

Dranetz HDPQ Private Network Communications Applications

INTRODUCTION

The Dranetz HDPQ family offers many advanced network communications and remote control features and benefits, with the primary advantages being **Safety** and **Productivity!** All instruments have a standard built-in Ethernet port and the Dranetz HDPQ Guide, Xplorer, and Xplorer-400 instruments have a standard Wi-Fi card for wireless communications. A standard VNC feature is available in all instruments that allows you to fully control the instrument remotely. Using an FTP-like interface, you can also download recorded data remotely from any location with communications to the instrument. The Dranetz Apps for Android and Apple offer you remote metering and monitoring status, but not the full remote control that's available using the VNC interface.

The strong communication features are a huge advantage of the Dranetz HDPQ family and are what enable the remote control and monitoring benefits to seamlessly work for you. When using remote communications, it's important to remember that each device must properly communicate to make this work. In other words, to communicate with a Dranetz HDPQ instrument remotely, both the instrument and the Smartphone/Tablet/Computer being used with the instrument must successfully communicate with each other over the network being used. The actual network can range from a simple cable connecting the instrument to your computer, to a local network switch, to using the Internet or wide area network, and anything in between.

This TechTip outlines some of the possible network communications applications for the Dranetz HDPQ family of instruments, and focuses on private networking applications. Private networking is usually when you are in close proximity to the instrument and do not require an Internet connection or other network communication to "bridge" networks together.

Dranetz HDPQ instructional videos are also available on our web site at the following link:

<http://www.dranetz.com/company-2/news/>

PRIVATE NETWORK COMMUNICATIONS

Private communications are generally point to point, and you are usually in close proximity to the instrument. In other words, the Dranetz HDPQ instrument is directly communicating with the Tablet/Smartphone/Computer being used. This is the simplest approach, but there are several options to choose from, including a direct Ethernet connection, an Ethernet switch/hub, and a direct Wi-Fi ad hoc connection. In each case, you are establishing a point to point network connection between the Dranetz HDPQ instrument and your computing device. These methods are

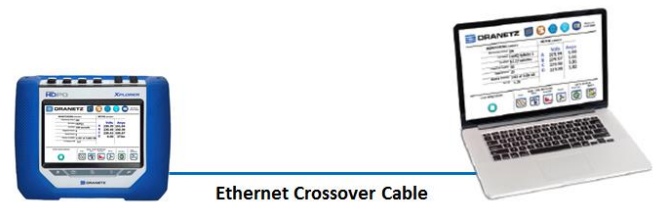
great for applications where you want to install the instrument, close the cabinet door, and safely and remotely control or monitor locally.

How do you configure your Dranetz HDPQ instrument and computing device to make all of this work? We'll divide these applications into two groups based upon the type of networking used: Private Ethernet Networking - Direct Ethernet & Hub/Switch connection; and Private Wireless - Wi-Fi (ad hoc) connection:

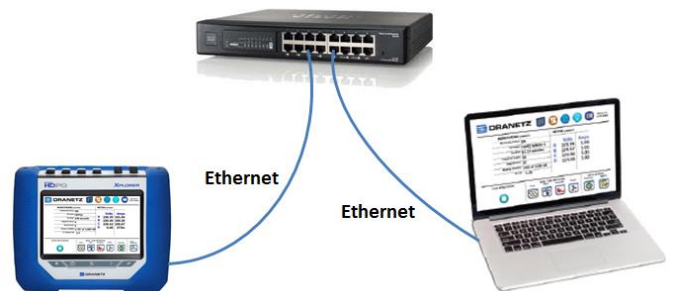
PRIVATE ETHERNET NETWORKING

By using the standard Ethernet port, all Dranetz HDPQ instruments can directly connect to any IP network by using an RJ45 Ethernet connection. This can be a direct connection between the instrument and a PC-based Computer, or by using a network switch or hub. See below:

