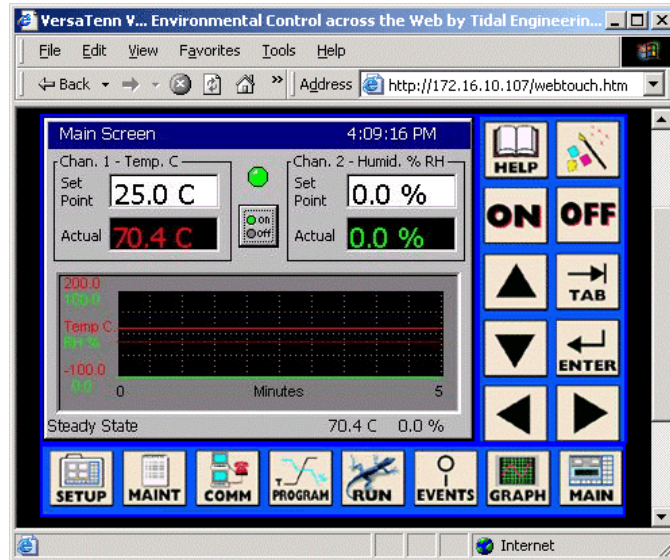


A Simple Wireless Network Setup for Connecting a VersaTenn V Using a D-Link DWL-810+ Ethernet to Wireless Bridge



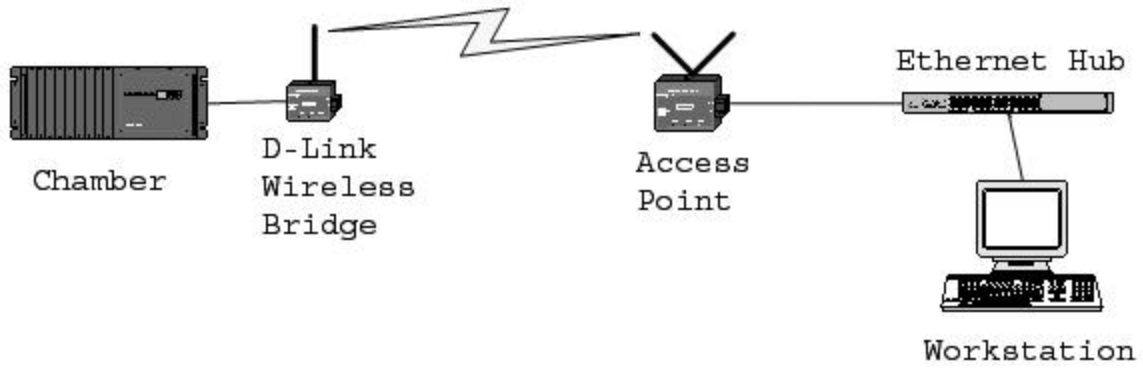
VersaTennV Web Touch Remote

One of the powerful features of the VersaTenn V (Five) is its built-in Ethernet port and the Web and TCP/IP servers that provide Ethernet (TCP/IP) communications. Using these VersaTenn V (VTV) features and a low cost Ethernet to wireless bridge, this application note will show you how to remotely monitor and control your environmental chamber from anywhere in your factory or over the Internet without running Ethernet cable connections to your chamber. Once connected you can use your Web Browser, our LinkTenn32 or SimpleComm software or your own LabVIEW, Visual Basic or Visual C++ program to monitor and control your networked environmental chamber. This application note will guide you through the setup of the D-Link DWL-810+.



D-Link Ethernet – Wireless Bridge

The diagram below illustrates the hypothetical system described in this AppNote: a VTV controller connected to a PC via the D-Link Wireless Bridge.



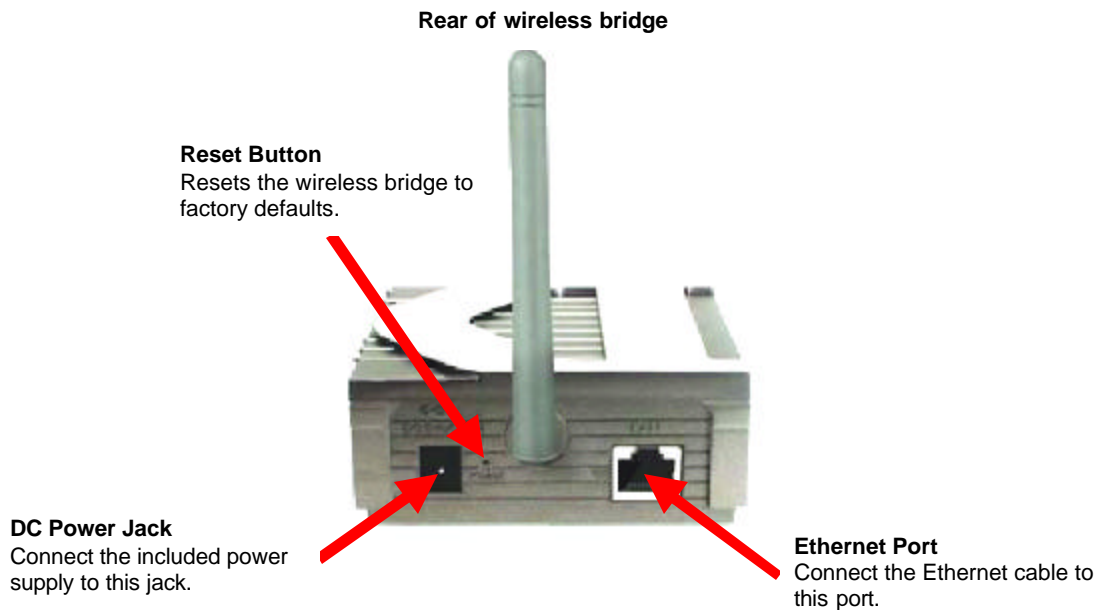
Connection Diagram

Setting up the Hardware Connections

Required Equipment

1. PC
 - Ethernet card
 - Windows 9x, ME, NT, 2000 or XP
2. D-Link DWL-810+ Ethernet to Wireless Bridge
 - DC power supply
3. One VersaTenn V Chamber Controller.
4. CAT 5 Ethernet patch cable between PC and Wireless Bridge for setup.

