



Application Note 115

Overview of Hach's OPC Software

Introduction

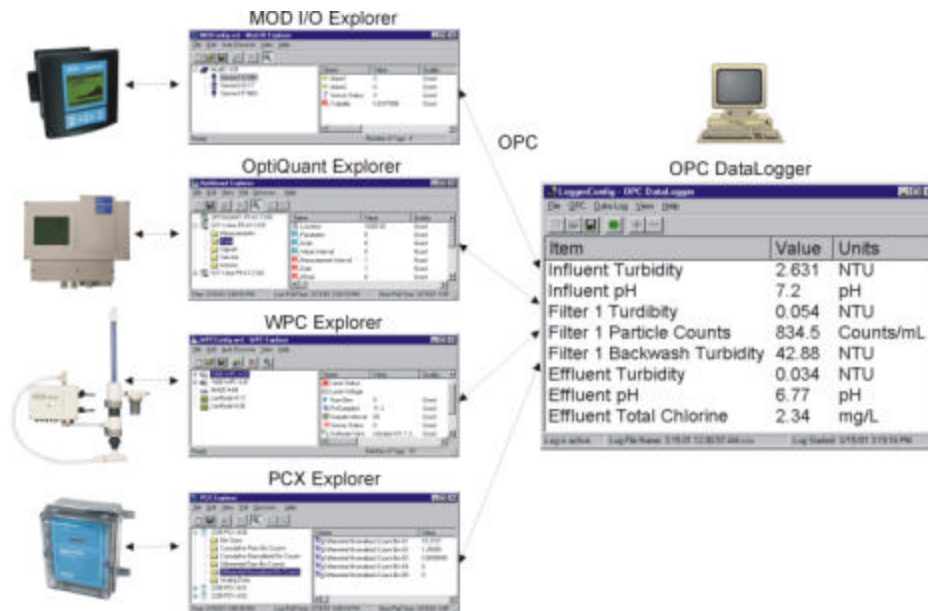
The Software Systems Group at Hach Company has developed OPC Servers and data logging software for various families of Hach process equipment. These include the AquaTrend network, the 1900 WPC Particle Counter, the 2200 PCX Particle Counter, and the OptiQuant family. This document describes how OPC works, and the interactions between OPC Servers and OPC Clients.

How Does OPC Work?

OLE for Process Control (OPC) is a communication standard developed by the OPC Foundation®. OPC uses Microsoft COM technology to send Process Control messages between programs. This is the same technology used to link Microsoft Office® products such as Word™ and Excel™.

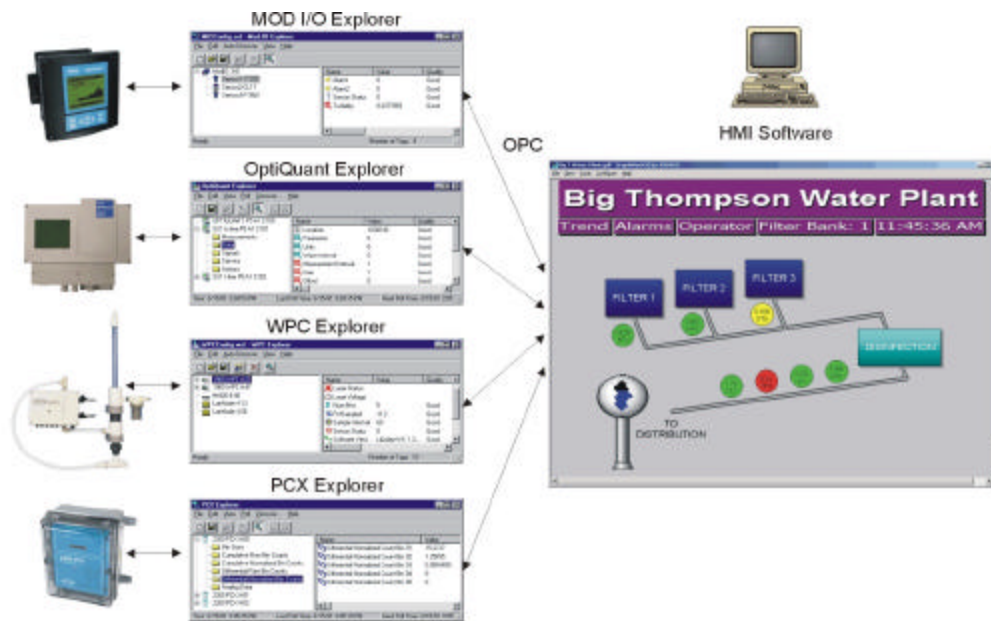
Fundamentally, OPC is comprised of two parts, servers and clients. Servers translate data from hardware devices and convert the data to a standard format called Tags. Each tag represents a piece of data such as a sensor reading, an alarm state, or a status value. Clients connect to servers and use the OPC tags to perform tasks Process Control tasks or log data to disk.

