

Xtreme Power Systems

XtremeLink[®]

RX6 NANO AND PICO

Installation And Usage Manual

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Firmware v10

Manual v11

Revision Date: February 15, 2010

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Introduction

Thank you for purchasing the RX6 Nano or Pico receiver for the XtremeLink® system.

Warranty Information

The XtremeLink® system carries a limited lifetime warranty. Units subject to improper installation, misuse, abuse, 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 while using 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.

Mounting the receiver

No matter which XtremeLink® 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 any type of large metal or wiring that is not directly coming out of the receiver. This includes steel, carbon fiber, servos, fuel pumps, any type of wiring, etc. The best method of mounting is to show it off! Mount the receiver as high and out in the open as possible 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 receiver. Moving wires can cause intermittent radio control.**

The servo connection ports on the XtremeLink® receivers are numbered. There is a port that is labeled "B". This is for a battery connection, and is also used for the binding plug. **Do not plug the power into this port backwards!** The receiver will power up and may appear to work, but it **will not** function properly powered this way!

Power and ground are available on every numbered slot. "Signal" is the pin nearest the number. 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 1 – RECEIVER SETUP

After powering on your XtremeLink® receiver, the STATUS LED will begin flashing red. Flashing red means that the receiver is waiting to connect with a XtremeLink® transmitter module.

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

Advanced Programming Features

Unlike other XtremeLink® receivers, there are no advanced programming features available.

XDP (COMPUTER) INTERFACE

To put the receiver into computer programming mode, insert a binding plug into the channel port marked "B" and then apply power. After the LED lights up solid red, immediately remove the binding plug. The system is now ready for use with the XDP.

RESET TO DEFAULTS

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, insert a binding plug into the channel port marked "B" and then apply power. Do not remove the binding plug until after the LED starts flashing red. Once flashing occurs, the system reset has occurred.

Before the XtremeLink® system can be used, the XtremeLink® receiver(s) must be instructed to communicate only with a single XtremeLink® RF module (transmitter). This process, known as "binding", is required only once for each new XtremeLink® receiver.

Note: when binding your system you must put your receiver(s) in binding mode BEFORE putting the transmitter module in binding mode.

You can have as many slave receivers and a single master receiver bound together. If you are not using slave receivers, please skip the "Slave Receiver" binding information below and start with the "Master Receiver" section.

Binding the XtremeLink® System

Power on your XtremeLink® receiver and wait for the STATUS LED to begin flashing red. Now, connect the binding plug to the port labeled "B". When the STATUS LED will turn solid red remove the binding plug. The STATUS LED will then flash red at a different rate, indicating that it is in binding mode.

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 on the XtremeLink® RF module while powering on the transmitter. Wait until the STATUS LED changes from off to green, and then release the button.

Once the button has been released, the units should bind. The STATUS LED on the transmitter module will turn green and the STATUS LED will turn off when a successful bind has occurred.

YOU MUST power off your transmitter and receiver(s) after binding! Your XtremeLink® system is now ready for use!

YOU MUST SET THE TRANSMITTER MODULE HOPPING MODE PRIOR TO BINDING. THE HOPPING INFORMATION IS TRANSFERRED DURING THE BINDING PROCESS. IF YOU CHANGE HOPPING MODES, YOU MUST REBIND ALL RECEIVERS.

MULTIPLE RECEIVER SUPPORT IS NOT AVAILABLE IN HOPPING MODE 1. ONLY MODES 2-5 SUPPORT MULTIPLE SLAVE RECEIVERS!

***** HOPPING MODES 2-5 WARNING! *****

IF TWO OR MORE RECEIVERS ARE TURNED ON AT THE SAME TIME, AND THE TRANSMITTER IS THEN TURNED ON, *ANY* OF THE RECEIVERS MAY LOCK ON TO THE TRANSMITTER. THE OTHER RECEIVERS WILL NOT LOCK (UNLESS SET AS A SLAVE). TURNING ON AND OFF YOUR TRANSMITTER WILL CAUSE RECEIVERS TO LOCK AND UNLOCK! FOR THIS REASON, PLEASE MAKE SURE THAT YOUR LAST MODEL IS TURNED OFF BEFORE FLYING THE NEXT MODEL! ALTHOUGH THIS IS THE SAME BEHAVIOR AS 35MHz/72MHz AND SOME OTHER 2.4GHz SYSTEMS, WE ARE LOOKING INTO SOLUTIONS TO ELIMINATE THIS POSSIBILITY.

NOTE: The range with the antenna off and PROG button pressed when using the v3.0 and later firmware will be noticeably less than previous versions. This is due to the fact that the power level is now 25 times lower than previous versions when pressing the PROG button.

Nano and Pico Range Testing

To perform a range test of the XtremeLink® system, follow the instructions below. Have someone help you during this procedure.

Range test for full range receivers:

1. Install the receiver in the R/C device as it will be used.
2. Turn on the radio system so servo movement can be observed.
3. Using flat ground (pavement, low cut grass, or dirt) place the R/C device so that the receiver antenna is no less than 6" from the ground. This might require you elevating the R/C device during the testing.
4. Hold your transmitter waist high, away from your body.
5. Press and **hold** the PROG button on the transmitter module.
6. Walk to a distance of at least 50 feet. If at any time you experience a pause in controls, try to reproduce it again and release the button to see if the pause no longer occurs. If the problem does not occur now, check to make sure that your receiver is at least 6" from the ground while testing.
7. With the PROG button still pressed down, walk away from the R/C device while moving the sticks until there is intermittent control. Releasing the PROG button should restore 100% control. If it does not, **do not use the system and contact Xtreme Power Systems for assistance!**
8. Test complete.

