen offers three functions:

Model Select: Allows the selection of one of thirty model memories. This allows you to store and select up to thirty models.

Model Name: Allows the selected model to be given a name with up to ten characters.

Model Copy: Allows a model memory to be copied internally to a different model memory (e.g. model one (01) can be copied to model thirty (30)).

MODEL SELECT



TO ACCESS THE MODEL SELECT FUNCTION

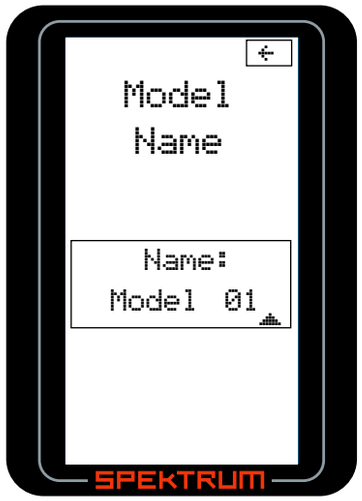
In the Model screen use the roller to highlight the Select function. A box will surround the Select function.

Press the roller to access the Select function. The box will now be flashing, indicating the Select function is active.

Use the roller to select the desired model memory (models 01 thru 30).

To return to the Main screen, press and hold the roller for more than three seconds.

MODEL NAME



TO ACCESS THE MODEL NAME FUNCTION

In the Model screen, use the roller to highlight the Name function. A box will surround the Select function.

Press the roller to access the Name function. The above screen will appear.

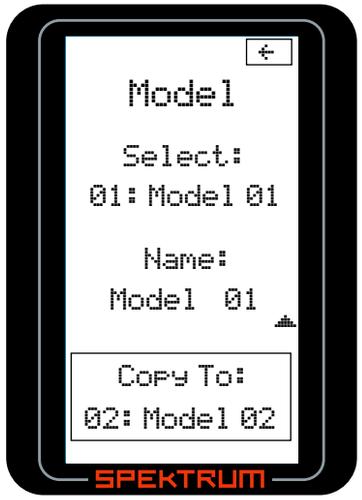
Use the roller to select the desired model name character position by placing the cursor below the desired position.

Press the roller to access that character or number; then use the roller to change to the desired letter or number.

Pressing the roller will allow the cursor to be repositioned to the next field.

To return to the Main screen, press and hold the roller for more than three seconds. You can also use the roller to select the back arrow.

MODEL COPY



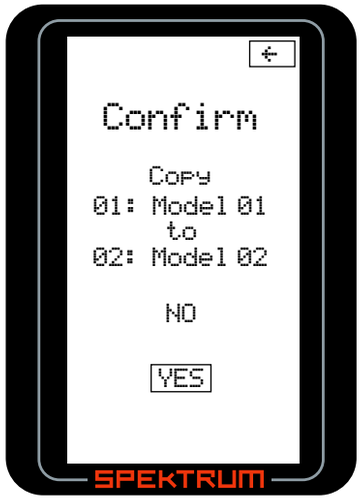
TO ACCESS THE MODEL COPY FUNCTION

In the Model screen use the roller to highlight the Copy To function. A box will surround the Copy To function.

Press the roller to access the Copy To function. The box will now be flashing, indicating the Copy To function has been selected.

Use the roller to select the desired model that you choose to copy to (models 01 thru 30).

When the desired model that you intend to copy to is selected, press the roller. The screen will appear as follows.

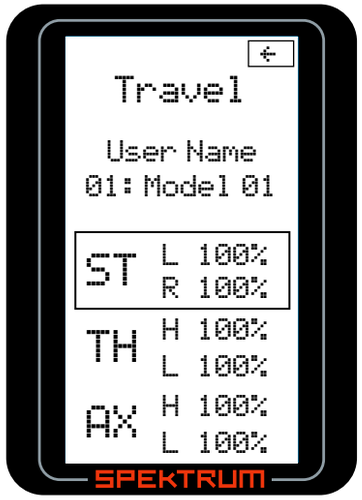


If the selected model is correct, use the roller to highlight YES and press the roller to copy from the current model to the selected model.

Note: The model memory of the selected model will be replaced with the current model's model memory, thus erasing the copy to the model's memory.

To return to the Main screen, press and hold the roller for more than three seconds.

TRAVEL



The Travel screen (sometimes referred to as travel adjust or endpoints) allows independent travel adjustment of the servo throw in each direction of all three channels (steering, throttle and auxiliary). A graphic illustration displays the effect of travel adjust.

TO ACCESS THE TRAVEL FUNCTION

From the list screen rotate the roller to highlight the Travel function.

Press the roller to enter the Travel function. The Travel screen will be displayed as shown above.

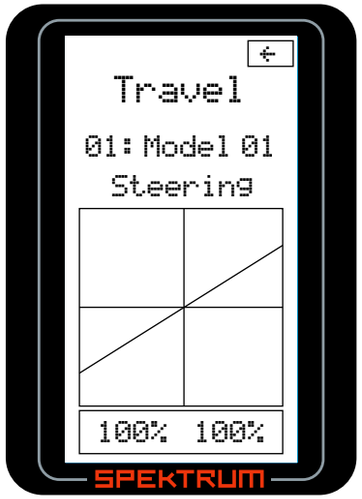
Rotate the roller to highlight the desired channel that you wish to adjust the travel of.

