

EXTREME RRS



User Guide

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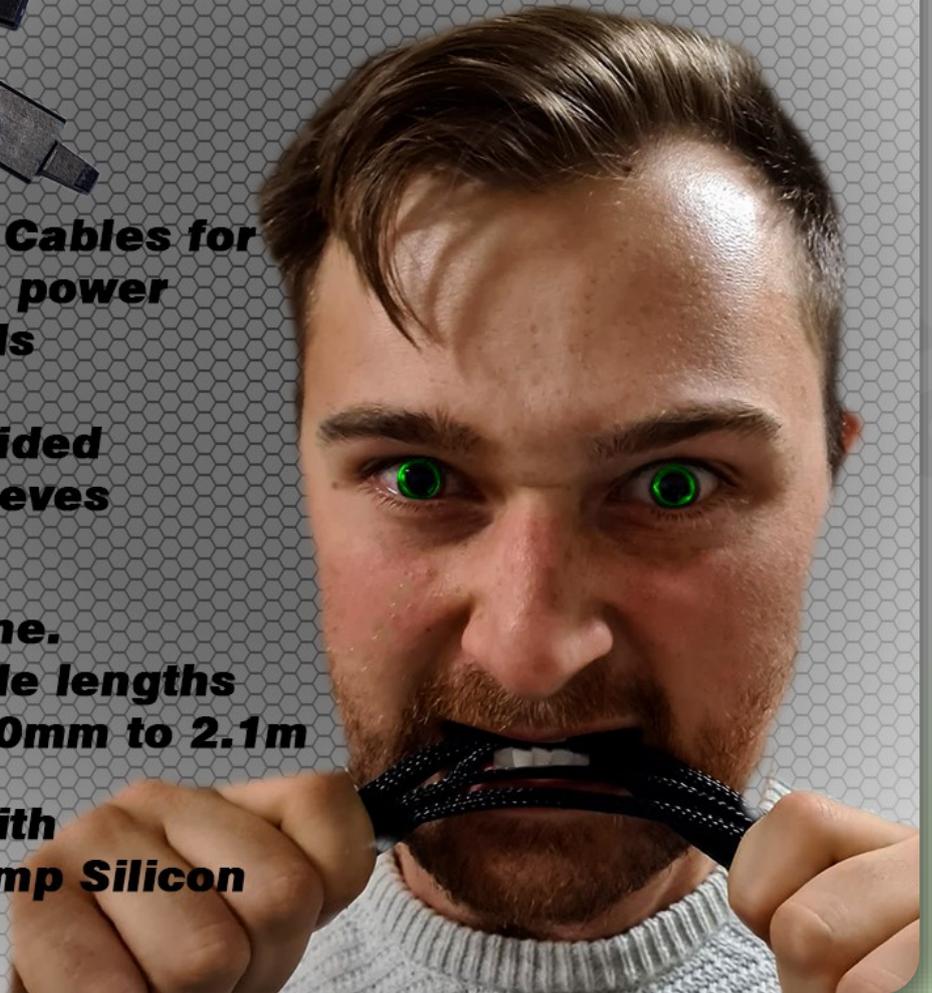
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Introduction

Thank you for your purchase of the Advance Radio EXTREME RRS System.

The Advanced Radio EXTREME RRS system was designed with Giant Scale 3D and IMAC Models in mind and combines Power Distribution and a 16 Channel Servo control system in the lightest package in it's class (less than 50 grams).

In the past trimming and matching servos would take place via the transmitter. This old school thought would limit you to the number of channels available from the transmitter. With EXTREME RRS these functions have been moved to the EXTREME RRS system and in doing so brings you much more functionality and flexibility in model setup. You gain at the touch of a button as many as 16 servo outputs that can all be mixed, matched, sub trimmed, reversed and endpoint adjusted. The power of this new system and thought process will become obvious as you start to use the EXTREME RRS System.

LETS GET STARTED — in this guide we will show you how to connect your new EXTREME RRS system, General use and setup as well as how to get the most out of the EXTREME RRS stabilisation system. Please take the time to read & understand this guide before installation.

TOUCH SCREEN—The touch screen display supplied with the EXTREME RRS should be protected from vibration. We don't recommend mounting the Smart Screen in models with gas powered engines.

BATTERIES—Before installation please ensure that your batteries are fully charged. The EXTREME RRS System relies on this to know how much your model has consumed from each pack. EXTREME RRS collects this information and displays this as a set of battery cells indicators on the Smart Screen. **NEVER FLY WITH BATTERY PACKS THAT HAVE 35% OR LESS CAPACITY (RED ZONE ON THE BATTERY INDICATOR).** Doing so may put your model at risk.

RECEIVER INSTALLATION—Some receivers don't offer protection against incorrect polarity or pin offset. **IT IS IMPORTANT** that you observe correct polarity and pins when connecting the receivers to the EXTREME RRS system.

Included Items:

- 1 x Live feedback touch screen Smart display
- 1 x EXTREME RRS power distribution module.
- 1 x Power LED
- 3 x Receiver cables

Optional Items:

- Pin Flag switch with Advance Radio Flag
- Remote FOB Switch with Advance Radio Flag
- Magnetic Switch with Advance Radio Flag
- 2 x Receivers

Features:

- Built-in Battery Guard Technology. The EXTREME RRS constantly monitors battery voltage and current draw and displays this on the Smart Screen display.
- Works with single or dual battery configuration. *Recommended with dual battery.
- Works with all major battery chemistries. LiFe. LiPo, Lion. High Power batteries essential.
- Full Dual Battery Redundancy - If one battery fails the other battery takes full control.
- Dual receiver redundancy
- Up to 16 input channels (depending on transmitter capability)
- 16 fully assignable and programmable servo outputs.
- Easy-to-use pre-routed servo routing.
- Independent servo reverse on all channels.
- Sub Trim and end point (3 point) matching on all channels.
- Advanced 15 point matching on all channels
- Maximum Battery Power Balancing – Using dual battery perfect diode technology.

Installation and Mounting Instructions

In this section we will explain how to mount both the EXTREME RRS and the Smart Display. The Advanced Radio Smart System gives you the choice of mounting the Smart Screen in the Model or leaving it disconnected for normal flying. The EXTREME RRS will operate in normal flying mode without the Smart Screen Connected.

Smart Screen Mounting

If your model is a gas powered and has a high level of vibration then we don't recommend mounting the screen in the model unless you provide a high level of vibration damping when mounting the screen.

The EXTREME RRS provides downlink telemetry so it is not necessary to mount the Smart Screen in the model to view battery data.

Mounting the EXTREME RRS System

The EXTREME RRS is supplied with 4 rubber shock mounts in the base plate, similar to rubber mounts on servos, these provide shock mounting for the EXTREME RRS.

We recommend mounting the EXTREME RRS in a convenient low vibration area of your model. DO NOT MOUNT the EXTREME directly to the motor box where high vibration exists.

Mounting the Smart Display

To save weight the Smart Screen is not required for normal flying usage. It is only required for programming the EXTREME RRS. Downlink telemetry is available to your transmitter from the EXTREME RRS so we do not recommend mounting the Smart Screen in a high vibration model.

AAR
Advanced Radio

General Usage and Screen Information

Important: The Smart Screen Display supplied with the EXTREME RRS is a touch screen display. It is used in both setup and provides feedback to the user about battery voltage and milliamps used. The screen can be mounted in a model for quick and easy use. However the EXTREME RRS will operate during normal flying mode without the Smart Screen connected.

