

Using the Proficy Historian Excel Add-In

By Carl Wadsworth
carl.wadsworth@apco-inc.com

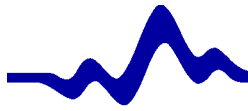
Proficy Historian is a powerful tool to log process data. The Historian provides an Excel Add-In that gives easy access to Historian data to generate reports in Excel. Documentation is provided for the Excel Add-In, but if you don't have any experience with the Add-In the documentation is very confusing and does not give you adequate knowledge to start using the Add-In.

This document shows how to get started using the Historian Excel Add-In and provides simple examples with screen-shots for many of its features. After reading this document, it is hoped that you will be able to understand the basics of using the Add-In to perform queries and generate reports. Reading this document and gaining experience using the Add-In should enable you to understand the provided documentation enough to explore more advanced features.

This document covers the following topics:

- Installing and Configuring the Historian Excel Add-In
- Searching for Tags
- Querying Current Values
- Querying Raw Values
- Querying Interpolated Values
- Querying Averages and Other Calculated Values

If the Historian Excel Add-In is already installed and configured on your machine, you can skip those sections and move on to searching for tags.



Installing the Historian Excel Add-In

Before using the Historian Excel Add-In, it must be installed from the Proficy Historian installation CD. During the installation you are asked which Historian components you want to install. If this installation is on a computer which will only be used for querying Historian data through Excel, you only need the options checked in Figure 1.

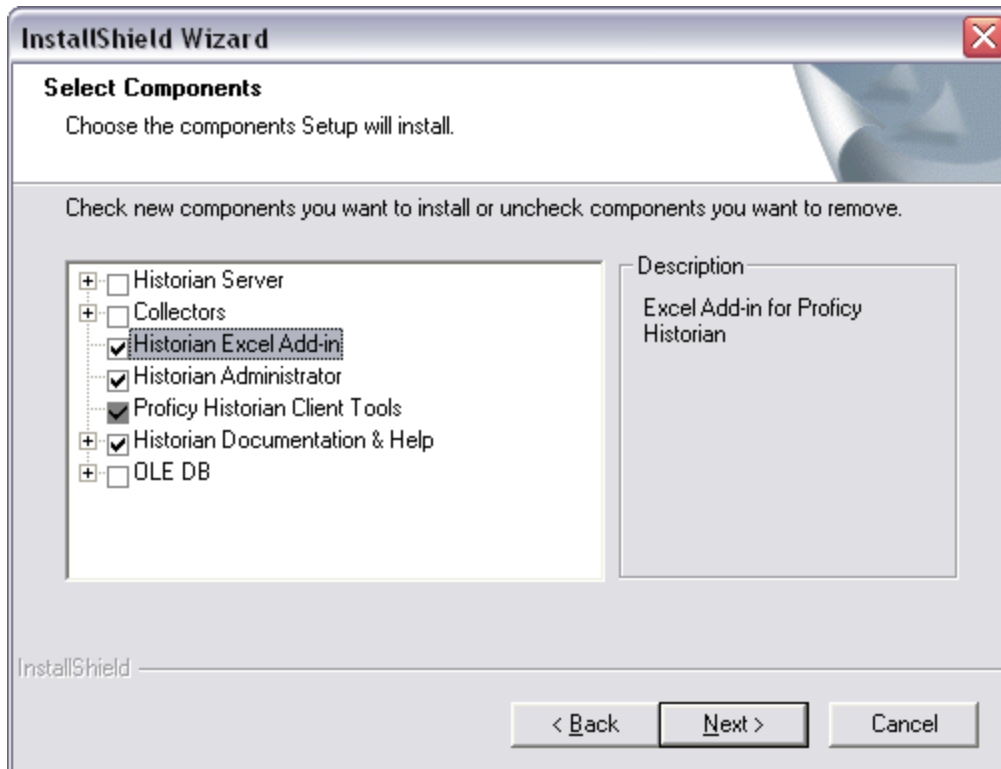
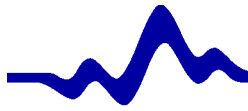


Figure 1 Options checked during installation

If the “Historian Excel Add-in” item does not appear on the list during the installation, then you do not have Microsoft Excel installed on your computer. Cancel out of the Historian installation and install Microsoft Excel on your computer first. If you install Historian before Microsoft Excel, you will have to re-install Historian after you install Excel to install the Excel Add-In.

The Historian Administrator is not really needed to query data through Excel, but it is a nice tool to check the status and performance of your Historian servers.



After selecting the components you want to install, the installation program will ask for the default server. Type the name or IP address of the computer that is running your Historian Server. This is shown in Figure 2.

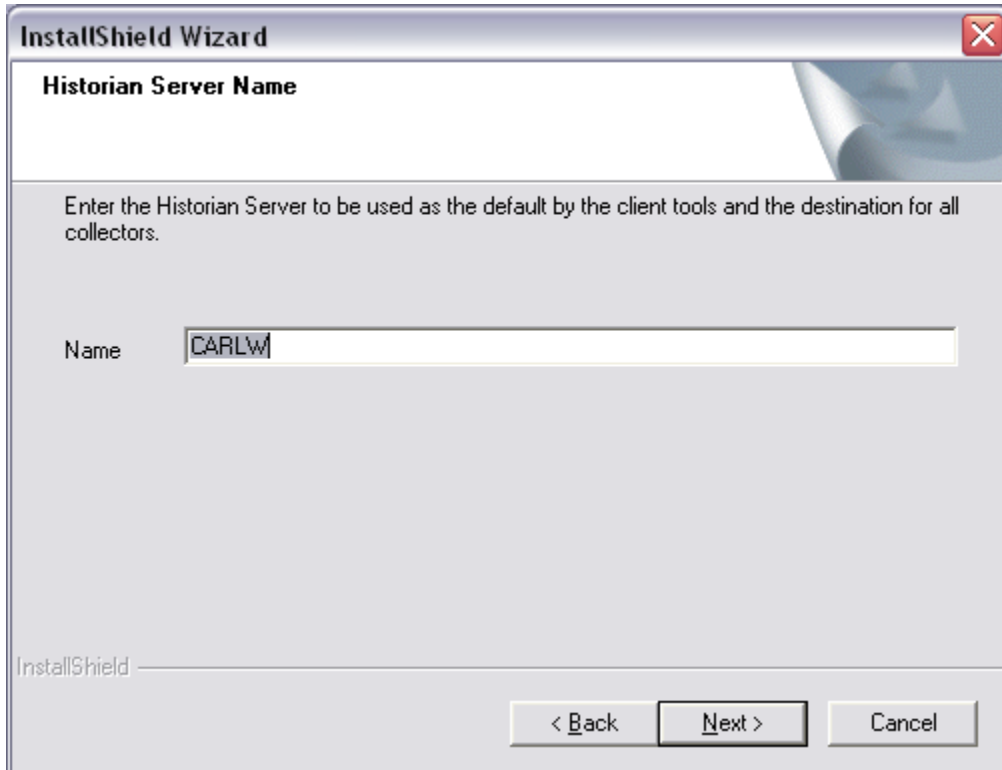
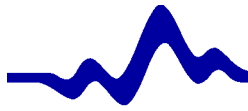


Figure 2 Specifying the default server

The name of the server is specified as “CARLW” in Figure 2. Instead of the name, the IP address (for CARLW it is 192.168.245.103) could be specified with the same results.



Adding the Add-In to Excel

After installing the Historian Excel Add-In from the CD, you must tell Excel that you want to use it. Select “Add-Ins...” from the “Tools” menu in Excel. (If “Add-Ins...” is not on your “Tools” menu, wait until the full menu is displayed, or click on the arrow at the bottom of the short menu to display the full menu.) The Add-Ins dialog box appears as shown in Figure 3.

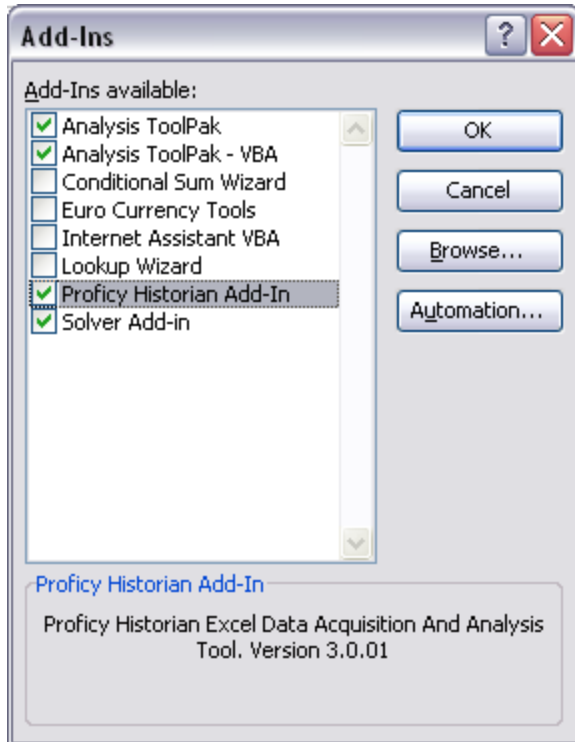
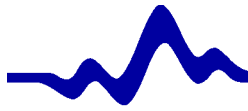


Figure 3 The Excel Add-Ins dialog box

Check the “Proficy Historian Add-In” check box and click “OK”. (You can leave all the other check boxes as they are.) After clicking “OK”, you will get a dialog box thanking you for using the Historian Excel Add-In. You will also get a new menu in Excel, the “Historian” menu, which includes all the functions you will need to access Historian Data.