ST= Steering

TH= Throttle and brake

AX= Auxiliary channel 3

Press the roller to enter the highlighted channel's travel function (see monitor Page 28).

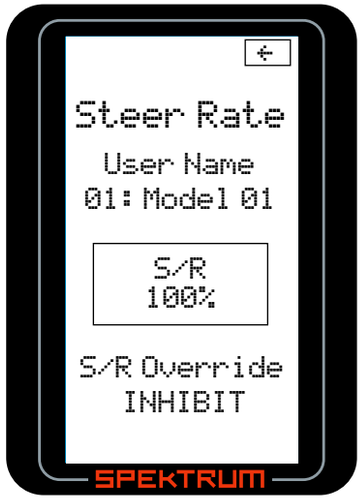


Rotate the roller to highlight the values at the bottom of the screen; then press the roller to select the values.

Rotating the roller will now adjust both the right and left values simultaneously. If you desire to adjust the right or left directions independently, then move the corresponding channel's wheel, throttle stick or trigger. The trimmer that the Aux channel is assigned to and that value alone will be highlighted (e.g. turning the steering wheel to the right will highlight the right value only and subsequent adjustment will affect the right travel only).

Note: The DX3R features "sticky gooey." When the corresponding channel is moved in the desired position as illustrated above and released, the value on that side remains highlighted. Moving the channel in the opposite direction will then highlight the opposite direction's value. This allows convenient independent travel adjustments without having to hold the wheel or trigger in the desired position. To highlight both values again after moving the wheel in one direction, simply press the roller once with the wheel centered and both values will be highlighted.

STEERING RATE



Steering rate (also known as dual rate) allows on-the-fly steering travel adjustments to be made using any of the programmable grip trimmers (A,B,C,D, or E). The Steering Rate screen also offers a Steering override function that allows a second steering rate (normally 100%) to be accessed at the touch of a button or trimmer. This is especially helpful for oval racers that program minimal steering throw to desensitize steering during racing but require maximum steering angle to drive out of a crash or get turned around on the track. The user name, model number and model name are also displayed in this screen.

TO ACCESS THE STEERING RATE FUNCTION

In the List screen use the roller to highlight the Steering Rate function.

Press the roller to access the Steering Rate function. The above screen will appear.

Use the roller to select the S/R function or the S/R Override function by placing the box around the desired function.

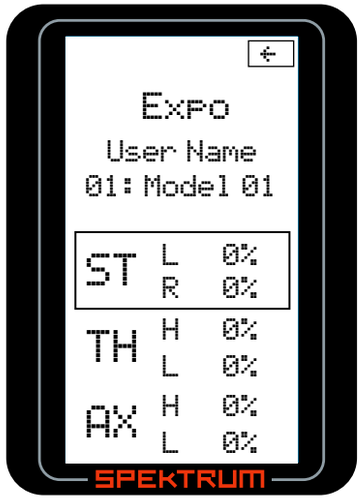
Press the roller to access S/R or S/R Override; then use the roller to change to the desired Steering rate value.

To return to the main screen press and hold the roller for more than three seconds.

Note: An adjustable S/R rate can be assigned to any of the trimmers (A,B,C,D and E) and is defaulted to trimmer D. This trimmer works in unison with the S/R Rate screen and the value can be adjusted from either the screen or from the programmable trimmer. If it's desired to not have an on-the-fly adjustable Steering Rate the S/R trimmer can be inhibited. See System function under switch selection on page 29 for more details.

Note: In order for the S/R Override to operate it must be assigned to a switch or trimmer. The default position for this function is inhibited. To activate the S/R rate, it's necessary to program this function to the desired switch or trimmer in the System function screen under Switch. See page 28.

EXPONENTIAL



Exponential is used to affect the response rate of the steering, throttle and/or brake. Typically positive Exponential is used for steering, reducing steering sensitivity around neutral and making it easier to drive the car at high speeds in a straight line. But exponential still allows for the maximum turning radius.

The DX3R's Exponential function (Expo for short) allows independent Expo values in each direction of all three channels (steering, throttle and auxiliary). A graphic illustration displays the effect of exponential adjustment.

TO ACCESS THE EXPONENTIAL FUNCTION

From the List screen rotate the roller to highlight the Exponential function.

Press the roller to enter the Exponential function. The Expo screen will be displayed as shown above.

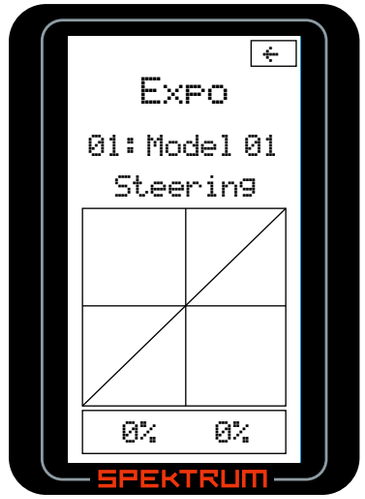
Rotate the roller to highlight the desired channel that you wish to adjust the travel of.

ST= Steering

TH= Throttle and brake

AX= Auxiliary channel 3

Press the roller to enter the highlighted channel's Expo function.



