

DranXperT® Cellular Wireless Applications

INTRODUCTION

DranXperT has state-of-the-art communications capabilities that allow for full remote control and data downloading from any location with connectivity to the instrument. These remote capabilities greatly enhance the user's safety and productivity.

DranXperT can easily connect to any Ethernet network, but what if there isn't a network available? Cellular wireless data networks are a great way to overcome this situation. This application note describes how to use DranXperT with a typical cellular wireless router.

CELLULAR ROUTER APPLICATION

Cellular routers use the same data networks as smartphones but are dedicated to data communications. Cellular routers can be purchased from a cellular carrier or 3rd party sellers, and like a smartphone, they require a contract or data plan. Note that the cellular router and data plan/contract is the responsibility of the end user and is not included in the purchase of DranXperT.

The cellular router bridges DranXperT to the Internet, making it available for remote control and data downloading from any Internet connected device with a web browser.

As shown in Figure #1, the cellular router connects to DranXperT's built in (RJ45) Ethernet port using a standard Ethernet cable. DranXperT can connect directly to the cellular router (as shown), or through a network router or switch.

This application note uses an InHand Networks IR300 4G cellular router, but most 4G cellular routers should also work well.

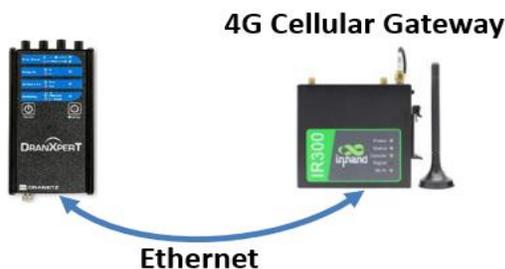


Figure 1. Typical DranXperT Cellular Router Application

For all remote communications, including cellular, DranXperT must be assigned an IP address that is reachable from the computer, tablet, or smartphone being used. In other words, if you want to use the Internet, both the DranXperT and the remote computing device must be properly connected to the Internet. The same is true for any device, connected to any network - public or private.

In this application, the web browser communicates with the cellular router which acts as a go-between and passes information to/from the Internet and DranXperT. A cellular router feature called 'Port Mapping' is often used to accomplish this.

Note that the methods described here can also be used for most Dranetz networked instruments including the Dranetz HDPQ family.

Here is an overview of how it works:

- The cellular router connects to the Internet with an IP address provided by the cellular carrier.
- The cellular router assigns another, local IP address to the DranXperT.
- When the cellular router receives information from the Internet it 'maps' it to an IP address on the local network which in this case is the DranXperT.

CELLULAR ROUTER & DRANXPRT CONFIGURATIONS

Below is an example using the InHand Networks IR300 cellular router on the Verizon network in the USA:

- The cellular router was assigned an IP address of '63.40.10.xxx' (xxx hides the real numbers) which was programmed into the SIM card provided by Verizon. Verizon also provided an Access Point Name (APN) setting that was programmed into the router. Other cellular network specific settings may also be required so check with your cellular provider for the proper configuration settings.
- DranXperT is connected to the routers local network port and the router assigned DranXperT IP address '192.168.2.13'. This is a router setting for the local network which you can choose and control. DranXperT is configured to use DHCP so

the cellular router can assign its IP address. See figure 2 below.

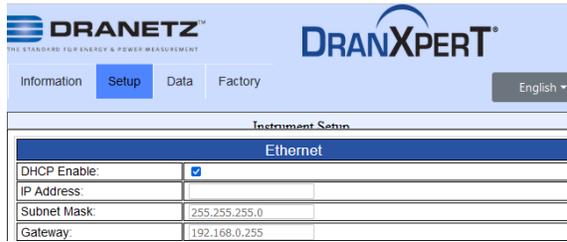


Figure 2. DranXperT IP Settings

- In the port mapping settings of the router, a 'Service Port' is used to map the data from the users web browser to DranXperT. See figure #3 below. The Service Port setting is '8080'. This means that the router will map data sent to it from the Internet that includes service port 8080 to/from the DranXperT at IP address 192.168.2.13. By using a service port, the cellular router can be shared with additional devices (DranXperT or other) connected to the routers local network. See Figure #4 below. Each device would need its own unique local IP address and service port (i.e., 8090, 8091, etc.) setting.



Figure 3. Cellular Router Port Mapping



Figure 4. DranXperT & HDPQ Plus Sharing a Cell Router

- To access DranXperT, the user enters IP address 'http://63.40.10.xxx:8080/' into their web browser. The cellular router will send (map) the data to/from the DranXperT at local IP address 192.168.2.13.

Your actual setup will depend on the cellular carrier and router used, but most routers will work similarly.

CELLULAR ROUTER IP ADDRESS NOTES

As with any networked device, the cellular router will need an IP address to be 'found' on the Internet and you will use this IP address to communicate with DranXperT. There are two ways IP addresses are assigned - Dynamic (DHCP) and Static.

Dynamic IP addresses are automatically assigned by the network. Dynamic IP addresses can change regularly, so the IP address assigned today can be different tomorrow.

Static IP addresses are pre-assigned by the network administrators and don't change. **It's for this reason that it's highly desirable to obtain a Static IP address for your cellular router from your wireless carrier.**

Note that there are other methods to address the cellular router on the internet. One example is a Domain Name Service (DNS) where a name (i.e. dranetz.com) is used instead of an IP address. This application is beyond the scope of this application note.

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: <https://www.dranetz.com/contact-us/>