Xtreme Power Systems

XtremeLink™

Installation And Usage Manual

XtremeLink™ is a trademark of Xtreme Power Systems

Firmware v1.0

Manual v1.3

Introduction

Thank you for purchasing the XtremeLink^{TM} system. This system is a direct replacement for your stock RF module and receiver.

Please read through this **entire** manual **before** you attempt the installation and usage of your XtremeLink^{TM} system!

Installation Requirements

The installation of the XtremeLink^{TM} RF module is not difficult. If after reading through this manual, you believe you cannot perform the installation, please seek someone who can assist you.

This manual should provide ample information and clarity to install and use this product.

Warranty Information

The XtremeLink^{TM} system carries a limited lifetime warranty. Units subject to improper installation, misuse, abuse, crash damage, or modifications will not be covered under this warranty.

Xtreme Power Systems may at its discretion either repair or replace the unit covered under warranty. The customer will pay all freight charges to and from Xtreme Power Systems. Xtreme Power Systems must be contacted to obtain a return authorization. Any product returned without authorization will be returned without repair or replacement.

Liability

By using this product, you agree to hold Xtreme Power Systems free from any type of liability either directly or indirectly due to the use of this product.

Legal Information

The 'look and feel' and functionality of this product are protected by U.S. copyright laws. Various terminology and feature names are protected under U.S. trademark laws.

SECTION 1 – INSTALLATION

Step 1 – Removing the stock RF module

Futaba, JR, and Hitec RF modules have tabs either on each side or top and bottom. Carefully squeeze these tabs and pull the RF module from the transmitter. Sometimes each side or each end will need to be wiggled for the module to come loose and removed. See Figures 1 and 2 for reference.

Figure 1 – Futaba RF module removal

Figure 2 – JR RF module removal

Step 2 – Installing the XtremeLink^{TM} RF Module

Position the XtremeLink^{TM} RF module over the original RF module location, and slowly press the module into the transmitter case. There should be no excessive force required to install the module. When the module is properly installed, it will "snap" into place and sit flush with the back of the transmitter case.

See figures 3 and 4 for reference.

The stock metal transmitter antenna MUST be removed. Nearly all transmitter antennas simply unscrew. If your transmitter has a pivot ball on top that the antenna normally screws into, do not screw in the antenna when the XtremeLink^{TM} RF module is installed.

If you switch back to a stock RF module, remember to re-install the antenna or damage may result to the transmitter!

When using the XtremeLink^{TM} RF module, the transmitter's modulation output **must** be set to PPM, MPLX, PPM18, or PPM24. PCM, APCM, SPCM, PCM1024, PCM2048, or any other method of modulation is not currently supported. This may change in the future. You will know if the modulation output is correct or not by looking at the STATUS LED when the power is turned on. If the LED lights up orange and does not change, the transmitter modulation is not set correctly. If the STATUS LED flashes red, then the transmitter modulation is set correctly.

Figure 3 – Futaba XtremeLink^{TM} module installation

Figure 4 – JR XtremeLink^{TM} module installation

Step 3 – Mounting the receiver

No matter which XtremeLink^{TM} receiver you use, the mounting procedure is the same. The most important thing to remember is that you must keep the antenna portion of receiver no less than 2 inches from anything that is metallic. This includes steel, carbon fiber, servos, fuel pumps, any type of wiring, etc. The best method of mounting is to show it off! Keep the receiver separated from anything else, and mount it out in the open so you can easily see it and get access to it (see Figures 5 & 6 for examples). Under no circumstance can you wrap or pass servo wires around the antenna! **Remember that wires can move under g-force, so make sure that wires can not move *at all* around the antenna area.** See figures 5 and 6 for reference.

Antenna orientation does not matter, so you are free to mount the receiver at any angle you like as long as you keep the antenna separated from anything metallic.

Figure 5 – XtremeLink^{TM} 8 channel receiver installation

Figure 6 – XtremeLink^{TM} 10 channel receiver installation

The servo connection slots on the XtremeLink^{TM} receivers are numbered. There is a slot that is labeled "B/T". This is for a battery connection, and can also be used for the telemetry sensor data port.