Direct Ethernet Connection



Ethernet Connection to Hub/Switch

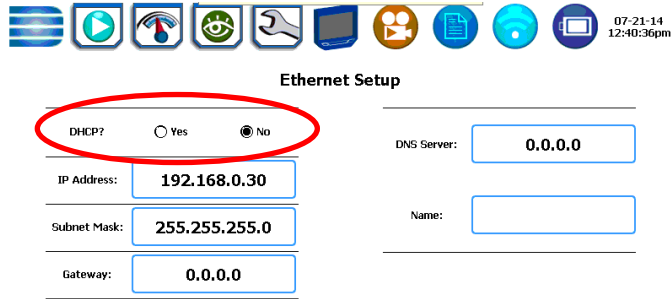


Like most networked devices, Dranetz HDPQ instruments use the TCP/IP protocol for communications. Regardless if the instrument is connected to a network hub/switch or directly connected to a computer, the instrument needs a valid and unique IP address, as does the computer it is communicating with.

TCP/IP networks generally support two types of IP addressing: Static & Dynamic. For Static IP addressing, the user manually enters the proper IP address information for use on the

network into the device. For Dynamic IP addressing, a DHCP server on the network automatically assigns the IP address information to the device. The Dranetz HDPQ instruments support both methods, but since this application uses a private network, static IP addressing is most advisable.

The instrument's IP address is configured in the Ethernet Setup screen. You can get there by clicking the Setup Instrument Icon (Wrench Icon), then selecting "Setup Communications Options," then selecting the "Ethernet" button at the bottom.



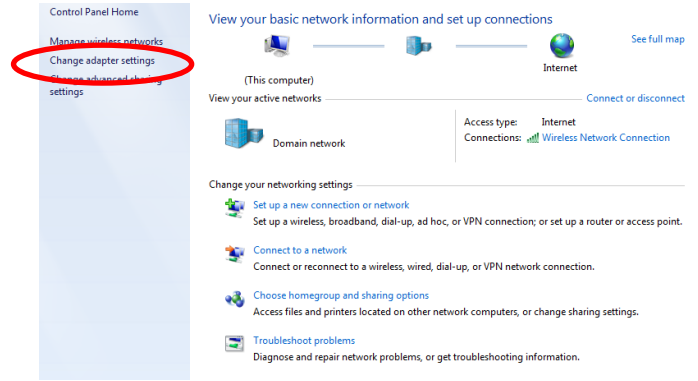
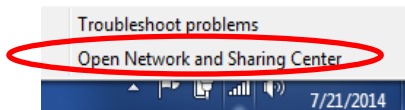
Note the picture above and the area circled in red that's labeled DHCP. When "No" is selected (shown), the user must manually enter the IP address, subnet mask, gateway and DNS server information (optional). Note that the factory default setting is "No" and there's a default IP address already entered that can be used, so there's no need to enter a different IP address unless you need to do so for other reasons. If for some reason the factory default values have been changed, they are:

- IP Address: 192.168.0.30
- Subnet Mask: 255.255.255.0
- Gateway: 0.0.0.0

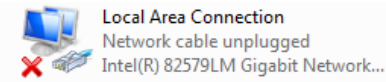
Now you have to set the IP address of the computer that you are using with the instrument since it needs a Static IP address too. See the steps below. Note that these examples are from Windows 7. If you are using another version of Windows, the actual steps may be different. In this case, you may have to contact your IT department or Dranetz Technical Support for assistance.

Important: Please note that after making the changes below, your computer may no longer work on your company or other networks. It is suggested that you record your current network settings, so that you can restore them later.

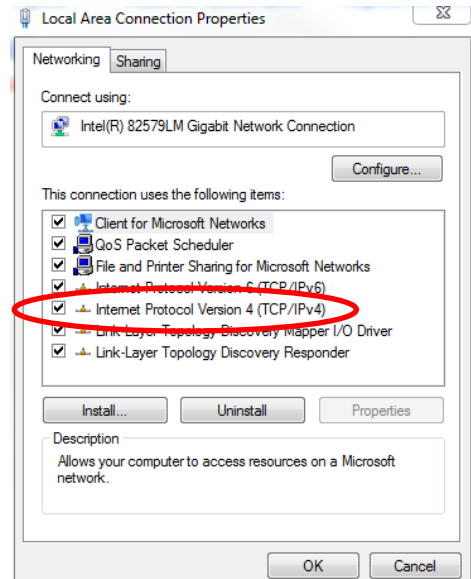
- Right click over the Network or Wireless icon in the notification area (bottom right) in the Windows Taskbar and select "Open Network and Sharing Center."



