



VEXnet Server P/N: 210-8909
Users Manual



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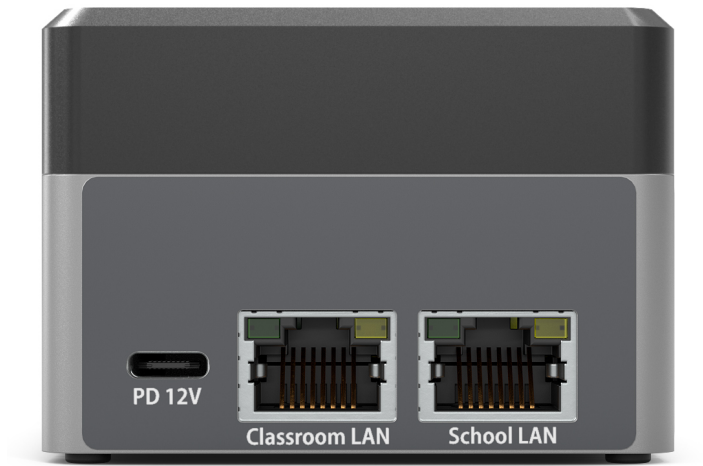
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1. Product Description

The VEXnet Server locally hosts the complete VEX teaching ecosystem so classrooms and schools can teach, build, code and learn regardless of your internet availability. It provides a local copy of all VEX content in many languages which can be accessed via a browser.

The VEXnet Server can additionally be used to help host VEX Competition events. This provides software, wired and wireless network connections as needed for small events.

The VEXnet Server only used at Industrial residential and forbid use at residential condition



2. RF Certification

3. Safety

Use the VEXnet Server only as described in this manual.

- Connect only the supplied 12V USB-C power adapter. Standard 5V USB-C power adapters will not power the VEXnet Server correctly.
- Connect the power adapter to a nearby, easily accessible power outlet.
- Use the VEXnet Server indoors only, on a stable surface, and keep it away from water, rain, excessive humidity, heat sources, and direct sunlight.
- Use the VEXnet Server only in ambient temperatures from 0 °C to 40 °C (32 °F to 104 °F).
- Do not use the VEXnet Server if the power adapter, power cable, enclosure, or connectors appear damaged.
- Do not open, disassemble, modify, or attempt to repair the VEXnet Server. Service should be performed only by qualified personnel.
- Do not disconnect power during a firmware or content update.
- Do not use the VEXnet Server where wireless devices are prohibited.
- Keep the VEXnet Server and its power adapter at least 15 cm (6 inches) away from pacemakers and other implanted medical devices. If you suspect interference, turn off the device and consult a physician.

4. Getting Started

There are three ways to get started. All three methods provide user access to VEX content at vexnet.com

1. Classroom Quick Start

- a. Provides a wireless and wired network
- b. No user configuration needed
- c. Anyone with the username and password can join wirelessly

2. Classroom Complete Setup

- a. Provides a wireless and wired network
- b. Setup an administrator account with a username and password

- c. Change the wireless network name and password
- d. Recommended for use with Tournament Manager at VEX Events

3. School Infrastructure Setup

- a. Requires a School network and IT Support
- b. Connects to a School network via ethernet
- c. Setup an administrator account with a username and password
- d. Requires a DNS redirect to the VEXnet Server
- e. Optionally disable VEXnet Wi-Fi
- f. Setup automatic content updates

5. Classroom Quick Setup

Classroom Quick Start

- Provides a wireless and wired network
- No user configuration needed
- Anyone with the username and password can join wirelessly

Instructions

1. Connect the VEXnet Server to the supplied 12V USB-C Adapter.
2. Connect to the default wireless network
 - a. Network **VEXnet**
 - b. Password **vex12345**
3. Open a browser and go to vexnet.com
4. Periodic updates are recommended. See the **Update Options** section for more information.