Hardware Setup



Rear Panel of the D-Link 810+ Wireless Bridge

1. Connect an Ethernet cable from the D-Link Wireless Bridge into the back of your PC.
2. Plug the connector of the 5 V AC power adapter into the DC adapter socket on the wireless bridge and then plug the adapter into a wall outlet.

Setting up the Software

D-Link Wireless Bridge Software Setup

The D-Link wireless bridge is set to the IP address 192.168.0.30. You must setup your computer with a similar IP address to configure the D-Link the first time you use it (i.e. 192.168.0.211).

PC Software Setup

The PC's network setting must match those on the D-Link in order to be able to program the D-Link to match your pre-existing wireless network settings. To configure your PC's IP address, select your operating system below and follow the instructions.

1. Open your Network Settings or Local Area Connection folder.

Windows 95 98 ME

Go to the Start button and navigate to Settings, Control Panel and click on Network.

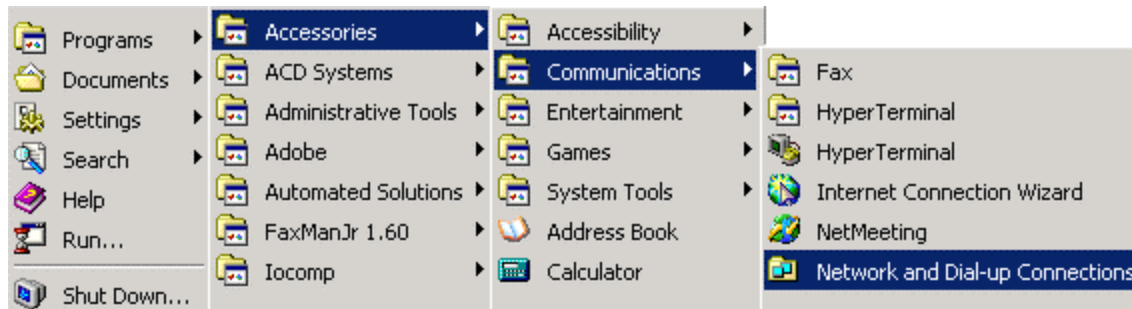
Windows NT & 2000

Go to the Start button and navigate to your Network and Dial-up Connections folder. Start, Programs, Accessories, Communications, Settings, Network and Dial-up Connections.

Windows XP

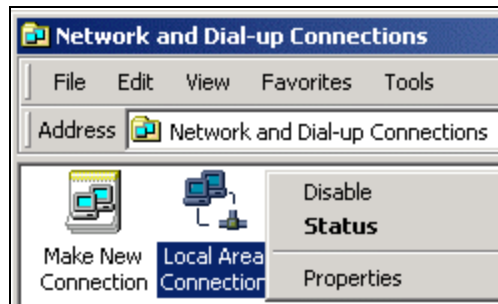
Go to the Start button and navigate to the Settings, Control Panel. Click on Network Connections folder and click "Local Area Connection".

The screen below is for Windows 2000. We will walk through the rest of the steps associated with Window NT & 2000 network settings modifications. Window 95, 98 and XP procedures are similar to these steps.



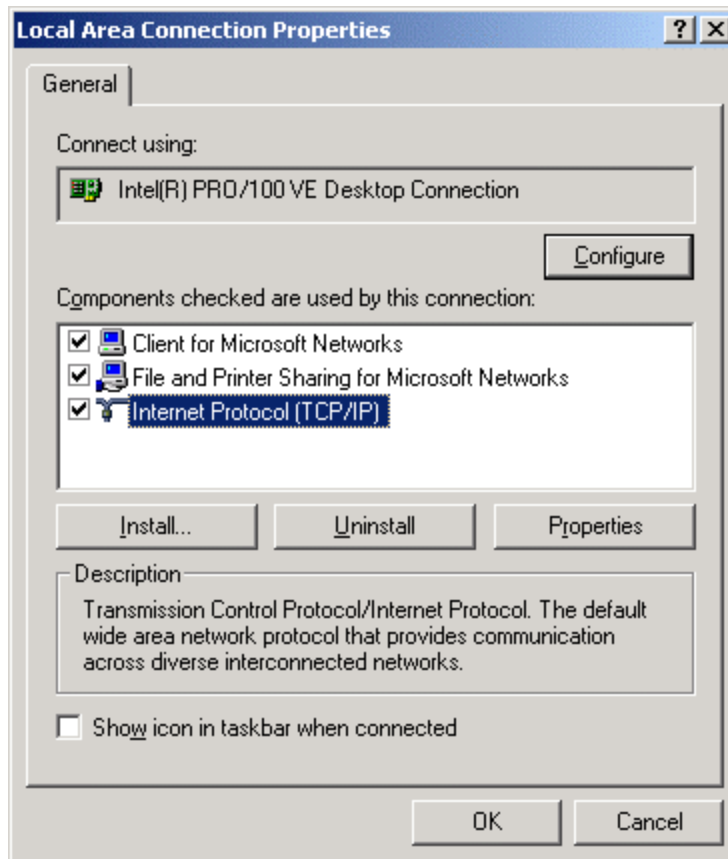
Opening Network Connection Setup Windows

2. After clicking on Network and Dial-up Connections, you will see the screen below. Right click on Local Area Connection and select Properties.