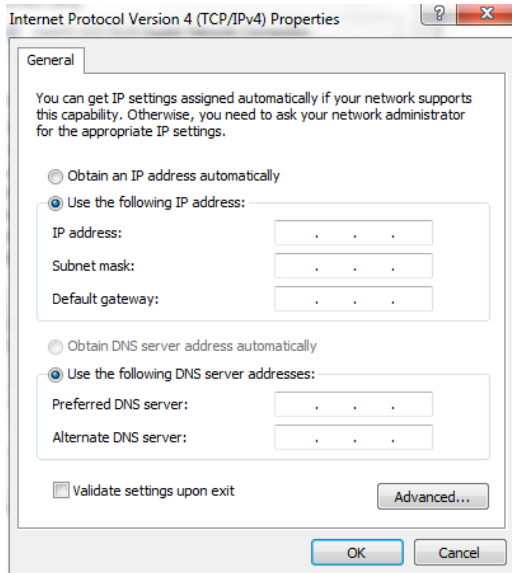
- Select "Change Adapter Settings" on the left. You will see a list of all of the network connections on your computer. Right click over the connection called "Local Area Connection," then select "Properties."



- Double click on "Internet Protocol Version 4 (TCP/IPv4)"



- Click "Use the following IP address." This is where you enter the unique IP address for your computer. The IP address has to be on the same network as the Dranetz HDPQ instrument, so if you're using the factory default instrument IP address settings, then all you need to enter is a slightly different IP address, since they can't be the same. Here are suggested values to enter:
 - IP Address: 192.168.0.20
 - Subnet Mask: 255.255.255.0
 - Default Gateway: 0.0.0.0



- Click "OK," and then "OK" again to close out the Local Network Properties page.
- By making the changes above, you have created a private network, and you should now be ready to communicate with the Dranetz HDPQ instrument using a 3rd party VNC Program on your computer.

Now that the Dranetz HDPQ instrument and computer networking has been setup, see the section below on how to configure VNC or the Dranetz App for use with the instrument.

PRIVATE WIRELESS NETWORKING

The Dranetz HDPQ Guide, Xplorer, and Xplorer-400 have built in Wi-Fi capabilities, so the instrument can connect to many common Wi-Fi networks, such as access points, hotspots, etc. Like Private Ethernet networking, a Private Wireless network can also be used for point to point communications with the instrument. Of course, the difference being that a wireless network is used instead of an Ethernet cable, but they are otherwise very similar.

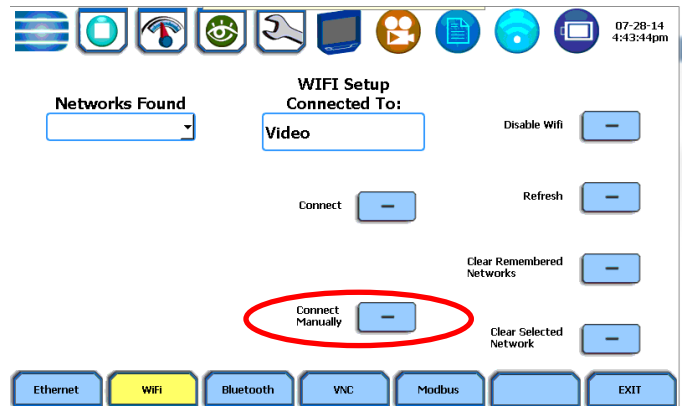
Ad Hoc Wireless Communications

The simplest and most productive method for point to point wireless communications is called an ad hoc network. An ad hoc network is one that doesn't have any infrastructure, such as a wireless router or access point to connect to. So, if there's no wireless access point or router to connect to, how can this work? When using the Dranetz HDPQ in a wireless ad hoc mode, it acts as a wireless access point and you can configure the instrument to broadcast a custom SSID network name. You can then connect your Tablet, Smartphone, or Computer directly to the instrument using this SSID and then run the VNC application or Dranetz HDPQ app.