Below is an overview of each screen on the EXTREME RRS

Main Smart Screen Display

Battery 1 (B1) and Battery 2 (B2)

Shows input voltage of both battery packs.

Servo

Shows Regulated voltage to servos

Total mA

Shows total milliamps since last charge.

Press here to enter the **Main Menu**

Last mA

Shows milliamps used since model was last powered up and resets when model is turned off. Press here to reset **flight timer** and **Last mA**.

FL-T

Flight timer since model was turned on. The timer only operates while on the main screen.

FL-N

Flight number since reset. Gives an indication of number of flights on the models airframe.

Battery Indicators

Shows the remaining capacity in the batteries from 100%

- 0%. **NEVER FLY IF THE INDICATORS ARE IN THE RED.**



Main Menu

Return

Returns back to the previous screen.

Power

Press here to go to the battery setup and reset menu.

Monitor

Press here to go to servo programming menu.

I/O Routing

Pressing here will take you to the channel routing screen.

Servo Match

Pressing here will take you to the 3 point and 15 point servo matching screen,

Receiver

Pressing here will take you to the receiver and frame rate monitor screen.

System

Pressing here will take you to the system page which contains credits and system information.



Power Setup Screen

Return

Takes you back to the previous screen.

RES-mA

Resets total mA used. Please ensure both packs are **FULLY** charged before you reset.

RES-FLT

Resets flight counter and timer to zero. Use this feature mostly when installing in a new airframe or before the maiden flight.

Bat Capacity mA

Shows the capacity of the batteries you are using. We will go through how to set this in the First Time Setup section on page 10.

I/O Routing Screen

Save

Takes you back to the previous screen and saves your routing choices.

- and + buttons

Changes the input Channel from 1 to 16

Note: you can only assign servos to channels that are available from your Receiver.

Example: you can not assign a servo to channel 16 when using a 10 channel radio

S01 to S16

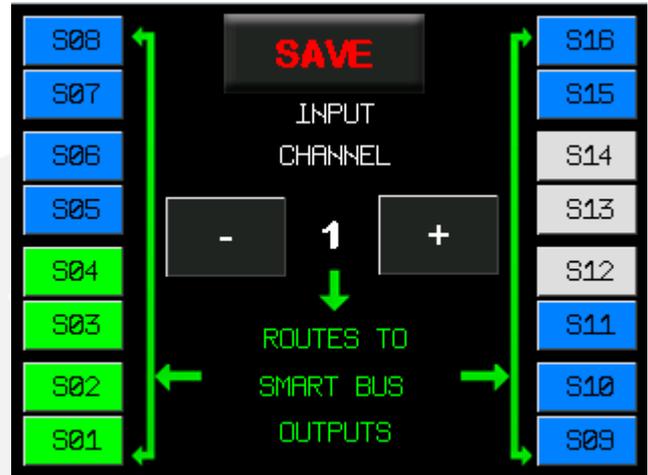
These buttons correspond to the outputs on the EXTREME RRS.

They have 3 colours,

Green = they are assigned to the current receiver channel.

Blue = they are not assigned to any receiver channel.

Grey = they have been assigned to a different receiver channel and cannot be selected for this channel



Servo Matching screen

Return

Takes you back to the previous screen.

S01—S16

Pressing any of these buttons will take you to the servo matching page for the corresponding servo output on the Extreme. Here you can match the servos with the 3 point and 15 point matching.

Channel Monitor screen

Return

Takes you back to the previous screen.

1/2

Changes the page to higher channels.

Channel Bars

The bars show the current input channels and position.

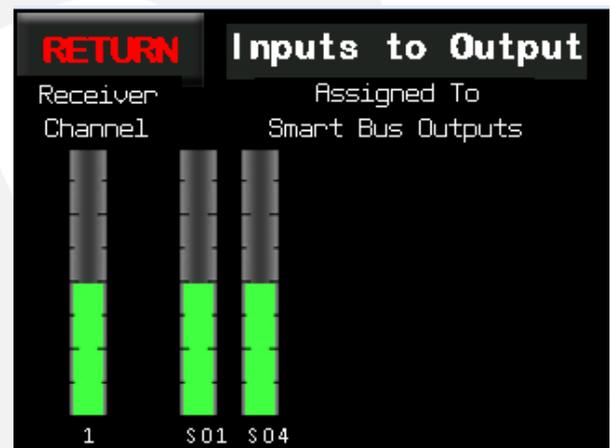
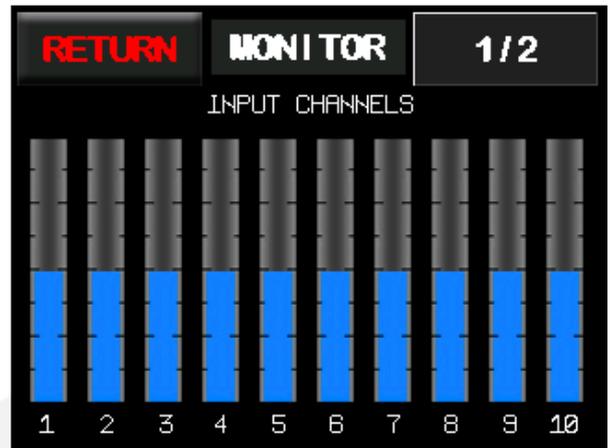
Note: The bars have two colours.

Blue = no servo output has been assigned.

Green = one or more servo outputs has been assigned to this channel.

Tapping any of the green bars will take you to the inputs to outputs screen and show corresponding assigned input to output channel(s).

We will expand on this feature in the servo matching



Sub Trim and Servo Match Menu

Return

Returns you back to the previous screen.

Servo Direction

Reverses the selected servo direction.

Sub Trim & Servo Match

Takes you to the Sub Trim page for the chosen Servo

15 point Servo Match

Takes you to the Multi-point match page.

Sub Trim

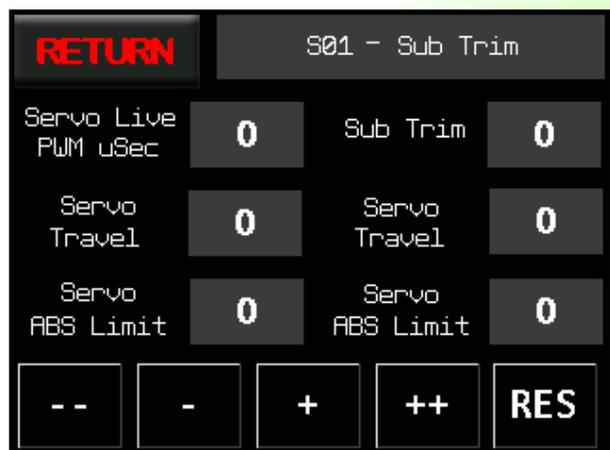
Return Returns you back to the previous screen.

Servo Live PWM Shows the live PWM value of the servo output.

Sub Trim Level shifts the entire range of the chosen servo channel.

Servo Travel Are end point adjustment to increase or reduce servo range relative to stick movement. Also used in conjunction to match multiple servos.

Servo ABS Limit Adjusts the absolute maximum and minimum travel of a servo.