Network And Dial-up Connections

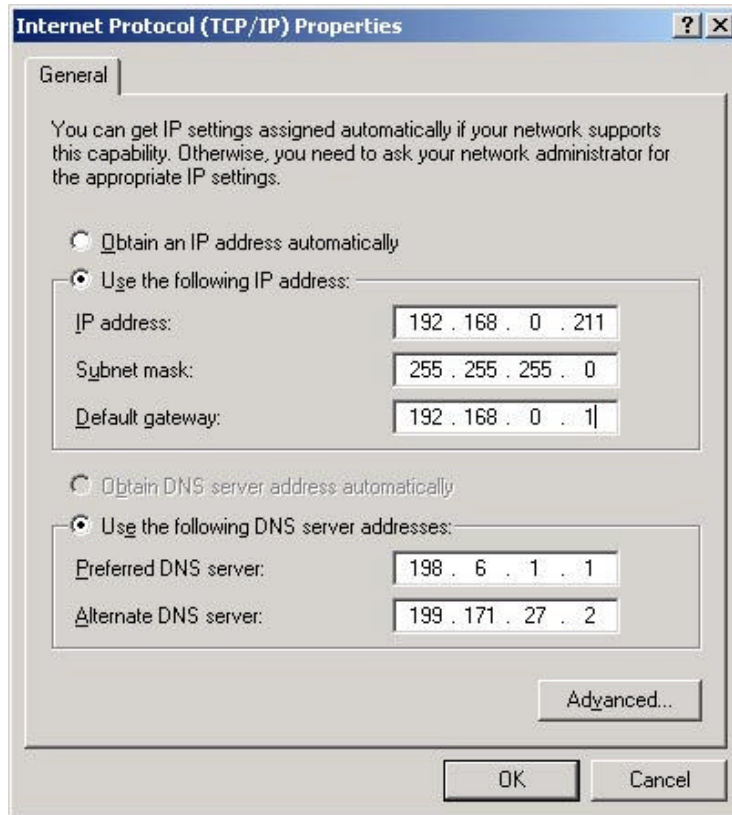
3. Select Internet Protocol (TCP/IP) and press the Properties button.



Local Area Connection Properties

4. Before modifying your PC's network settings, write down your current settings (DHCP or Static IP, current IP Address, Subnet Mask and Gateway) or note if it is set to "Obtain an IP address automatically". You will have to reset these values after you configure the D-Link wireless bridge.

5. To enable your PC to communicate with the D-Link Wireless Bridge, select "Use the following IP address" option. Under IP Address, enter 192.168.0.211. Under the Subnet Mask, enter 255.255.255.0. Set your Default Gateway to 192.168.0.1. You can leave the DNS server settings alone.



Internet Protocol Properties – IP Setup

6. Your PC is now configured for the proper address. Press OK to accept the changes.

Note: You may need to reboot your PC to actually be assigned an IP address.

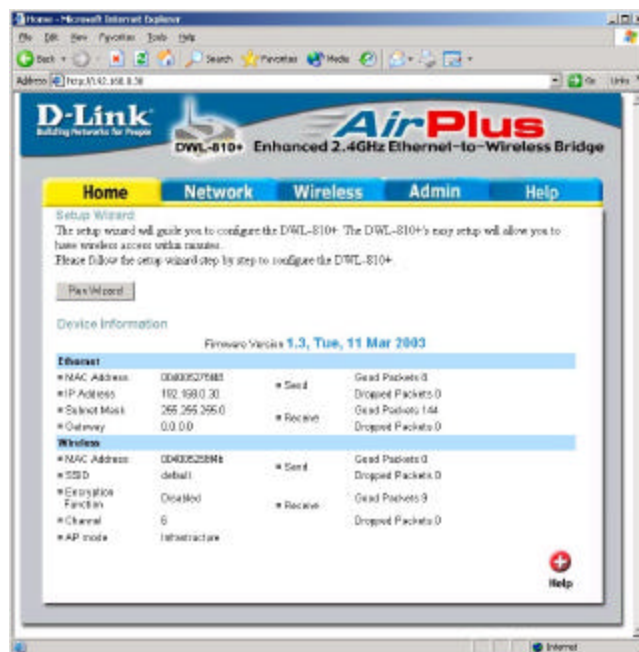
Configuring the D-Link Ethernet to Wireless Bridge

1. Open up Internet Explorer and enter <http://192.168.0.30> into the address bar and press enter.
2. You should be prompted to log into the D-Link. The login name is Admin, and the password is left blank.



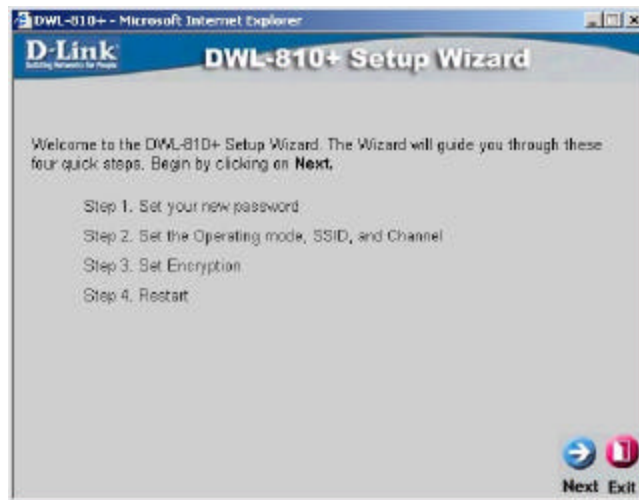
Login Prompt when connecting to D-Link DWL-810+

3. Once logged in, you will see the main D-Link Configuration page. Click on the button that says Run Wizard. The wizard will take you through the steps required to configure your DWL-810+ for your network.