The Hach MOD I/O Explorer, for example, is an OPC Server. It communicates with AquaTrend network hardware, and translates the data into OPC tags. The Hach OPC DataLogger is an OPC client. It communicates with any OPC server, and logs data to simple text files. As the figure below demonstrates, multiple OPC servers can run on a single machine – at the same time – providing a unified system.



SCADA / HMI Packages and OPC

SCADA or HMI packages such as Wonderware InTouch®, Intellution Fix32® or Iconics Genesis32® can also function as OPC Clients, exchanging data with OPC servers. In the picture below, Genesis32 is sending and receiving OPC data providing both monitor and control of the Hach instruments.

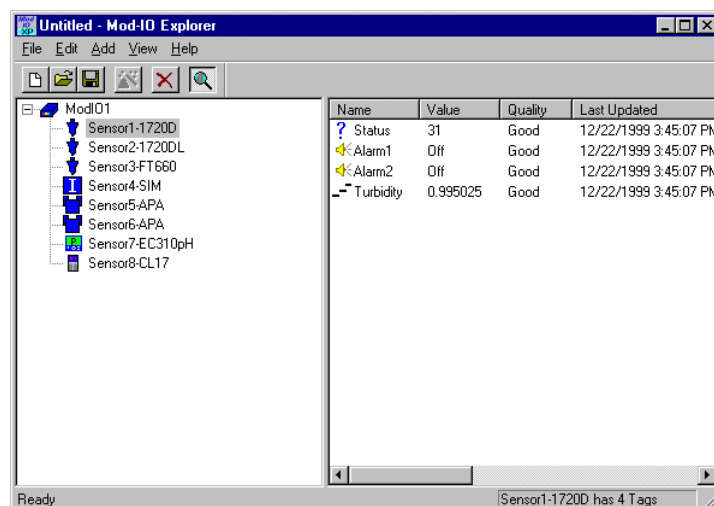


Note that both a SCADA / HMI package and OPC DataLogger can run simultaneously, providing both control capabilities and data logging.

Configuring an OPC Server

The easiest way to configure an OPC Server is to use the Auto Discover wizard. The server knows how to communicate with the hardware, and will open every available COM port on the computer searching for devices. When a device answers, the server determines the device type, and automatically builds a list of OPC tags for that device.

To start the Auto Discover process, click the Wizard Icon  on the toolbar. Each OPC tag (measurement) is automatically assigned a name by the wizard as shown below.



Live data can be accessed from the devices by clicking the spyglass  toolbar button. This forces the OPC server to begin "polling", an operation in which the server asks each device to refresh its data.

Note: OPC Servers do NOT Log Data, they make data available to other programs using the OPC protocol! The spyglass icon on the tool bar allows the OPC server to monitor data only

Saving the Server Configuration

Once the OPC server is configured, the configuration file must be saved to disk. Click on the diskette icon in the toolbar to save the configuration. The server will always start with the last known configuration, so that the wizard does not have to be run each time.