Dranetz HDPQ as a Wi-Fi Hot Spot – Ad hoc Wireless



The instrument's wireless settings are configured in the Wi-Fi Setup screen. You can get there by clicking the Setup Instrument Icon (Wrench Icon), then selecting "Setup Communications Options," then selecting the "WiFi" button at the bottom. The Wi-Fi configuration screen is shown below:

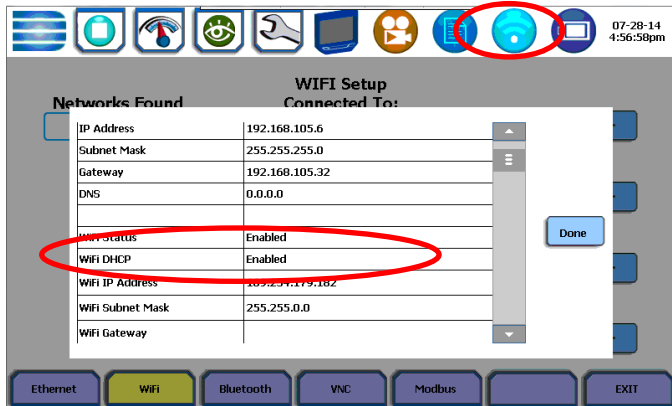


To set up an ad hoc network, press the "Connect Manually" button and the screen below will be displayed:



Press the checkbox called "AdHoc" to enable the ad hoc connection, then press the box next to "Network." A window will appear prompting you to enter the name of the ad hoc network that you would like to create. Enter a short name and press OK.

Wait about a minute for the ad hoc network to be enabled, and then press the network status icon in the Taskbar at the top of the screen. The status screen is shown below:



Scroll down to the second group that shows the Wi-Fi connection status. Look at the Wi-Fi IP address and confirm that it's a valid IP address, such as what's shown in the picture above (169.254.179.182). If the IP address is valid, jot it down since it will be needed later when configuring the VPN program/app and Dranetz app. If you see an IP address of 0.0.0.0, the ad hoc network was not enabled. Please review your configuration by repeating the steps above. Occasionally, you may have to reboot the instrument for the wireless settings to take effect. Try turning the instrument off and then back on. After the instrument has turned on completely, review the wireless settings as described above and confirm that there is a valid IP address.

Wireless Router and Hotspot Communications

Wi-Fi capable Dranetz HDPQ instruments can easily connect to most wireless routers, Hotspots and Smartphones/Tablets with a Hotspot feature.

Wi-Fi Hub, Access Point, Hotspot, etc.