Power and ground are available on every numbered slot. The function for each channel is determined by the transmitter in use, and not the receiver itself. For example, throttle control with most JR radios is on channel 1, while throttle control on most Futaba radios is on channel 3. Throttle output would be determined by the radio and will change with brands. Keep this mind when setting up a different transmitter.

SECTION 2 – TRANSMITTER MODULE

After turning on your transmitter, the STATUS LED on the XtremeLink^{TM} RF module will flash RED. This means that there is no connection to an XtremeLink^{TM} receiver.

When a connection is established, the STATUS LED will light solid green. If there are telemetry sensors attached to the receiver, the STATUS indicator will flash orange every time telemetry data is received

Programming Features

By holding the PROG (program) button on the RF module while turning on the power to the transmitter, you can enter "programming mode". This mode allows various features to be changed, and also is required for binding the XtremeLink^{TM} RF module to an XtremeLink^{TM} receiver.

Once you are in programming mode, the STATUS LED will be solid red. Each time you press and release the PROG button, the STATUS LED will change. Below is a table of STATUS LED colors and their meanings:

STATUS LED	FUNCTION
Solid Red	Set Power Level
Solid Green	Set Modulation
Solid Orange	Set Binding

If you press and HOLD the PROG button while the LED is any one of these colors, the LED will turn off and you will enter the programming for that function. For example, if you wanted to bind the transmitter module to a receiver, you would briefly press and release the PROG button until the LED was orange. Then you would press and HOLD the PROG button until the LED turns off, at which point you would then see the LED flashing orange (in binding mode).

SET POWER LEVEL

Range: 1 to 5

With LED solid red, press and HOLD the PROG button until the LED turns off. The LED will now slowly flash green the number of times equal to the current power setting. For example, the default power level is 5, so the LED will flash 5 times.

After the flashing stops you have 5 seconds to change the power level. To change the power level, press and release the PROG button one time for each level of power you would like. For example, if you wanted the power level to be the lowest possible value, you would press and release the PROG button once. If you wanted the power level to be 3, you would press and release the button 3 times.

If you do not press the PROG button within 5 seconds, or if the value you enter exceeds what is allowed, the LED will alternately flash red and green (error condition occurred) and no change will be made. At this point, you are back at the programming mode start.

If you do make a change, the LED will blink green/red/orange in rapid succession to let you know that the change was successful.

Power output can be calculated as 10mw + (10mw x Power Level). The following power levels **must** be adhered to in order to legally use this product:

Country	Allowable setting
USA / U.K.	1-5
Australia	1-5
Japan	1 only
Europe	Varies, consult local laws

Note: the XtremeLink™ receiver's STATUS LED will be green during normal operation when the power level is set higher than 1, and red when the power level is set to 1.

SET MODULATION

Range: N/A

This function is not currently supported. It will be supported in future versions to allow using HRS, PCM, SPCM, APCM, PCM1024, PCM2048, etc. modulation types.

SET BINDING

Range: N/A

This function is used to "marry" or "bind" the XtremeLink^{TM} RF Module with an XtremeLink^{TM} receiver. You can have as many receivers as you like bound to a single transmitter.

Please see section 4 for information on how to bind the XtremeLink™ system.

SECTION 3 – RECEIVER

After powering on your receiver, the STATUS LED on the receiver will flash RED. This means that there is no connection to an XtremeLink^{TM} RF module (plugged into your transmitter).

When a connection is established, the STATUS LED will light solid green.

Programming Features

To enter programming mode, any transmitter module that has been "bound" to the receiver must be turned off prior to powering on the receiver.

Once the STATUS LED is flashing red, briefly press and release the programming button on the XtremeLink™ receiver. This will put receiver in "programming mode". NOTE: The receiver's programming button is located on the circuit board itself and can be depressed using a 3/32 Allen key or similar BLUNT object. DO NOT USE ANY TYPE OF SCREWDRIVER to press the button or damage will result! See Figure 7 for hole location.

