



VP-X Configurator

For VP-X Pro and VP-X Sport Models



Release Notes

As of Version 1.6 (May 13, 2013)
This Document Updated August 5, 2020

Important Notice

This manual contains important information that may affect the safety of your aircraft. Do not fly the aircraft until you fully understand the installation and operating instructions, and all of the pre-flight checks have been successfully completed.

Read the Limited Warranty document (Limited Warranty - Vertical Power Products) available at www.verticalpower.com. There is information in the Limited Warranty that may alter your decision to install this product. **If you do not accept the terms of the Limited Warranty, do not install this product.** The product may be returned for a refund if you do not accept the terms of the Limited Warranty.

Astronics is not liable or responsible for a pilot's action or any situation that results in personal injury, property damage, missed commitments, lack of use of an aircraft or any expenses incurred due to: product failure, inaccuracy in displayed data or text files, display or display format issues, software bugs or problems, upgrade or customization issues, misinterpretation of the display, warning and/or limit settings, calibration problems, installation issues (leaks, mis-wiring, obstructions, damage to aircraft or components, incorrect installation of any parts, wrong parts, parts that don't fit, etc.) or any other issues related to the installation or operation of this product. All of the above are solely the pilot's and/or installer's responsibility.

The pilot must understand the operation of this product before flying the aircraft. The pilot will not allow anyone to operate the aircraft that does not know the operation of this product. The pilot will keep these Operating Instructions in the aircraft at all times. The ability for this product to correctly control electronic components and detect a problem is directly related to the pilot's ability to properly install the system, and the pilot's interpretation and observation skills.

By installing this product, the aircraft owner/pilot and installer agree to hold Astronics harmless and in no way responsible for monetary compensation, including punitive damages for any incident, harm and/or damage associated with this product (including but not limited to the ones listed above). If you do not agree to the above, **DO NOT INSTALL THIS PRODUCT.** The pilot, aircraft owner and/or installer may want to obtain an appropriate insurance policy before installing this product. If you do not have the skills, knowledge, tools, equipment or facility, to perform and determine the installation of this product is safe, reliable and accurate and to determine this product is operating properly after installation, **DO NOT INSTALL THIS PRODUCT.** If the aircraft owner/pilot and/or installer are unwilling to take the responsibility for the installation and operation of this product, **DO NOT INSTALL THIS PRODUCT.** This product may be returned for a refund by contacting Astronics.

It is possible for any system to fail thereby disabling electronic components or displaying inaccurate high, low or jumpy readings. Therefore, you must be able to recognize a system failure and you must be proficient in operating your aircraft safely in spite of a system failure. **IT IS THE BUILDER AND/OR PILOT'S RESPONSIBILITY**

TO DETERMINE THE APPROPRIATE LEVEL OF BACKUP AND REDUNDANT SYSTEMS NEEDED FOR SAFE OPERATION OF THE AIRCRAFT. If you do not have this knowledge or skill, contact the FAA, a certified aircraft mechanic, or a local flight instructor for training prior to building or flying the aircraft with this system. Before flying the aircraft verify the instrument markings displayed on the system are accurate with your POH for every function displayed. Verify that each electrical device is configured correctly and behaves appropriately. All data must be verified by the pilot before it is used.

Before starting the installation, make sure that your planned installation will not interfere with the proper operation of any controls. The installer should use current aircraft standards and practices to install this product. Refer to AC 43.13-2A, Acceptable Methods, Techniques, and Practices - Aircraft Alterations and AC 43.13-1B, Acceptable Methods, Techniques, and Practices—Aircraft Inspection and Repair.

This is an experimental system limited to use in experimental aircraft or Light Sport Aircraft. These products are not approved for use in aircraft with FAA or foreign type certificates.

Limited Warranty

For warranty information, please refer to the Limited Warranty document (Limited Warranty - Vertical Power Products) available at www.verticalpower.com.

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Astronics

The home of Vertical Power products

12950 Willows Road NE

Kirkland, WA 98034

Phone: +1.425.328.1658

Email: info@verticalpower.com

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Change Log

Change date	Rev	Change
May 13, 2013		Release for Version 1.6
Oct 31, 2013		Document updated
Aug 5, 2020	B	Updated to remove references to original VP-X model, added operation with Windows 10.

1. Updating the VP-X Pro and Sport Firmware (Automatic)

When you connect to the VP-X using the Configurator application, it checks if you have the latest firmware installed. If you have an older version installed a message pops up saying you need to upgrade. Press OK and it will upgrade it for you. The configurator automatically saves your settings then restores the settings after the firmware upgrade. See below for connection instructions.



When asked to power cycle during the upgrade process, be sure to turn off the power for at least 5 seconds before turning it back on.

Verify that all the settings, circuit breaker values, trim, flap, wig-wag etc. are correct after the upgrade.

2. Software Upgrade Notice

With any software update you should always do your own flight testing in VFR conditions until you are satisfied with the software's stability and functionality. Be sure to read and understand the full software installation AND test procedure described in the Installation Manual.