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. The default failsafe time is 2 seconds.

You can program the failsafe condition for each channel using the XDP or Telemetry Station devices. Once you have set the failsafe map conditions, you can then set the user defined channels. To do this, turn on the XtremeLink® system so that servos can be moved. Now, connect the binding plug to the port labeled "B". After the STATUS LED starts flashing, remove the binding plug. The STATUS LED will flash for about 8 seconds. During this time, move your sticks and switches to the where you would like them during a failsafe condition. NOTE - Only those channels programmed in the failsafe map will change to a user defined position. All other channels will hold their last positions when a failsafe occurs.

WARNING!

PLUGGING A BATTERY INTO THE PORT LABELED 'B' WITH THE POLARITY REVERSED WILL RESULT IN UNPREDICTABLE OPERATION! THE RECEIVER WILL POWER UP, BUT SERVO CONTROLS WILL NOT FUNCTION PROPERLY. TWITCHING SERVOS, BLINKING RECEIVER LED AND OTHER ODDITIES WILL BE SEEN. RANGE WILL BE UNUSABLE, EVEN IF A RANGE CHECK SHOWS RANGE TO BE NORMAL.

SECTION 2 – POWERING THE SYSTEM

The XtremeLink® system is a computer controlled device. Just like your home PC, power is the most critical link to success or failure.

XtremeLink® transmitter modules can use the standard transmitter battery. Nothing else is required.

XtremeLink® receivers must be powered properly! With today's high torque digital servos, the load on the flight battery can be extreme. It is not uncommon to see many amps of current draw during flight. You must use a power source that can provide the proper voltage when there is a heavy load. Even small servos like the Hitec HS-55 can draw up to $\frac{3}{4}$ of an amp when stalled. Four of these servos in a "foamie" can technically draw 3 amps of current, not including the current required for the receiver. For years people have been claiming radio "failures" or "hits" with their 35MHz/36MHz/72MHz/75MHz systems that have actually been power related and not due to signal loss. The Nano and Pico receivers use the latest technology to safely operate down to 2.0v, well below the operating voltage of any servo.

Recommend Power Setups for XtremeLink® Receivers

4 cell packs. 4 cell packs will work fine with XtremeLink® receivers providing you have adequate capacity. The rule that we use is no less than 350mAh for each analog servo and no less than 500mAh for each digital servo. So, in a typical 4 servo analog setup, a 1400mAh 4 cell flight pack would be the absolute minimum we would recommend. Yes, you could probably get by with a lower capacity pack, but then you have to ask yourself "what is my model worth to me, and am I willing to take a chance with an improper power setup?"

5 cell packs. 5 cell packs offer additional voltage headroom. These are a better choice than a 4 cell pack. Note that some servos will not handle the voltage of a 5 cell pack. Please consult the specifications of your servos before using a 5 cell pack.

A123 flight packs. These are the best choice. They provide a voltage higher than a 4 cell pack, but less than a 5 cell pack. The current capabilities of these batteries exceed what any 4 or 5 cell Nimh or Nicad pack can provide.

2 cell Lipo packs. Newer high voltage servos can use a 2 cell Lipo pack. This works fine as the XtremeLink[®] receivers can handle voltage up to 30 volts. Just please note that the input voltage to the XtremeLink[®] receiver is not regulated, so the full input voltage is passed to the servos.

Please remember that wall chargers included with most radio systems are designed only for 4 cell packs. These chargers are typically 50ma, meaning that 50mAh of current is put back into the pack every hour. A 2000mAh pack would require 40 hours to charge from a completely drained state and 20 hours if the pack was half way discharged. An overnight charge would not work in either of these cases!

Load Testing, BECs, and Switches

We recommend that you always load test your power system using at least a 1.5amp load before every flight. Several companies make inexpensive load and voltage testing devices. These will determine if your battery pack has the capacity required to fly your setup.

Battery Eliminator Circuits (BECs) are great for small aircraft where loads are very light. However, beware of ANY "linear" regulators, even the so called "high current" versions. "Switching" regulators are far more reliable and generally do not get hot or change output voltages with heat or load. BECs built into Electronic Speed Controllers (ESCs) must have enough current capacity to properly power the XtremeLink[®] receiver

Although switches make it convenient to turn our R/C systems on and off, they can be the cause of system failures. Even heavy duty switches typically have a .2 volt drop across them when brand new. As switches age they oxidize, and constant vibration wears the metal contact plates. We have seen ¾ volt drop with a heavy duty switch after one season of flying.

Charge, Charge, Charge!

You can never have a flight pack that is too full. We recommend "topping off" your flight packs between flights. Often times you don't fly back to back flights and there is ample time to do this, especially when using A123 flight packs where a "top off" could literally be just a few minutes.

Keep Your Setups Simple

Although modelers love to have the latest and greatest toys, there are some products that can introduce new potential failure points when installed. For this reason, we recommend that you keep your setups as simple as possible. Instead of using “power expansion” type devices, we recommend using power inputs to both ends of the XtremeLink® receiver’s servo connection bus. For example, when using an XtremeLink® 10 channel receiver, power should be connected to the B/T port and channel 10 (even if a Y-cable is required). Using two separate flight packs on each end of the servo bus will give you double the current capacity and a functioning system if one pack were to fail.



Model: Micro Rx
FCC ID: X5L-XPSRX6NP
IC ID: 8829A-XPSRX6NP

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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



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.



This device complies with ETSI EN-300-328 v1.71 and later. A Declaration of Conformity is available from the Xtreme Power Systems website: www.xtremepowersystems.net/doc.php