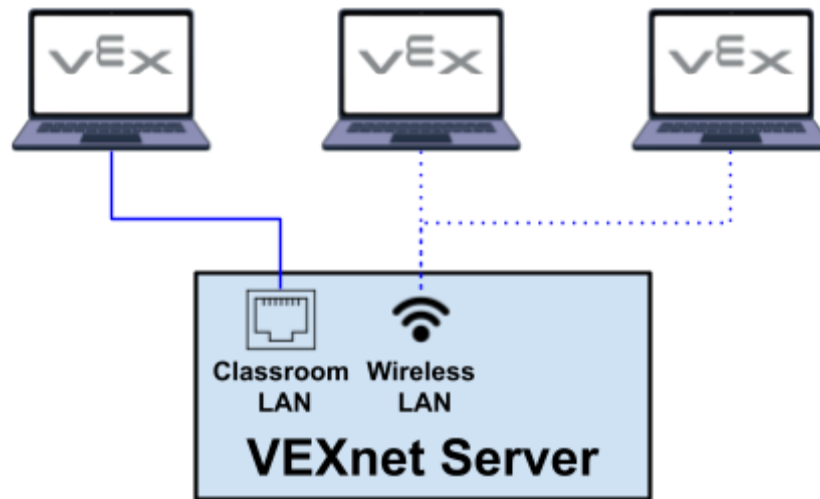


Diagram 1: Classroom Quick Setup

6. Classroom Complete Setup

Classroom Complete Setup

- Provides a wireless and wired network
- Setup an administrator account with a username and password
- Change the wireless network name and password
- Recommended for use with Tournament Manager at VEX Events

Instructions

1. Initial Connection
 - a. Connect the VEXnet Server to the supplied 12V USB-C Adapter.
Note: Normal USB-C Power Adapters are 5V and will not work.
 - b. Connect to the default Wi-Fi network
 - i. Network **VEXnet**
 - ii. Password **vex12345**
2. Admin Configuration
 - a. Open a browser and go to admin.vexnet.com
 - b. You will be prompted to press the reset button once to confirm physical access
 - c. Create an Admin username and password

- d. (optional) Rename with wireless network name and password
 - e. (optional) Make any other changes listed
 3. Connect Users
 - a. Access the wireless **VEXnet** network or connect to the **Classroom LAN** network
 - b. Open a browser
 - c. GO to vexnet.com
 4. Periodic updates are recommended. See the **Update Options** section for more information.

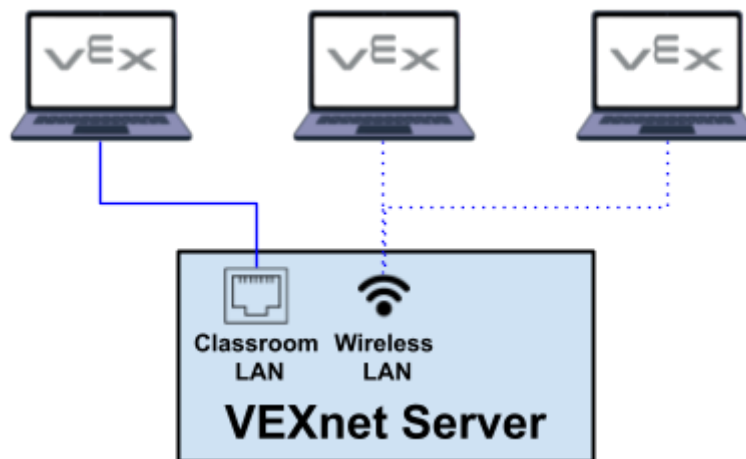


Diagram 1: Class Complete Setup

7. School Infrastructure Setup

School Infrastructure Setup

- Requires a School network and IT Support
- Connects to a School network via ethernet
- Setup an administrator account with a username and password
- Requires a DNS redirect to the VEXnet Server
- Optionally disable VEXnet Wi-Fi
- Setup automatic content updates

Instructions

1. Initial Connection
 - a. Connect the VEXnet Server to the supplied 12V USB-C Adapter.
Note: Normal USB-C Power Adapters are 5V and will not work.
 - b. Connect the VEXnet Server's **School LAN** port to the School Network with an ethernet cable

- c. Find the VEXnet Server's IP Address on your School Network
 - i. Check your school router or DHCP client list for a device named "VEXnet"
 - ii. Note the IP Address, you'll need this for the next step
 - d. Modify the School DNS to point vexnet.com to the VEXnet Server's IP Address
 - e. Connect to the School Network
 - f. Open a browser and go to vexnet.com (unless automatically directed there)
2. Admin Configuration
 - a. Open a browser and go to admin.vexnet.com
 - b. You will be prompted to press the reset button once to confirm physical access
 - c. Create an Admin username and password
 - d. (recommended) Perform an Update Now to ensure the VEX content is up-to-date
 - e. (optional) Adjust the Automatic Update settings as needed
 - f. (optional) Rename with wireless network name and password
 - g. (optional) Review and change other options as needed
3. Connect Users
 - a. Access the wireless or wired School Network
 - b. Open a browser
 - c. GO to vexnet.com

