1. General Robot Troubleshooting Flowchart

Start

Does the Microcontroller turn on?

Is the Robot LED on the Microcontroller consistently red?

Is the Robot LED on the Microcontroller consistently red?

Do all LEDs flash Red in a repeating cycle?

Is the Microcontroller VEXnet LED on?

Is the Microcontroller VEXnet LED on?

Is the Game LED flashing?

Is the Game LED green?

Are you having trouble running your competition autonomous code?

Do all motors work correctly?

Fast or slow blink?

Single or double blink?

Fast

Single

Double

No

Do all motors work correctly?

No

Low or missing 9v backup battery. If in a competition setting, install a fully charged 9v backup battery before continuing.

Robot battery is dead. Charge or replace batteries before continuing.

Programming error. Try switching to the Default Code which can be found within your programming software. If this fixes the issue, return to your user code and attempt to isolate the issue to a particular line of code. The best way to do this is to comment out various sections at a time and test after each change.

Update the VEXnet Firmware (Master CPU Firmware for ROBOTC users) on both the Microcontroller and the Joystick using the Firmware Upgrade Utility included with your programming software. If you do not have programming software this utility is available on the Downloads page at vex.com/firmware

The Microcontroller is currently running an Autonomous Only user code. If you want to use the VEXnet Joystick, download a VEXnet Enabled project such as the Default Code using the USB A-A Cable.

If the units are still not correctly linked, refer to the VEXnet Troubleshooting Flowchart in Section 8.

When programming a competition robot, it's very important that you write your code in a competition template so that the Field Controller will be able to correctly enable/disable your robot. Note: during autonomous the VEXnet Joystick is disabled.

Refer to the Motor Troubleshooting Flowchart in Section 9.

For any other issues, you can refer to the other guides or post a question on the VEX Forum (vexforum.com). You can also contact VEX Technical Support by phone at +1-903-453-0802 or email support@ vexrobotics.com. Please note: for programming questions contact the developer of your programming software.
The main battery on the robot was dead or had been disconnected from the Cortex. The Cortex was running on the 9V backup battery which is intended to only maintain the VEXnet link in case of main battery failure.

After the match, verify that your main battery is fully charged and check the battery's connection to the Microcontroller. The battery connectors on the Microcontroller can become bent open over time. If necessary, bend the prongs back in to ensure a solid power connection.

The Joystick and Microcontroller temporarily lost the VEXnet link. This may be caused by excess interference, lose connections or low batteries in the Joystick. After the match, make sure all batteries are fully charged and check for loose power connections. In particular, make sure that you are using a fully charged 9V backup battery.

If this is a reoccurring issue, it may necessary to move the VEXnet key to a better location on your robot. Please note that the key should be mounted at least 2 inches (5 cm) away from anything metal.

It is likely that one or both of the 4 amp circuit breakers on the Microcontroller were tripped. This is usually a result of the motors being stalled or placed under too high of a load. See the Motor Troubleshooting Flowchart in Section 4 for further assistance. Please note that the Power Expander also has one 4 amp circuit breaker.

If you're still having issues with your competition robot, you can refer to the other guides or get help from the Technical Support staff available at your competition. You can also contact VEX Technical Support by phone at +1-903-453-0802 or email support@vexrobotics.com. Please note: When preparing for a competition, the VEXnet Competition Switch (276-2335) is an excellent tool for testing your robot's autonomous code and verifying that your robot will correctly respond to the Competition Field Controller.
3. VEXnet Troubleshooting Flowchart

Start

Do both units turn on?

YES

Is the Joystick LED solid?

YES

Joystick batteries are dead. Replace batteries before continuing.

NO

Check batteries and power connections.

Is the Joystick LED red?

YES

No VEXnet key detected. Check key connection and replace key if necessary. Powercycle unit when finished.

NO

What color is the VEXnet LED?

Flashing Yellow

NO

Units are establishing VEXnet link. No action required.

YES

For longer than 20 seconds?

Units are correctly linked. If the problem persists, check user code or try using the Default Code which is available from within your programming software.

Signal may be blocked or units may be out of range. Consider moving key to a better location or consider moving the Microcontroller closer to the Joystick.

Is the Joystick LED solid?

YES

Pair Microcontroller and Joystick. For instructions, refer to Section 1 of the VEXnet User Guide.

NO

What color is the VEXnet LED?

Red

NO

Units are correctly linked. If the problem persists, check user code or try using the Default Code which is available from within your programming software.

Other

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Pair Microcontroller and Joystick. For instructions, refer to Section 1 of the VEXnet User Guide.

Flash LED?

NO

Lost VEXnet link.

NO

YES

For longer than 20 seconds?

Units are establishing VEXnet link. No action required.

Double or double blink?

NO

Single or double blink?

NO

For longer than 20 seconds?

Units are establishing VEXnet link. No action required.

NO

For longer than 20 seconds?

Units are correctly linked. If the problem persists, check user code or try using the Default Code which is available from within your programming software.

NO

For longer than 20 seconds?

Units are establishing VEXnet link. No action required.

NO

Flash LED?

NO

Flash LED?

NO

Flash LED?

NO

Flash LED?

NO

Flash LED?

NO

Flash LED?

NO

Flash LED?

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Flash LED?

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Flash LED?

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Flash LED?

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Flash LED?

NO

Flash LED?

NO

Flash LED?
Do the Motors spin at all?

Are you using Motor Controller 29 Modules on all 2-wire motors plugged into ports 2-9 on the Cortex?

Do motors intermittently lose power or stop working?

Are your motors drifting?

Are you having Issues with using your Power Expander?

In order to run a 2-Wire Motor off a 3-Wire PWM motor port you must use a Motor Controller 29 Module (276-2193) for each 2-wire motor. This motor controller acts as a converter between a 2-wire motor and a 3-wire motor port. Ports 1 and 10 on the Microcontroller are equipped with built-in Motor Controllers, allowing you to directly control a 2-Wire Motor on these ports.

This could be a programming issue. Try switching to the Default Code to isolate the problem.

The Microcontroller is equipped with two 4 amp circuit breakers that may trip if the motors pull too much current. Motor ports 1-5 share one 4 amp circuit breaker. Ports 6-10 share a second 4 amp circuit breaker. It’s recommended that you balance the load from your motors across these two breakers to prevent the circuit breaker from tripping unnecessarily.

If a motor still loses necessary power it is likely that the motor’s internal thermal breaker is tripping. This is almost always attributed to the motor being stalled or placed under too high of a load. First check your drivetrain or mechanism for any unnecessary friction. The best way to do this is to disconnect the motor from your mechanism and then turn the shaft by hand. Ideally, your mechanism or drivetrain should spin relatively freely.

You may also need to add additional motors to your application or switch to a slower and less aggressive gear ratio. If you have a high-load application and are using 2-wire Motor 269 modules, it may be a good idea to change them out for 2-wire Motor 393 Modules, which, in their factory setting, can output 60% more torque.

Refer to the Power Expander Inventor’s Guide which is available at vexrobotics.com/276-2271.html

If you’re still having problems with motors you can refer to the other guides or contact VEX Technical Support by phone at +1-903-453-0802 or email support@vexrobotics.com. You may also want to post a question on the VEX Forum and someone in the VEX community will assist you.

The Joystick may need to be recalibrated. For instructions, see section 6 of this guide or refer to the help files included with your programming software.