

## 3G/4G WIRELESS CONNECTIVITY FOR ENCORE 61000

*Application note demonstrating how to use the Encore 61000 with a cellular modem*

### INTRODUCTION

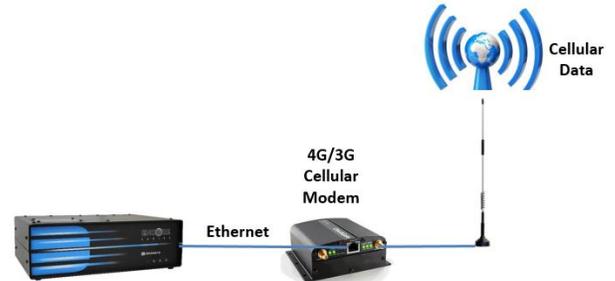
Most network capable power monitors, such as the Encore 61000 family, are intended for use on an Ethernet or other types of networks. They typically have an RJ45 connector meant to connect directly to the local network in the substation or other remote site. However, oftentimes a network is not available or cannot be used. In such cases, other forms of communication need to be considered. Modems and other (slow) communications have been used in the past to solve the problem, but cellular wireless communications are now a very viable option. Cellular modems use the same cellular networks as Smartphones, but are dedicated to data communications. By using an off-the-shelf wireless cellular modem, you can easily communicate with remote 61000 DataNodes using most 3G or 4G wireless networks.

Cellular wireless modems can be purchased from a cellular carrier or 3<sup>rd</sup> party sellers, and like any smartphone, they require a contract or data plan. Note that the cellular modem and data plan/contract is the responsibility of the end user and is not included in the purchase of the 61000 instrument.

This application note describes how to use a 3G or 4G cellular modem with the 61000 DataNode. In this application, the cellular modem bridges the 61000 instrument to the Internet, making it available to Encore Series Software with Internet connectivity.

### 3G/4G CELLULAR MODEM APPLICATION

In this application, the 3G and 4G cellular modem connects to the 61000 by using Ethernet communications. An example using Ethernet is shown in Figure #1. The Ethernet link from the cellular modem to the instrument can be a direct connection (as shown), or through a local Ethernet router or switch.



**Figure 1 Cellular modem uses with the Encore 61000**

For all remote communications, including cellular wireless, the 61000 instrument must be assigned an IP address that is accessible from the remote network that the Encore Series Software (ESS) server computer is connected to. In other words, if you want to use the Internet, both the 61000 and the ESS server must be properly connected to the Internet. The same is true for any network - public or private. In this application, the cellular modem connects to the Internet and assigns an IP address to the instrument. ESS communicates with the cellular modem which acts as a gateway, or go-between, and 'forwards' information between the Internet and the 61000 instrument.

There are two types of IP addresses - Dynamic (DHCP) and Static. Dynamic IP addresses are usually automatically assigned by the networking hardware. 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 is for this reason that it's highly desirable to obtain a Static IP address for your cellular modem from your wireless carrier - the cellular modem is what's connected to the Internet and it's much better for it to be fixed and not changed automatically.**

## 61000 DATANODE SETUP

This application uses the standard 61000 DataNode with no modifications. The 61000 connects directly to the Ethernet interface of the cellular modem or a small hub or Ethernet switch. The cellular modem will have an IP address or URL assigned to it after being configured by the provider - this will be used by ESS to access the 61000 remotely.

Communication setup with the 61000 is nearly plug and play - just enable DHCP in the 61000. The configuration of the cellular modem and account setup must be performed by the service provider as each one is different.

Follow the steps below to enable DHCP in the 61000:

Connect a PC to the 61000 with a cross-over Ethernet cable. You can skip this step if the 61000 is already connected to a network that you can use.

Open a web browser (Internet Explorer, Firefox, etc.) and enter the IP address of the 61000. The default factory IP address is: 192.168.0.20. Note that the PC's IP address must be configured for use on the same IP network as the 61000 in order for communications to work.

If communications with the 61000 are successful, you will be prompted to enter a Username and Password. The factory defaults are: Username = "admin" & Password = "password".

Navigate to the Setup Page by pressing the wrench icon, then set DHCP to Yes. Click the <Submit Changes> button to save the changes.

Please consult the 61000 Installation guide for more information about 61000 DataNode setups.

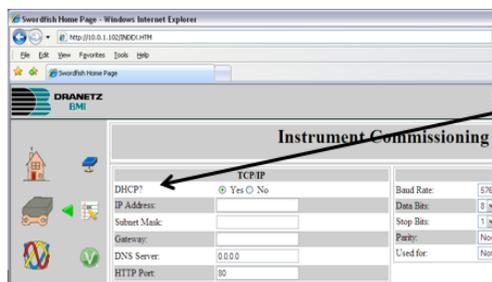


Figure 2 61000 DHCP Setup

## ENCORE SERIES SOFTWARE SETUP

The 61000's site in Encore Series Software must be configured with the cellular modems IP address. Remember - the cellular modem will forward the data to and from the 61000. Follow the steps below:

1. Access Encore Series Software using a web browser. You must log in as an administrator to change the 61000 DataNode settings.
2. Click the "Setup" tab at the top and navigate to the settings for the 61000 that will be used with the cellular modem. You can modify an existing 61000 site or add a new one.
3. Click the "Communication" tab at the bottom. In the "Address" field, enter the IP address or URL assigned to the cellular modem followed by "/0" for Virtual Analyzer #1, /1 for Virtual Analyzer #2, and so on.
4. Click "Save Setup" at the bottom when complete.

Please consult the Encore Series Software user's guide for more information about configuring DataNodes in ESS.



Enter the cellular modem IP or URL

Figure 3 Encore Series Software Setup

## 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>