15 Point Servo Matching

Return

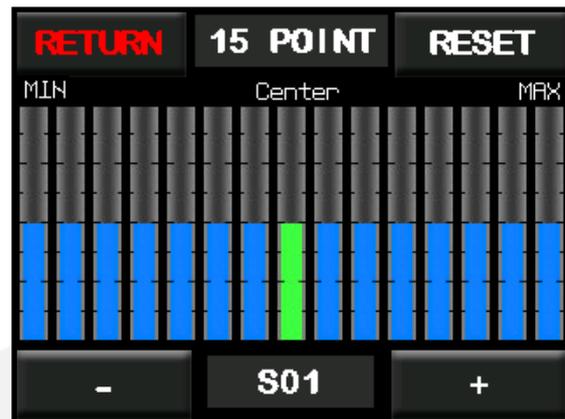
Takes you back to the previous screen.

Reset

Resets the sub trim values back to default.

Vertical Bars

Shows the sub trim applied to the servo. The sub trim values can be changed using the **DEC**, **INC** buttons.



Receiver Page

Return

Takes you back to the previous screen.

Reset

Resets the receiver values back to zero.

Frames

Shows good frames received by each receivers.

Drops

Shows frames not used by the receivers.

Fails

Shows frames received by EXTREME RRS with an incorrect checksum value.

Frame Rate

Set the output frame rate of the signal to the servos.

Fail Safe Button

Takes the user to the fail safe set up screen.

RETURN		Receiver		RESET
Rec	Frames	Drops	FailSafe	
1	0	0	0	
2	0	0	0	
3	0	0	0	

Set Fail Safe

Fail Safe Screen

Return

Takes you back to the previous screen.

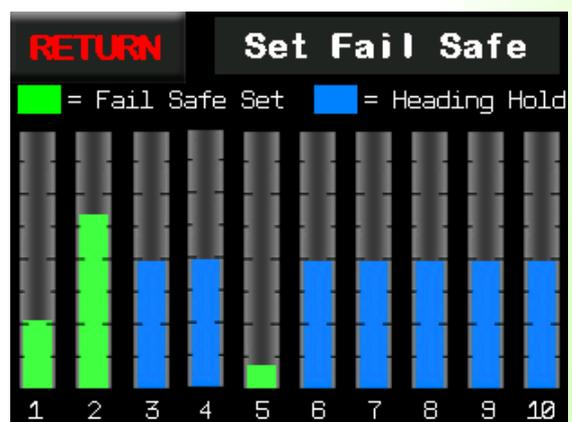
Vertical Bars

Shows the fail safe values based on stick position from the radio. Fail safe is set by pressing the corresponding blue bar.

Note: The bars have two colours.

Blue = Fail safe is set to heading hold for that transmitter channel.

Green = Fail safe is set to a specific position based on the radio



First Time Battery Setup

We are now going to go proceed with a first time setup of the EXTREME RRS .

Please ensure your batteries are fully charged before you setup the Extreme.

If you need any additional help with what each button or item does please read the General Usage and Screen information page located on page 7 of this manual.

We recommend you do not have any servos connected to the EXTREME RRS during the first time setup.

Step 1

Ensure that both batteries are plugged into the Extreme. You will also need to ensure the Smart display is plugged into the switch as it is used for programming.

Upon power up, you will see the AR logo. After a few seconds the Smart Screen will be shown.

Step 2

Press the green **Total mA** text on the Smart Screen, this will take you to the main menu.



Step 3

You should now see the Main Menu Screen. Press the **POWER** button on the screen.

Step 4

This is the battery setup screen. Using the arrows (DEC, INC) next to **Bat Capacity mA** cycle through until you see the correct capacity that matches your battery packs.

Note: Step 4 is extremely important! Please ensure the capacity is set correctly to the battery packs you are using.

The EXTREME RRS uses this capacity value to show the remaining battery capacity on the main screen. If you set this value incorrectly then the remaining capacity indicators may not show the correct remaining battery capacity.



Step 5

Once you have setup these parameters, press the **RETURN** button to save and return to the main menu. Press **RETURN** again to go back to the Smart Screen. You have successfully setup the EXTREME RRS Battery monitoring.

Important

The Smart display main Screen shows how much capacity you have left using the battery indicators on the left and right of the battery screen. It is important that the capacity you enter is correct and accurate. If you are unsure about the capacity of your batteries or if your packs are not new we recommend cycling your packs by discharging them and recharging them to full. This will give you the best possible result for the battery packs you are using.

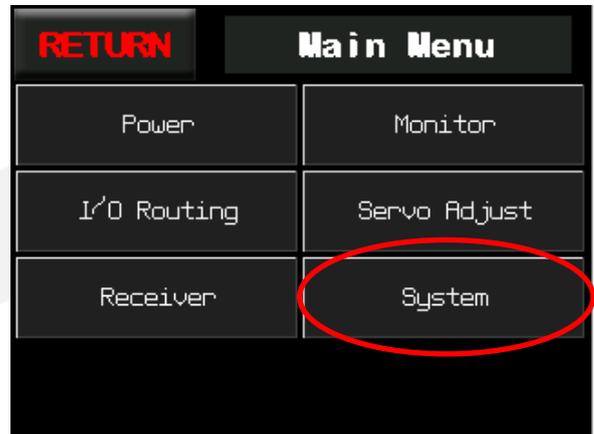
Protocol Selection

Before connecting receivers to the EXTREME RRS you will need to select the appropriate protocol to match to your transmitter system. EXTREME RRS system supports the following protocols:

SBUS, SBUS2, XBUS, Jeti EX Bus, FRISKY, HOTT, SRXL, SRXL2 and Core in SBUS mode.

Step 1

From the main Menu tap the "System" button.



Step 2

From the System Page tap "Receiver Protocol".



Step 3

Tap the appropriate button that matches the protocol of your transmitter/receiver system.

Futaba = SBUS2

JR/DFA = X-BUS

Graupner = HOTT

JETI = JETI EX

Spektrum SRXL = AR8010T/ AR9030T receivers.

FRSKY S=Port = SBUS2 with S-Port telemetry

Spektrum SRXL2 or SRXL DX18 Mode = SPM4651T

DO NOT CONNECT 3.3V Spektrum Satellite receivers to the SF16 version of the Extreme.

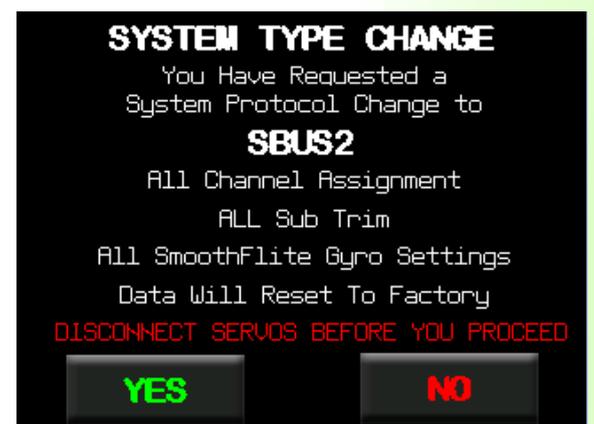
Core SBUS = SBUS receiver connectivity.

Multiplex SRXL = Multiplex SRXL



After making the selection you will be asked to confirm.

PLEASE NOTE changing the protocol will reset the EXTREME RRS system to factory defaults erasing all input to output routing, sub trim and EXTREME RRS Gyro settings.



Installing the Receivers ARXL Version

The EXTREME RRS ARXL includes two receiver connection cables and possibly a third telemetry cable. (For Spektrum SRXL2 receivers you will need to purchase adaptor cable part number BRC857), Standard receiver cables are generally supplied pre-connected to the Extreme. These can then be connected to the SBUS2, SRXL, JR XBus, Jeti EX Bus, HOTT port on your receiver.

PLEASE NOTE the polarity of the receiver signal and ground on the receiver before connecting to the Extreme.