Renaming OPC Tags

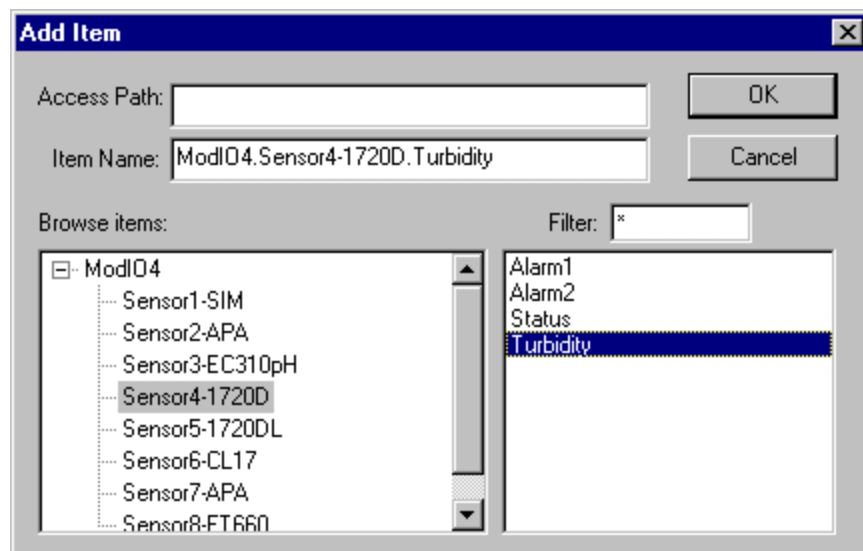
OPC Tags within the OPC server can be renamed, but be aware that when the name is changed, any OPC client accessing that data will now have an invalid OPC Tag name. Hach recommends that OPC Tag names be not renamed to simplify configuration. Tags displayed in OPC DataLogger can be set to any appropriate name.

Configuring OPC DataLogger

The Hach OPC DataLogger was designed to be a very simple data collection program for users without SCADA / HMI packages. The goal was to keep datalogging as simple as possible using standard data formats. Data from OPC DataLogger is written to CSV (comma separated value) files, which can be imported into almost any application (i.e. Microsoft Excel or Access).

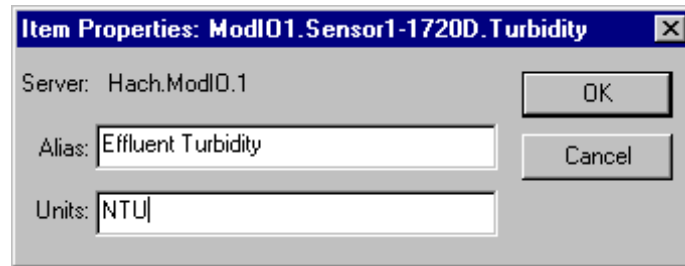
1) Add OPC Tags

Click on the  to add OPC Tags. The following dialog box appears.