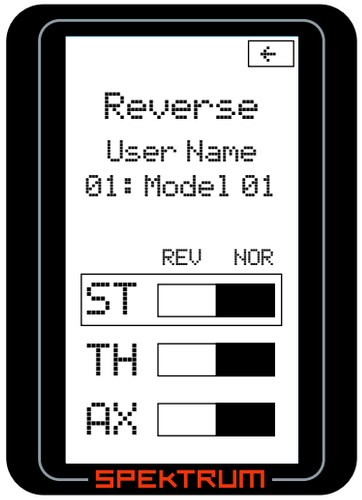
Rotate the roller to highlight the values at the bottom of the screen; then press the roller to select the values.

Rotating the roller will now adjust both the right and left values simultaneously. To adjust the right or left Expo values independently, move the corresponding channel's wheel, throttle stick or trigger the trimmer that the Aux channel is assigned to, and that value alone will be highlighted. For example turning the steering wheel to the right will highlight the right value only and subsequent adjustment will affect the right travel only.

Note: Positive and negative Expo values are available. A positive Expo value results in the center being less sensitive (desirable most of the time) while a negative value increases the sensitivity around center (normally not used).

Note: The DX3R features "sticky gooey." When the corresponding channel is moved in the desired direction (as illustrated above) and released, the value on that side remains highlighted. Moving the channel in the opposite direction will then highlight the opposite value direction. This allows convenient independent exponential adjustments without having to hold the wheel or stick in the desired position. To highlight both values again after moving the wheel in one direction, simply press the roller once with the trigger centered and both values will be highlighted.

REVERSE



The Reverse function (also known as servo reverse) establishes the servo's direction relative to the channel's input (e.g. a right steering input should result in a right steering angle at the car). Reverse is available on all three channels and is normally the first function that is checked and adjusted during programming.

The user name, model number and model name are also displayed in this screen.

TO ACCESS THE REVERSE FUNCTION

In the List screen use the roller to highlight the Reverse function.

Press the roller to access the Reverse function. The above screen will appear.

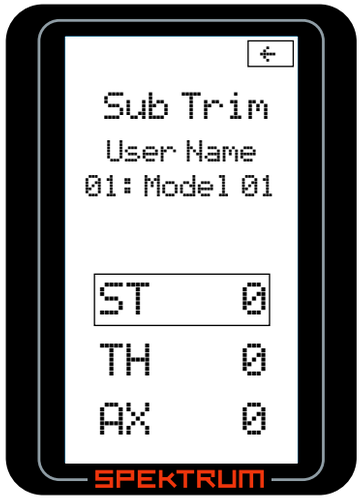
Use the roller to select the desired channel that you wish to reverse.

ST=Steering
TH=Throttle
AX= Auxiliary

Press the roller to highlight that channel and the surrounding box will flash; then use the roller to change to the desired servo direction (REV or NOR).

To return to the Main screen, press and hold the roller for more than three seconds.

SUB TRIM



The Sub Trim function is normally used to correct for minor angular inaccuracies that occur when placing the servo horn on the servo. In many cases, the servo horn is not exactly perpendicular to the servo (or in the exact optimum desired position). Minor sub trim values can be used to correct this offset inaccuracy. However, it's important to understand that large sub trim values can limit the total throw of the servo in that direction so small sub-trim values only are recommended.

The user name, model number and model name are also displayed in this screen.

TO ACCESS THE SUB TRIM FUNCTION

In the List screen use the roller to highlight the Sub Trim function.

Press the roller to access the Sub Trim function. The above screen will appear.

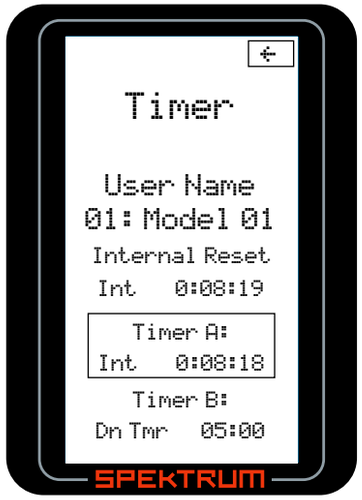
Use the roller to select the desired channel that you wish to reverse.

ST= Steering
TH= Throttle
AX= Auxiliary

Press the roller to highlight that channel and the surrounding box will flash; then rotate the roller to adjust the value and direction of the sub trim.

To return to the Main screen press and hold the roller for more than three seconds.

TIMER



The DX3R offers three types of timers.

Internal timer

Automatically records the time that the transmitter is turned on. Timer A is defaulted to the internal timer.

Up timer

The Up Timer is triggered via a selectable button/switch and counts up from 00:00 seconds, functioning as a stopwatch. It is useful for timing a fuel run to determine fuel mileage/pit stop strategy or, for electrics, to time the run time of a pack to determine gear ratio and setup information. To pause the Up timer, press the button/switch that the timer is programmed to. To reset the UP timer to 00:00, press and hold the programmed button for more than three seconds.

Down timer

Can be programmed for up to 99 minutes and 99 seconds in one-second increments. Normally this timer is programmed for the length of the race with electrics and is defaulted to 5:00 minutes, or the duration of the fuel tank in gas, warning the driver that it's time to pit and refuel. The Down timer is started via a selectable programmable switch. When the down timer expires, an alarm will sound and the timer will begin to count up. To pause the Down timer, press the button/switch that the timer is programmed to. To reset the Down timer to its preprogrammed value, press and hold the programmed button for more than three seconds. Timer B is defaulted to the Down timer, the time is defaulted to 5:00 minutes and button F is defaulted to actuate the down timer.