The EXTREME RRS system will work with either a single or dual receiver setup. The receivers **MUST BE** capable of 7.4V.

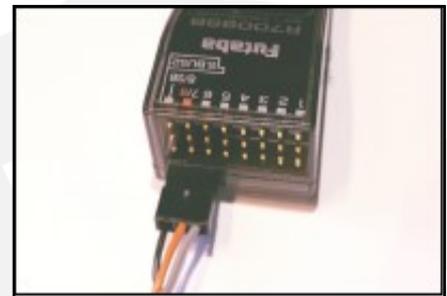
We recommend using two HV (high voltage) receivers or similar. If you are unsure please contact Advanced Radio for details.

The EXTREME RRS System is designed to supply the power to all the servos. NEVER connect servos directly to the receiver when using the EXTREME RRS System.

Note: For more information on how to setup and bind single or dual receivers, please consult your transmitter and receiver manual supplied by the manufacturer.



Please note cable polarity on a RG812BX



Please note cable position on a 7008 receiver. It is possible to plug into the ground pins of the receiver and this may damage the receiver and EXTREME RRS system.



Redundant Receiver Cable

Spektrum Receivers = Connect to SRXL/SRXL2 port .

Futaba Receivers = Connect to SBUS2 port.

JR/FDA Receivers = Connect to XBUS port.

JETI Receivers = Connect to EX BUS port.

Graupner Receivers = Connect to SUMD port.

FRSky Receivers = Connect to SBUS port.

Core Receivers = SBUS port.

System Specific Receiver Installation

Please observe the correct polarity and pin placement when connecting the receivers.

EXTREME RRS sends telemetry of battery voltage, current and mAh consumption downlink to the connected receivers.

Futaba SBUS2 System.

EXTREME RRS supports dual SBUS2 receivers. SBUS2 provides up to 16 channels into the EXTREME RRS (depending on transmitter) routed to any of the 16 servo outputs. Connect the two supplied receiver cables to SBUS2 ports. **Please observe the correct polarity and pin placement when connecting the receivers.** Telemetry is provided from port R1. No additional translator accessory is required. Only the first bound receiver will accept telemetry in a Futaba system. You **MUST** connect this receiver to port R1 of the EXTREME RRS system to receive telemetry.

Jeti EX-BUS System.

EXTREME RRS supports all Jeti EX-Bus capable receivers. Jeti EX provides up to 16 channels (depending on transmitter) into the EXTREME RRS routed to any of the 16 servo output channels. When using two JETI EX BUS receivers with EXTREME RRS you connect receivers to EXTREME RRS ports R1 and R2 and to the EXT port of each receiver. Set the receivers to EX bus mode on the Jeti Transmitter. **Please observe the correct polarity and pin placement when connecting the receivers.** Telemetry is provided via the EX bus cable on EXTREME RRS port R1.

JR/DFA X-BUS System.

EXTREME RRS supports all JR/DFA receivers with XBUS-A. XBUS-A protocol supports up to 16 channels into the EXTREME RRS (depending on transmitter) routed to any of the 16 servo output channels. Connect the two supplied receiver cables to EXTREME RRS ports R1 and R2 and then to the receiver. **Please observe the correct polarity and pin placement when connecting the receivers.** For Telemetry connect port TEL of the EXTREME RRS to the Battery/Sense port of either receiver.

FRSKY.

EXTREME RRS supports S-Port capable receivers. Up to 16 channels are available (depending on transmitter) into the EXTREME RRS routed to any of the 16 servo output channels. When using two S-Port receivers with EXTREME RRS you connect receivers to EXTREME RRS ports R1 and R2 and to the SBUS. **Please observe the correct polarity and pin placement when connecting the receivers.** For Telemetry connect port TEL of the EXTREME RRS to the S-Port of the primary receiver.

Spektrum SRXL2 System.

The current version of EXTREME RRS supports the full features of SRXL2 protocol. EXTREME RRS will receive 16 channels when using SRXL2 receivers and depending on your radio TX capabilities. Telemetry is sent on all SRXL2 receiver connections when requested by the receiver. Please use 3 x SPM4651T receivers for full range telemetry. The SPM4651T use a new 4 pin connector. You will require adaptor leads SKU BRC857 from AR for the SPM4651T receivers to connect to SF16.

Spektrum SRXL System.

Connect with the supplied receiver cables one or two SRXL receivers to the SF16 ports marked R1 and R2. Connects to the receiver SRXL port (please not the polarity of the port connection on the receiver) .

Please Note: Spektrum SRXL does not support downlink telemetry from external devices. Receiver voltage is

System Specific Receiver installation

however sent from the receiver.

Graupner HOTT System.

EXTREME RRS supports all receivers with HOTT protocol. HOTT receivers provide up to 16 channels (depending and transmitter) into the EXTREME RRS routed to any of the 16 servo output channels. Connect receivers to EXTREME RRS ports R1 and R2 to the SUMD port of the HOTT receiver. You will need to set the receiver to SUMD.

Please observe the correct polarity and pin placement when connecting the receivers. For Telemetry connect port TEL of the EXTREME RRS to the telemetry port of either HOTT receiver.

Power Box Core

EXTREME RRS supports SBUS capable Core receivers. Up to 16 channels are available (depending on transmitter) into the EXTREME RRS 16 routed to any of the 16 servo output channels. Connect receivers to EXTREME RRS ports R1 and R2 and to the SBUS port on the receiver. **Please observe the correct polarity and pin placement when connecting the receivers.** Battery telemetry is supplied by the receivers.

Please observe the correct polarity and pin placement when connecting the receivers.

Advanced Radio

Input Channel to Servo Output Routing

During this stage, we will install the receiver and servos.

Important: Check the recommended voltage range of your servos, supplying excessive voltage to your servos may cause damage to the servos.

Before connecting any servos to the EXTREME RRS we recommend reading through the following steps. This will allow you to familiarise yourself with EXTREME RRS in order to use it to its fullest potential.

During the setup if you have multiple servos on a control surface (Example: 2 servos on an aileron). We recommend setting up the master servo before mechanically connecting the slave.

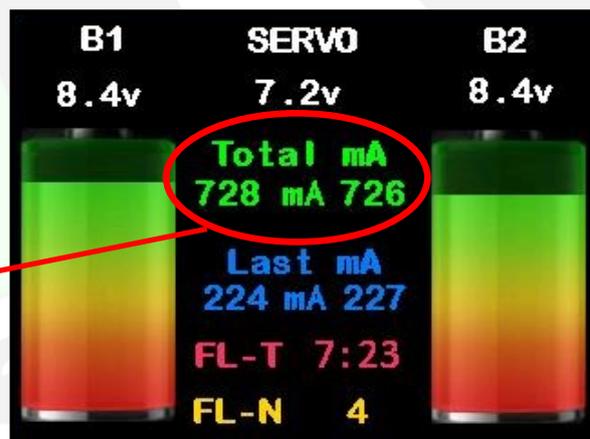
Step 1

Ensure that both batteries are plugged into the Extreme. You will need to plug in the Smart Screen as it is used for programming. Ensure your receiver is plugged into the EXTREME RRS and your transmitter is on and bound to your receiver.

For more information see page 6.

Step 2

Press the green **Total mA** text on the Smart Screen, this will take you to the main menu.



Step 3

You should now see the Main Menu Screen. Press the **MONITOR** button on the screen. This will take you to the receiver input channel monitor.

Note: The monitor gives you a visual indication of the assigned input channels from your receiver. Your new EXTREME RRS comes with primary control surfaces pre-assigned to simplify your setup.