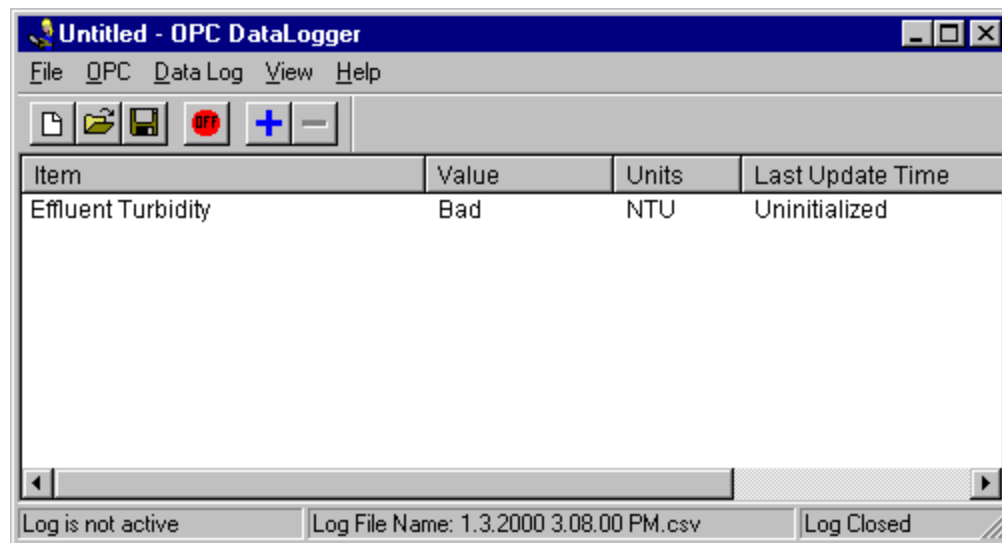


Select the OPC Tags (measurements) you wish to log data for and click OK. Typically the Access Path remains blank. The item name is automatically filled in when an OPC Tag is selected in the Browse Items list.

Another window appears with the fields “Alias” and “Units”. The entries in these two boxes are used as the column headers in the CSV file. Any name can be entered in these two fields. Click OK after the names have been entered.



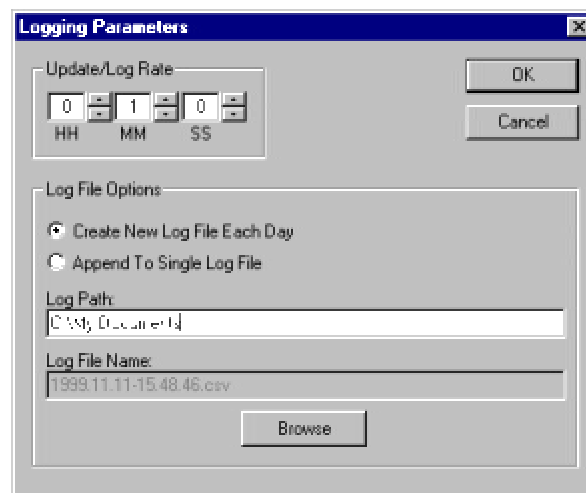
2) Start Data Logging



At this point OPC DataLogger is ready to collect data, but the red stop sign  indicates the logger is inactive. Click this button to start logging data.

3) Set Data Log Parameters

A logging parameter configuration window is now displayed. This window sets the the frequency the data is logged and the location of the data files. All OPC Tags are written to the CSV file according to the Update/Log rate.