Firmware updates on any system always carry a risk of failing the unit. Update the VP-X firmware only when you have a few extra days to resolve any issues that may arise from the upgrade process.

3. Features in VP-X Firmware Version 1.6

Refer to the VP-X Installation and Operating Manual for details on new features.

- Added RV-10 reflex functionality.
- Added “continuous flaps” functionality. Flaps can be set to the second lower position before reaching the next position.
- Added ability to disable primary alternator (for Rotax, Jabiru, etc.).
- Fixed bug that showed VP-X Pro circuits on EFIS display connected to VP-X Sport system.
- VP-X accepts configuration commands over Ethernet only..
- Addressed issues with installer not correctly installing VP-X files on some computers.
- Improved Configurator logging capability.
- 1.6 enhanced flap current reporting, otherwise identical to 1.5. Upgrade to 1.6 if you have 1.5.

4. Notes about the latest release

Be sure to verify correct operation of all circuits, especially trim and flap operation, after you upgrade. Check for proper direction of travel and indication on the EFIS. Verify correct operation of the backup trim and flap controls on the EFIS.

5. General Information

This version of the VP-X configurator includes the following firmware versions:

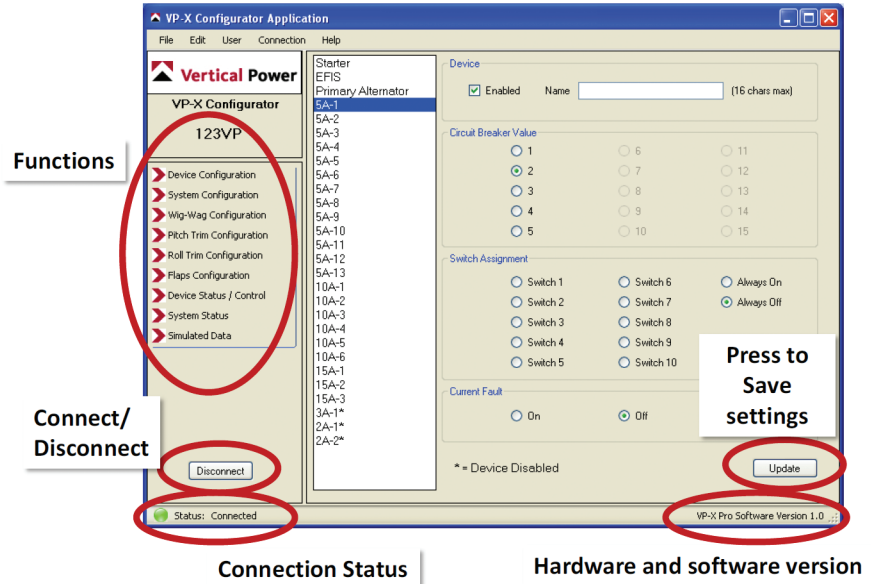
- VP-X Pro: 1.6
- VP-X Sport: 1.6

The VP-X Configurator is used to configure the VP-X Pro and VP-X Sport models. It is used to:

- Configure each power pin and switch
- Configure trim and flaps
- Configure wig wag
- Configure system settings
- Turn devices on and off, move trim and flaps

- View individual device current draw
- Reset faults
- Save your configuration to the PC
- Restore your configuration from the PC
- Update VP-X firmware

The main functions of the VP-X Configurator are shown below. The installation manual describes how to configure each individual item.



6. Configurator Installation

The VP-X Configurator works best with Windows 10, 7, and XP. Customers have reported it works with a Mac running Boot Camp, Parallels, or VMWare, but is not officially supported. Note that USB to Ethernet converters usually block the connection to the VP-X, so it is important to use a computer that has an Ethernet port.

Prior to installation, verify that:

- You have administrative rights on your account (you are allowed to install software)
- You have internet connectivity (some files may be downloaded automatically from the internet when you initially install the configurator.; after the configurator is installed you do not need to be connected to the internet)

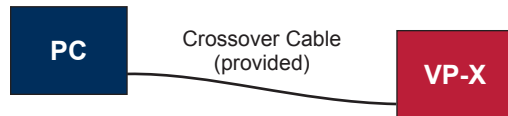
To begin installation:

1. Go to verticalpower.com, then Support, then Software Upgrades
2. Click on the VP-X Configurator link and save the Configurator file to your desktop. If that doesn't work, right mouse click on the VP-X Configurator link and select "Save Target As..." then save the Configurator file to your desktop.
3. Double click on the Configurator Setup file located on your desktop.
4. Windows will pop up various security windows. Press OK or Yes when prompted. If it prompts you to install the Microsoft .NET framework 4.0 select YES or OK.
5. Wait until the installation process is complete, and then exit the installer. You are ready to run the VP-X Configurator. Instructions on running the Configurator are shown in the next section.