Hint: Create a new model on your transmitter with dual aileron channels, single elevator and single rudder channels.

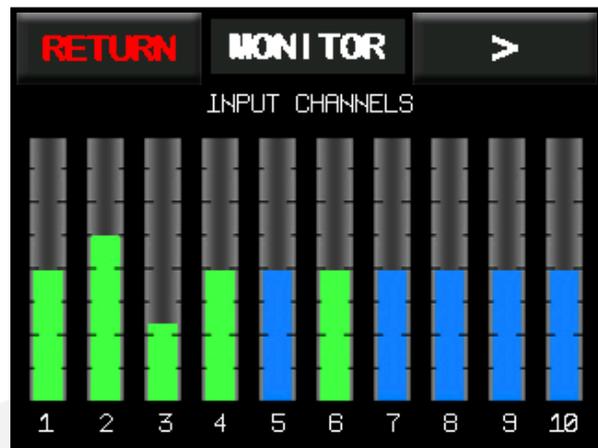
If all is connected correctly, moving the transmitter sticks will cause the green bars on the monitor screen to move.

As you can see, the monitor screen is a good tool for viewing input channel assignments.

For advance setups, we have included a blank assignment sheet at the end of this user guide.

The following steps will show you how you can re-assign channels from the factory setup.

Press return from the monitor screen to return to the main menu.



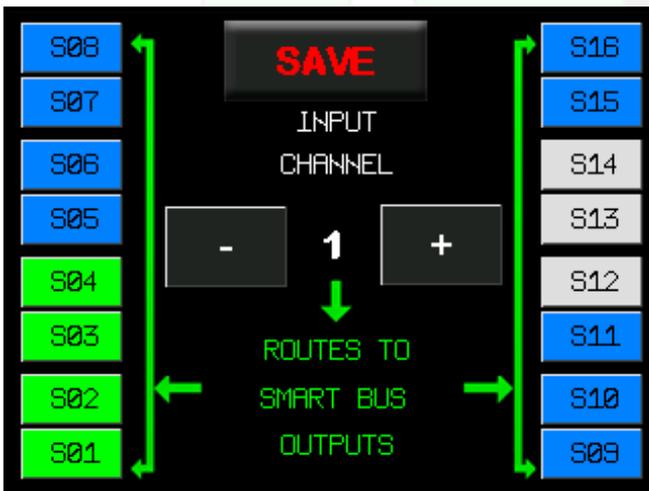
Step 4

From the main menu, tap the I/O Routing button. The screen (on the left) should appear. In this example, transmitter input channel 1 (coloured white) routes to servo outputs S01, S02, S03 and S04, which are coloured green.

Lets show how easy it is to assign and de-assign additional servo outputs to transmitter channel 1.

Tap the Blue S09 button on the Smart Screen. The S09 should turn green. We have now added servo output 19(S09) to transmitter input channel 1. EXTREME RRS makes it that simple!

Tapping S09 a second time, will de-assign it turning it back to blue.



Note: The servo channels are colour coded.

Green = they are assigned to the current transmitter input channel.

Blue = they are not assigned to any transmitter input channel and are available .

Grey = they have been assigned to a different transmitter input channel other than the one currently selected and cannot be selected for this channel.

Step 5

Lets now show you how to move through transmitter input channels. With the Stylus, tap the Plus (+) button once. You should see the input channel change to 2 (coloured white), and the previously green servo output channels will become grey (remember these servo outputs were assigned to input channel 1 so they are not available to input channel 2). Depending on the chosen protocol other servo outputs should show as green i.e. they are assigned to input channel 2. Tapping the Plus (+) sign will move you to higher input channels. Tapping the Minus (-) sign minus sign will move you to lower input channels and eventually back to input channel 1.

Note: you must press the **SAVE** button in order to confirm any changes to the channel routing. Pressing save also returns you to the Main Menu.

Servo Sub-Trim: Reversing Method 1

The EXTREME RRS system is designed to allow you to easily trim up to 16 servo outputs for precise servo matching in multi ganged servo installations, Elevators, flaps and multi motor installations. If servos require matching we recommend for simplicity you do this in the EXTREME RRS system. And here is an example of why

Example: Gyro assisted Rudder and ground steering using only 1 transmitter channel.

You assign the transmitter rudder channel to 2 EXTREME RRS output channels. EXTREME RRS output 1 controls Rudder while output 2 controls Steering. You can reverse/reduce the throw of the rudder and steering channel for better ground steering and the rudder gyro function becomes available to steering for direction assisted take off steering. Nice.

OK, there are two methods to access the servo sub trim and matching function in the EXTREME RRS 16.

The following example assumes channel 1 from your transmitter has been assigned to S01 on the EXTREME RRS as per factory setup.

From the **Main Menu**, tap on the **SERVO ADJUST** button. This will take you directly to the servo match and sub-trim screen (pictures to the right).

Lets have a look at how to sub-trim and reverse channel S01 on the Extreme.

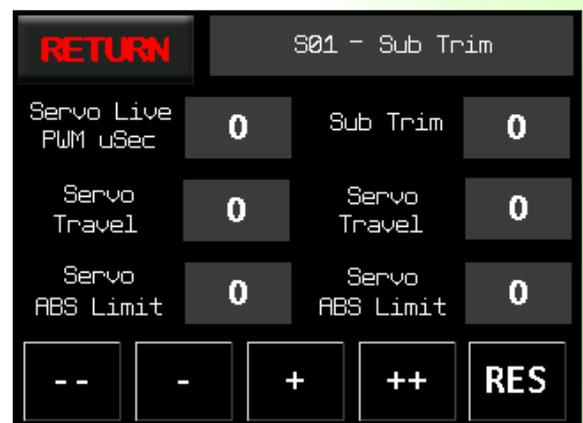
Simply tap on the servo output S01. You should now see the Sub Trim menu for S01. The words **"Editing S01"** will be shown at the top right of the screen (picture to the right) . This can be used to check you have selected the correct channel.

Lets now reverse the servo. Tap the **SERVO DIRECTION** button. This will change the direction of rotation on the servo. Tapping the **SERVO DIRECTION** button a second time will set it to its original direction.

Now lets have a look at sub-trimming a servo. Tap the **"Sub Trim & Servo Match"** button to take you into the Sub Trim Page. Press the Sub Trim +/- buttons to Sub Trim the servo.

This is the same as sub trimming on your transmitter but offers higher resolution and precise servo matching. You can also adjust end points of the servo from this page using **Servo Travel**. The combination of sub trim and Servo Travel will give you precise multi-ganged servo matching or precise matching of elevators, flaps and multi engine models.

TAP RETURN TO COMMIT YOUR TRIM CHANGES TO MEMORY



Servo Sub-Trim: Reversing Method 2

We also provided an input channel **MONITOR** screen so you can easily visualise which transmitter channel is assigned to which servo output and then easily trim and match.

The following example assumes Channel 1 from your transmitter has been assigned to S01 on the EXTREME RRS as per factory setup.

From the Main Menu tap on the **MONITOR** button.

The **MONITOR** screen will appear as pictured right.

From the **MONITOR** screen, tap the green bar for transmitter input channel 1. This will take you to the **INPUTS TO OUTPUTS** screen for transmitter input channel 1 (see right).

With reference to this screen, "Receiver channel" 1 (left most column) is "Assigned to Smart Bus outputs" S01, S02, S03 and S04 shows as column 1,2,3 and 4.

Now, Simply tap on "Assigned to Smart Bus output" 1.