Once you are in programming mode, the STATUS LED will be solid red. Each time you press and release the programming button, the STATUS LED will change, indicating a different programming function. Below is a table of STATUS LED colors and their meanings:

STATUS LED	FUNCTION
Solid Red	1 - Set Channel Map
Solid Green	2 - Set Country
Solid Orange	3 - Set Binding
Blinking Red	4 - Set Output Type
Blinking Green	5 - Set Failsafe Time
Blinking Orange	6 - Telemetry Setup

Figure 7 – XtremeLink^{TM} receiver programming button location

SET CHANNEL MAPPING

Range: 1 to number of receiver channels

Channel mapping is a handy feature when you have a transmitter with limited functionality or you just want assign channels to different output pins. The default channel map is 1:1. This means that the transmitter's output channel 1 is mapped to the XtremeLink^{TM} receiver's output channel 1. One common use for this feature is assigning two throttle outputs. Instead of using a "Y-cable" to tie the servo outputs together, you can just assign a second output. You could use the normal throttle channel output (channel 1 for most JR), and assign it also to be a channel 10 output (providing you had a 10 channel XtremeLink^{TM} receiver). The outputs occur at the exact same time, completely eliminating any type of "lag" that is common with PPM based systems.

Figure 7 – XtremeLink[TM] receiver programming button location

SET CHANNEL MAPPING

Range: 1 to number of receiver channels

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With STATUS LED solid red, press and HOLD the programming button until the STATUS LED turns off. The STATUS LED will now flash orange the number of times equal to the current output channel position, followed by a 1 second pause. When you first enter the channel map programming (channel 1), the STATUS LED will flash once, followed by a 1 second pause.

Every time you press and release the programming button, the channel map position will advance by 1. The channel map position begins at 1 (1 flash) and ends with the number of channels that your receiver has. So, the 8 channel XtremeLink^{TM} has 8 possible channel map positions, while the 10 channel XtremeLink^{TM} receiver has 10 possible channel map positions.

To change the channel map output, press and HOLD the programming button until the STATUS LED turns off. The STATUS LED will begin flashing green the number of times equal to the current map position output. For example, the default value of the channel map 1 would flash just once. After the STATUS LED is done flashing green, you have 5 seconds to enter a new map position value. You do this by pressing and releasing the programming button the number of times equal to the new map position.

If you do not press the programming button within 5 seconds, or if the value you enter exceeds what is allowed, the LED will alternately flash red and green (error condition occurred) and no change will be made. At this point, you are back at the channel map position.

If you do make a change, the LED will blink green/red/orange in rapid succession to let you know that the change was successful.

SET COUNTRY

Range: 1 to 4

With LED solid green, press and HOLD the programming button until the LED turns off. The LED will now slowly flash green the number of times equal to the current country setting. For example, the default country level is 1, so the LED will flash 1 time.

After the flashing stops you have 5 seconds to change the country. To change the country, press and release the programming button the number of times necessary to equal the country from the list below. For example, if you wanted the country to be Japan, you would press and release the programming button three times.

If you do not press the programming button within 5 seconds, or if the value you enter exceeds what is allowed, the LED will alternately flash red and green (error condition occurred) and no change will be made. At this point, you are back at the programming mode start.

If you do make a change, the LED will blink green/red/orange in rapid succession to let you know that the change was successful.

The country selection is necessary to meet various FCC, ETSI, IC, and other guidelines.

Country	Setting
USA / U.K.	**1**
France	**2**
Japan	**3**
Europe	**4**

SET BINDING

Range: N/A

This function is used to "marry" or "bind" the XtremeLink^{TM} receiver with an XtremeLink^{TM} RF Module. You can have as many receivers as you like bound to a single transmitter.

Please see section 4 for information on how to bind the XtremeLink™ system.

SET OUTPUT TYPE

Range: N/A

This function is not currently supported. It will be supported in future versions to allow different servo output types such as sequential, grouped, TruDigital™, etc.

SET FAILSAFE TIME

Range: 1 to 5 seconds

The failsafe time is the number of seconds before the receiver will go into failsafe mode.

With LED flashing green, press and HOLD the programming button until the LED turns off. The LED will now slowly flash green the number of times equal to the current failsafe time (in seconds). For example, the default failsafe time is 2, so the LED will flash 2 times.