D-Link main configuration page

- When you press the Run Wizard button, you will see the first wizard screen. Begin the setup by pressing the Next button in the lower right hand corner.



First D-Link Setup Wizard Page

- The first step of the wizard is to setup a new password that must be provided to configure the unit at a later date. Enter a password in the New Password field, and type it again in the Confirm Password field, making sure it is the same both times. Remember this password! You will need to enter it the next time you enter the configuration page.



Setting up new Default Password

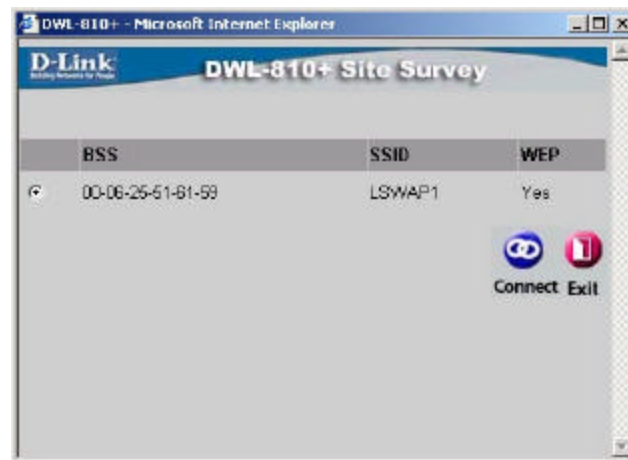
- Next you must set the mode for the wireless LAN. This Application Note assumes that you have a wireless base station already, and you will be setting up the wireless router in infrastructure mode. Make sure the Infrastructure mode option is selected, and then click on Site Survey to see any available wireless access points to connect to.



Wireless LAN Setup

7. After you click on Site Survey, you will see a list of available access points that you may connect to. If you do not see any access points in the list, make sure your access point is setup and running, and that you are within range of it. If you are unsure of the range, you can move closer to the access point and try the site survey again.

From the list that is displayed, select the access point to use. If under the WEP heading the access point you selected says YES you will have to configure encryption on the wireless bridge in a later step. You will need to get the encryption keys to use from your network administrator. Click on Connect to continue.



Access Point Site Survey

8. You will be back at the Wireless LAN Setup page, but the information for the access point you selected will be displayed on the screen. Click Next to continue.



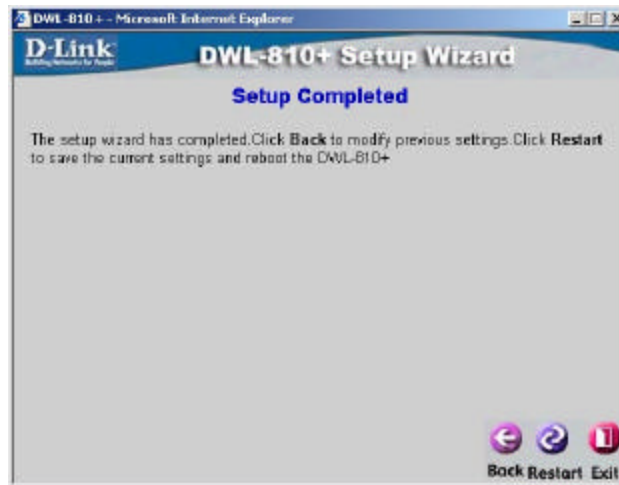
Wireless LAN Connection after Site Survey

9. Next you setup your wireless encryption if necessary. If your access point does not have encryption (WEP) enabled, then make sure Disabled is selected. If your access point uses encryption, you must make sure Enabled is selected, and enter your encryption settings below. Press Next to continue.