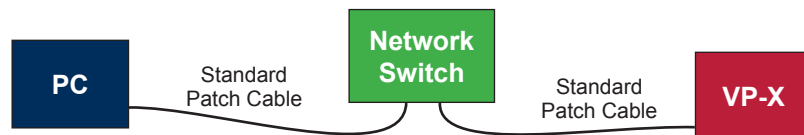
7. Connecting to the VP-X Pro and Sport Using Ethernet Cable

This is the standard way to connect the VP-X Pro and Sport to your computer. Your PC can be connected to the VP-X using Ethernet in one of three ways. We recommend the first way for non-technical users, and offer options 2 and 3 for more tech-savvy users. These directions apply to both the VP-X Pro and VP-X Sport.

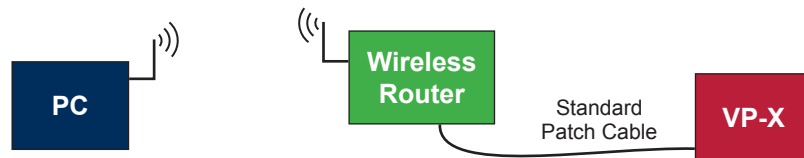
1. Connect the PC's Ethernet port directly to the VP-X Ethernet port using the Ethernet crossover cable supplied with the VP-X.



2. Connect through a network switch or router using a standard Ethernet cable. The VP-X is set to IP address 192.168.0.51 and the subnet must be 192.168.0 with no other device assigned to .51 address. The VP-X address is not configurable at this time.

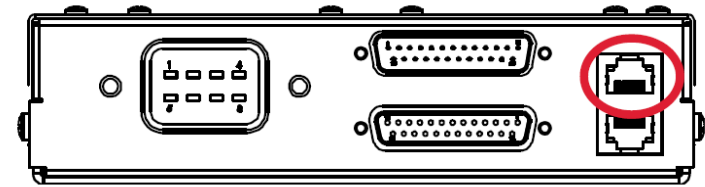


3. Connect through a wireless router using a standard Ethernet cable and WiFi. The VP-X is set to IP address 192.168.0.51 and the subnet must be 192.168.0 with no other device assigned to .51 address. The VP-X address is not configurable at this time.



THE ETHERNET CABLE SHOULD ONLY BE PLUGGED IN FOR CONFIGURATION. We recommend plugging it in and leaving it until you're flying, but once you are flying do not leave the Ethernet cable connected to the VP-X. During Phase 1 period, you may need to plug it in again to make adjustments to your initial configuration, but in general you won't need to connect your laptop once you are flying.

- Plug the Ethernet cable into the TOP jack on the VP-X.



- Turn on the aircraft master switch. The green light and the orange light on the top jack should turn on and blink. The green light indicates a link has been established and the orange light indicates the internal VP-X processor is running. On the VP-X Pro, the orange light on the bottom jack should also be blinking.
- From Windows, go to the START Menu > Programs > Vertical Power folder, click on the VP-X Configurator to start the application.
 - The first time you run the application it will ask for your name and tail number.
- The connection screen appears automatically. Press the "Connect using Ethernet" button to connect. You must establish a connection between the VP-X Configurator and the VP-X to configure it or update firmware.


If you get a window that says the firmware must be updated, follow the prompts to update the firmware.

If you get an error message saying that system files are missing, try re-installing the configurator, then call VP Tech Support if the issue is not resolved.

If you get an error message saying it cannot connect, please see the troubleshooting section below.

Once the connection is established the Configurator reads the existing configuration from the VP-X.

NOTE: You may or may not have access to the internet or your regular network while the VP-X configurator is running.

	<p>Always exit the VP-X configurator prior to putting the PC to sleep or shutting down.</p>
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Please see the VP-X Pro & VP-X Sport Installation Manual for details on configuring the VP-X.

8. Troubleshooting an Ethernet Connection “Cannot Connect” Error

If you cannot connect, please check the following items:

1. Check that the system is powered on by verifying that the orange light on the Ethernet jack is blinking. On the VP-X Pro there should be 2 orange blinking lights, one on each jack. The VP-X Sport should have a single orange blinking light on the top jack.
2. The Ethernet cable is connected to the top jack (see image above).
3. Verify that the green light on the top Ethernet jack on the VP-X is blinking.
4. Try reconnecting again several times. Sometimes Windows is just finicky.
5. If you are using a laptop with wireless Wi-Fi capability, most laptops have a switch that enables you to turn off the Wi-Fi. Please turn it off.
6. Disconnect any other Ethernet cables from the PC.
7. Restart the computer. Try to connect again.
8. If you are using a laptop, shut off the laptop and remove the power cord, then remove the laptop battery for a few minutes, then put everything back together and restart. Try to connect again.
9. Start the Configurator. Close the connect window and select View Log on the left side of the configurator. The contents of the log have been placed automatically in your clipboard. Open an email to info@verticalpower.com and paste the clipboard contents into the email. Send the e-mail and VP Tech Support will review the log to determine what is causing the problem.