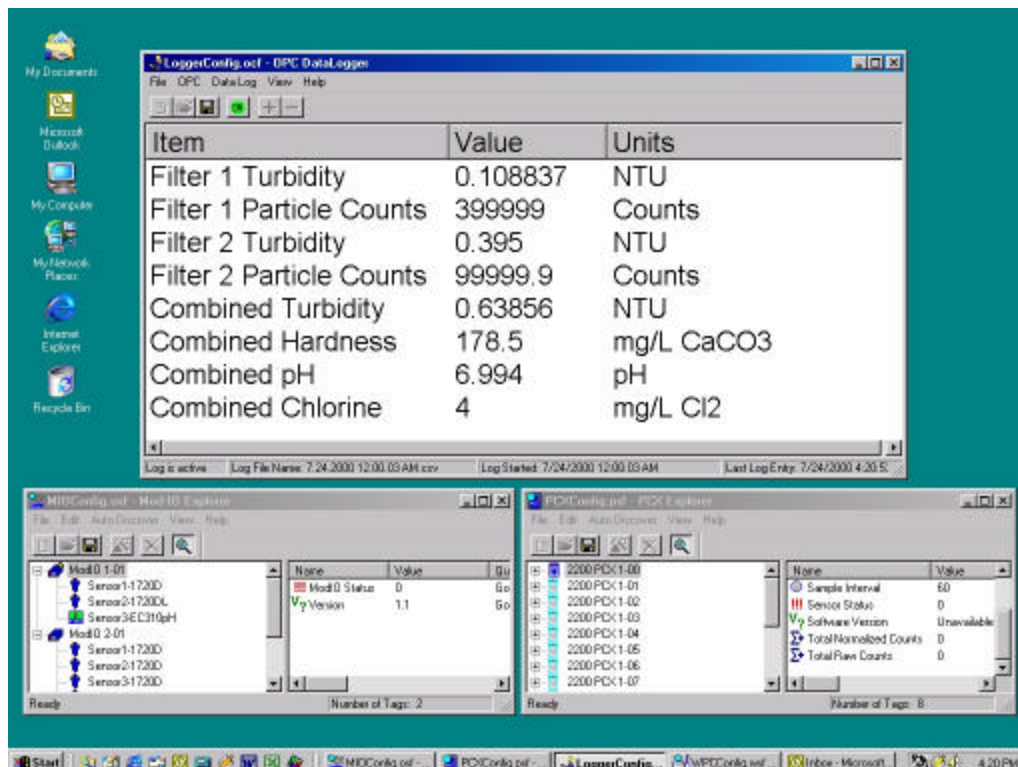


The Log File Options allow either creating a single file or a new file which is created each day at midnight. The default file path is C:\My Documents. If the "Create New Log File Each Day" option is selected, a file name based on the system time/date is automatically created.

4) Save the Configuration

Save the OPC DataLogger configuration by clicking the diskette icon on the toolbar. When the Data Logger is re-started, it will open the last saved configuration file.

A running session of OPC DataLogger is shown below.



Viewing the Data in Microsoft Excel

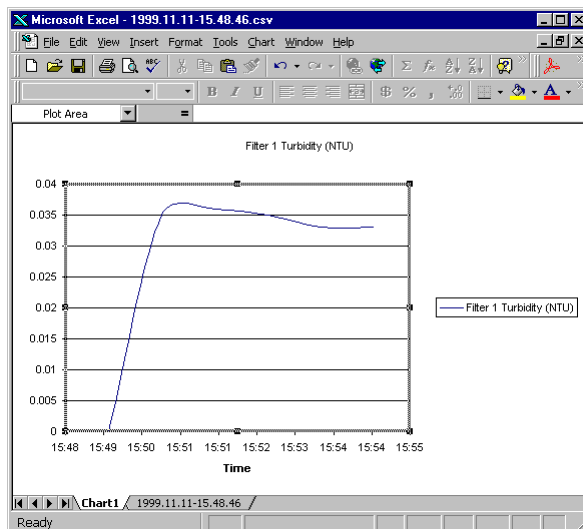
To view a data file, start Microsoft Excel and select File, Open. Select "CSV file types" to view the list of data files in C:\My Documents. A sample file is shown below.

Microsoft Excel - 1999.11.11-15.48.46.csv

	A	B	C	D
1	Time	Filter 1 Turbidity (NTU)		
2	11/11/1999 15:49	0		
3	11/11/1999 15:50	0.035		
4	11/11/1999 15:51	0.036		
5	11/11/1999 15:52	0.035		
6	11/11/1999 15:53	0.033		
7	11/11/1999 15:54	0.033		
8				
9				

A header is shown at the top of each column. Time is always in the left column (Column A). Each OPC Tag selected to log shows up as a separate column to the right. Note that the name and units are displayed at the top of each column.

To create a graph, click on the graph wizard tool in Excel and follow the prompts. A sample is shown below.



Configuring a SCADA / HMI Package as an OPC Client

A variety of Application Notes are available to help with configuration of common SCADA / HMI packages with Hach's OPC Servers. These can be downloaded from <http://www.AquaTrend.com>.



For more information, visit our AquaTrend Technical Information site at:

<http://www.AquaTrend.com>



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