You will only need to tell Excel that you want to use the Historian Add-In once. If you close Excel and then open it again, the Historian menu will still be there. Since the Historian Add-In is now always in Excel, a Historian client access license will be used every time you open Excel, even if you are working on things that do not use the Add-In. If there is a limited number of client access licenses, do not leave Excel open if you are not using it. If the licensing issue becomes a problem, you may need to remove the Historian Add-In when you are not using it by un-checking it in the Add-Ins dialog box.



Configuring Historian Servers for the Excel Add-In

The default server was specified during the installation, but it may need to be re-configured or changed. You can configure Historian servers from just about any of the Historian Add-In dialog boxes, but for this example it is done from the Options dialog box. Selecting “Options” in the “Historian” menu brings up the Options dialog box as shown in Figure 4.

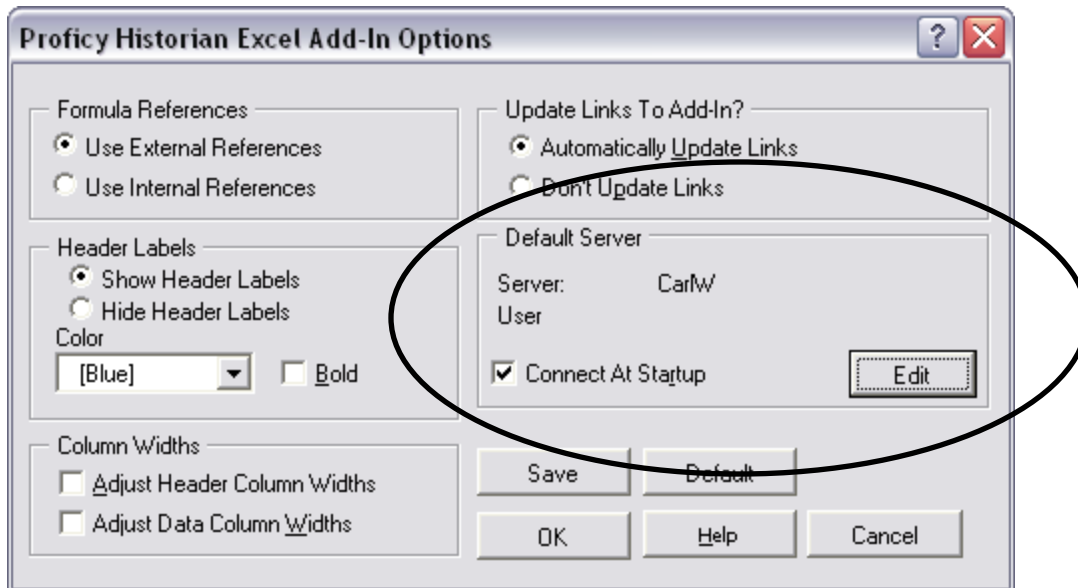


Figure 4 The Excel Add-In Options dialog box

In this example, the default server is “CarlW”, as specified during the installation. To view or change the configuration, click on the “Edit” button. This brings up the Historian Servers configuration dialog box, shown in Figure 5.

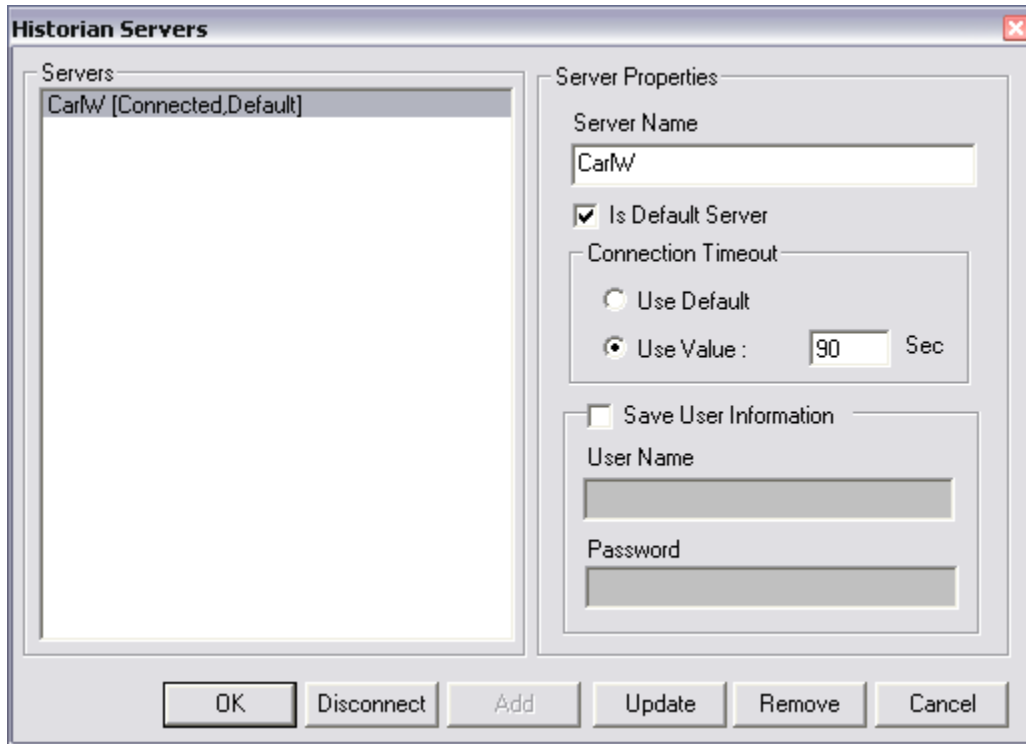
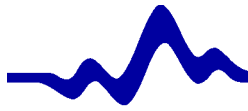
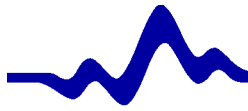


Figure 5 Historian servers configuration

Only one server, “CarlW” is configured, it is connected and it is the default server. In this example security is not used, so the user name and password fields are blank. If you are using security you can check “Save User Information” and enter in a user name and password. If you misspelled the server name or IP address, you can change it in the “Server Name” text box and click the “Update” button.



Searching Tags

Now that the Historian Excel Add-In is installed and configured, you can begin querying data from the server. All queries need one or more tag names, and the tag names must be in a cell somewhere in your Excel spreadsheet. You can type the tag names manually into your spreadsheet, but since tag names are usually long and the Historian queries need tag names that are spelled correctly, it is easier to have the Add-In query the tag names for you.

Select “Search Tags...” from the “Historian” to bring up the Historian tag search dialog box, as shown in Figure 6.

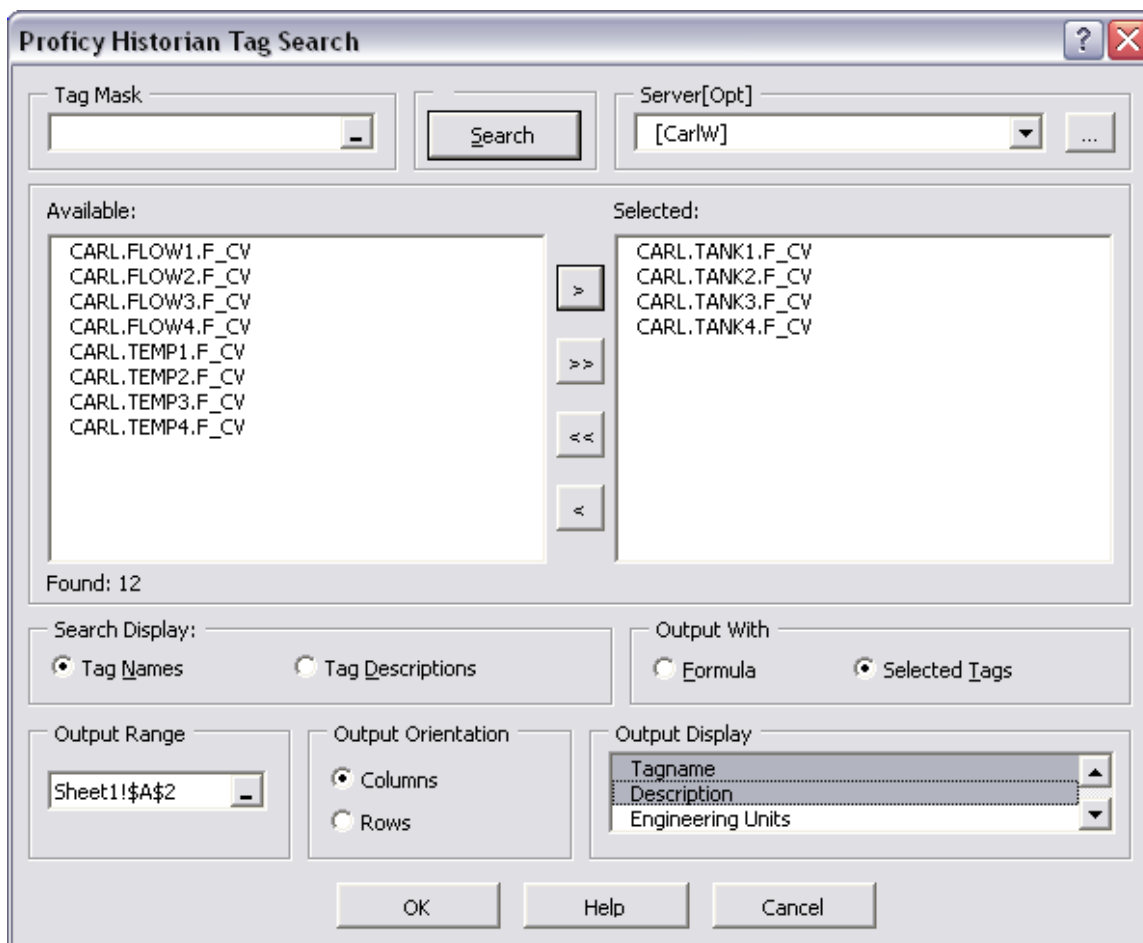
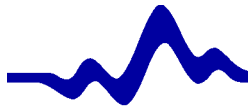