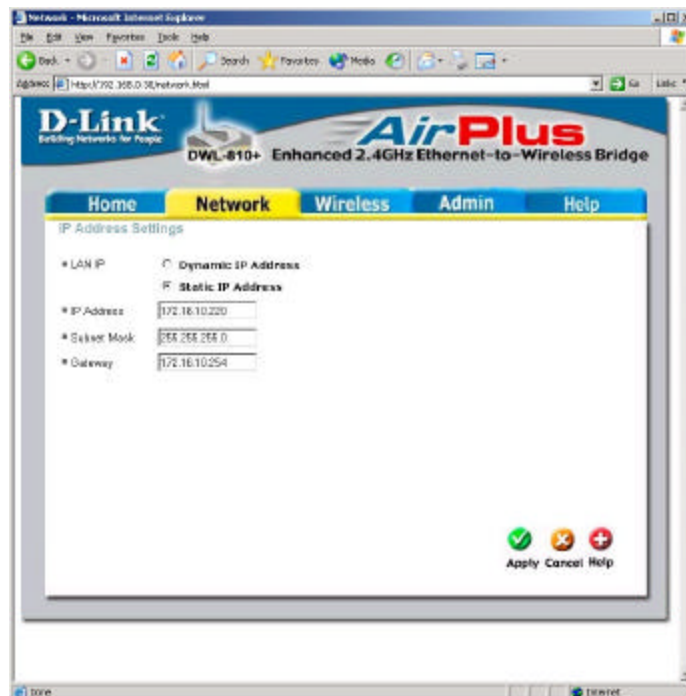
Wireless Encryption (WEP) Setup Wizard

10. The setup is almost complete now. Click on the Restart button to save the changes and restart the wireless bridge.



Setup Wizard is Complete

11. Once the wireless bridge restarts, connect to it again through internet explorer by going to <http://192.168.0.30>. Login as admin and type in the password that you entered in step 5. You will be at the main configuration page again. Click on the Network button at the top of the page to configure the wireless bridge to work off the same IP addresses as the rest of your network.
12. If your network supports DHCP (which it most likely does if you can connect to the VersaTenn V over Ethernet), you can just select the Dynamic IP Address option on the network page. If you do not use DHCP, then click on the Static IP Address option and fill in the IP address, Subnet Mask and Default Gateway for your network. When you are done, press Apply.



Change IP Address Screen

13. After you click on Apply, the D-Link will reboot. You will see the reboot screen which looks like this. After the D-Link reboots, you will not be able to communicate with it until you restore your old networking settings.



D-Link restarting after changing IP address

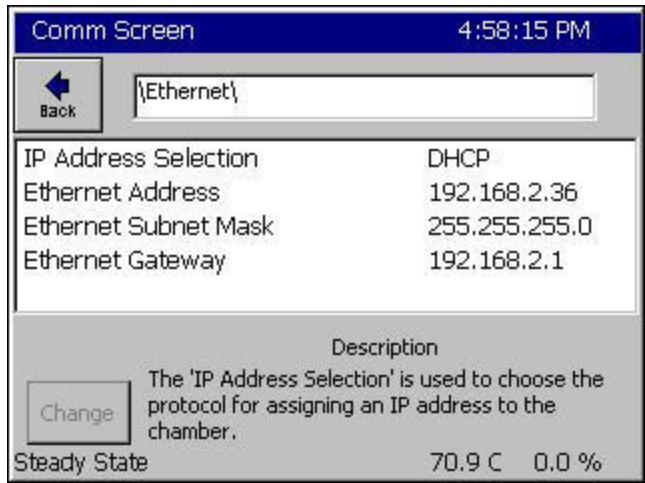
14. The configuration of the D-Link Wireless Bridge is complete. You must now restore your PC's network settings to their original state. Go back to the PC Software Setup section at the beginning of the Application Note, and follow those steps again, but enter the old settings you wrote down previously.

Connecting a VersaTenn V to the DWL-810+ and your Wireless Network

1. After the D-Link Wireless Bridge is configured, plug a network patch cable into your VersaTenn V and the other end into the D-Link. Make sure the D-Link is powered on. Then boot your VersaTenn V controller. If your VersaTenn V controller is set to DHCP you should be assigned an address automatically.

Verify DHCP IP Addressing

1. To confirm that the VersaTenn V was assigned an address, press the COMM button on the VTV touch screen and press the Ethernet folder icon. You should see a screen similar to the one below. Verify that each field contains non-zero numbers.



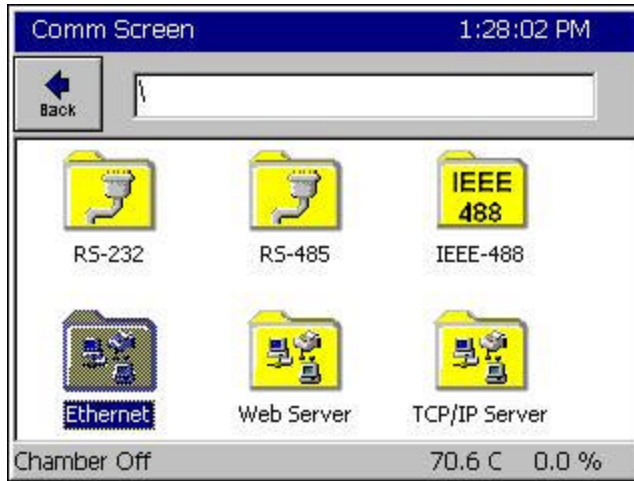
VTV Ethernet Settings

The address in the Ethernet Address field is the IP Address of the VTV controller. Use this address when connecting to the VTV over Ethernet.

If the addresses are blank or 0.0.0.0 then the VTV did not obtain an IP address from the DHCP router. If this is the case, review the previous sections to make sure you have set up the D-Link Wireless Bridge properly. If that doesn't solve the problem, verify the settings on the D-Link with your network administrator.

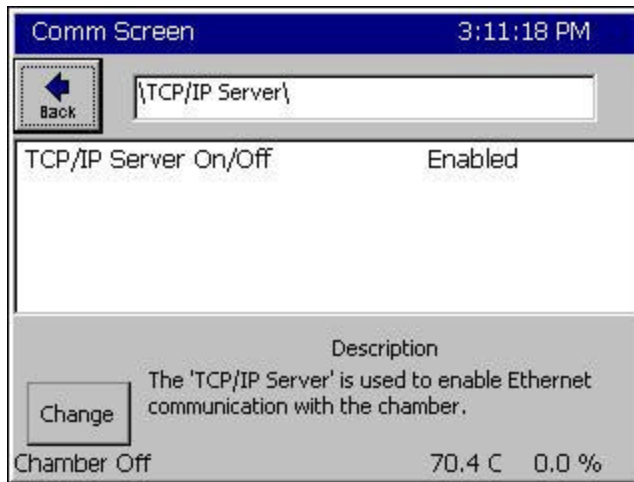
VersaTenn V TCP/IP Server Setup

To set up the VersaTenn V for ASCII commands over TCP/IP, press the COMM button at the bottom of the VersaTenn V's touch screen. The Comm Screen window will appear.



