

Encore Series® Miscellaneous Data Acquisition

INTRODUCTION

The Dranetz Encore Series Power Quality, Demand, and Energy monitoring system can also measure temperature, pressure, contacts and nearly any other parameter available as a standard transducer output - all in parallel with the PQ, Demand, and Energy measurements from Dranetz instrumentation. 3rd party off-the-shelf analog input, digital input, and other data acquisition (DAQ) modules can be easily integrated with Encore Series Software (ESS) by using the optional SW MODBUS Generic Modbus driver. The 3rd party DAQ modules 'map' into the Generic Modbus driver just like any traditional energy meter, except the measured parameters are different.

This application note describes how to interface 3rd party DAQ modules to ESS using Advantech ADAM Series modules as an example, several of which are available directly from Dranetz. These modules can measure analog inputs, digital inputs, RTD's, and thermocouples.

Please note that this application note describes the overall approach used, but is not meant to replace the user's guides of the products mentioned. Please consult their specific user guides for detailed instructions on their use.

WHAT IS REQUIRED?

You will need:

- Encore Series Software (ESS) with the optional SW MODBUS driver installed.
- Ethernet connected DAQ module(s) that support Modbus TCP. Note that Modbus RTU (RS485) can also be used with the SW MODBUS, but TCP is preferred.
- Ethernet network for the ESS to communicate with the 3rd party DAQ module.

There are many DAQ modules available on the market, but this application note focuses on those from Advantech's ADAM series that are available directly from Dranetz.

It's important to note that the DAQ modules are doing the actual digitization and measurements in this application. As a result, it's recommended that you review the specifications of the DAQ module chosen to

make sure that it meets the needs of your application. In addition, the DAQ module will usually read sensors or transducers, and their specifications are also important in knowing the overall specifications of the measurements that are to be recorded by ESS.

DATA ACQUISITION MODULES

Although most compatible DAQ module should work fine, Dranetz offers the following DAQ modules from Advantech:

- ADAM-6015 RTD (temperature)
- ADAM-6017 Analog I/O
- ADAM-6018 Thermocouple
- ADAM-6022/24 I/O with digital inputs



Of course, the right DAQ model to use will depend on your application, but most applications fall into one of the types of modules listed above.

HOW DOES IT WORK?

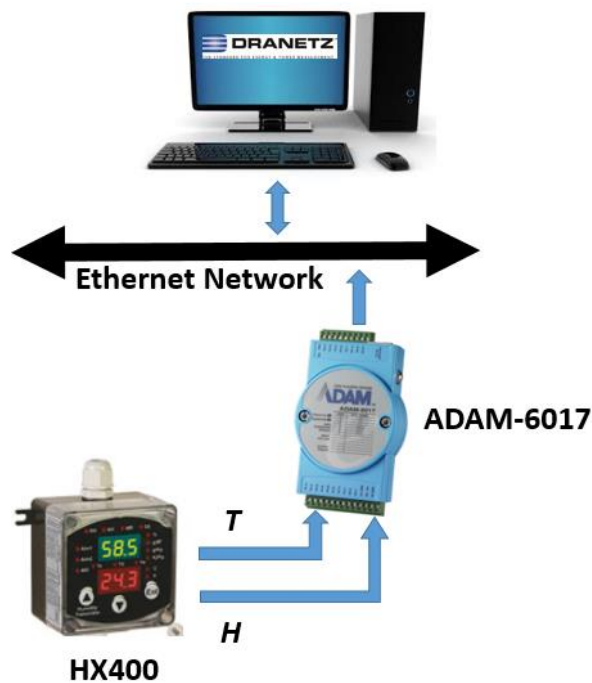
By using the SW MODBUS driver, ESS can read virtually any 3rd party device with a Modbus interface. Once configured, these devices are treated just like the PQ, Demand, and Energy DataNodes sold by Dranetz - ESS will read their data and store it in the ESS database for trending and triggering alongside the Dranetz DataNodes. The major difference is the data being read does not have to be power-related and can come from virtually any transducer or sensor with an industry standard voltage or current output that is compatible with 3rd party DAQ modules.

EXAMPLE APPLICATION

As an example application, let’s assume that there is a need to measure the ambient temperature and relative humidity in a Substation, Data Center, or any other location. The first thing needed is a temperature and humidity sensor. If one is not already available, www.omega.com and other sites are good resources for such sensors.

We’ll use the Omega HX400 Series that is a combined temperature and humidity sensor with two industry standard 4ma-20ma outputs - one for temperature and the other for humidity.

Since the HX400 sensor has a 4ma-20ma analog output, a DAQ module with an analog input is required. The Advantech ADAM-6017 is one of many Modbus-capable DAQ modules that will work in this application. The ADAM-6017 can measure up to 8 analog inputs of various types, including the 4ma-20ma outputs from the HX400.



After configuring the ADAM-6017 for the application (input type, IP address, and other configurations), the next step is to configure the ESS SW MODBUS driver to communicate with the ADAM-6017 over the network (or other communications path) and to then map the parameters being measured (temperature & humidity) into ESS.

Each Modbus-capable DAQ (or other) module will provide a Modbus map and other interface details, usually in the operating instructions. This information is used to configure the ESS SW MODBUS driver so it knows how to read the data from the DAQ via Modbus. Information, such as Modbus registers, parameter scaling, number types, etc. must be configured in the ESS SW MODBUS driver so that the parameters appear correctly in ESS. The user must also configure the SW MODBUS driver with the DAQ’s IP address, polling interval, and other communications details.

Properties	Values
Analog	
Analog 1	
Analog 2	
Analog 3	
Analog 4	
Analog 5	
Enable	<input checked="" type="checkbox"/>
Channel name	Substation 123 Ambient Temperature
Register Definition	
Analog input	
Register address (1-9999)	1
Scale register address (1-9999, 0 for none)	0
Modbus data type	IEC 16 bit signed integer
Quantity measured	Temperature
Characteristic	None
Units	Degrees

CONCLUSION

By using the SW MODBUS driver, Encore Series Software can read, store, trend, and trigger on virtually any physical or other parameter alongside the Power Quality, Demand, and Energy data from the Dranetz DataNodes. ESS can easily interface to 3rd party Modbus capable data acquisition modules that read the outputs from the sensors measuring these parameters.

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>