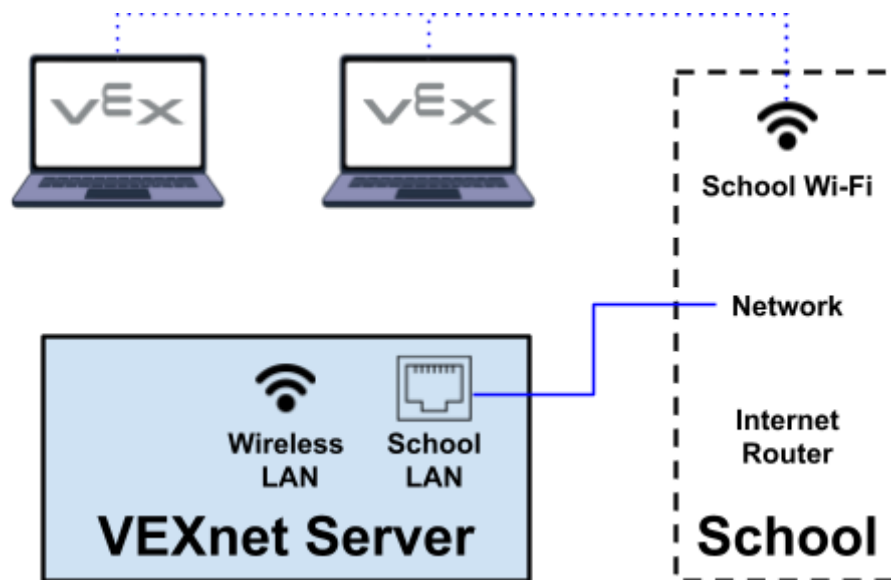


Diagram 2: School Infrastructure Setup

8. Restarting the VEXnet Server

Reasons to Restart the VEXnet Server

- You are experiencing difficulties with wireless connectivity
- The device is responding slowly or not at all

Instructions

1. Make sure the VEXnet Server is powered on. Look for a (color) LED on the front of the unit.
2. The reset button is located on the front of the device.
3. Press and release the reset button briefly.
 - a. Do Not hold the reset button On
4. Wait for the device to restart and the LED to turn Green
5. If difficulties still persist, proceed to **Resetting to Factory Default**

9. Resetting to Factory Default

Reasons to Reset to Factory Default

- Network password has been lost, or
- Setup from scratch is desired.

Instructions

1. Make sure the VEXnet Server is powered on. Look for a (color) LED on the front of the unit.
2. Press and hold the reset button for at least 10 seconds.
 - a. Wait for the LED starts blinking RED
 - b. Release the button
3. Wait for the device to reset and the LED to turn Green
4. Follow the Classroom Setup or School Setup instructions

10. Update Options

Choosing Manual or Automatic Updates

- Classrooms will typically use a Manual Update process.
- Schools will typically use the Automatic Update process.

Manual Update Instructions

1. Cellular Service
 - a. Connect an internet connected iOS or Android device to VEXnet's Wi-Fi
 - b. Go to vexnet.vex.com
 - c. Follow the instructions for Cellular Update which will involve installing an app
 - d. Note that cellular data usage may incur service provider fees
2. USB Storage Device
 - a. Requires a USB Storage Device of at least ____ GB
 - b. Go to vexnet.vex.com
 - c. Follow the instructions for USB Update
3. Ethernet
 - a. Requires a wired network with internet access
 - b. Disconnect any Classroom LAN connection
 - c. Connect the School LAN to a network with internet access
 - d. Go to vexnet.vex.com
 - e. Follow the instructions for Ethernet Update

Automatic Update Instructions

1. Ensure the School LAN port is connected to a network with internet access
2. Open a browser on the same network and go to admin.vexnet.com
3. You will be prompted to press the reset button once to confirm physical access
4. Select Ethernet Update
5. Change the Automatic Update Settings:
 - a. Time-of-day
 - b. Day-of-week
 - c. Bandwidth limits
6. Optionally select "Update Now" for a maximum speed update

11. Technical Details

Network Operation

The intended network function of the VEXnet Server is to provide Wi-Fi and/or LAN access to VEX content served from local storage on the device. Client devices connect to the VEXnet Server and access locally hosted services and content through the client-access network.