Two of the three timers can be selected and displayed on the main screen. The user name, model number and model name are also displayed in this screen.

TO ACCESS THE TIMER FUNCTION

From the List screen rotate the roller to highlight the Timer function.

Press the roller to enter the Timer function. The Timer screen will be displayed as shown above.

Rotate the roller to highlight the desired Timer that you choose to program (Timer A or Timer B).

Press the roller to enter the highlighted Timer function.

Rotate the roller to select:

Int- Internal
Dn Tmr- Down Timer
Up Tmr- Up Timer

Note: If Down timer is selected, pressing the roller again will allow the time to be changed by rotating the roller.

To reset the internal timer, rotate the roller to highlight Internal Reset then press the roller to reset the internal timer to 0:00:00.

See System on page 28 for details on programming the timers to various buttons and switches.

BIND

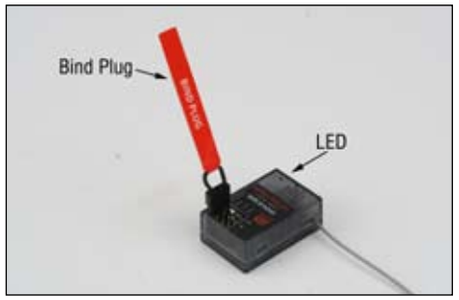
Binding is the process of teaching the receiver the specific transmitter's code called GUID (Globally Unique Identifier) and storing failsafe values. When a receiver is bound to a transmitter/model memory, the receiver will only respond to that specific transmitter/model memory (see ModelMatch below). It's also important to understand that during the binding process the transmitter is learning the type of receiver that it's being bound to, and the transmitter configures itself to transmit in DSM or DSM2 protocol depending on the type of receiver that it's being bound to. Note that the DX3R stores this information for each model memory and recalls the proper protocol when that model is selected. See ModelMatch below.

Note: If a receiver is not bound to a specific model memory, it will not operate.

MODELMATCH

The DX3R features patent pending ModelMatch technology that prevents operating a model using the wrong model memory. During the binding process, the receiver actually stores the code that is assigned to the specific model that is currently selected in the transmitter. For example: if the model that is selected in the transmitter is model #3, when a receiver is bound to that transmitter, the receiver will only operate when model #3 is selected. If another model memory is selected (model #5 for example) the receiver will not connect. If model three is again selected in the transmitter, the receiver bound to model #3 will connect. ModelMatch prevents operating a model using the wrong model memory.

BINDING A RECEIVER



Note: The SR3100 operates in DSM2 mode and is compatible with transmitters that utilize DSM2 protocol.

1. With the receiver off insert the bind plug into the Batt/Bind port in the receiver.
2. Power up the receiver. If using an electronic speed controller the lead should be plugged into the throttle port and the switch turned on. If a receiver battery pack is used, plug the battery lead into any open port noting the polarity.
3. Turn on the transmitter and make sure the transmitter is in the desired model number that you intend to use.
4. Press the rolling selector to access the List screen.
5. Rotate the roller to highlight the Bind screen and press the roller to access this screen.

6. Rotate the roller to highlight BIND.
7. With the steering wheel, throttle stick and Aux channel (if applicable) in the desired preset failsafe positions, press the roller to initiate the bind process and to store the failsafe positions. BIND will flash for a few seconds; then the transmitter will beep, indicating the process is complete. The LED on the receiver should now be solid, indicating a successful bind has taken place.
8. Remove the bind plug and store it in a convenient place.

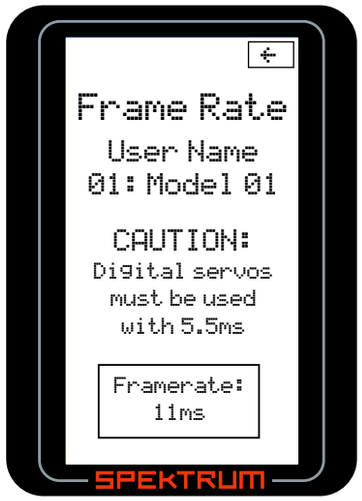
Note: The only time it's necessary to do a rebind is when different failsafe positions are desired, or if the receiver is to be bound to a different model memory.

Note: Some Spektrum receivers, like the SR3000, use a bind button rather than a bind plug. The binding process is the same with this receiver. However, instead of inserting the plug before powering up the receiver, press and hold the bind button while powering up the receiver to enter the bind mode.

FAILSAFE

Failsafe positions are also set during binding. In the unlikely event that the radio link is lost during use, the receiver will drive the servos to their preprogrammed failsafe positions (normally full brakes and straight steering). If the receiver is turned on prior to turning on the transmitter, the receiver will enter the failsafe mode, driving the servos to their preset failsafe positions. When the transmitter is turned on, normal control is resumed. Failsafe servo positions are set during binding (see Bind on the previous page).

FRAME RATE



To allow the DX3R to be compatible with all types of servos (older analogs through the latest high response rate digitals), three frame rates are available. Please note Marine receivers will always output at 22ms and cannot be changed by this feature even though the values can be changed.

5.5ms: Gives the fastest response rate; is only compatible with high-performance digital servos. Works with both DSM and DSM2 surface receivers. Please note DSM surface receivers output at 11ms when 5.5ms is selected.