Figure 6 Searching Historian tags

Clicking the “Search” button will list all tags logged in the Historian server in the “Available” box. If the tag names are too confusing in your system, you can click on the “Tag Descriptions” button to list the tag descriptions instead of the tag names.



Select the tags you want to query by individually clicking on them in the available box and then clicking on the “>” button to move them to the “Selected” box. Clicking on the “>>” button will move all of the tags to the “Selected” box. Clicking on a tag in the “Selected” box and then clicking the “<” button will remove the tag from the “Selected” box, and clicking the “<<” button will remove all tags from the “Selected” box. In the example in Figure 6, all of the tank level tags have been selected.

On most Historian Add-In dialog boxes, including the “Tag Search” dialog box, the “Output Range” is optional. If you don’t specify an output range, the output is sent to the cell that was selected before you selected the Historian menu item. In this example, the output range was specified as cell A2, by clicking in the “Output Range” text box and then clicking on cell A2 in the spreadsheet.

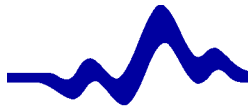
You have to specify what you want the query to output. In the “Output Display” box click on the “Tagname” option. Multiple outputs can be selected by holding down the control key on the keyboard and clicking on another option. In this case, both “Tagname” and “Description” have been selected. Clicking on “OK” will produce the result shown in Figure 7.

	A	B
1	Tagname	Description
2	CARL.TANK1.F_CV	TANK LEVEL 1 (F_CV)
3	CARL.TANK2.F_CV	TANK LEVEL 2 (F_CV)
4	CARL.TANK3.F_CV	TANK LEVEL 3 (F_CV)
5	CARL.TANK4.F_CV	TANK LEVEL 4 (F_CV)
6		
7		

Figure 7 Result from searching tags

The tagnames and descriptions are sent to the excel spreadsheet. The tagnames start at cell A2, but the Add-In puts a header label above each column. The properties of these header labels can be set in the Options dialog box, and the headers can also be turned off. If you have headers turned on and you don’t leave enough room for the header (for example if your output range started at A1) the Add-In will report an error but will also return the data anyway.

The output is in columns because “Columns” was selected as the “Output Orientation”. The output is text and not a formula because “Selected Tags” was selected for “Output With”.



Searching Tags with the Output as a Formula

An output that looks the same as Figure 7 can be obtained using the settings for the tag search query shown in Figure 8.

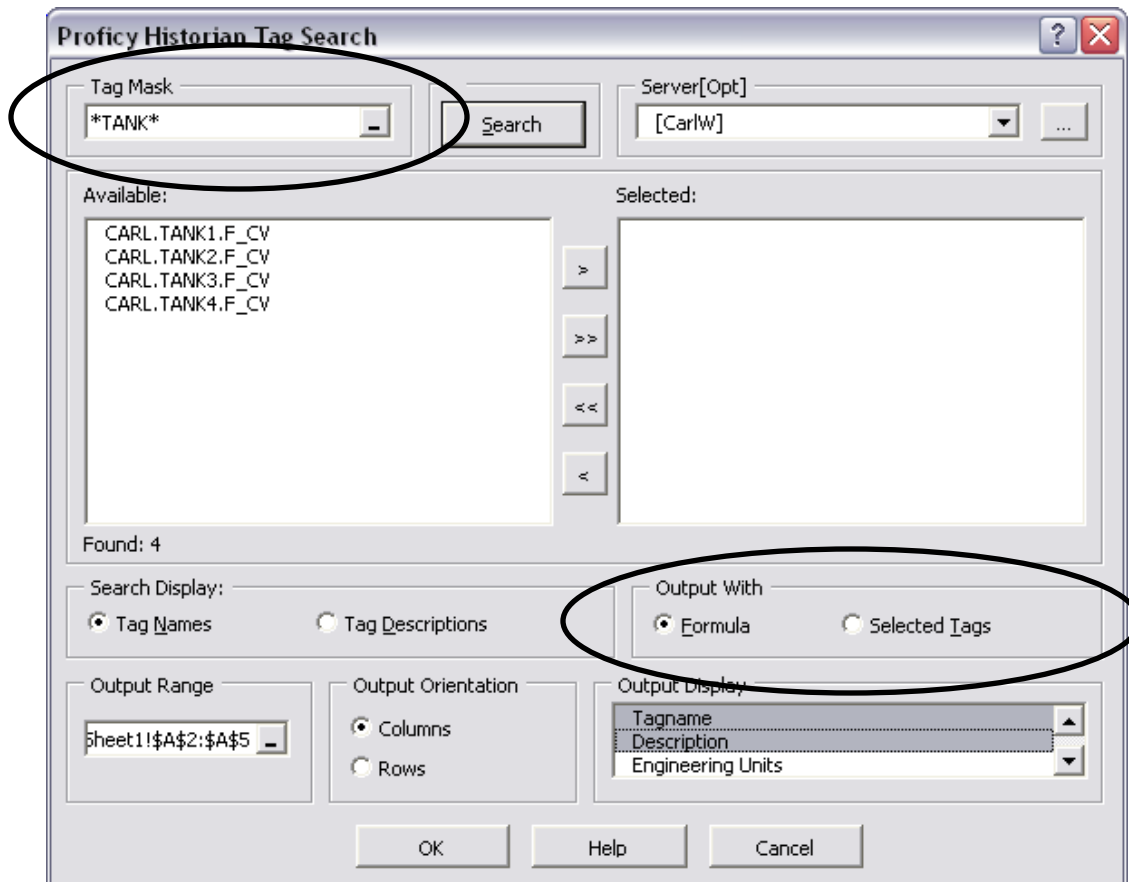
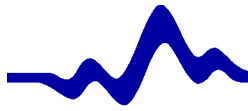


Figure 8 Tag search output as a formula

In this case, before clicking the “Search” button a tag mask was entered. In the tag mask, the “*” character is a wildcard, so clicking on the “Search” button will only return tags with “TANK” somewhere in their name. “Output With” is selected as “Formula”. If the output is a formula, the output range must be selected to give enough room for all the tags, in this case four. The output will look the same, but the output is not text, it is a formula. The formula queries the tag names from the spreadsheet. Because the formula queries the data, if the tagnames or the descriptions change at the server the spreadsheet will automatically be updated.

While a tag search formula is a tool that can be very useful, the text output is by far the simplest and easiest to use and will probably be the method that you use most frequently.



Querying Current Values

Now that there are tag names on the spreadsheet, you can query actual data from the Historian server. The simplest query is the query for current value. This returns the most recently logged value for a tag.

To query the current value, select “Query Current Values...” from the Historian menu. The “Proficy Historian Current Value Query” dialog box comes up, as shown in Figure 9.

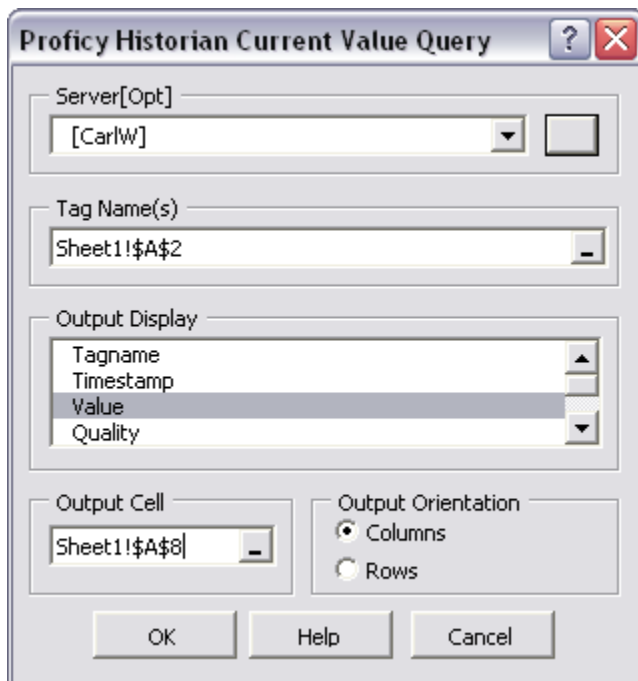
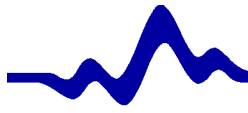


Figure 9 Querying current value

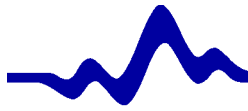
In this example the tag name in cell A2, which is “CARL.TANK1.F_CV”, has been specified and its current value (and only the value) will be output to cell A8. This query produces the following output shown in Figure 10.