After the flashing stops you have 5 seconds to change the failsafe time. To change the failsafe time, press and release the programming button one time for each additional second you would like the failsafe time to be. For example, if you wanted the failsafe time to be 1 second, you would press and release the programming button once. If you wanted the failsafe time to be 3 seconds, you would press and release the button 3 times.

If you do not press the programming button within 5 seconds, or if the value you enter exceeds what is allowed, the LED will alternately flash red and green (error condition occurred) and no change will be made. At this point, you are back at the programming mode start.

If you do make a change, the LED will blink green/red/orange in rapid succession to let you know that the change was successful.

RESET

It is possible to reset all of the settings to the factory defaults. When a reset is performed, ALL settings, including the binding information will be reset. This means that the receiver will have to be bound again to the Xtremelink™ transmitter module.

To perform a RESET, make sure your transmitter power is OFF and then turn ON the power to your Xtremelink™ receiver. Press and release the the programming button, the status LED will light up red. Now, press and HOLD the programming button for approximately7 full seconds. During this time, the STATUS LED will turn off, and then I will start flashing red. When it begins flashing red, you can release the programming button. The RESET is now complete.

SECTION 4 – USING THE SYSTEM

Binding the XtremeLink™ System

Transmitter – **The transmitter modulation must be set to PPM, MPX, PPM18, or PPM24 prior to using this product. Switch to one of these modes before any use.** Press and hold the PROG button the XtremeLink™ RF module while powering on the transmitter. Hold the button until the STATUS LED turns red. Release the PROG button. Each time press and release the PROG button, the STATUS LED will change colors. Now, press and release the PROG button until the STATUS LED is orange. Now, press and hold the PROG button until the STATUS LED turns off. The STATUS LED will begin flashing orange. This indicates that the transmitter is waiting for an XtremeLink™ receiver to bind to.

Receiver – Power on your XtremeLink™ receiver. After two seconds the STATUS LED will begin flashing red. Press and release the programming button (located inside of the receiver, next to the antenna) using a 3/32nd or equivalent blunt object (note: screwdriver tips will damage the receiver) until the STATUS LED is orange. Press and hold the programming button until the STATUS LED turns off. Release the button and the units should bind. Both STATUS LEDs will turn green when a successful bind has occurred. If either STATUS LED does not turn green, repeat this procedure.

Power off your transmitter and receiver after binding. Your XtremeLink™ system is now ready for use!

Range Testing

After the transmitter and receiver are turned on and operating, you can perform a range check by pressing and HOLDING the PROG button. The STATUS LED will change from green to red when the PROG button is held, indicating the power level has been dropped to the lowest possible. With a clear and level line of sight view of the R/C device, with both the device and transmitter placed on the ground, you should be able to have at least 200 feet of separation and still have complete control. If control is lost at any time within this distance then there is something wrong with your installation (such as the receiver antenna is located too close to something metallic). Check the installation and make changes as necessary and then try again.

WARNING! DO NOT PRESS AND HOLD THE PROG BUTTON DURING THE NORMAL OPERATION (FLYING, DRIVING, ETC.) OF YOUR R/C DEVICE!

Setting the Failsafe

If no failsafe is programmed, the servos will hold their last known valid state when a failsafe condition occurs.

You can program the failsafe position for each channel. To do this, turn on the XtremeLink™ system so that servos can be moved. Now, press and hold the programming button on the XtremeLink™ receiver until the STATUS LED goes out. The STATUS LED will begin alternately flashing red and green for about 8 seconds. During this time, move your sticks and switches to the where you would like them during a failsafe condition.

Servo Outputs

The 8 and 10 channel receivers do not have markings for the servo connector polarity. The servos and any battery connections can be safely plugged in either way, however, the receiver and servos will only work if the proper polarity is used. See Figure 8 for the servo output diagram.

Figure 8 – XtremeLink^{TM} receiver servo output polarity

Contains FCC ID: OUR-XBEE / OUR-XBEEPRO * The enclosed device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (*i.*) this device may not cause harmful interference and (*ii.*) this device must accept any interference received, including interference that may cause undesired operation.

 WARNING: To satisfy FCC RF exposure requirements for mobile transmitting devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance is not recommended. The antenna used for this transmitter must not be co-located in conjunction with any other antenna or transmitter.