Note: when 5.5ms frame rate is selected only two channels (steering and throttle) are operational.

11ms: Offers good response rates and is compatible with most digital and analog servos (this is the default position). Works with both DSM and DSM2 surface receivers.

16.5ms: This is the least responsive rate and is needed for older analog servos. Works only with DSM2 surface receivers.

Note: It's always recommended that the fastest response rate that the servos can handle be used, as this gives the lowest latency/fastest response. If the frame rate is incompatible with the servo, the servo will move erratically or in some cases not at all. If this occurs, it's necessary to change the frame rate to the next highest value.

TO ACCESS THE FRAME RATE FUNCTION

In the List screen, use the roller to highlight the Frame Rate function.

Press the roller to access the Frame Rate function. The above screen will appear.

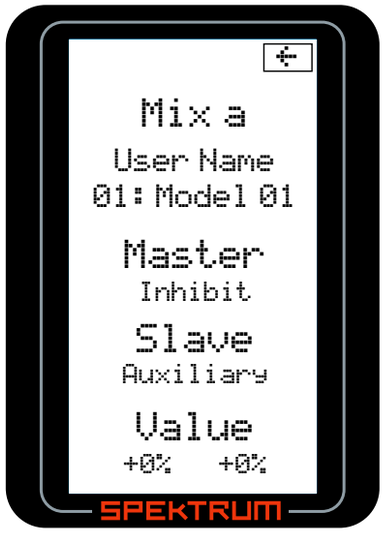
Use the roller to select and highlight Frame Rate, at the bottom of the screen.

Press the roller to highlight the Frame Rate, function and the surrounding box will flash. Then rotate the roller to select the frame rate.

To return to the Main screen, press and hold the roller for more than three seconds.

MIXING

The mixing function allows any of the channels (steering, throttle and Aux.) to be mixed to any channel. Two mixes are available, Mix A and Mix B. Both mixes function identically. Typically this is used for dual steering servos in giant-scale trucks or for dual throttles in dual engine boats. The primary or controlling channel is called the master while the channel that is mixed to is called the slave. The slave channel follows the movement of the master channel based on the mixing value that is programmed. Negative values cause the slave to move in the opposite direction. Note that the trim is active for both the master and slave channels.



TO ACCESS THE MIX FUNCTION

In the List screen use the roller to highlight the Mixing function.

Press the roller to access the Mixing function. The Mixing screen will then appear.

Use the roller to select the desired Mix that you wish to adjust, Mix A or Mix B.

Press the roller to highlight that mix and the surrounding box will flash, then rotate the roller to access that mix function.

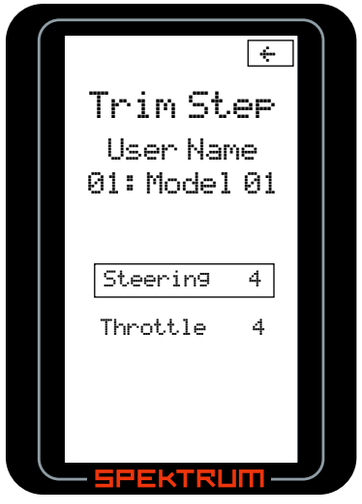
Use the roller to highlight the master or slave channels, then press the roller to access master or slave.

Use the roller to highlight Value, then press the roller. Adjust the mix values by rotating the roller. Independent values can be adjusted by holding the master channel input (e.g. steering wheel) in the desired direction and scrolling the roller.

To return to the Main screen press and hold the roller for more than three seconds.

Mixing values and their proportions can be observed in the Monitor screen on page 28.

TRIM STEP



The Trim Step function allows the user to adjust the sensitivity of the steering and throttle/brake trims. It's important to understand that Trim Step affects the amount the servo travels with each click of the trim but has no effect on the total trim travel. In essence, Trim Step changes the number of trim steps that are available within the trim stroke and has no effect on the total trim travel. Trim Step allows the user to fine-tune the steering, throttle and brake trims to meet the needs of specific applications.

TO ACCESS THE TRIM STEP FUNCTION

In the List screen use the roller to highlight the Trim Step function.

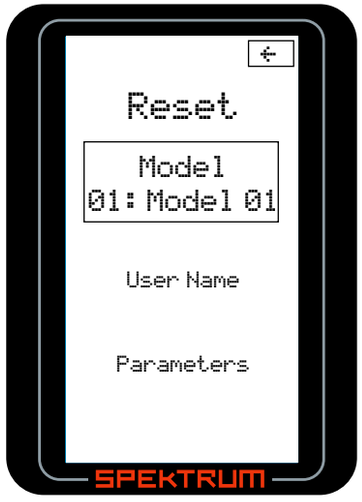
Press the roller to access the Trim Step function. The above screen will appear.

Use the roller to select the desired channel that you wish to adjust the trim step of.

Press the roller to highlight that channel and the surrounding box will flash then rotate the roller to adjust the Trim Step value. The adjustment range is from 1 to 20 (very fine to coarse trim steps). The default setting is 4.

To return to the main screen press and hold the roller for more than three seconds.

RESET



The reset function is used to reset the Model Memory that is selected and the User Name back to the factory defaults. The Parameters function is used to recalibrate the transmitter's steering and brake potentiometers.