9. Troubleshooting a “Firmware Update Failed” Message

This message appears during the firmware update process, and can mean different things depending on when it appears. If it appears during the update process with a horizontal green progress bar, go to step 9a below. If it appears after the progress bar is complete and you have power cycled the VP-X and the pressed OK, go to step 9b below.

Step 9a

Follow these steps to diagnose the issue:

1. The failure message is followed by a code (loc #) where # is a number. Record this number.
2. Turn off the VP-X and exit out of the screen that displayed the error message.
3. Turn on the VP-X, wait about 5 seconds, and observe the orange light(s) next to the Ethernet jack on the VP-X. (A VP-X Sport has one orange light and a Pro has two.) Both orange lights should be blinking slowly (only one for the VP-X Sport), about once per second.
 - If a light is not on, or one is blinking rapidly, then a problem exists. Contact Vertical Power tech support for further guidance.
 - If both are blinking normally (slowly, but at dissimilar rates) then re-connect the Configurator restore your settings as shown in step 9c below.

Step 9b

More than likely you did not turn the VP-X off long enough for the system to fully power down, leaving it in update mode. It then failed the update because it could not restore your settings.

Perform the following steps:

1. Turn off the master switch.
2. After waiting about 5 seconds, turn on the VP-X and observe the orange light(s) next to the Ethernet jack. (A VP-X Sport has one orange light and a Pro has two.) Both orange lights should be blinking slowly (only one for the VP-X Sport), about once per second.
 - If a light is not on, or one is blinking rapidly, then a problem exists. Contact Vertical Power tech support for further guidance.
 - If both are blinking normally (slowly, but at dissimilar rates) then re-connect the Configurator and restore your settings as shown in step 9c below.

Step 9c

Before the Configurator does a firmware update, it saves your settings automatically to a file located in the C:\VerticalPower directory. This file can be used later to restore your settings manually. It is important that you restore your settings after a firmware update, even if the settings appear in configurator. Go to section 15 Restoring your settings manually.

10. Copying Settings from the On-line VP-X Planner to the Configurator

You can export settings from the on-line VP-X Planner to your VP-X. When you do this, any existing settings on the VP-X are overwritten by the settings from the planner. Once the settings have been copied to the VP-X, any changes you make to the web Planner will not be automatically updated on the VP-X. Because the actual settings are unique to each airframe, the trim and flap settings must be configured on the VP-X itself and cannot be done using the planner. If you've made any changes to the configuration on the VP-X, we recommend noting these changes in writing, then going back to the Planner and manually entering the changes so you have a "master list" of changes. You can print your configuration from the VP-X Planner.

Here's how to copy your settings from the Planner to the VP-X:

- When you have all the settings configured in the on-line Planner, go to the **VP-X Pinout** tab and click on the download VPX configuration file (.vpx) link.



VP-X Pinout and Configuration

Currently configuring **VP-X Sport**, 14 volt. [change type](#)

[download VPX configuration file \(.vpx\)](#)

All device pins assigned! [Unassign All](#)

- The browser will ask if you want to open or save the file. Select **Save As...** and save it to your desktop or somewhere on your computer where you can find it again.
- Launch the VP-X Configurator and connect to the VP-X.
- From the File menu, select **Restore Configuration...** and then select the file you saved earlier. The settings are then sent to the VP-X.
- Follow the prompts on the screen and power cycle the VP-X, and then re-connect.
- Set the trim, flaps, wig-wag and system settings.**
- Verify all of the settings are correct.

11. Using the VP-X Configurator

Be sure the VP-X is connected and the aircraft master switch is on.

Double click on the VP-X Configurator icon on your desktop or locate the VP-X Configurator in the Start >Programs menu.

Go through EACH of the settings pages (the list on the left side of the screen) and verify each item is as it should be. Specific instructions to configure the VP-X are listed in the VP-X Installation manual.

When the VP-X Configurator starts, it saves the current Ethernet port settings. When you connect to the VP-X using Ethernet, it may need to change the network settings in order to connect. The VP-X Configurator does not affect wireless network configurations. When you quit the program, it restores the network configuration to its previous state. Sometimes this restore operation can fail, and the result is that you cannot connect to a network using your hardwired Ethernet port. Please see Appendix A for instructions on restoring your network settings manually.



Always exit the VP-X configurator prior to putting the PC to sleep or shutting down.