VTV COMM Screen

Press the "TCP/IP Server" folder icon.



VTV TCP/IP Server Settings

Confirm that the TCP/IP Server On/Off field is set to Enabled. If it is not enabled, press the Change button and enable it. Your VersaTenn V is now configured to accept ASCII commands over TCP/IP.

Note: The Web Server is enabled separately from the TCP/IP Server.

Communicating ASCII commands over TCP/IP

To connect over TCP/IP you can use a Web Browser, a communications program such as Tidal Engineering's LinkTenn 32 or VTV SimpleComm or a third party telnet program.

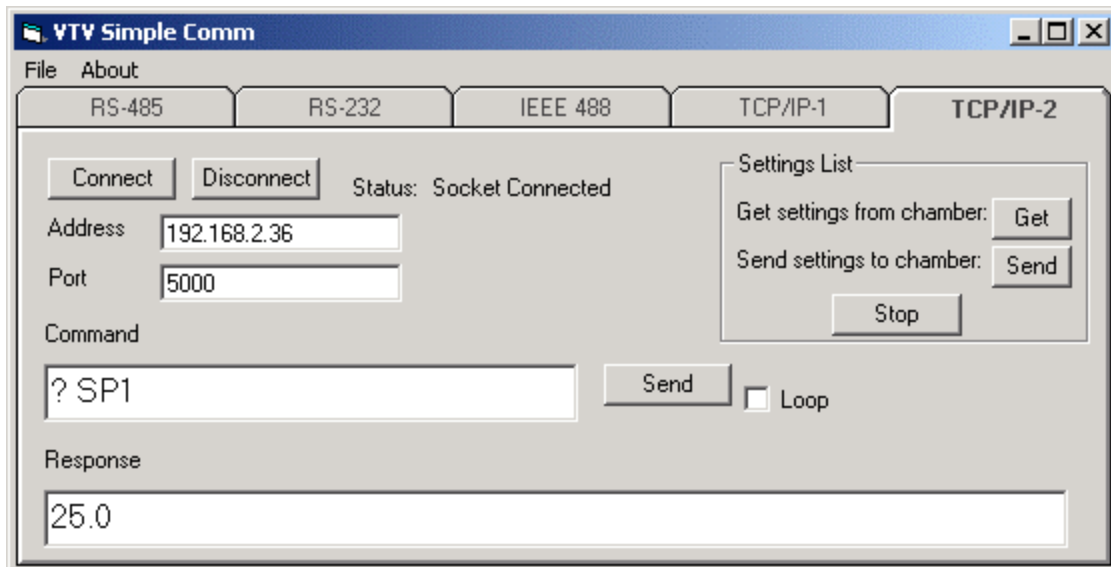
SimpleComm Setup

SimpleComm is a free communications application from Tidal Engineering that can communicate with VersaTenn V controllers over RS-485, RS-232, IEEE 488 and TCP/IP protocols. This Visual Basic 6.0 application is available from our web site in both executable and source code form with documentation. Go to:

<http://www.tidaleng.com/vtvmain.htm> to download:

- VersaTenn V AppNote 8 - VTV Simple Comm
- VTV SimpleComm Application
- VTV SimpleComm Source Code

To set up the VTV SimpleComm program for TCP/IP, enter the VTV's IP Address, set the port to 5000 and press Connect. In other telnet programs you may need to set the protocol to telnet and the emulation to VT100.



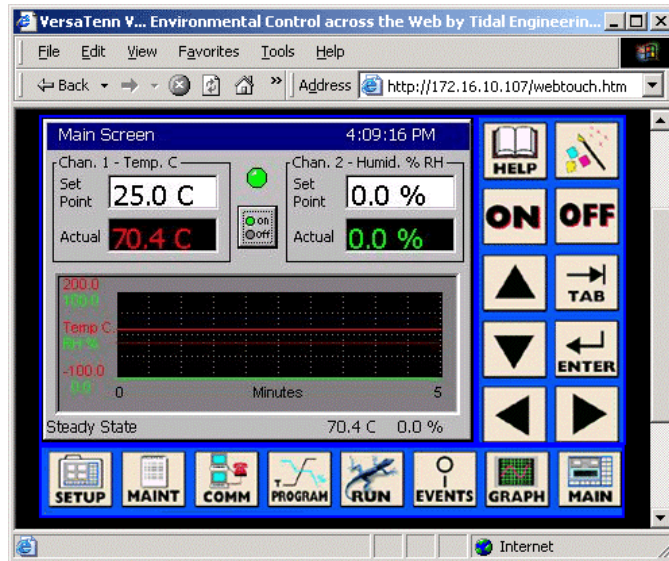
SimpleComm TCP/IP Telnet Connection

Note: Microsoft HyperTerminal cannot be used communicate with the VTV over TCP/IP.

When communicating with the VTV using either SimpleComm or another Telnet program you will want a list of communication commands. This list is available from Tidal Engineering at: www.TidalEng.com/vtvmain.htm. Scroll down to the General Information section and download either VTV 1.2.19 Communication Commands or VTV 1.3.8 Communication Commands, depending on the VTV version on your chamber.

Web Touch Remote

You can operate and monitor your VersaTenn V (VT V) controller over a network with a web browser. Each controller has a built-in web server that uses Tidal Engineering's Web Touch™ Remote technology (Pat. Pending). This technology provides a web browser user interface that is identical to the local touch screen interface on the environmental chamber (see image below). You can use this feature to remotely monitor chamber settings and readings. Technicians can use this feature for remote troubleshooting.