TO ACCESS THE RESET FUNCTION

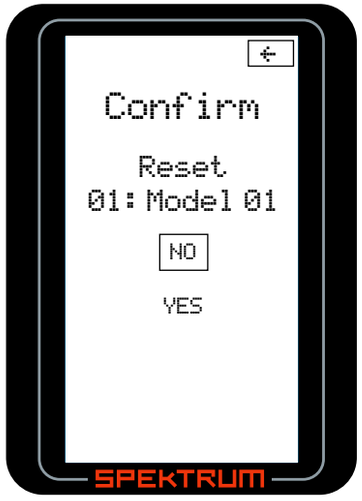
In the List screen use the roller to highlight the Reset function.

The above screen will appear.

Rotate the roller to access the desired function that you choose to reset.

Model:	Reset the model memory that is displayed
User Name:	Reset the user name
Parameters:	Recalibrate the transmitter's steering and brake potentiometers

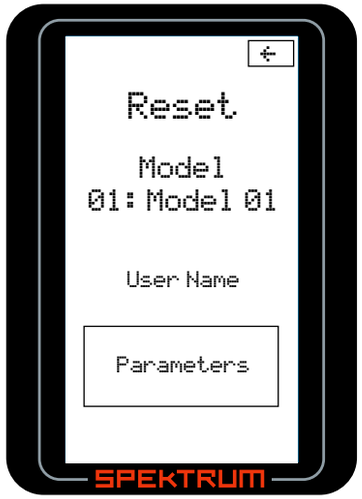
Press the roller to access the selected reset function. If the model was selected use the roller to select the desired model memory that you wish to reset. Then press the roller to access the Confirm screen.



Use the roller to highlight YES; then press the roller to reset.

To return to the Main screen press and hold the roller for more than three seconds.

TO ACCESS THE PARAMETERS (RECALIBRATE) FUNCTION



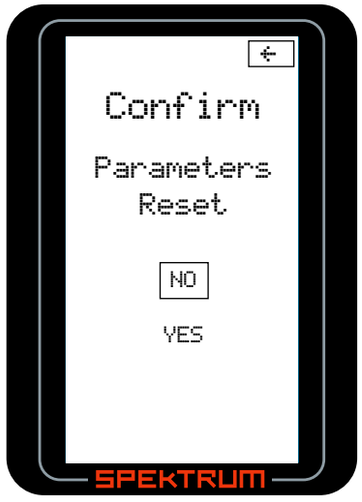
Warning: If calibration is not properly completed the radio will not function correctly. If after calibration the steering or throttle does not function properly (the travel is reduced or no servo travel), it will be necessary to recalibrate the transmitter.

In the List screen use the roller to highlight the Reset function.

The above screen will appear.

Use the roller to access Parameters.

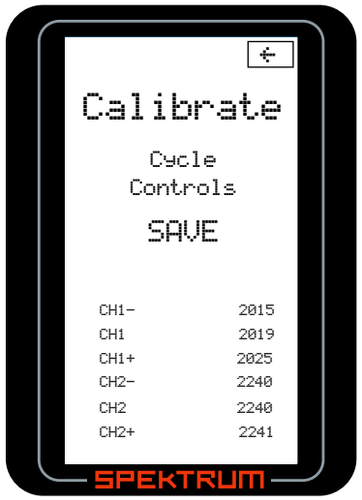
Press the roller to access the Confirm screen.



Use the roller to highlight YES then press the roller to reset. The following screen will appear.

Warning: Once YES is selected, you must complete all the calibration steps described in this section or the radio will not function properly.

To return to the main screen press and hold the roller for more than three seconds.

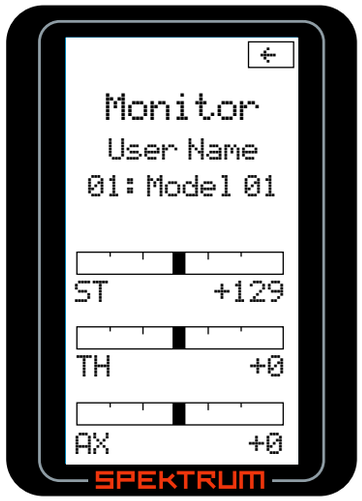


Rotate the steering wheel full right then full left; then move the throttle trigger to full throttle and full brake.

Note: The values will change to correlate with the actual potentiometers.

After the steering and throttle/brakes have been transitioned throughout their stroke, use the roller to highlight SAVE and press the roller to save the calibration settings.

MONITOR



A servo monitor is available that displays the servo output positions graphically and digitally. This monitor can be useful in troubleshooting setups, displaying mixing functions and how they interrelate, etc.

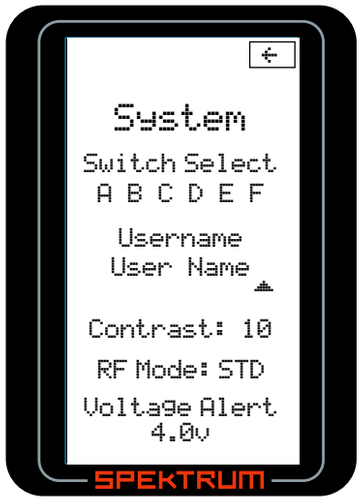
TO ACCESS THE MONITOR FUNCTION

In the List screen use the roller to highlight the Monitor function.