	A	B
1	Tagname	Description
2	CARL.TANK1.F_CV	TANK LEVEL 1 (F_CV)
3	CARL.TANK2.F_CV	TANK LEVEL 2 (F_CV)
4	CARL.TANK3.F_CV	TANK LEVEL 3 (F_CV)
5	CARL.TANK4.F_CV	TANK LEVEL 4 (F_CV)
6		
7	Value	
8	53.76477667	
9		
10		

Figure 10 Results of current value query

The value of 53.76... is put into cell A8 with the header “Value”. This value will be updated when the spreadsheet is recalculated, which can be forced by pressing F9. The value will only change if a new value has been logged by the Historian.



Adding More Information to the Current Value Query

The current value by itself is not completely useful because it does not show which tagname the value is for or any other information. We can do the query again and tell it to provide more information, in this case the tagname, timestamp, and value. Holding down the control key while selecting “Output Display” items allows multiple items to be selected.

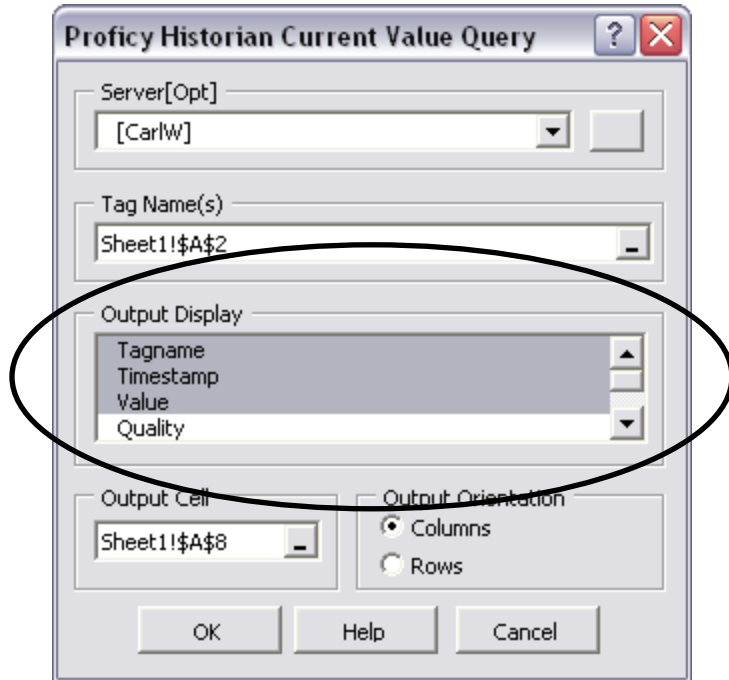
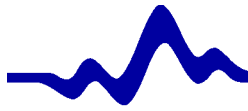


Figure 11 Current value query with more information

This query shown in Figure 11 will produce the output shown in Figure 12. The query puts a header for the tagname, timestamp and value above the actual values.

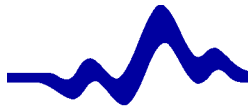


The screenshot shows a Microsoft Excel window titled "Historian Example.xls". The spreadsheet contains the following data:

	A	B	C
1	Tagname	Description	
2	CARL.TANK1.F_CV	TANK LEVEL 1 (F_CV)	
3	CARL.TANK2.F_CV	TANK LEVEL 2 (F_CV)	
4	CARL.TANK3.F_CV	TANK LEVEL 3 (F_CV)	
5	CARL.TANK4.F_CV	TANK LEVEL 4 (F_CV)	
6			
7	Tagname	Timestamp	Value
8	CARL.TANK1.F_CV	7/19/05 4:12 PM	53.76477667
9			
10			

Figure 12 Current value query with tagname, timestamp, and value

When the spreadsheet is recalculated, the value and the timestamp will update showing the last logged value.



Querying Raw Data

Querying current value returns only the latest value that was logged into Historian. By using the “Query Raw Data...” command you can view the data logged into Historian for any range of time. This query, and all of the queries that will be discussed later, require a start time and/or an end time. As mentioned before, all of the query dialog boxes require that the information needed to execute the query be located somewhere in the spreadsheet. The start and end times need to be entered into the spreadsheet, either by typing them into a cell or using a formula. Figure 13 shows a start and end time that has been entered into the spreadsheet.

	A	B	C
1	Tagname	Description	Start Time
2	CARL.TANK1.F_CV	TANK LEVEL 1 (F_CV)	7/19/05 3:00 PM
3	CARL.TANK2.F_CV	TANK LEVEL 2 (F_CV)	
4	CARL.TANK3.F_CV	TANK LEVEL 3 (F_CV)	End Time
5	CARL.TANK4.F_CV	TANK LEVEL 4 (F_CV)	7/19/05 4:00 PM
6			
7			
8			

Figure 13 Start and end time added to spreadsheet

In Figure 13 the start and end times include a date and a time, the hour from 3:00 PM to 4:00 PM on July 19. A query performed for this start and end time will return values only from the 3:00 PM hour, and will not return any values from the 4:00 PM hour. If you want data from both hours, the end time needs to be specified as 5:00 PM.

If you enter a date with no time for a query, the time used in the query is 12:00 midnight. For example, if the start time is 7/19/05 and the end time is 7/20/05, the query will retrieve all data logged into the Historian from 7/19/05 12:00 AM to 7/20/05 12:00 PM, which means it will not return any data from 7/20/05.

With a start and end time specified, select “Query Raw Data...” from the Historian menu. The “Raw Data Query” dialog box appears as shown in Figure 14.

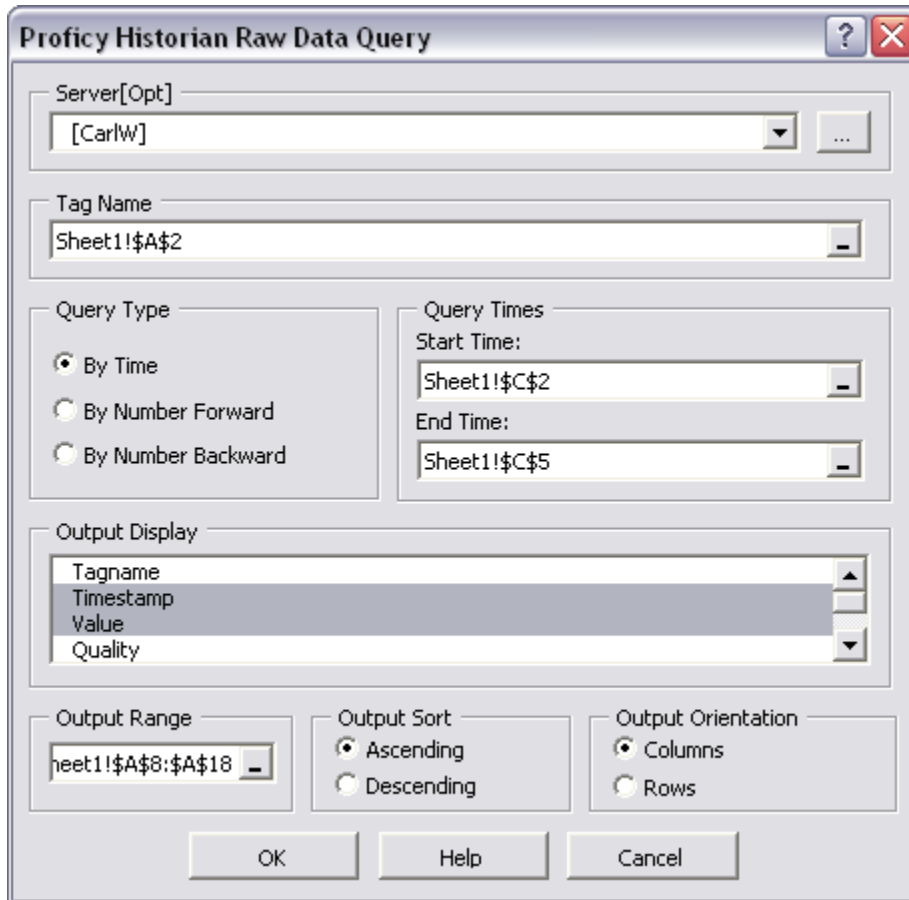
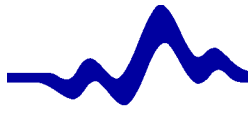
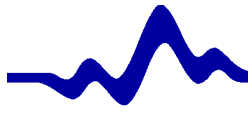


Figure 14 Raw data query dialog box

One tagname is specified with the start and end times entered on the spreadsheet and the query will output the timestamp and the value. For most Historian queries, only single cell needs to be specified as a starting cell for the output range. However, the raw data query requires that you specify a range that is big enough to hold the data you want. If you only select a single cell, only a single row of data will be returned. Similarly, if you select a range of 10 cells, then 10 rows of data will be returned. If you select a range that is larger than the number of data points that the query returns, part of the range you select will be blank.