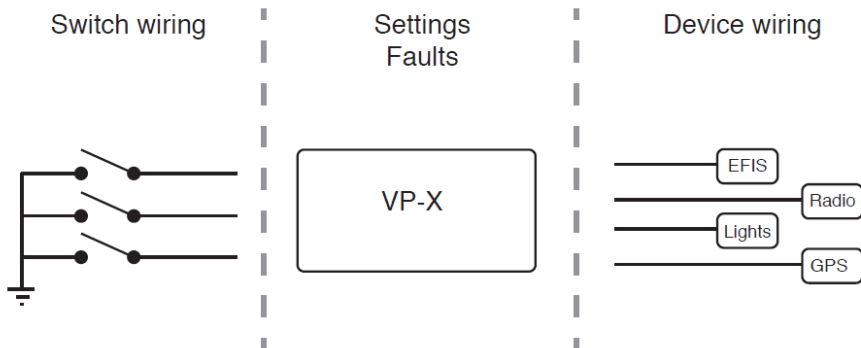
12. Troubleshooting: A Device is Not Working as Expected

Once you have imported your configuration or manually configured the VP-X, some items may not work as expected. Sometimes a device won't turn on, or a switch will turn on unexpected devices. Usually this is because the VP-X is not configured or wired correctly, and this section explains how to troubleshoot those issues. Trim and flap configuration is discussed in the VP-X Installation Manual.



Verify the battery is fully charged. If it is not, the voltage can drop when turning devices on. The VP-X operates down to about 6 volts, whereas most avionics operate down to 10 volts.

We're going to break things up into their logical sections, and troubleshoot and isolate each one individually. First, we'll look at how the switches are wired. Then we'll verify that the VP-X is configured correctly and there are no circuit faults. Finally, we'll double check the wiring from the VP-X to the devices. These sections are shown below:



The troubleshooting steps are summarized here and each one is explained in detail below. Please follow these steps in the order shown.

1. Check the switch inputs for proper operation.
2. Check the device configuration.
3. Check the device for faults, and test each device individually.
4. Test the wiring harness.

Now perform the steps as shown below:

1. Check the switch inputs for proper operation

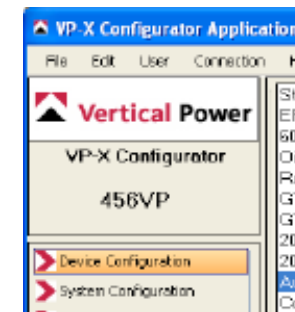
With the Configurator connected to the VP-X, select the System Status page. At the bottom you'll see the status of each switch input, including trim and flaps.



Turn a switch on and verify that the corresponding switch input changes from OFF to ON. Then turn it off and go to the next switch input. Be sure to verify that the trim and flap switches are wired in the correct direction. It is easy to get these backwards. If you turn a switch on and it does not change the status display, or changes the wrong display, then the switch is wired incorrectly.

2. Check the device configuration

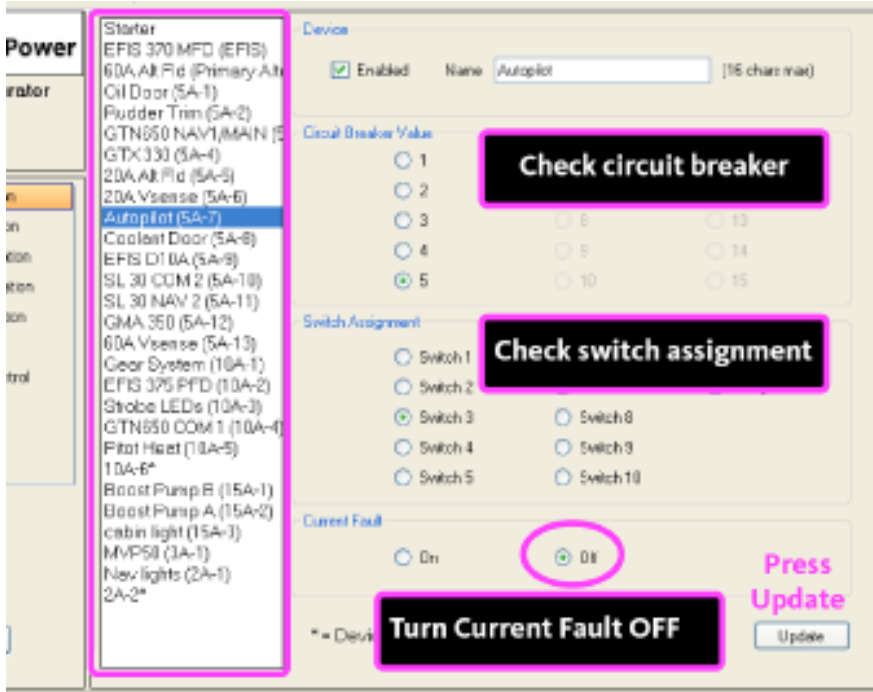
With the Configurator connected to the VP-X, select the Device Configuration page.



Select each device from the list in the middle of the screen and check the following for each device:

1. The device is enabled with a check mark in the small box labeled 'Enabled'.
2. The name and pin number match your planning document.
3. The circuit breaker is the correct value.

4. The switch is assigned to the correct switch input.
5. For now, turn Current Fault checking off. This will cause a fault when nothing is connected to the power pin, which is often the case during the build process. You can always turn it back on later.
6. Press Update button to save changes.