You should then see the Sub Trim menu for S01. The words "**Editing S01**" will be shown at the top right of the screen (picture to the right) . This can be used to check you have selected the correct channel.

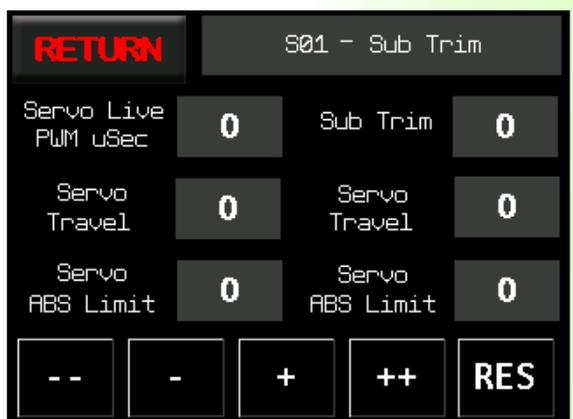
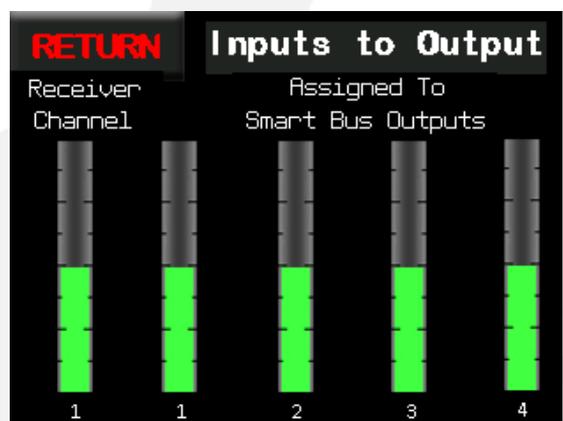
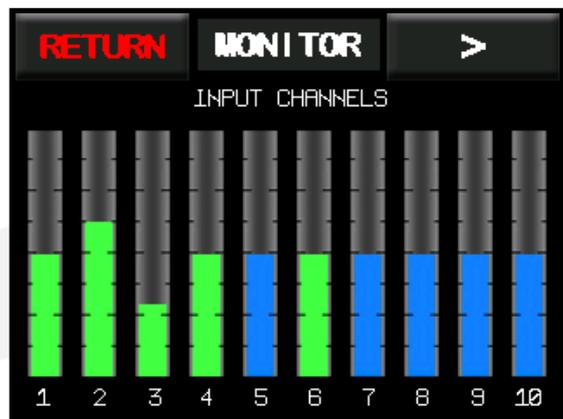
Lets now reverse the servo. Tap the **SERVO DIRECTION** button. This will change the direction of rotation on the servo. Tapping the **SERVO DIRECTION** button a second time will set it to its original direction.

Servo Trave Limit

EXTREME RRS also offers a Servo Trave Limit function. You use this feature to set an absolute servo limit irrespective of any Sub Trim in the transmitter or Extreme. Think of this as a protection feature that will stop a servo from overdriving and damaging a control surface.

Example: Dual Flaps 15 point matched with 1 transmitter channel.

You assign the transmitter flap channel to 2 EXTREME RRS servo outputs. EXTREME RRS output 1 controls left Flap while output 2 controls right flap. You can reverse/reduce the throw of the left and right flap channel for exact matching. And for even more precise matching you can apply 15 point servo matching which is described on the next page.



15 Point Matching

(EXTREME RRS All Versions)

15 point matching is useful for getting the best possible match between servos. This includes mechanically matched servos (aileron) or non mechanically matched (left and right elevator, flaps or multi engine models). We are now going to go through the 15 point servo matching process. For best results please do 3 point match before proceeding.

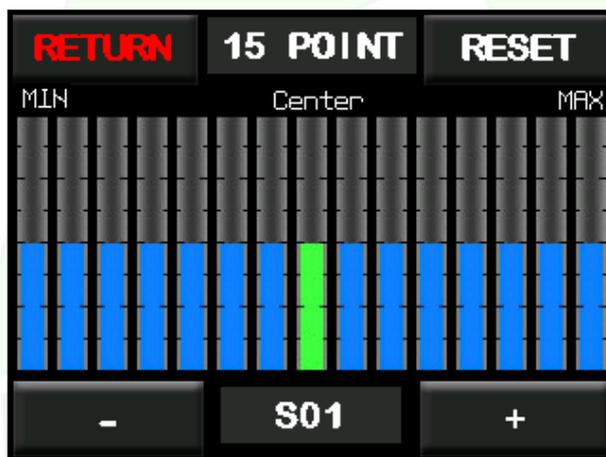
Note: If the servo is only moving a small amount. (Example: 10-15 degrees each way) You will only be able to use a small number of bars on the 15 point match. To use more bars, we recommend you increase the servo range by using a smaller servo arm.

Step 1

From the Sub Trim Screen tap the 15 Point Servo Matching button.

Step 2

You should now see the multi point match screen. Similar to the 3 point match, as you move the transmitter stick for that channel. The bars will change colour from blue to green.



Note: You can return the servos sub trim values back to default by pressing the RESET button.



Step 3

Slowly move the transmitter stick or rotary control for that channel from one side to the other, if at any point you hear servo buzz. Hold the transmitter stick in that position and use the -, + buttons to sub trim at that point. Sub trim the servo until the servo buzz lessens or disappears.

Step 4

Repeat Step 3 for the entire range of the servo, this can be repeated as many times as you wish.

Step 5

Once you are happy with the sub-trim press the **back** button to move back to the 3-point sub-trim page. Pressing back again from the 3-point sub-trim page will save the trim values to memory.

Receiver Menu

All EXTREME RRS systems have the added feature of monitoring the connection between the Receiver and the transmitter. This can be used to assist in the optimal placement of your receivers during set-up.

We will now go through a process of how to check the quality of the connection between your receiver and your transmitter.

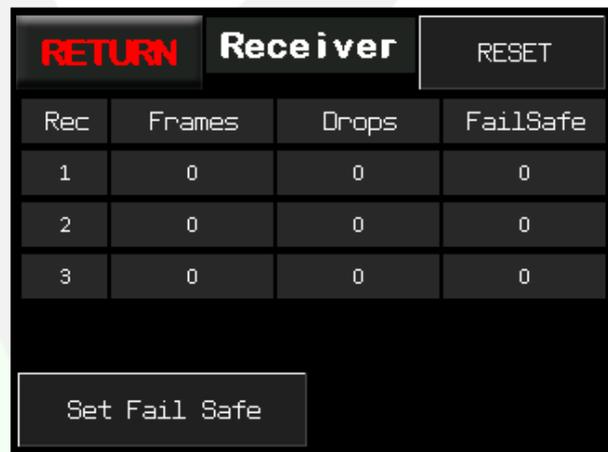
Using the Smart Display, from the **MAIN MENU** tap the **RECEIVER** button. This will take you to the receiver page.

From the receiver page you can see the receiver **FRAMES** received for each individual receiver, these indicate good packets of information sent from the receiver to the EXTREME RRS or received by the receiver from the transmitter. You can also see **DROPS**, these are packets have been received by the

Note: If the number of DROPS (dropped frames) is unusually high, it may indicate there is a problem with that receiver or receiver placement inside the model.

NOTE: It is quite normal to see these numbers with values higher than 0 however, if you are experiencing extremely high drop ratios, please consult your receiver manufacturer for more details on receiver placement.