Press the roller to access the Monitor function. The above screen will appear and real-time servo output positions will be displayed.

To return to the Main screen press and hold the roller for more than three seconds.

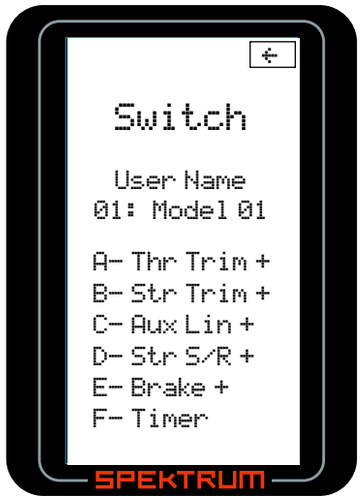
SYSTEM



The System function allows the six available switches (A,B,C,D,E and F) to be programmed to the desired function. It allows the user name to be selected, contrast to be adjusted, and the voltage alarm threshold to be set.

SWITCH SELECT

The Switch select function allows any of the six available switches (A, B, C, D, E and F) to be assigned one of the following functions:



Inhibit	Switch/button turned off
Aux 3P	Channel three functions as a three-position output
Aux 2P	Channel three functions as a two-position output
Aux Lin-	Channel three functions as a linear output
Brake	Full brake trim
Thr Exp	Throttle exponential
Thr Trim	Throttle trim—adjusts the neutral throttle position
S/R Override	Steering override
Str Exp	Steering exponential
Str S/R	Steering rate
Str Trim	Steering trim
Timer	Activates up or count down timer

TO PROGRAM A SWITCH OR BUTTON

Highlight the desired switch/button and press the roller. Use the roller to select the desired function from the list above.

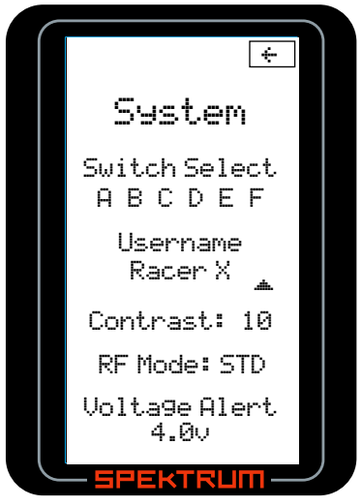
Note: A positive + or negative – value is available for many of the above functions allowing the reversing of the switch direction.

USER NAME

A user name with up to ten characters can be programmed and the name displayed on the Main screen.

TO PROGRAM A USER NAME

In the System screen highlight the User Name and press the roller to access the function.



Use the roller to select the position, then press the roller to access the character.

Contrast is adjustable from 0 to 30. Highlight the Contrast function then scroll the roller to adjust the contrast.

The Voltage Alert sets the voltage threshold at which the alarm sounds. The default setting is 4.0 volts, however, if you wish to change this setting, highlight the Voltage Alert function and press the roller. Scrolling the roller will allow the voltage threshold to be adjusted from 0.0 to 6.5 volts.

RF MODE

STD is the standard RF mode. FR is the France RF mode and should only be selected if the transmitter is used in France.

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 operating competency must be high enough to ensure you are able to control your model under all conditions. If you are a newcomer to radio controlled models, please seek help from an experienced modeler or your local hobby shop.

Safety Points to Obey for Modelers

- Ensure your batteries (both transmitter and receiver) have been properly charged for your model.
- Keep track of the time the system is turned on so you will know how long you can safely operate your DX3R.
- Check all servos and their connections prior to each run.
- Do not operate your model near spectators, parking areas or any other area that could result in injury to people or damage of property.
- Do not operate your model during adverse weather conditions. Poor visibility can cause disorientation and loss of control of your model.
- 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 the operation of your model you observe any erratic or abnormal operation, immediately stop operation of your model until the cause of the problem has been ascertained and corrected. Safety can never be taken lightly.

TIPS ON USING SPEKTRUM 2.4GHZ

While your DSM equipped 2.4GHz system is intuitive to operate, functioning nearly identically to 27 and 75MHz systems, following are a few common questions from customers.

1. Q: Which do I turn on first, the transmitter or the receiver?

   A: It doesn't matter, although it is suggested to turn the transmitter on first. If the receiver is turned on first, all channels will be driven to the failsafe position set during binding. When the transmitter is then turned on, the transmitter scans the 2.4GHz band and acquires an open channel. Then the receiver that was previously bound to the transmitter scans the band and finds the GUID (Globally Unique Identifier code) stored during binding. The system then connects and operates normally.

   If the transmitter is turned on first, the transmitter scans the 2.4GHz band and acquires an open channel. When the receiver is turned on, the receiver scans the 2.4GHz band looking for the previously stored GUID. When it locates the specific GUID code and confirms uncorrupted repeatable packet information, the system connects and normal operation takes place. Typically this takes 2 to 6 seconds.

2. Q: Sometimes the system takes longer to connect and sometimes it doesn't connect at all?

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

3. Q: I've heard that the DSM system is less tolerant of low voltage. Is this correct?

   A: All Spektrum surface receivers have an operational voltage range of 3.5 to 9.6 volts. With most systems this is not a problem as in fact most servos cease to operate at around 3.8 volts. When using multiple high-current draw servos with a single or inadequate battery/power source, heavy momentary loads can cause the voltage to dip below this 3.5-volt threshold, causing the entire system (servos and receiver) to brown out.