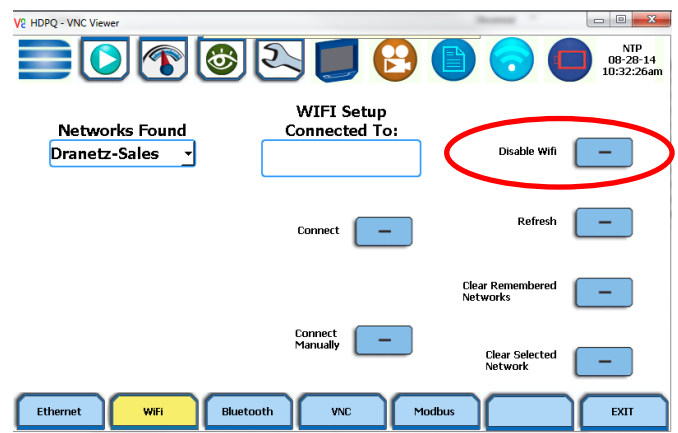
Smartphone as a Local Wi-Fi Hotspot



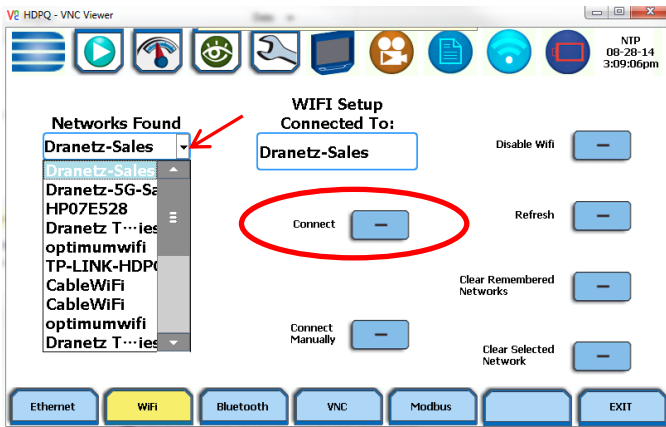
Connecting a Dranetz HDPQ instrument to an existing wireless network is very similar to connecting any other device, such as a Tablet, laptop, etc. - You select the desired network and then enter a security code if necessary.

The instrument's wireless settings are configured in the Wi-Fi Setup screen. You can get there by clicking the Setup Instrument Icon (Wrench Icon), then selecting "Setup Communications Options," then selecting the "WiFi" button at the bottom.

First, make sure that Wi-Fi communications are enabled by looking at the name of the topmost button on the right (circled in red below). If it's called 'Disable Wifi', then Wi-Fi is enabled and you can skip to the next step below. If the button is called 'Enable Wifi', then Wi-Fi is disabled and must be enabled in order to proceed. Simply press the Enable Wifi button and Wi-Fi communications will be enabled and the name of the button will change to Disable WiFi. Note that it may take a minute or so for the Wi-Fi feature to start up and to find any available Wi-Fi networks.



To connect to an existing wireless network, press the down arrow in the 'Networks Found' window, select the desired network name and then press the connect button.



After pressing the Connect button, the Wi-Fi security screen (below) will appear, prompting you to enter the security key if necessary. The instrument should automatically detect the wireless network security type and encryption, but you can change those settings if you like. If the security settings are not available to change, the network is open and doesn't require any security. If this is the case, just press Exit.



To enter a security key for the selected network, press in the Security Key box. Enter the security key and then press OK.



The Wi-Fi security screen will be displayed again with the security key entered shown. If it's correct, press Exit and the instrument will attempt to connect to the selected Wi-Fi network. If successful, the box labeled 'Connected To' will display the network name.

Connected To:

Dranetz-Sales

To confirm that your connection was successful, press the network status icon in the Taskbar at the top of the screen. The network status screen is shown below:



Scroll down to the second group that shows the Wi-Fi connection status. Look at the Wi-Fi IP address and confirm that it's a valid IP address, such as what's shown in the picture above. If the IP address is valid, jot it down since it will be needed later when configuring the VPN program/app and Dranetz app. If you see an IP address of 0.0.0.0, there was a problem with the Wi-Fi connection. Please review your configuration by repeating the steps above. Occasionally, you may have to reboot the instrument for the wireless settings to take effect. Try turning the instrument off and then back on. After the instrument has turned on completely, review the wireless settings as described above and confirm that there is a valid IP address.

CONFIGURING YOUR VNC PROGRAM/APP AND DRANETZ APP FOR USE WITH THE DRANETZ HDPQ

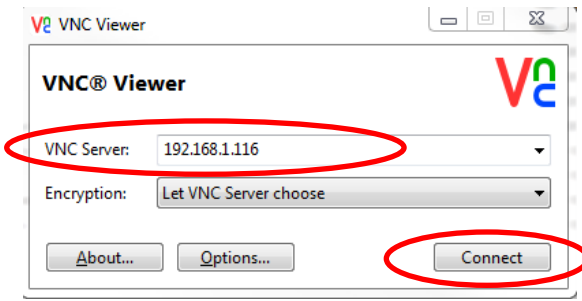
There are two primary applications that can be used with the Dranetz HDPQ family for remote monitoring and control: A VNC program/application and the Dranetz HDPQ app. Regardless of which is method is used, you need to know the IP address of the Dranetz HDPQ instrument.