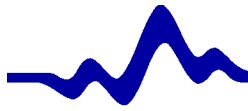
The query in Figure 14 produces the following output shown in Figure 15.



	A	B	C	
1	Tagname	Description	Start Time	
2	CARL.TANK1.F_CV	TANK LEVEL 1 (F_CV)	7/19/05 3:00 PM	
3	CARL.TANK2.F_CV	TANK LEVEL 2 (F_CV)		
4	CARL.TANK3.F_CV	TANK LEVEL 3 (F_CV)	End Time	
5	CARL.TANK4.F_CV	TANK LEVEL 4 (F_CV)	7/19/05 4:00 PM	
6				
7	Timestamp	Value		
8	7/19/05 3:02 PM	51.82511359		
9	7/19/05 3:04 PM	52.19380988		
10	7/19/05 3:14 PM	52.19380988		
11	7/19/05 3:16 PM	52.45029425		
12	7/19/05 3:24 PM	52.45029425		
13	7/19/05 3:26 PM	52.70677863		
14	7/19/05 3:36 PM	52.70677863		
15	7/19/05 3:38 PM	52.99532355		
16	7/19/05 3:44 PM	53.23577765		
17	7/19/05 3:52 PM	53.52432257		
18	7/19/05 3:58 PM	53.76477667		
19				
20				

Figure 15 Results of the raw data query

The results from the raw data query are the “raw” data, the data exactly as they are stored in the historian. With collector compression enabled in the historian, the data may not have a regular interval between samples. By logging the data only when it changes, the Historian is able to conserve disk space. However, irregularly spaced data does not make nice reports, and so the raw data query is of limited use for generating reports.



Querying Raw Data with Number Forward or Number Backward

A raw data query can also be executed by using a start time and the “Number Forward” option, or the end time and the “Number Backward” option. In the data returned in Figure 15 there are 11 samples returned. The same results can be obtained by typing “11” into cell C3 and performing the query shown in Figure 16.

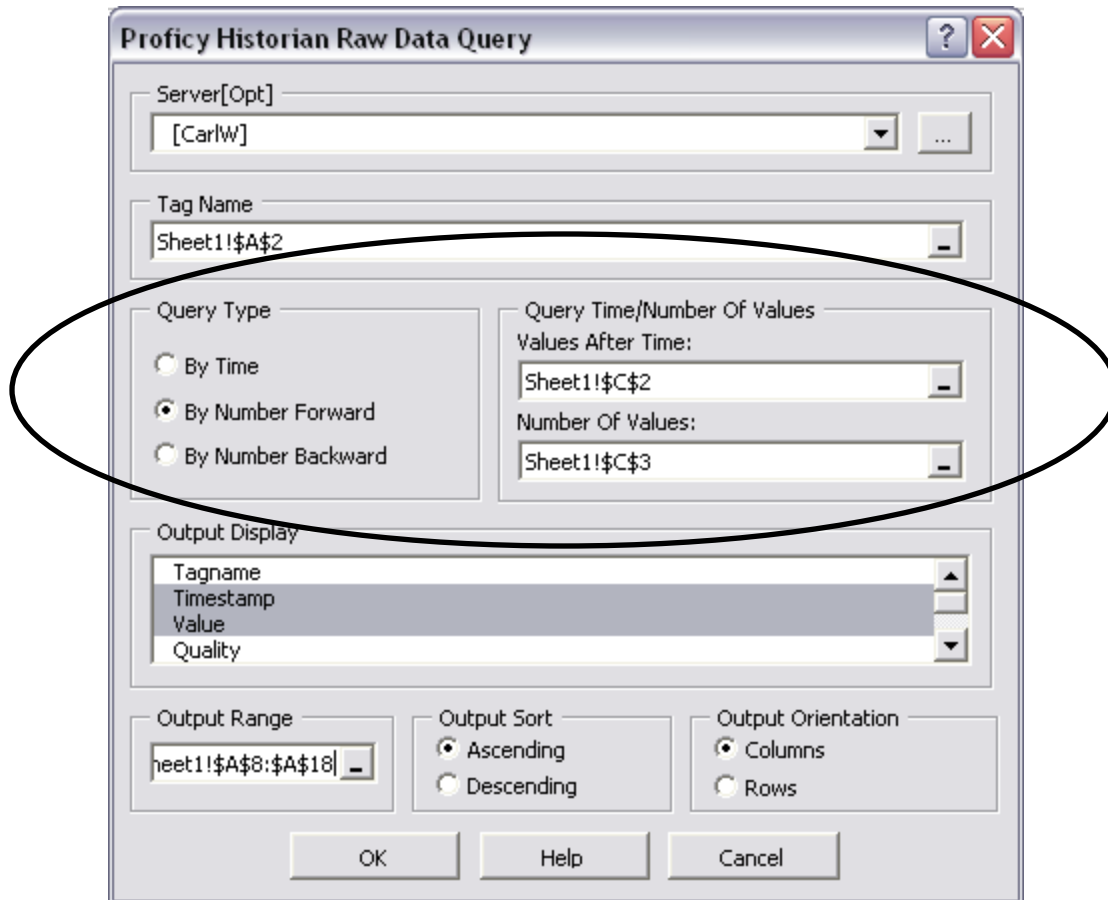
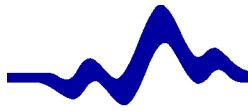


Figure 16 Raw data query by using Number forward

The “Query Type” is selected as “By Number Forward”. The start time is specified, and cell C3 with the value “11” is specified as the number of values. By specifying the number of samples, you know how large to make the output range. The output of this query is exactly the same as shown in Figure 15.

Similarly, if you ran the query with “By Number Backward” selected for the “Query Type” and use the end time and the 11 samples, you would also get the same result.



Querying Interpolated Data by Interval

If you want your data to be presented at regular intervals instead of the variable intervals of raw data, there is a query that returns interpolated data at regular intervals. You specify the regular interval that you want the data to be returned, and the query will check for values before and after the specified interval and interpolate a value for the interval.

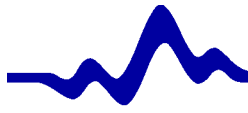
To perform an interpolated query, select “Query Calculated Data...” from the “Historian” menu.

The screenshot shows the "Proficy Historian Calculated Data Query" dialog box. It contains the following fields and options:

- Server[Opt]:** [CarlW]
- Tag Name(s):** Sheet1!\$A\$2
- Query Times:** Start Time: Sheet1!\$C\$2, End Time: Sheet1!\$C\$5
- Sampling Type:** Interpolated Sampling
- Calculation:** (Empty dropdown)
- Sampling Interval:** By Interval, Interval: 10, By Sample, Time Unit: Minutes
- Output Display:** Tagname, Timestamp, Value
- Output Range:** Sheet1!\$A\$8
- Output Sort:** Ascending, Descending
- Output Orientation:** Columns, Rows

Buttons: OK, Help, Cancel

Figure 17 Querying interpolated data

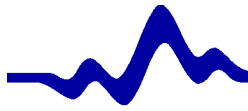


In the query shown in Figure 17, the start time and end time are the same as used for the previous raw data query. For the “Sampling Type”, “Interpolated Sampling” is selected. The “Sampling Interval” is “By Interval”, with an interval of 10 minutes. The value will be interpolated and reported every 10 minutes between the start and end time. This query produces the following output shown in Figure 18.

	A	B	C
1	Tagname	Description	Start Time
2	CARL.TANK1.F_CV	TANK LEVEL 1 (F_CV)	7/19/05 3:00 PM
3	CARL.TANK2.F_CV	TANK LEVEL 2 (F_CV)	11
4	CARL.TANK3.F_CV	TANK LEVEL 3 (F_CV)	End Time
5	CARL.TANK4.F_CV	TANK LEVEL 4 (F_CV)	7/19/05 4:00 PM
6			
7	Timestamp	Value	
8	7/19/05 3:10 PM	52.19380988	
9	7/19/05 3:20 PM	52.45029425	
10	7/19/05 3:30 PM	52.70677863	
11	7/19/05 3:40 PM	53.07547491	
12	7/19/05 3:50 PM	53.45218634	
13	7/19/05 4:00 PM	53.85027295	
14			

Figure 18 Result of an interpolated data query

The query reports a value every 10 minutes, even though at exactly those times no data was logged. Compare the output of this query to the raw data query results in Figure 15 to get a feel for how the interpolation is performed.



Querying Interpolated Data by Sample

In the dialog box for the interpolated sampling query, in the “Sampling Interval” frame there is an option of “By Sample”. This divides the start and end time not into intervals, but into a set number of samples. After selected “Query Calculated Data...” from the “Historian” menu, the “Sampling Interval” can be set as “By Sample”, as shown in Figure 19.