4. Q: Sometimes my receiver loses its bind and won't connect requiring rebinding. What happens if the bind is lost during use?

   A: The receiver will never lose its bind unless it's instructed to. It's important to understand that during the binding process the receiver not only learns the GUID (code) of the transmitter but the transmitter learns and stores the type of receiver that it's bound to. If the system fails to connect, more than likely the transmitter is near conductive material (transmitter case, truck bed, etc.) and the reflected 2.4GHz energy is preventing the system from connecting. (See tip #2)

WARRANTY AND USER INFORMATION

WARNING

An RC model is not a toy! If misused, it can cause serious bodily harm and damage to property. Operate only in open areas, following all instructions included with your radio.

WARRANTY PERIOD

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

LIMITED WARRANTY

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

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

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

DAMAGE LIMITS

HORIZON SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCT, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY. Further, in no event shall the liability of Horizon exceed the individual price of the Product on which liability is asserted. As Horizon has no control over use, setup, final assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability.

If you as the Purchaser or user are not prepared to accept the liability associated with the use of this Product, you are advised to return this Product immediately in new and unused condition to the place of purchase.

Law: These Terms are governed by Illinois law (without regard to conflict of law principals).

SAFETY PRECAUTIONS

This is a sophisticated hobby Product and not a toy. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this Product in a safe and responsible manner could result in injury or damage to the Product or other property. This Product is not intended for use by children without direct adult supervision. The Product manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or injury.

QUESTIONS, ASSISTANCE, AND REPAIRS

Your local hobby store and/or place of purchase cannot provide warranty support or repair. Once assembly, setup or use of the Product has been started, you must contact Horizon directly. This will enable Horizon to better answer your questions and service you in the event that you may need any assistance. For questions or assistance, please direct your email to productsupport@horizonhobby.com, or call 877.504.0233 toll free to speak to the Product Support department.

INSPECTION OR REPAIRS

If this Product needs to be inspected or repaired, please call for a Return Merchandise Authorization (RMA). Pack the Product securely using a shipping carton. Please note that original boxes may be included, but are not designed to withstand the rigors of shipping without additional protection. Ship via a carrier that provides tracking and insurance for lost or damaged parcels, as **Horizon is not responsible for merchandise until it arrives and is accepted at our facility.** A Service Repair Request is available at www.horizonhobby.com on the "Support" tab. If you do not have internet access, please include a letter with your complete name, street address, email address and phone number where you can be reached during business days, your RMA number, a list of the included items, method of payment for any non-warranty expenses and a brief summary of the problem. Your original sales receipt must also be included for warranty consideration. Be sure your name, address, and RMA number are clearly written on the outside of the shipping carton.

WARRANTY INSPECTION AND REPAIRS

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

NON-WARRANTY REPAIRS

Should your repair not be covered by warranty the repair will be completed and payment will be required without notification or estimate of the expense unless the expense exceeds 50% of the retail purchase cost. By submitting the item for repair you are agreeing to payment of the repair without notification. Repair estimates are available upon request. You must include this request with your repair. Non-warranty repair estimates will be billed a minimum of ½ hour of labor. In addition you will be billed for return freight. Please advise us of your preferred method of payment. Horizon accepts money orders and cashiers checks, as well as Visa, MasterCard, American Express, and Discover cards. If you choose to pay by credit card, please include your credit card number and expiration date. Any repair left unpaid or unclaimed after 90 days will be considered abandoned and will be disposed of accordingly.
Please note: non-warranty repair is only available on electronics and model engines.

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

Horizon Service Center
4105 Fieldstone Road
Champaign, Illinois 61822

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

Horizon Product Support
4105 Fieldstone Road
Champaign, Illinois 61822

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

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

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

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

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

Horizon Technischer Service
Hamburger Strasse 10
25335 Elmshorn
Germany

Please call +49 4121 46199 66 or e-mail us at service@horizonhobby.de with any questions or concerns regarding this product or warranty.

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 in 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.

FCC INFORMATION

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution: Changes or modifications not expressly approved by Horizon Hobby, Inc. could void the user's authority to operate the equipment.

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

CE COMPLIANCE INFORMATION FOR THE EUROPEAN UNION

Instructions for Disposal of WEEE by Users in the European Union

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

The associated regulatory agencies of the following countries recognize the noted certifications for this product as authorized for sale and use:

UK	**DE**	**DK**	**BG**	**SE**	**FI**
EE	**LV**	**LT**	**PL**	**CZ**	**SK**
HU	**RO**	**SI**	**AT**	**IT**	**ES**
PT	**IE**	**NL**	**LU**	**MT**	**CY**
GR	**FR**				

DECLARATION OF CONFORMITY

(in accordance with ISO/IEC 17050-1)

No. HH2008111006

Product(s): Spektrum DX3R Transmitter
Item Number(s): SPM3100

Equipment class: 2

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

EN 300-328 v1.7.1 ERM requirements for wideband transmission systems operating in the 2.4GHz ISM band

EN 301 489-1 v.1.6.1 General EMC requirements for Radio equipment
EN 301 489-17 v.1.2.1

Signed for and on behalf of:
Horizon Hobby, Inc.
Champaign, IL USA
Nov10, 2008

Steven A. Hall
Vice President
International Operations and Risk Management
Horizon Hobby, Inc.