VNC Program/App

The VNC feature that is standard in all Dranetz HDPQ instruments allows you to fully control the instrument remotely. All you need is a 3rd party VNC client viewer application. There are many free VNC programs for the PC and apps for Android and Apple operating systems that are available.

For the PC, two popular choices are RealVNC and TightVNC. You can easily find them by doing an Internet search for them by name. Just download and install the VNC viewer of your choice.

For Tablets and Smartphones, you can do a search in the Google Play or Apple store for the term, "VNC Viewer." There will be several to choose from, but some popular choices are RealVNC and Android VNC; just install the VNC viewer of your choice.



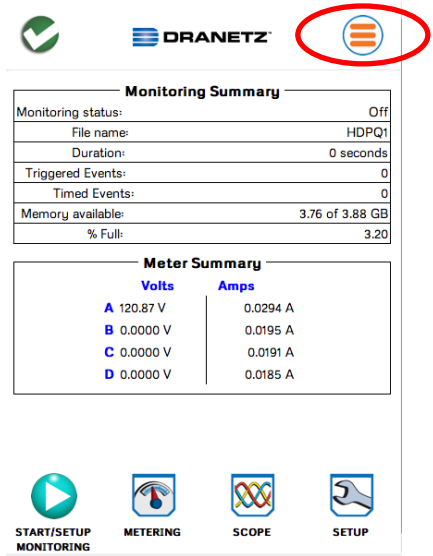
Regardless of your operating system or computing platform, you connect to the Dranetz HDPQ in the same way: by IP address. The exact procedure will vary by VNC viewer application, but the process is generally the same: Start the program/application, add a new connection and then enter the IP address of the Dranetz HDPQ instrument. You then select “Connect,” and if successful, you will be prompted to enter the instruments password, which defaults to “Dranetz.” Enter the password, and your device should then display a copy of the contents of the Dranetz HDPQ LCD display. You can control the instrument remotely by touching or mouse clicking over any area of the VNC display, which works the same as if you were touching the same area on the instruments local LCD display - it’s that easy.



- If for some reason your VNC viewers cannot connect to the instrument, try the following:
- Double check that the IP address was entered correctly. Also make sure that it’s the correct IP address for the Dranetz HDPQ instrument.
 - Make sure that the device that’s running your VNC viewer application has network connectivity to the Dranetz HDPQ.
 - Make sure that the VNC feature on the Dranetz HDPQ has been enabled - it defaults to OFF.

Dranetz HDPQ App

The Dranetz HDPQ app is available as a free download in the Apple and Google Play stores. The Dranetz HDPQ app can be used for remote metering and monitoring, but cannot fully control the instrument. For full remote control, please use a VNC application as described above.




Configuring the Dranetz HDPQ app to communicate with a Dranetz HDPQ instrument is similar to configuring a VNC viewer, and you’ll need to know the IP address of the instrument. From the app’s main screen, press the configure connections button on the top right as shown in the area circled in the picture above. The screen below will be displayed:

You must enter the following information:

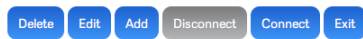
- The IP address of the instrument.
- User name. The factory default is “Admin”
- Password. The factory default is “Dranetz”

When the above is completed, press “Save” and you should now see the instrument shown in the instrument list as shown below:



Instruments

Name	IP
HDPQ1	172.20.20.70



Select the instrument you wish to connect to, and then press the “Connect” button. If the connection was successful, a message will pop up saying “xxxx is connected,” where “xxxx” is the name of the instrument. Press “OK” and the main screen of the app will be displayed and the metered values and monitoring summary will be updated in a few seconds.

If the connection failed, an error message will be displayed. Please check the following:

- Double check that the IP address was entered correctly. Also make sure that it’s the correct IP address for the Dranetz HDPQ instrument.
- Double check that the User name and Password were entered correctly. Remember that they are case sensitive.
- Make sure that the device that’s running the app has network connectivity to the Dranetz HDPQ.

To CONTACT DRANETZ

- Call 1-800-372-6832 (US and Canada) or 1-732-287-3680 for Technical or Sales support.
- To submit a support request online, please visit: <http://extranet.dranetz.com/techsupportform.cfm>