Re-



Rec	Frames	Drops	FailSafe
1	0	0	0
2	0	0	0
3	0	0	0

The third column shows **FAILSAFE** (Fail Safe events PER RECEIVER) this value shows the number of failed-to-send events from a receiver to the EXTREME RRS i.e. the EXTREME RRS was expecting to receive frames but the receiver stopped sending them.

If you experience high numbers in FAILSAFE events during ground testing or after landing do not fly the model until you understand what has caused them.

Powering down the transmitter before powering down the model WILL cause the EXTREME RRS to show accumulate FAILSAFE events because the EXTREME RRS can no longer see signal from the transmitter.

Information: The EXTREME RRS redundant receiver design is evolved from medical system information delivery that must guarantee only good data is used. As such EXTREME RRS listens to all receivers all the time. This algorithm ensures only good frames are used and the fastest frames to control surface response in the industry.

Setting Fail Safe

EXTREME RRS 16 has Fail Safe function which should be used for all receiver types.

Note: It is extremely important that FAILSAFE is set before flying. We recommend at least setting FAILSAFE on throttle to either idle or off as a matter of safety.

Note: It is important to make sure that FAILSAFE is OFF or not set in the radio. If FAILSAFE is set in both the radio and the Extreme , you may experience servo jumping during a failsafe condition.

Note: In the EXTREME RRS, for FAILSAFE to occur, both receivers must enter FAILSAFE. If only one receiver enters FAILSAFE then the system will function on the remaining receiver. This is one of the outstanding safety features of the EXTREME RRS.

Step 1

Using the Smart Display, From the **MAIN MENU** tap the **RECEIVER** button. Now tap **FAILSAFE**.

You should see the Fail Safe Page (picture on the right). The **Blue** bars will follow the stick positions of your radio (just like the monitor screen).

The bars represent the first 10 channels outputted from your radio.

Note: The bars have two colours.

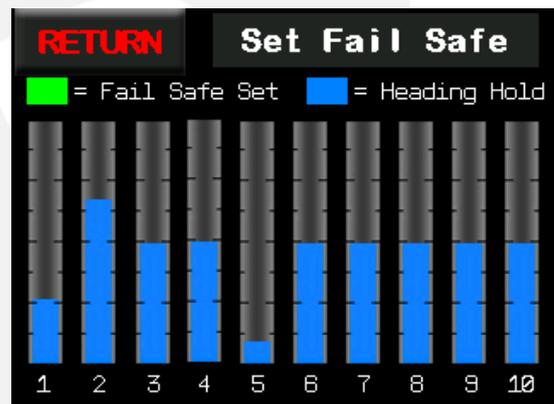
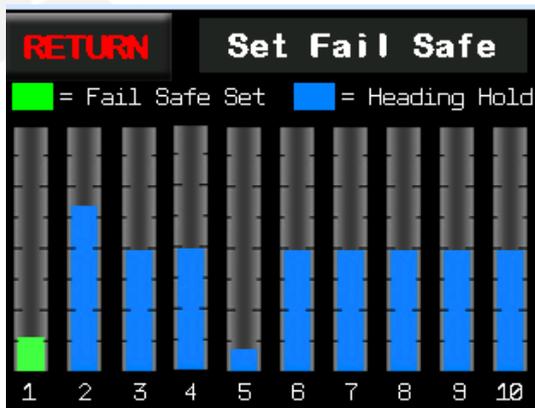
Blue = FAILSAFE is set to heading hold. In a FAILSAFE event the channel and associated servos will hold the last good received channel value.

Green = FAILSAFE is set to a specific position. The channel and associated servos will move to the pre-set FAILSAFE channel value.

The default setting for all channels is heading hold. (**Blue** bars)

Step 2

To set failsafe on any channel tap on the channel bar.



The blue bar will now turn green capturing the current input channel position. Alternate tapping of the Channel bar will cycle between heading hold (**Blue** bar) and FAILSAFE modes (**Green** bar).

Below is an example of how to set FAILSAFE on throttle assuming channel 1 is throttle:

On the Set FAILSAFE screen, move your throttle transmitter stick, the blue bars above channel 1 will move. With your throttle stick at the Idle position, tap the channel bar for channel 1.

The channel bar will now turn green.

you have successfully setup FAILSAFE for throttle.

To test the FAILSAFE function is correctly set up power off the transmitter. Channels set to FAILSAFE should move servos to the pre-set position.

IT IS EXTREMELY IMPORTANT TO SET AND TEST FAILSAFE PRIOR TO OPERATING THE MODEL.

Telemetry with SBUS2 Receivers

EXTREME RRS comes with the added ability of downlink telemetry when using a 7008SB or 7003SB SBUS/ SBUS2 receiver.

Note: In order to receive telemetry via Extreme, you must plug the receiver signal into the SBUS2 port. Please ensure that the primary receiver (first bound receiver in a dual receiver setup) is plugged into the R1 port on the Extreme. To check which receiver is the primary receiver, please consult your transmitter manual for reference.

Step 1

Ensure your receivers are plugged into the SBUS2 port.

Step 2

Ensure that the EXTREME RRS is on and both receivers are bound to your transmitter.

Step 3

Ensure your transmitter is turned on,

Note: For the following steps we will be using the 18SZ as an example. For all other radios please consult your transmitter manual.

Select the linkage menu on your transmitter.

Now select the sensor menu

Linkage menu	New Normal	6.7V	1/2
Servo monitor	Model select	Model type	
Servo reverse	End point	Servo speed	
Sub-trim	Function	Fail safe	
System type	T1-T6 setting	Throttle cut	
Idle down	Swash ring	Swash	
Stick alarm	Timer	Function name	

Step 4

Page across until you see sensor slot 24, Assign Curr. F1678 to this slot.

Step 5

Page across to slot 27 Assign Curr. F1678 to this slot.

Step 6

Now go to your telemetry screen, you should see the current used in mAHs and the Voltage of both Receiver packs.

Note: Both batteries must be plugged into the EXTREME RRS unit to receive voltage up-dates.

Other telemetry systems are similar in how the connect with the EXTREME RRS System. We also offer "How To" videos Advanced Radio YouTube channel.

https://www.youtube.com/channel/UCY_uLkfkMiO3OWU8jLm3jZQ?view_as=subscriber

Sensor	New-1 Condit1	6.7V	2/3
Sensor type	ID	Sensor type	ID
13	GPS	19	-----
14	GPS	20	-----
15	GPS	21	-----
16	-----	22	-----
17	-----	23	-----
18	-----	24	-----

Factory Reset

When you use the Sub-Trim and other functions these functions are saved to the permanent memory of the Extreme. RRS. There may be situations where you will want to initialise your EXTREME RRS back to the original factory settings. Switching the EXTREME RRS to a different model for example would be one of the situations. When you select the Factory feature all the sub-trim data and battery settings will be erased and the EXTREME RRS will be returned to “Out-Of-The-Box” settings.

WARNING!

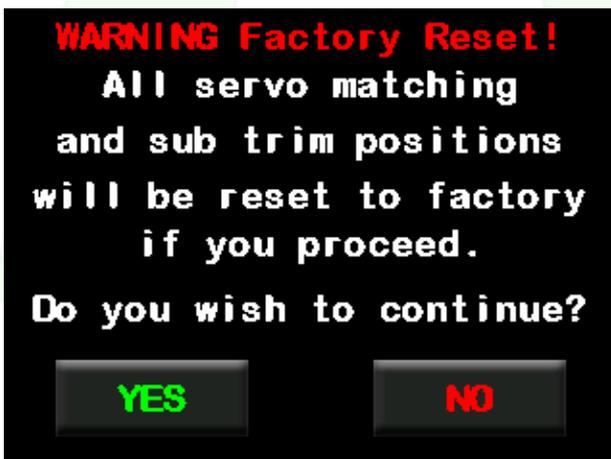
Performing a Factory Reset will erase all sub-trim data and is an irreversible process. Only do this if you are sure you want to reset the EXTREME RRS to factory settings.

