

## 1. Check that all of your batteries are charged

Low batteries can easily cause your VEXnet connection to become unreliable. Install a charged 7.2v battery on your robot and charged AAA batteries in your Joystick. If you have a 9V battery connected, make sure that it is charged as well. Insert the VEXnet keys and turn on the Joystick and Cortex. The lights should show:

Joystick	Solid Green
Robot	Off <b>OR</b> Solid Green
VEXnet	Medium/Fast Yellow
Game	Off

This indicates that the Joystick and Cortex are connecting. After a moment, the lights on both should turn:

Joystick	Solid Green
Robot	Green
VEXnet	Fast Green
Game	Off

This indicates that the Cortex and Joystick are connected wirelessly and working properly. If this does not happen, move on to step two.

## 2. Pair the Joystick and Cortex

With charged batteries installed, remove the VEXnet keys from your Cortex and Joystick and then connect the two with the orange USB A-A cable. Turn just the Cortex on. The VEXnet light should flash yellow as before and then the lights should turn:

Joystick	Solid Green
Robot	Green
VEXnet	Solid Green
Game	Off

This indicates that the Cortex and Joystick are connected with a tether and working properly. If this does not happen, move on to step three. If it does, turn everything off, unplug the USB cable, and install the VEXnet keys. Turn the Joystick and Cortex on. After a moment, the lights should turn:

Joystick	Solid Green
Robot	Green
VEXnet	Fast Green
Game	Off

This indicates that the Cortex and Joystick are connected wirelessly and working properly. If this does not happen, move on to step three.

### 3. Update firmware

VEXnet 1.0 (black keys) only requires that the Joystick and Cortex have matching firmware. VEXnet 2.0 (white keys) requires that the firmware on the Cortex, Joystick, and both keys match. Make sure you have the latest firmware downloader by going to: <http://www.vexrobotics.com/vex/support/vex-firmware-updater>. Using a Windows PC, download both the VEXnet Firmware Upgrade Utility and, if you are using white keys, the VEXnet key 2.0 Firmware Upgrade Utility:

**VEX EDR Firmware Updates**

VEXnet devices contain internal processors and run on special software called Firmware (or Master Code). Firmware is updated periodically to provide additional functionality or fix bugs. To fully unlock the potential of VEX Robotics VEXnet devices, it's important to ensure that all applicable drivers are installed and firmware is updated. This page should help you get your new system up to spec, or return a device to its default/factory state for a "clean slate."

**Update PC Drivers**

These drivers allow your computer to communicate with the VEX ARM Cortex-based Microcontroller over a direct USB connection or wirelessly with the VEXnet Joystick and a Programming Hardware Kit.

**Update Firmware on VEX ARM Cortex-based Microcontroller, VEXnet Joystick, and VEXnet Key 2.0**

The VEXnet Key 2.0 requires VEXnet Firmware v4.0 or higher on the VEX ARM Cortex-based Microcontroller and VEXnet Joystick. The VEXnet Firmware Upgrade Utility overwrites the Master Code on the VEX ARM Cortex-based Microcontroller or a VEXnet Joystick to the latest version. Versions 3.0 or higher require a VEX Serial USB Driver installed on your PC (see the section Update PC Drivers above). This ZIP file includes the Upgrade Utility and instructions.

**VEXnet Firmware Upgrade Utility**  
v4.1.7  
(zip, 3-05-15)  
(updates to VEXnet Firmware v4.25)  
(includes Windows 8 compatibility)

**VEXnet Key 2.0 Firmware Upgrade Utility**  
v3.0  
(zip, 11-04-14)

**VEXnet Serial USB Driver**  
(zip, 11-01-11)

**VEXnet Firmware 4.2.3 (for Cortex Microcontroller and VEXnet Joystick) requires VEXnet Key 2.0 firmware 1.46**

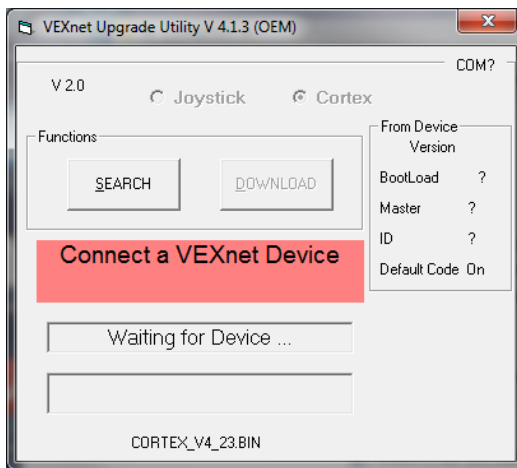
Unlike the first generation VEXnet USB Key, the VEXnet Key 2.0 supports its own internal firmware updates to ensure continued system improvements. Use this utility to upgrade the firmware on a VEXnet Key 2.0. The zip includes the utility, instructions and Windows 8 Driver instructions.

**Sign up for VEX EDR Firmware Update Notifications!**

Email Address: \* required  
First Name: \*  
Last Name: \*  
School:  
Enter the letters shown above: \*  
Join Now

Email & Social Media Marketing by [VEXnetResources](#)

Unzip the downloaded folder(s), and run the installer(s). Start the VEXnet Firmware Upgrade Utility using the desktop icon or the start menu. This window should show up:



Using the USB A-A cable, connect the Cortex to a USB port on the computer. You do not need to turn it on. If your firmware is up to date the window will show:

**VEXnet is up to date  
No action required**

If it shows:

**Update Master Code  
Click DOWNLOAD now.**

OR

**Upgrade required  
Click BootLoad now.**

your firmware is out of date. Click the DOWNLOAD or BootLoad button as instructed. When the update is complete, unplug the Cortex and plug in the Joystick. Repeat the same procedure for the Joystick. Once both the Cortex and Joystick are updated, unplug the USB cable from the computer and close the VEXnet Firmware Upgrade Utility.

If you are using the white VEXnet 2.0 keys, open the VEXnet key 2.0 Firmware Upgrade Utility. Once it opens, plug one key into one of the computer's USB ports. The updater will tell you if the key is up to date. If it is not, click Start Update. Once the update is completed, unplug the key and repeat the process for the other key.

If you are using Windows 8 or Windows 10, the keys may not automatically connect to the computer properly. If you plug in a key and the firmware updater still says “No VEXnet Keys are connected”, follow the instructions in the Windows 8 Driver Installation pdf that was included with the VEXnet key 2.0 Firmware Upgrade Utility download.

After everything is up to date, install the keys in the Cortex and Joystick. Turn both on. After a moment, the lights should turn:

Joystick	Solid Green
Robot	Green
VEXnet	Fast Green
Game	Off

This indicates that the Cortex and Joystick are connected wirelessly and working properly. If this does not happen, you may need to repeat step 2.