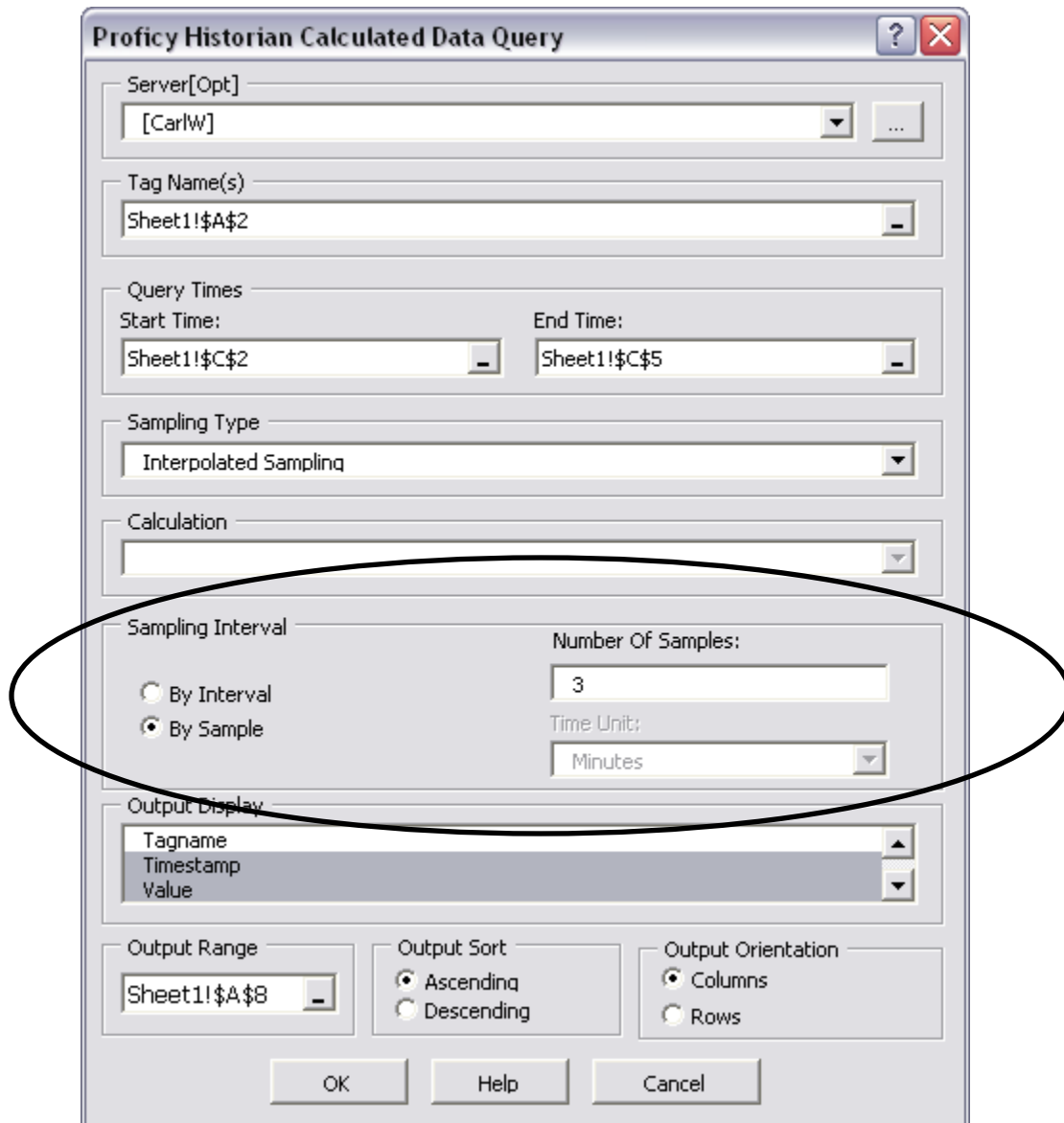
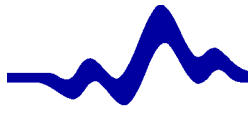


Figure 19 Interpolated data query by sample

With the number of samples set to 3, the output shown in Figure 20 is produced.



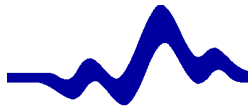
The screenshot shows a Microsoft Excel window titled "Historian Example.xls". The spreadsheet contains the following data:

	A	B	C
1	Tagname	Description	Start Time
2	CARL.TANK1.F_CV	TANK LEVEL 1 (F_CV)	7/19/05 3:00 PM
3	CARL.TANK2.F_CV	TANK LEVEL 2 (F_CV)	11
4	CARL.TANK3.F_CV	TANK LEVEL 3 (F_CV)	End Time
5	CARL.TANK4.F_CV	TANK LEVEL 4 (F_CV)	7/19/05 4:00 PM
6			
7	Timestamp	Value	
8	7/19/05 3:20 PM	52.45029425	
9	7/19/05 3:40 PM	53.07547491	
10	7/19/05 4:00 PM	53.85027295	
11			
12			

Figure 20 Results of interpolated data query by sample

Since the start and end times are an hour apart and the number of samples is 3, the query reports data in intervals of 20 minutes. If we wanted to use the “By Sample” option and produce intervals of 10 minutes, the number of samples would be set to 6.

In the examples for interpolated data queries the time interval or the number of samples is typed directly into the dialog box for the query. It is a rare case where information for a query does not have to appear in the spreadsheet itself.



Querying Multiple Tags

In all of the previous examples, data has been queried for only one tag. If you want to display the current value for all four of the tags, you could create four separate queries. However, the Historian Excel Add-In allows you to query multiple tags at the same time by selecting the range of cells with your tagnames. In the example shown in Figure 21, a range of tags was selected and the same query as the preceding section was performed.

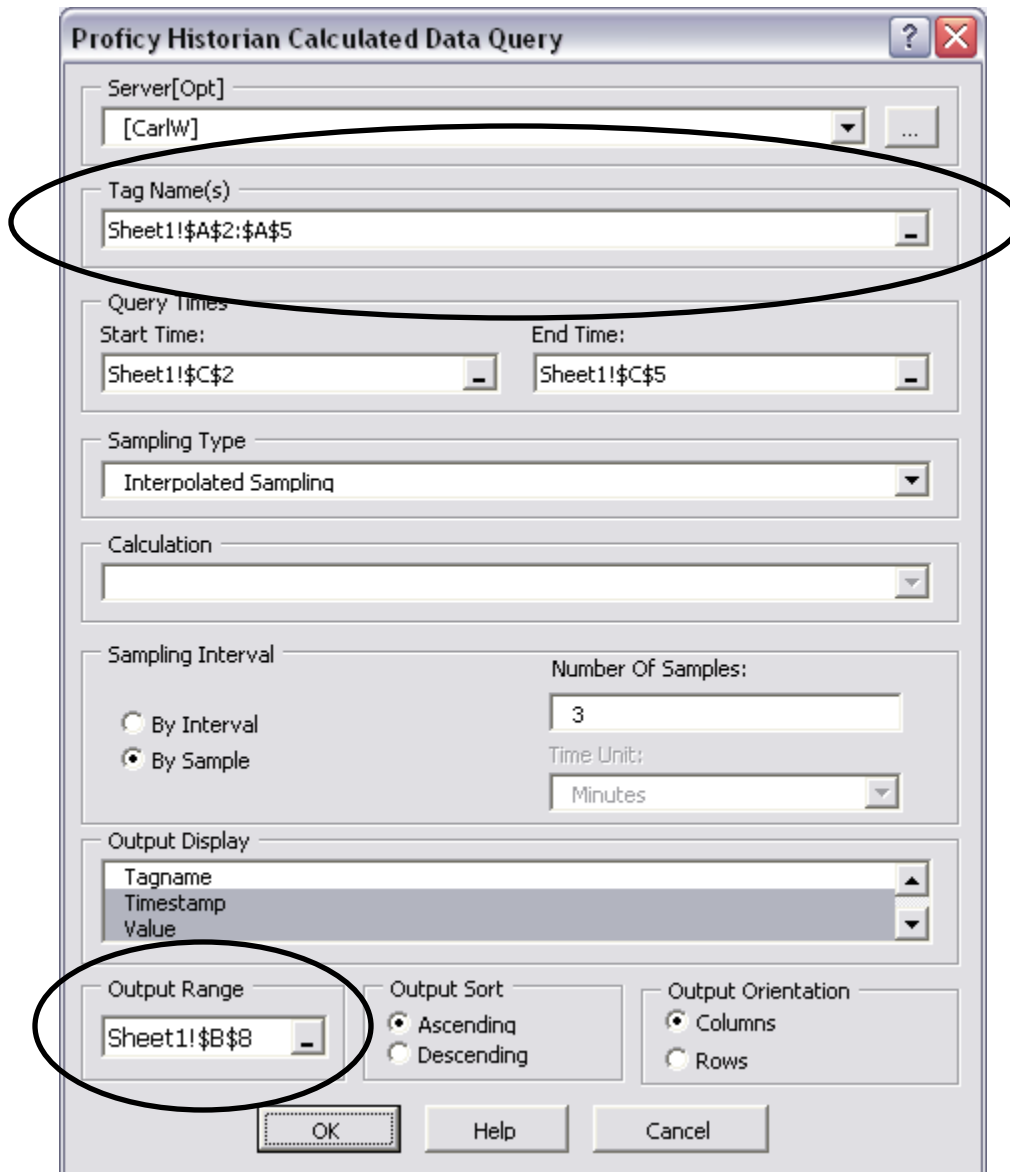
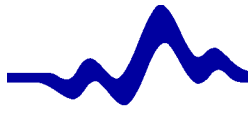


Figure 21 Selecting multiple tags



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The query puts the headers in a column to the left of the data, so the output range is in column B to allow for the headers, which will be in column A. The query produces the output shown in Figure 22.