3. Check the device for faults, and test each device individually

With the Configurator connected to the VP-X, select the Device Status/ Control page. This page shows the on/off/fault status of each device, and also allows you turn each device on and off individually (except flaps and trim which are done from their respective pages).

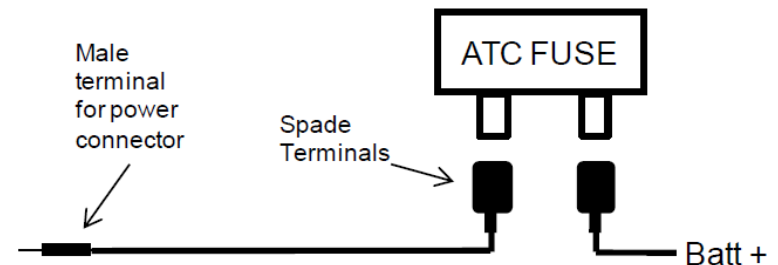


Check that there are no faults on a device. If there is a fault, note the TYPE of fault. That can help you understand the cause of the fault. Faults are explained in the VP- X Installation Manual. You can reset a fault by pressing the button that describes the fault.

Starting at the top of the list, turn on a device by clicking the check mark next to the name. Check that the device turns on as expected. Then turn it off. Repeat for each device. If a device does not turn on, and no faults exist, make a note of that device for later use.

4. Test the wiring harness

In this section you will test the wiring from the VP-X connector to the device itself. Build a test harness as shown below. The wiring harness kit comes with two test leads (wire with a male terminal on one end). Connect this to an in-line fuse (5A is a good start, but it should match the circuit you are testing) then to the battery. Verify the battery ground is connected to ground. Careful! The wire is a HOT wire now. Do not touch it to the airframe.



Using your planning document as a guide, understand which device is connected to which pin. Looking at the power connector from the side where all the wires go into it, pin 1 is at the top left, then it increments going across

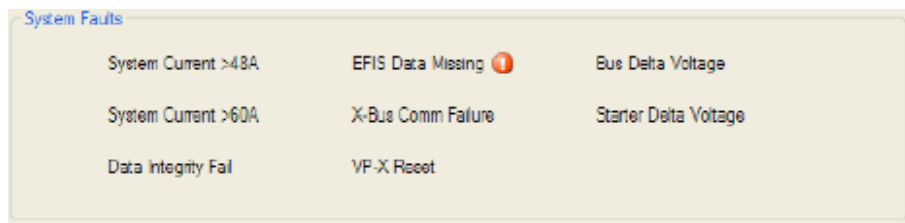
to the right, then again from the bottom left increments to the bottom right. The top of the connector is the side with the latch on it.

Insert the male terminal into the white part of the J8, J10, or J12 connector. You should feel a slight resistance as the terminal engages the connector. If you don't feel that, re-install the female terminal into the connector housing. The device should come on. If it does not, then check the wiring all the way through from the connector to the device. If you have any switches per backup method B installed, be sure to check the switch position.

If you are still having trouble, please contact Vertical Power Support.

13. Troubleshooting: System Status Faults

On the System Status page is a section titled System Faults. These are to alert you of any internal faults or abnormal conditions. If a red '!' icon is next to an item, then there is a fault. If the item does NOT have an icon next to it, conditions are normal.



The following describes each item:

Item	Description
System Current>48A System Current>60A	Advisory only. Total current exceeds these values.
EFIS Data Missing	Data from the EFIS is not being received by the VP-X.
Bus Delta Voltage X-Bus Comm Failure Starter Delta Voltage VP-X Reset	Internal fault (BIT fail). Note the fault and contact technical support for assistance.
Data Integrity Fail	The ECB settings are corrupted and have been reset to their default values. Contact technical support for assistance.

14. Manually Updating the VP-X Pro and Sport Firmware

This should only be performed if requested by tech support, and is performed in three steps:

Step 1:

Save your settings. Go to File menu, then Save Configuration As... and save it to your desktop.

Step 2:

Update firmware. With the configurator connected, select "Update VP-X firmware..." from the Connection menu. A window appears asking you to select a file. Navigate to the main hard disk (C:\), then open the Program Files/Common Files/VerticalPower/vpx folder. Select the file that matches your model and press Open.

Step 3:

Restore your settings. After the firmware is updated, Go to File menu, then Restore Configuration... and select the file you saved in step 1.

15. Restoring Your Settings Manually

The VP-X Configurator automatically saves your settings prior to a firmware upgrade and automatically restores your settings after the firmware upgrade. If the restore process was not initiated, you can manually restore your settings. Please follow these steps:

1. Connect to the VP-X with the Configurator.
2. From the File menu, select "Restore Configuration..."
3. A window appears asking you to select a file. Navigate to C:\VerticalPower folder
4. You will see one or more LONG file names with a date at the end of the filename. Select the file with the most recent date and press the Open button.
5. The settings will be restored to the VP-X. Power cycle the VP-X when complete.