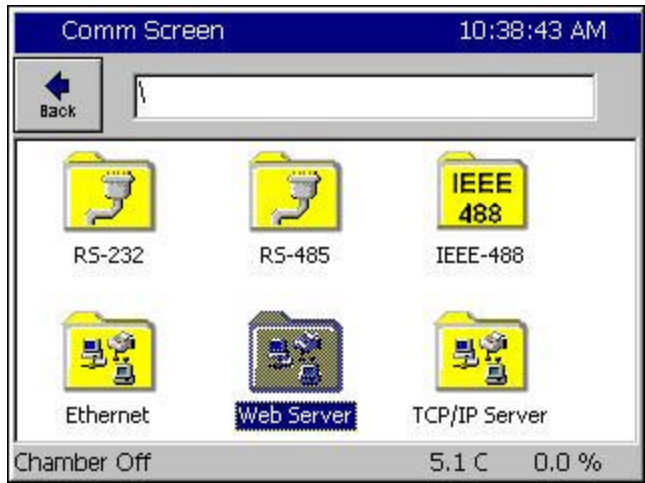


Web Touch Remote Browser Interface

VersaTenn V Web Server Setup

Detailed instructions for setting up the VTV Web server and your Web Browser can be found at www.TidalEng.com/vtvmmain.htm in the application note titled: "VersaTenn V AppNote 7 - Using Web Server Rev 3.doc". A brief description of this process follows on the next several pages. The VTV Web server registration key is available from Tenney Environmental. Contact them at www.Tenney.com.

Press the COMM button on the bottom tool bar to navigate to the Communications screen and then press the Web Server folder.

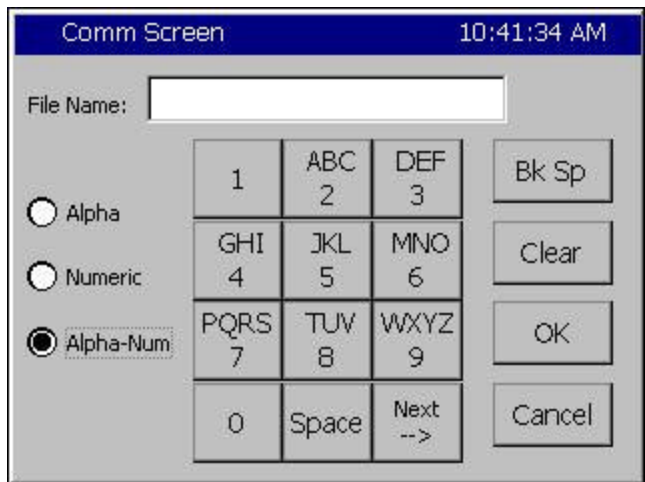


COMM Screen



Web Server Registration Window

Click on the Registration Key text box to display the keypad. Input the registration key you received from Tenney Environmental using the keypad.



Keypad

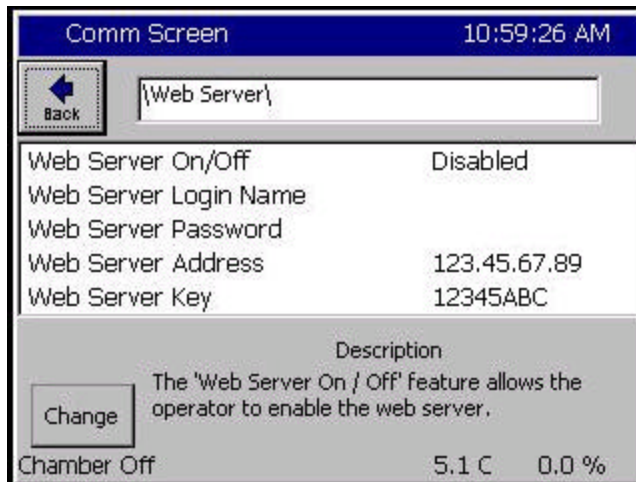
Press Register to continue.



Successful Registration

The VersaTenn V will display a message box indicating that the web server key was successfully registered.

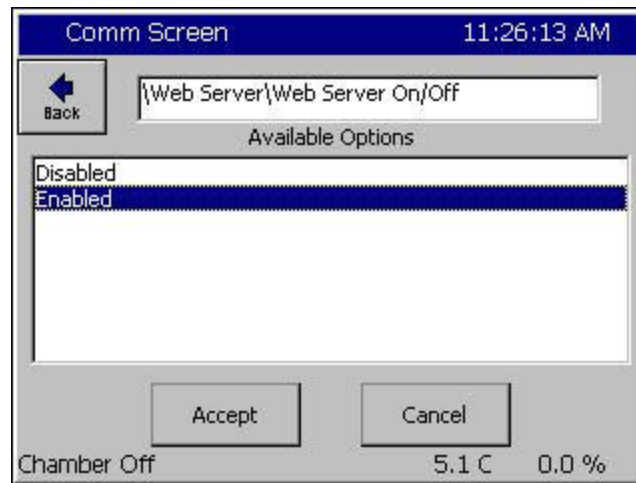
Hit OK to proceed to the Web Server Settings page (see image above).



Web Server Settings

Assuming you have successfully registered the web server, you can now set a Login Name and Password and enable the web server. Once enabled, you can connect to the VersaTenn V using your web browser.

To change the Web Server On/Off value to Enabled, first press the line in the Web Server screen to highlight it and then press the Change button. From the Web Server On/Off screen, highlight Enabled and press Accept (see image below).