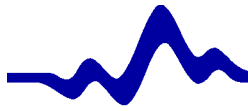
	A	B	C	D
1	Tagname	Description	Start Time	
2	CARL.TANK1.F_CV	TANK LEVEL 1 (F_CV)	7/19/05 3:00 PM	
3	CARL.TANK2.F_CV	TANK LEVEL 2 (F_CV)	11	
4	CARL.TANK3.F_CV	TANK LEVEL 3 (F_CV)	End Time	
5	CARL.TANK4.F_CV	TANK LEVEL 4 (F_CV)	7/19/05 4:00 PM	
6				
7				
8	Timestamp	7/19/05 3:20 PM	7/19/05 3:40 PM	7/19/05 4:00 PM
9	Value	52.45029425	53.07547491	53.85027295
10	Value	75.9526125	76.3846875	77.01351094
11	Value	61.14784335	60.56621219	59.93641171
12	Value	99.92247296	99.59077521	99.27980856
13				
14				

Figure 22 Result of a multiple tags query

The values are in the same orientation as the tagnames. The label “Value” is not very helpful, and since it is text, it can be replaced with something more useful. The labels were changed in Figure 23 to show the orientation of the data.

7				
8	Timestamp	7/19/05 3:20 PM	7/19/05 3:40 PM	7/19/05 4:00 PM
9	Tank 1	52.45029425	53.07547491	53.85027295
10	Tank 2	75.9526125	76.3846875	77.01351094
11	Tank 3	61.14784335	60.56621219	59.93641171
12	Tank 4	99.92247296	99.59077521	99.27980856
13				
14				

Figure 23 Labels changed for the multiple tags query



Changing the Orientation of Multiple Tag Queries

When multiple tags are queried at the same time, the orientation of the output depends on the orientation of the tagnames in the spreadsheet. Even though there is an “Output Orientation” that can be selected in the query dialog boxes, it is ignored if multiple tags are selected.

To change the orientation of the output, the orientation of the tagnames must be changed. You can change the tagnames either by cutting and pasting the tagnames or re-doing the “Search Tags” query and selecting “Row” as the “Output Orientation” for the search tags query. Figure 24 shows the tags in a row instead of a column.

The screenshot shows a Microsoft Excel window titled "Historian Example.xls". The spreadsheet has columns A through E and rows 1 through 6. Row 1 contains headers "Start Time" and "End Time". Row 2 contains values "7/19/05 3:00 PM" and "7/19/05 4:00 PM". Row 4 contains tagnames: "CARL.TANK1.F_CV", "CARL.TANK2.F_CV", "CARL.TANK3.F_CV", and "CARL.TANK4.F_CV".

	A	B	C	D	E
1			Start Time	End Time	
2			7/19/05 3:00 PM	7/19/05 4:00 PM	
3					
4	Tagname	CARL.TANK1.F_CV	CARL.TANK2.F_CV	CARL.TANK3.F_CV	CARL.TANK4.F_CV
5					
6					

Figure 24 Tagnames in a row

With the tagnames in a row, the query in Figure 25 is performed. With this orientation, the headers will be above the data, so the output range is in column A.

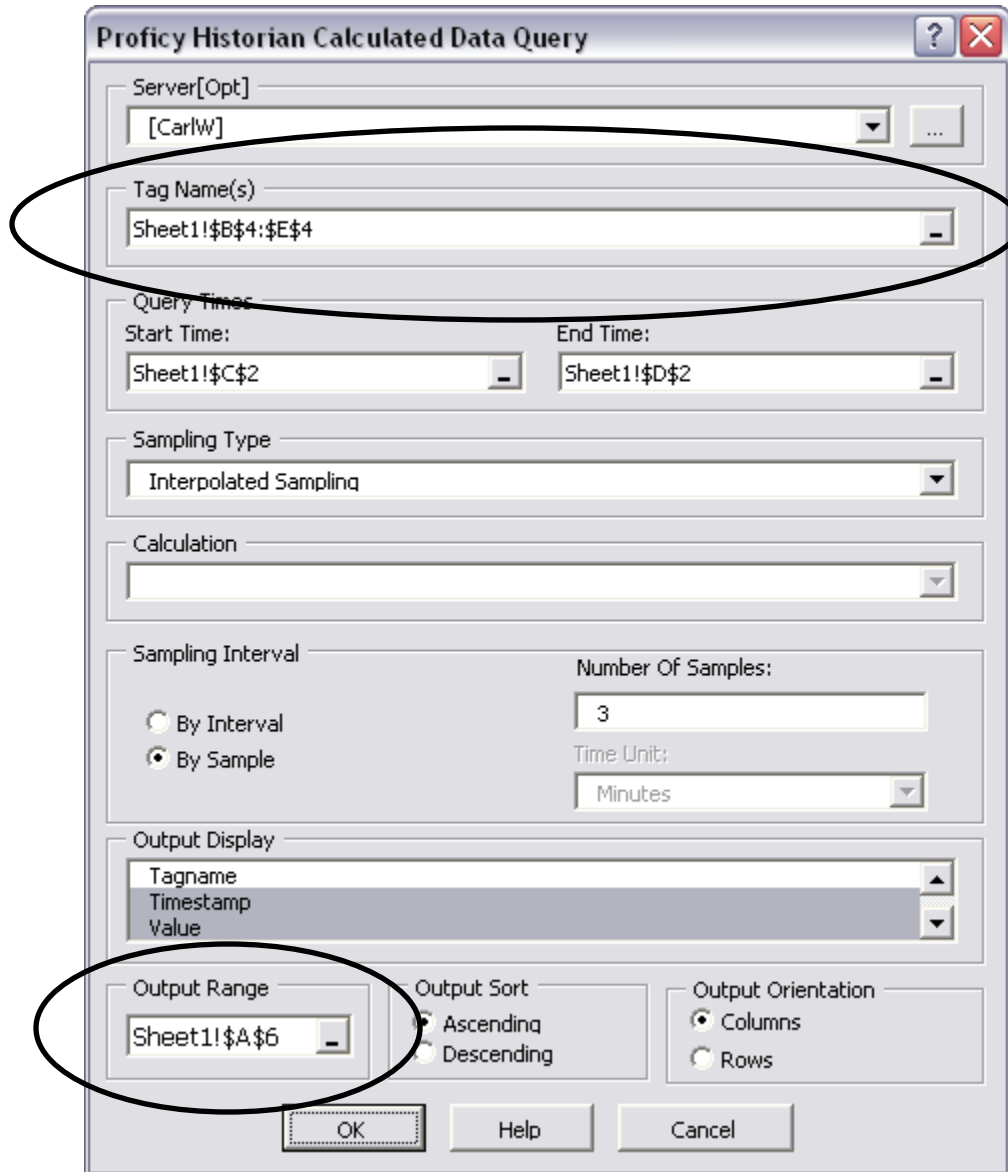
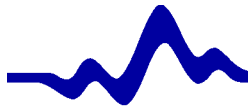
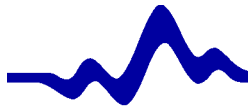


Figure 25 Query with tags in rows

The query with the tags oriented in rows produces the output shown in Figure 26.



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Microsoft Excel - Historian Example.xls

File Edit View Insert Format Tools Data Window Historian Help

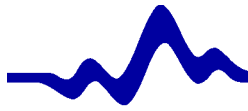
Arial 10 B I U

G19

	A	B	C	D	E
1			Start Time	End Time	
2			7/19/05 3:00 PM	7/19/05 4:00 PM	
3					
4	Tagname	CARL.TANK1.F_CV	CARL.TANK2.F_CV	CARL.TANK3.F_CV	CARL.TANK4.F_CV
5	Timestamp	Value	Value	Value	Value
6	7/19/05 3:20 PM	52.45079425	75.9526125	61.14784335	99.92247296
7	7/19/05 3:40 PM	53.07597491	76.3846875	60.56621219	99.59077521
8	7/19/05 4:00 PM	53.85077295	77.01351094	59.93641171	99.27980856
9					
10					

Figure 26 Results of query with tags in a row

With the tags in a row, the data is in columns below the tagnames. This orientation is useful for reporting lots of data for a single tag.



Querying Averages

The interpolated data query returns a “snapshot” of a value at a particular time. For reporting data, it is often more useful to have a representation of data for an entire time period. The Historian Excel Add-In provides several calculation queries for representing data for a time period. The most useful of these is the average.

The average query is similar to the interpolated data query. You specify tags and a start and end time, and specifying a time interval. Instead of interpolating a value for that interval, the query looks at all the data in the interval then calculates and reports a time-weighted average for the interval.