Step 1

Using the Smart Display, go into the System menu, once here press the FACTORY RESET button.

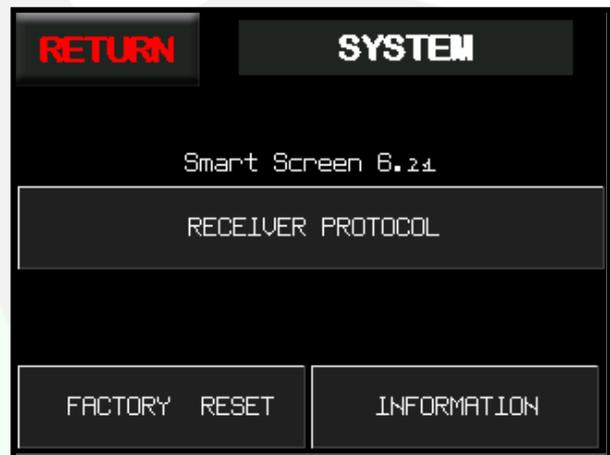
Step 2

A WARNING and Instructions will appear on screen. Please Read this as it is an important process. When ready press **YES** to continue or **NO** to go back to the system screen.



Step 4

After the Factory Reset process is complete the Saving Data Screen will disappear indicating you have reset all data.



Step 3

During the reset process the saving data screen will show for up to 20 seconds. Please DO NOT turn off the EXTREME RRS during this process.



General FAQ

Can I mount the Smart Display in my model.

The Smart Display can be mounted as a simulation cockpit for RC aircraft, however, it should be shock mounted to protect against vibration. All Advanced Radio ARXL products (EXTREME RRS and Smart Bus) provide downlink telemetry so in most cases it is not necessary to mount the display in the model.

After setup, do I have to leave the Smart Screen in my model.

No you don't. The EXTREME RRS will work perfectly without the Smart Display attached. Please read the FAQ above.

What are the 2 battery/bar pictures on the front screen for?

These pictures show you a percentage of the battery you have left. They will range from 100% to 0% and update as the battery packs are used. Never fly if the packs are in the RED ZONE and always make sure you have set up the correct battery capacity for your battery packs.

If I change the batteries in my model or move the EXTREME RRS to a different model will I have to setup the switch again?

Yes, The switch relies on the information that you program into it to be accurate. It can not work to its best if this information is not accurate.

Does the EXTREME RRS regulate the voltage?

No the EXTREME RRS pas through the actual battery voltage. If using LiPo or Lion packs please ensure that your servos are HV capable.

Can I Plug 2 different voltages into the Extreme ? For example a 3S lipo and a 2S lipo battery

No, you should always use the same voltage (S rating) and capacity packs on both sides of the Switch.

Can I plug 2 different chemistries into the Extreme? For Example: A LiFe and a Li-ion battery

No, you should always use the same chemistries for both batteries.

I have the remote switch version of the Extreme. Can I leave the batteries connected for a prolonged period?

EXTREME RRS with the remote switch option will draw a small amount from the batteries each day so for periods longer than a few days you should disconnect the batteries.

Specifications

Operating Voltage:	5.0 — 12.0v (Receivers must be capable of these voltages)
Battery type:	2s LiPo/Lion, 2s LiFePo4.
Receiver:	Dual AR Active Redundancy technology
Receiver Voltage:	High Voltage
Supported protocols:	Jeti EXBUS, SBus, SBus2, JR/DFA XBus-A, HOTT, SRXL, SRXL2.
Telemetry:	Ex-Bus, SBus2, XBus-A, Spektrum SRXL, HOTT, S-PORT
Number outputs:	16 Channels fully programmable
Servo Output Resolution:	0.25 μ s
Frame Rate:	11ms
Graphic Interface:	16k Colour Touch Screen
Dimensions:	66 x 49.5 x 22
Weight Power Unit:	50g (without screen)
Weight Screen:	66g
Temperature:	-30°C to 85°C
EMV Conformance:	EN 55014-1:2006
CE Conformance:	2004/108/EG

Channel Routing for Model _____

EXTREME RRS Servo Output	Transmitter Input	Function	Function	Transmitter Input	EXTREME RRS Servo Output
S08					S16
S07					S15
S06					S14
S05					S13
S04					S12
S03					S11
S02					S10
S01					S09

EXTREME RRS 3 Year Replacement Warranty

At Advanced Radio our products are designed and tested to very high standards. We use only the highest quality electronic components sourced from reputable manufacturers; ST Micro, BOSCH, TDK, Linear Technology, Texas Instruments, Cypress Semiconductor Corp and NPX. Our circuit boards are assembled in Australia in a certified ISO900-2008 and ISO 13485 medical devices risk management quality assurance environment.

At Advanced Radio we understand the value of the models that run our RC division of electronics. During our many years of operation we have focused on and developed a high quality product and reputable testing regime. Our QC process has been developed from many years of experience designing and working in medical systems. We understand completely the processes involved to achieve a very high quality and reliable product.

Our QC process provides for complete system functionality testing followed by rigorous load testing and running up a device up to 70°C for a period of 10 minutes under high electrical load. If the unit passes this stress test it is further run and heat soak at 60°C for a period of 8 hours prior to final test where it is load tested for a second time. If it passes these tests it is then packaged.

Shipping charges related to any warranty claim are at the expense of the user, but Advanced Radio may elect to cover shipping charges at it's discretion.

Warranty does not cover over voltage or over current damage beyond stated specification. Warranty does not cover damage due to negligence, abuse, accident, improper installation or improper mounting.

Warranty does not cover loss of time, inconvenience, loss of model, or other incidental or consequential damages.

EXTREME RRS Usage Statement

EXTREME RRS has competed in its first International competition at Top Gun in May of 2018 in several models with excellent results. EXTREME RRS employs state-of-the-art components to bring you the best possible flight experience for your giant scale model.

EXTREME RRS is a highly technical product and so it is important that you fully understand the usage of a gyro based system prior to usage of Extreme. This is not a toy. Incorrect setup of gyro parameters in any gyro system can lead to loss of control of a model. If you are unsure of the usage of gyro based systems then seek assistance from more experienced pilots.

Advanced Radio has extensively tested all supported radio protocols with our AR7444 and AR7434 servos during the 4 year development phase of the EXTREME RRS product. These high voltage servos are design proven with superior reliability specifically for giant scale models. We highly recommend trying these servos. They really are superior by design. We have also tested with several other leading brands of servos with excellent results.

EXTREME RRS servo outputs are filtered to remove spurious noise. This allows the usage of long servo lead lengths. We strongly advise the usage of high quality servo leads like the AR ProLine capable of carrying currents experienced with today's high power high voltage servos.

While every attempt has been made to provide complete user instructions, it is impossible to cover every possible combination of servos, radio type and battery type. If you would like to discuss the set up of your new model please feel free to contact us by FaceBook (Booma RC), Telephone on +61 242955847 or email support@boomarc.com.

We trust you will enjoy using the Advanced Radio EXTREME RRS.

Rick and Brendan Gell
AR Design Team.