Supported VEX service requests are resolved to the local server address. Local DHCP, DNS response, and captive-portal response functions, where used, are provided only to direct client devices to locally hosted services on the VEXnet Server.

Within the local client-access network, client devices may communicate with other devices on the same local network as supported by the active configuration. This local network communication does not provide internet access and does not cause the device to operate as a general-purpose router, broadband gateway, bridge, repeater, or mesh-networking device.

Limitations

The VEXnet Server will not perform general-purpose router functions such as bridging traffic between networks, acting as an internet gateway, extending an existing Wi-Fi network, operating as a repeater or mesh node, or sharing broadband access between connected devices.

User Capacity

- The wireless network has been tested with 50 simultaneous users
- The wired network should handle 200 simultaneous users

LED Indications

- **PWR** Solid red means 12 V input power is present.
- **SYS** Blinking green during startup. Solid green when the device is operational.
- **W2G** Flashes blue with Wi-Fi 2.4 GHz traffic.
- **W5G** Flashes blue with Wi-Fi 5 GHz traffic.
- **SSD** Flashes blue with VEXnet storage access.

Administrator Configuration

Admin configuration is available at admin.vexnet.com

- Setting a new Username and Password are required on first use.
- In the case that the Admin Username and/or Password is lost, see the section Reset to Factory Default.

Allowable changes are

1. Admin user name
2. Admin password
3. Wi-Fi enabled or disabled
4. SSID: Wi-Fi network name
5. Wi-Fi password
6. Install firmware updates
7. Install content updates
8. Configure Automatic Updates (School LAN only)

Wireless LAN (Wi-Fi)

Equipment: No additional equipment is required

Wireless LAN Usage

- Client devices may access locally hosted VEXnet content
- Client devices can be used with VEX Tournament Manager

Network Details

- Wireless clients may communicate with other devices on the same local network
- Resolves all VEX domains locally to 10.3.141.1
- DHCP hands clients 10.3.141.1 as both their gateway and DNS
- DHCP hands out addresses in the range 10.3.141.50–10.3.141.200
- Wireless clients are on the 10.3.141.0/24 subnet
- OS captive portal checks (Android, iOS, Windows, Firefox) land on the VEXnet Server

Classroom LAN Port (Host)

Equipment: Can be used with network switches to connect more than one device

Classroom LAN Usage

- Client devices may access locally hosted VEXnet content
- Client devices can be used with VEX Tournament Manager

Wireless Usage

- VEXnet wireless can be used in conjunction with Classroom LAN
- VEXnet wireless client devices may access locally hosted VEXnet content
- VEXnet wireless is On by Default and can be disabled in the Admin Configuration
- VEXnet wireless can be used with VEX Tournament Manager

Network Details

- Classroom LAN and WiFi are one connected network
- Classroom LAN and WiFi clients may communicate with other devices on the same local network
- Resolves all VEX domains locally to 10.3.141.1
- DHCP hands clients 10.3.141.1 as both their gateway and DNS
- DHCP hands out addresses in the range 10.3.141.50–10.3.141.200
- Wired and wireless clients are on the same 10.3.141.0/24 subnet
- OS captive portal checks (Android, iOS, Windows, Firefox) land on the VEXnet Server

School LAN Port (Client)

Equipment: Requires School Network equipment.

School LAN Usage

- School LAN is a Client to the School Network.
- School Network client devices may access locally hosted VEXnet content
- School LAN can be used to automatically keep the VEX content on the device up-to-date.
- Do not connect to the Classroom LAN while using School LAN. Only one LAN port can be active at a time.

Wireless Usage

- VEXnet wireless can be used in conjunction with School LAN
- VEXnet wireless client devices may access locally hosted VEXnet content
- VEXnet wireless is On by Default and can be disabled in the Admin Configuration
- VEXnet wireless is on a separate network from the School LAN network

Network Details

- Device receives an IP address from the school network's DHCP server on the School LAN port
- The school network must direct vexnet.com to the VEXnet Server's IP address

FCC Caution:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: Use only the supplied antenna.