16. Known Bugs

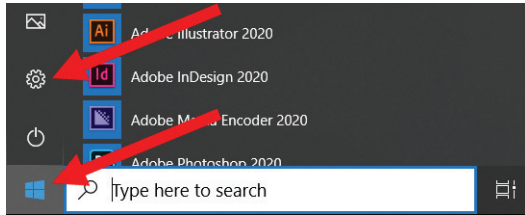
- No known bugs.

17. Restoring Network Settings

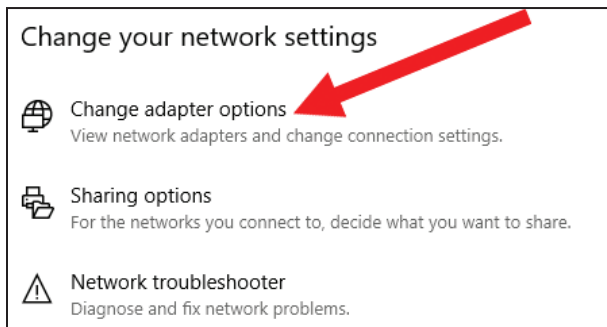
When the VP-X Configurator application disconnects from the VP-X, it restores the computer's network settings back to their previous settings. In some instances this may fail and you must reset them manually. Follow the instructions below (See the appropriate Windows section below):

Windows 10

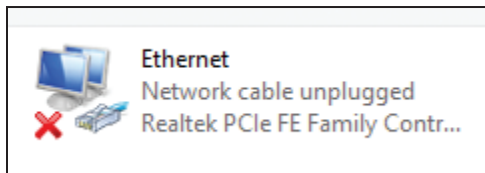
Select the "Settings" icon and then "Network & Internet"



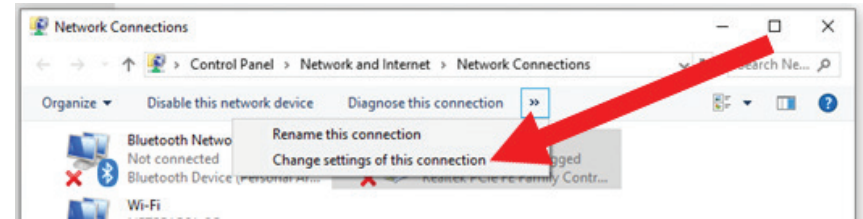
Select "Change adapter options"



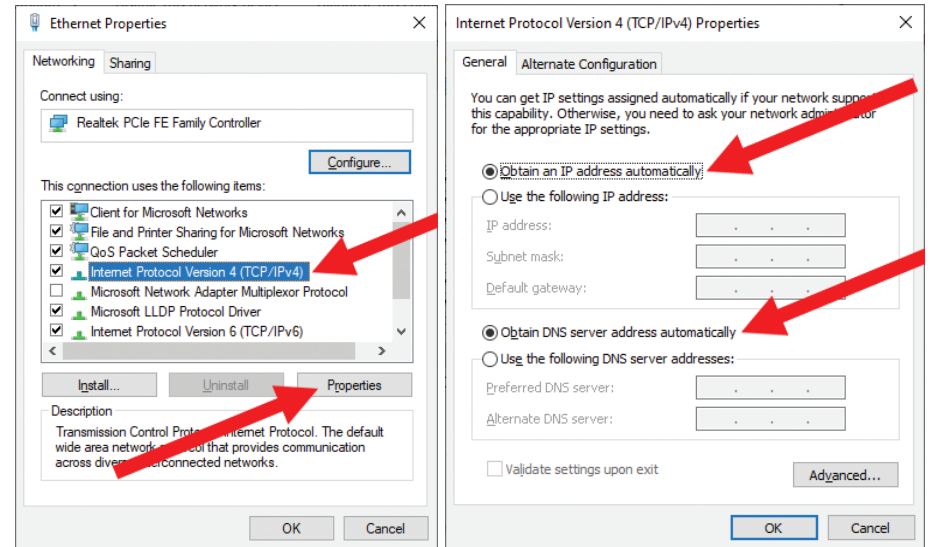
Select the "Ethernet" icon



Select "Change settings of this connection"



Select "Internet Protocol Version 4 (TCP/IPv4)"



Under the General tab, click on "Obtain an IP Address automatically" AND "Obtain DNS server address automatically"

Press "OK" button.

These are the standard settings for a home computer. If your computer is a work computer, the settings may be different. Check with your administrator.

Windows 8, Windows Vista, and Versions Older than XP

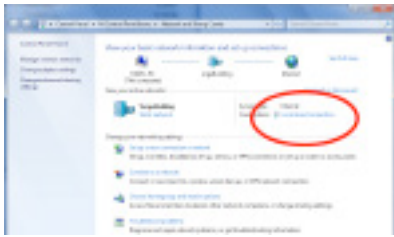
The VP-X Configuration application may not work reliably with Windows 8, Windows Vista, or operating systems older than Windows XP such as Windows ME. Use of the application with these operating systems is not recommended.

