Endurance R/C

Wi-Fi Servo Controller 2 Instructions

The Endurance R/C Wi-Fi Servo Controller 2 allows you to control up to eight hobby servos, R/C relays, light controllers and more, across the internet easier than ever before. Control can be achieved over an IEEE 802.11 b/g/n wireless local area network (WLAN) connection. In addition to infrastructure mode, the new controller features a built in access point making ad-hoc connections with a Wi-Fi enabled device a breeze. A smart phone, tablet or Wi-Fi enabled laptop can easily configure and operate the controller with a web or native application.

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Package Contents

1x Wi-Fi Servo Controller 2 main board
1x 5V AC adapter (Not shipped outside of the US)

Requirements for Operation

- **Network and Devices**

  Usage of the Wi-Fi Servo Controller 2 requires an 802.11 b, g or n wireless access point for wireless infrastructure operation or a tablet, PC or phone with wireless capability for ad-hoc point-to-point connectivity.

- **Output Devices**

  Any PWM controlled device can be controlled with the Wi-Fi Servo Controller 2. Devices such as hobby servos, R/C switches, light controllers, and electronic speed controls can all be used.

- **Power**

  A +5V DC power source is required for operation of the Wi-Fi Servo controller 2. A +5V DC 1000mA power supply is included for orders within the United States.

  Important Note: The supplied 1000mA power supply may be inadequate for operation of all devices. Please check the output device power requirements in order to choose a power supply with enough amperage. If the Wi-Fi Servo Controller 2 suddenly disconnects from its connection when devices are operated, after a servo stalls out, or if many servos are moving at the same time this could be a sign that the power source used cannot supply enough voltage or amperage to the Wi-Fi Servo Controller 2. Many high torque and robotics servos can draw in upwards of 1A or more when stalled. It is important to ensure you choose the correct power source. Incorrect power can result in damage to the controller. A +5V DC source with 2mm center positive jack is required.

Quick Start Guide

Start by connecting the supplied power supply to the controller. Once properly powered the SYS LED will show.

The Wi-Fi Servo Controller 2 features a built in access point that can be used for control and for configuring the device settings. Using a laptop, phone or Wi-Fi enabled tablet scan for available Wi-Fi networks.

The Wi-Fi Servo Controller 2's SSID is "Wi-Fi Servo Controller" with no encryption. Once found, connect to the network and open a browser to http://192.168.0.1. This is the address of the built in access point. From this page you can access any of the configuration options on the Wi-Fi Servo Controller 2. If you are using a device such as a smart phone, tablet or Wi-Fi enabled PC you can now directly control the Wi-Fi Servo Controller 2 from a native application. Skip to the software section for more info.

If you wish to control your Wi-Fi Servo Controller 2 over the internet you will need to connect it to an existing Wi-Fi network. Browse to the configuration page and go to the QuickConnect tab. Press the scan button and then click on the available Wi-Fi network and submit the changes. Once connected the WIFI LED on the controller will show. You can now access your controller from inside your network. To gain access from outside of your network you must enable port forwarding on your router. By default the controller resides on port 10001. Consult your router's manual for instructions on how to enable port forwarding.

Software

The Wi-Fi Servo Controller 2 can be operated via a web page or native application. Native applications have been written for Windows, iOS and Android. Go here for the latest software source code and download links: http://www.endurance-rc.com/software.php

Reset to Defaults

The Wi-Fi Servo Controller 2 can be reset to hardware defaults by pressing and holding the DEFAULT button until the SYS LED begins to flash. Once the reset has been performed the SSID will also change. You will now see "**XpicoWiFi_XXXXXX**" show when scanning for networks. (**Note:** X characters will be replaced by your unit's unique serial number.) Network encryption is also enabled. The default password is: **XPICOWIFI**

Protocol

To communicate with the WiFi Servo Controller 2 nine bytes must be sent to the device. The first character is defined as the frame start byte. This value is always 0. The following eight bytes correspond to channels 1-8. The following is an example of a valid frame. Spaces have been inserted for readability.

0 150 150 150 150 150 150 150 150

If you wish to view any data sent to the Wi-Fi Servo Controller 2 see the USB Port section.

USB Port

The Wi-Fi Servo Controller 2 features a bi-directional USB port that is capable of passing serial data to and from the controller.

To use the port a virtual COM port driver must be installed. Most modern versions of Windows include the correct driver and should install automatically. If the OS requires a driver it can be found here: http://www.ftdichip.com/Drivers/VCP.htm. A new COM port will be available on your PC. In Windows, open the device manager by right clicking on Computer and choosing properties. Click device manager and expand the Ports entry and take note of the newly installed COM port.

On the output side the port can be used to monitor any data sent to the Wi-Fi Servo Controller 2. This is useful in developing new software and you are unsure of the data actually being sent.

A terminal application such as RealTerm can be used to then view the data being sent to the controller. RealTerm can be obtained here: http://realterm.sourceforge.net/. Open RealTerm and click on the Display tab. Change the "Display As" field to unit 8. Unit 8 will allow you to see the data being sent as intended. Now open the Port tab and change the baud rate to 9600, parity to none, data bits to 8 and stop bits to 1. Choose the correct port number and click the change button. Once data has been successfully sent to the Wi-Fi Servo Controller 2 the data will be displayed on the screen. For more info on the data sent checkout the Protocol section of the manual.

Alternatively the USB port can be used to provide input into the Wi-Fi Servo Controller 2. This can be used to configure the controller if an ad-hoc connection is not available. If you don't have a smart phone, tablet or Wi-Fi enabled laptop you can always connect and configure the device via a PC and then have it connect to an existing wireless network.

Input Mode

Caution! Configuring the Wi-Fi Servo Controller 2 for input mode can be a bit tricky. Follow the steps below exactly. Be sure not to hold down the reset button for more than 5 seconds. Holding the reset button down for an extended period of time will reset the controller to its default settings.

1. Open a terminal and connect to the device on COM# at 9600 8-N-1-None and display the data as ANSI.
2. Make sure your cursor is in the data field at the top of RealTerm and click the Display tab. Press any key on your keyboard and verify the data is being sent by observing the TXD icon. It should flash yellow when a key is pressed.
3. Unplug the power from the Wi-Fi Servo Controller 2 while leaving the USB port connected. Press and hold the DEFAULT button on the controller and plug in the power. Quickly and repeatedly press the x key on the keyboard. After a few seconds you will see following prompt appear:

   xPifoWiFi <MAC address>

   Press <enter to continue>

4. As soon as you see the above prompt release the DEFAULT button and stop pressing the x key. Be sure to not hold the DEFAULT button down for more than 5 seconds or the module will revert to factory defaults. If the prompt does not appear repeat the process above.
5. Press the enter key on the keyboard. You will see the following prompt:

   Command Line started.

   >

6. At the prompt send '?' and press enter. A menu of available options will display. You can send the '?' character at any time for this menu.

Configure the WiFi Servo Controller to connect to a wireless network

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-- assuming the controllers access point is enabled

1. Using a WiFi enabled device (smart phone, laptop or desktop with wireless card)

   open a browser and navigate to http://192.168.0.1

2. When prompted enter the user name: admin and password: PASSWORD (

3. You should see the web configuration page appear afer a few seconds

4. Go to the "Quick Connect" entry in the menu

5. Select your wireless network

6. Click the Apply button (click OK to any dialogs)

7. If the connection is successful you will see the LNK LED illuminate