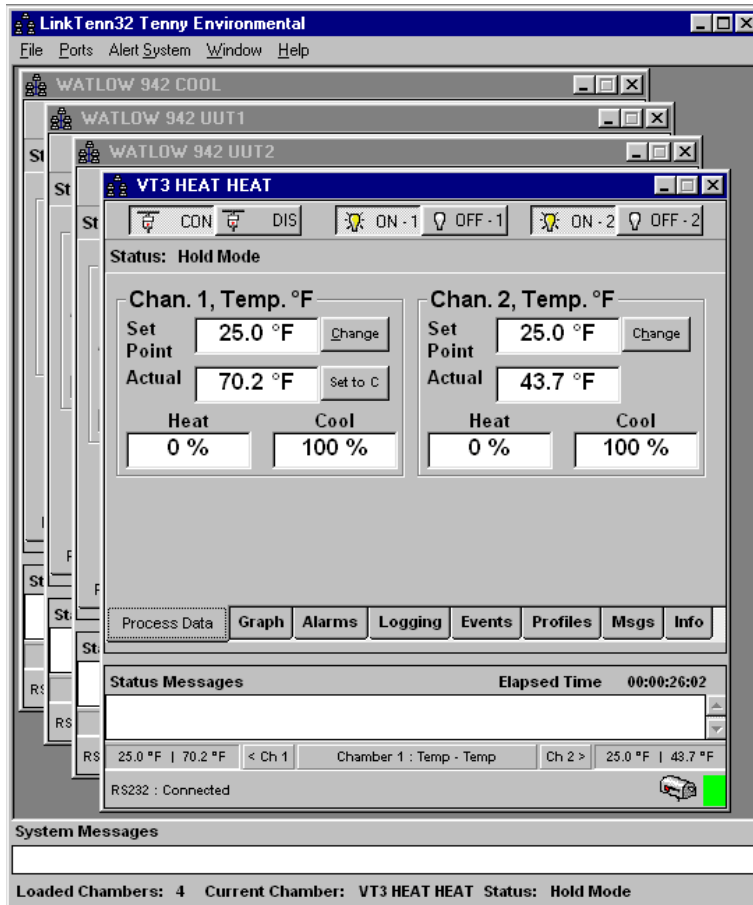
Web Server On/Off Screen

Press the Back button to return to the settings page. Now that the webserver is enabled you can open a browser window and type in the IP address of the VTV to view the control panel. Refer to Application Note 7 for the browser settings required.

LinkTenn32

The LinkTenn32 PC based application, developed by Tidal Engineering for use with Tenney Environmental test chambers, can monitor and control multiple chambers from a single PC. It offers advanced logging, profile management and graphing capabilities not only for the VersaTenn V, but also for Tenney's VT IV, VT III and Watlow F4 and 942 controllers.

For more information on the LinkTenn32 go to www.tidaleng.com/linktenn.htm. Contact Tenney at www.Tenney.com to purchase LinkTenn32.



LinkTenn 32 Application

Appendix B

Troubleshooting

If you cannot communicate with the VersaTenn V using telnet or Internet Explorer through the Wireless Bridge please review the instructions in this manual, namely:

- confirm the PC settings.
- confirm the D-Link Ethernet to Wireless Bridge settings.
- confirm the VTV settings.

Due to the nature of wireless networks, and the variety of ways that they are connected to corporate networks, it is impossible to provide a step by step troubleshooting guide. Some common problems and tips for solving them are listed below. If they do not solve the problem you should seek help from your system administrator to correct the problem.

I cannot connect to an access point or wireless router.

- Make sure that the SSID on the DWL-810+ is exactly the same as the SSID on the Access Point or wireless router.
- Move the DWL-810+ and Access Point or Wireless router into the same room and then test the wireless connection.
- Disable all security settings. (WEP, MAC Address Control, AES)
- Turn off your Access Point and the device with the DWL-810+. Turn on the Access Point, and then turn on the device with the DWL-810+.
- Make sure that the DWL-810+ is set to Infrastructure mode.

I cannot connect the DWL-810+ to my network.

- Check that the LED indicators on the wireless router are functioning properly. If not, check that the AC power and Ethernet cables are firmly connected.
- Check that the IP Address, subnet mask, gateway, and DNS settings are correctly entered for the network
- In **Infrastructure** mode, make sure the same Service Set Identifier (SSID) is specified on the settings for the wireless clients and access points.
- If **Security** is enabled, make sure that the correct encryption keys are entered on both the DWL-810+ and the wireless router.

Why does my wireless connection drop?

- Antenna orientation – try different antenna orientations for the DWL-810+. Try to keep the antenna at least 6 inches away from the wall or other objects.
- If you are using 2.4GHz cordless phones, X-10 equipment or other home security systems, ceiling fans, and lights, your wireless connection will degrade dramatically or drop altogether. Try changing the Channel on your Router, Access Point and all other devices on the network to avoid interference.
- Keep your product away (at least 3-6 feet) from electrical devices that generate RF noise, like microwaves, Monitors, electric motors, etc.

About Tidal Engineering

Headquartered in Randolph, NJ, Tidal Engineering Corporation has been designing and building award-winning embedded hardware and software for test and measurement and data acquisition applications since 1992. The company further provides product development services together with engineering support, and is recognized for technical expertise in such areas as Embedded IEEE 488, and turnkey SCADA (Supervisory Control and Data Acquisition) systems. Tidal's products are available exclusively through ADI American Distributors Inc., an ISO-9002 certified distributor of electronic and electromechanical components and assemblies.

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