The following example calculates an hourly average for every hour during one day. The start and end times are changed to give a span of one day, as shown in Figure 27.

The screenshot shows a Microsoft Excel window titled "Microsoft Excel - Historian Example.xls". The menu bar includes File, Edit, View, Insert, Format, Tools, Data, Window, Historian, and Help. The toolbar shows standard Excel icons and the font settings are set to Arial, size 10. The active cell is H19. The data table is as follows:

	A	B	C	D	E
1			Start Time	End Time	
2			7/19/05 12:00 AM	7/20/05 12:00 AM	
3					
4	Tagname	CARL.TANK1.F_CV	CARL.TANK2.F_CV	CARL.TANK3.F_CV	CARL.TANK4.F_CV
5					

Figure 27 Time period changed to a day

To perform the query, select “Query Calculated Data...” from the “Historian” menu. This is the same dialog box used to perform interpolated data queries in the preceding examples, and is shown in Figure 28.

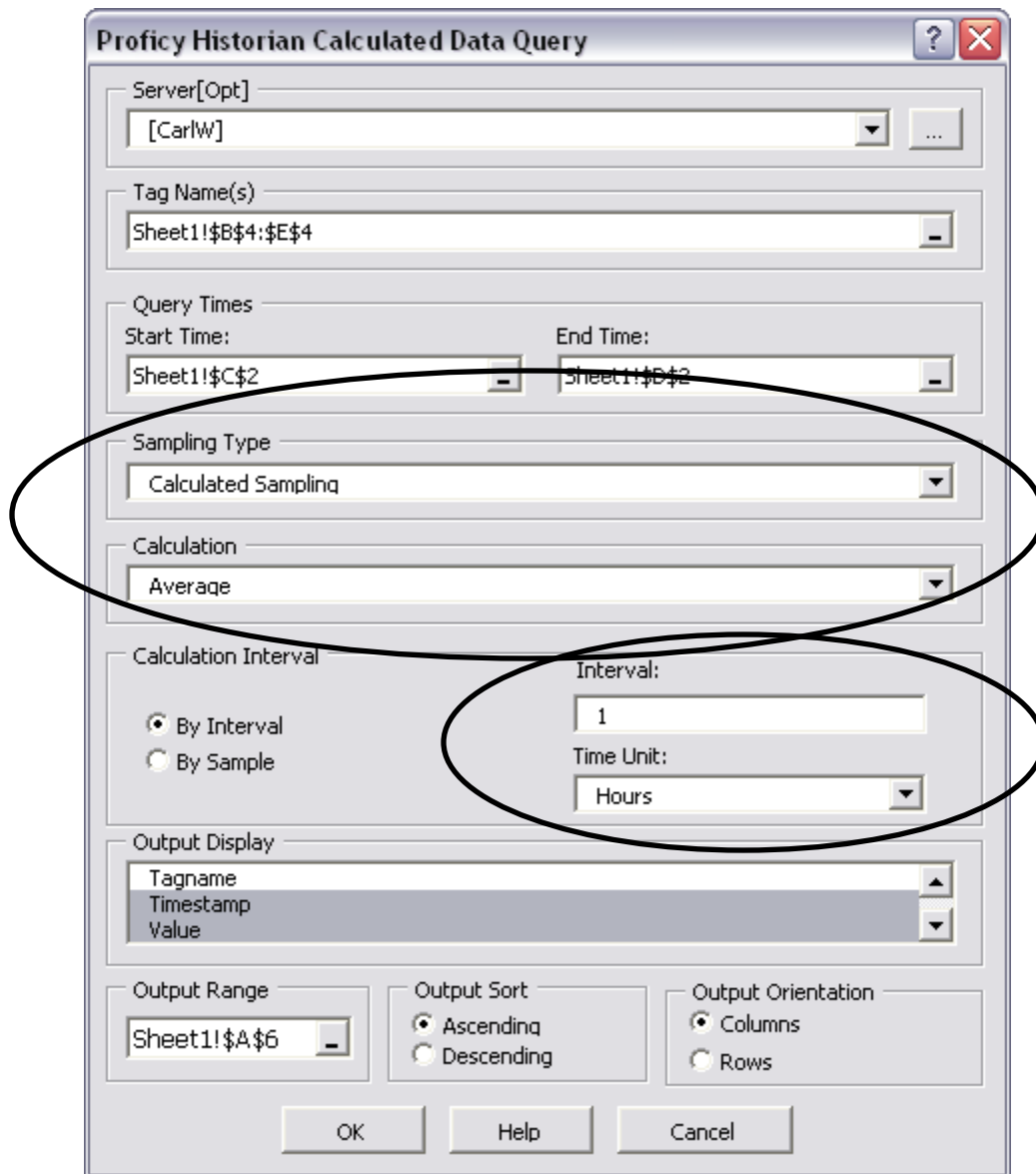
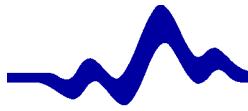
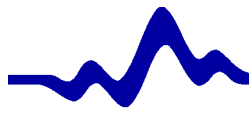


Figure 28 Query for hourly averages

“Calculated Sample” is selected from the “Sampling Type” combo box, and “Average” is selected from the “Calculation” combo box. To produce hourly averages the interval is set to 1 hour by typing “1” in the “Interval” text box and selecting “Hours” from the “Time Unit” combo box. This query produces the results shown in Figure 29.



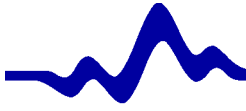
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	A	B	C	D	E
1			Start Time	End Time	
2			7/19/05 12:00 AM	7/20/05 12:00 AM	
3					
4	Tagname	CARL.TANK1.F_CV	CARL.TANK2.F_CV	CARL.TANK3.F_CV	CARL.TANK4.F_CV
5	Timestamp	Value	Value	Value	Value
6	7/19/05 1:00 AM	52.95097312	68.52529469	59.63238051	101.2886531
7	7/19/05 2:00 AM	54.30179083	68.551785	61.31011074	103.9287599
8	7/19/05 3:00 AM	54.27186766	67.99651719	62.61761815	105.4763372
9	7/19/05 4:00 AM	51.76633592	67.35174813	60.85863213	103.598617
10	7/19/05 5:00 AM	51.12512498	68.28971094	59.52395672	101.1138207
11	7/19/05 6:00 AM	49.78606281	69.6552051	60.70155467	99.686599
12	7/19/05 7:00 AM	48.93966437	70.55013188	62.50005596	101.5781976
13	7/19/05 8:00 AM	48.31127765	70.27416969	61.6042631	104.082746
14	7/19/05 9:00 AM	47.73365346	69.81457563	59.95369982	105.7750956
15	7/19/05 10:00 AM	48.15631834	69.77934094	60.47433211	104.7393463
16	7/19/05 11:00 AM	49.8640768	69.68803938	62.58427678	103.7411434
17	7/19/05 12:00 PM	48.07082355	70.35344773	61.49164134	102.7771468
18	7/19/05 1:00 PM	46.42504881	72.01275719	59.78526023	101.8933104
19	7/19/05 2:00 PM	49.98163214	73.52647708	60.87839036	101.1815424
20	7/19/05 3:00 PM	51.47725665	75.19373792	62.58847602	100.4925785
21	7/19/05 4:00 PM	52.7190685	76.19899813	60.90333455	99.7692931
22	7/19/05 5:00 PM	53.90406194	77.37601672	59.6630055	98.89144578
23	7/19/05 6:00 PM	54.24354751	78.01782813	61.70848852	97.98687836
24	7/19/05 7:00 PM	54.28843227	77.29950344	62.34520002	96.80658719
25	7/19/05 8:00 PM	51.89190639	76.59532406	60.73859937	95.5339274
26	7/19/05 9:00 PM	52.37655499	76.057545	59.70474544	96.40993195
27	7/19/05 10:00 PM	53.29134926	76.21520094	62.18466327	99.28119064
28	7/19/05 11:00 PM	53.7097394	76.24259141	61.66872486	102.2934209
29	7/20/05 12:00 AM	52.12367743	75.2339449	59.92060369	105.0105783
30					

Figure 29 Hourly averages

The values shown in Figure 29 represent the average of values for the hour preceding the timestamp. This is a time-weighted average, so it accurately takes into account the variable intervals between samples.



Querying Other Calculated Data

In addition to averages, there are other types of calculations that can be performed on queried data. These calculation queries are performed the same way as querying averages. Select “Query Calculated Data...” from the “Historian” menu. This is the same dialog box used to perform average data queries in the preceding examples, shown in Figure 28. As for averages, select “Calculated Sample” from the “Sampling Type” combo box. From the “Calculation” combo box, other calculation types can be selected, including:

- Minimum
- Maximum
- Standard Deviation
- Total
- Count

See the provided help and documentation for further details about these calculations, or experiment with them yourself.

More to Explore

This document shows you how to perform the basic and most useful queries using the Historian Excel Add-In. These queries may be all you ever need or use to generate reports. However, there are more features in the Add-In that may be useful to you. After mastering the basics, other queries and features to explore on your own include:

- Lab Sampling
- Trend Sampling
- Querying Filtered Data
- Querying Multiple Historian Servers
- Importing and Exporting Tags & Data
- Server Administration Tasks