Windows 7

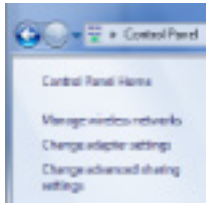
Control Panel -> Network and Sharing Center

Press Local Area Connection.

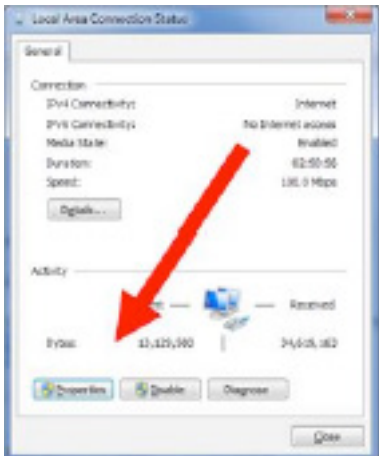
If this is not present click on “Change adapter settings” on the left side of the Window. Then right click on the icon that says “Local Area Connection” and select Properties.



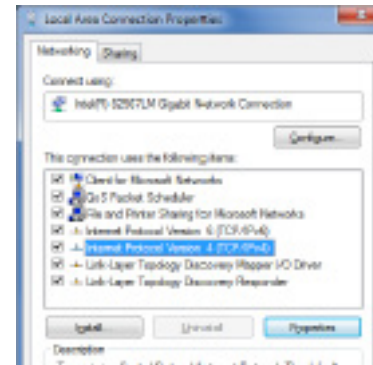
or



Under General tab, click Properties

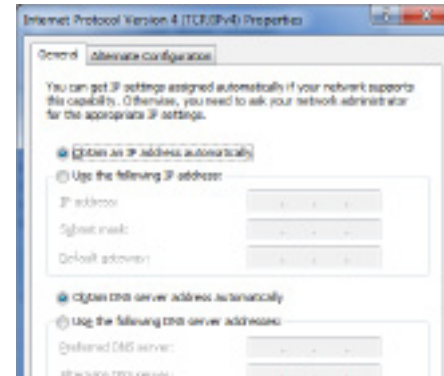


Under Networking tab, click on an item labeled TCP/IPv4 then press Properties button



Under the General tab, click on “Obtain an IP Address automatically” AND “Obtain DNS server address automatically”

Press OK button.

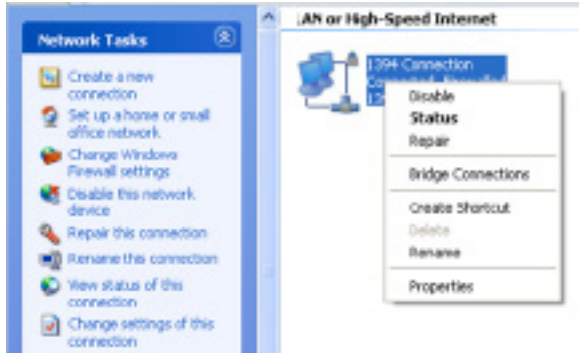


These are the standard settings for a home computer. If your computer is a work computer, the settings may be different. Check with your administrator.

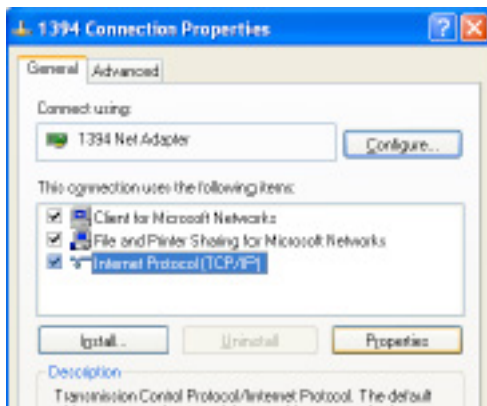
Windows XP

Go to Control Panel → Network Connections

Right click on the network connection that you want to restore, and select properties.

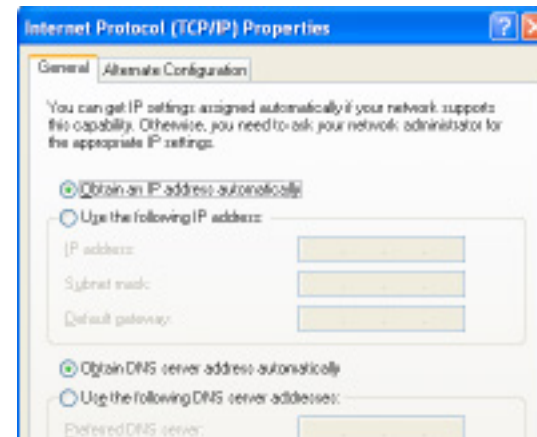


Select Internet Protocol then press Properties



Under the General tab, click on “Obtain an IP Address automatically” AND “Obtain DNS server address automatically”

Press OK button.



These are the standard settings for a home computer. If your computer is a work computer, the settings may be different. Check with your administrator.