

Reporting from FactoryStudio

XLReporter generates Excel based reports from Tatsoft's FactoryStudio using current process values, historical logs and alarm archives.

The purpose of this document is to describe how to set up FactoryStudio for **XLReporter**.

Process Values

XLReporter can take snapshots of the process values and add them to an existing report worksheet, periodically or on event. To prevent excessive build-up of information in a single worksheet, new workbooks and worksheets can be created automatically.

XLReporter gets real time data from FactoryStudio through the FactoryStudio OPC server.

Before you Begin

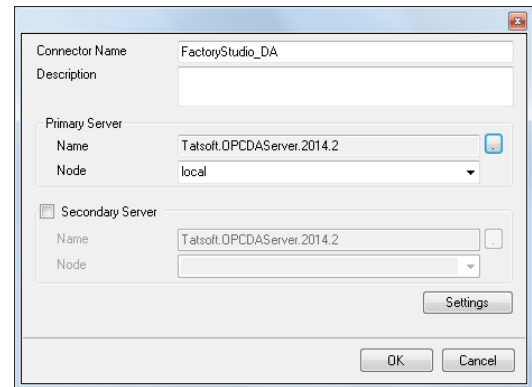
In order for **XLReporter** to communicate with OPC servers, the machine where **XLReporter** is installed must also have the OPC core components installed. The OPC core components are provided in the tools folder of the **XLReporter** install CD or from www.OPCFoundation.org.

If **XLReporter** is installed on a PC that is remote to the OPC DA server then a number of settings need to be configured on both the server and client machines. This includes having matching Windows user accounts (with matching passwords) on both machines and enabling DCOM on the machine where the server is installed.

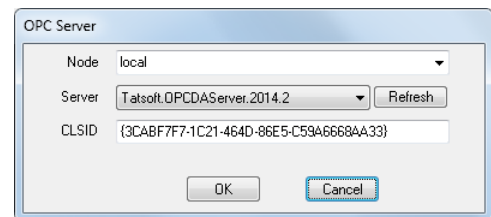
For a detailed explanation of the requirements for remote access, please read the OPC Training Institute document *OPC_and_DCOM_5_things_you_need_to_know* that is provided in the Tools folder of the **XLReporter** install CD.

Creating a Real Time Data Connector

To connect **XLReporter** to FactoryStudio for real time data, you will need to create a **Connector**. To do this, open **XLReporter's Project Explorer**, and open **Connectors** from the **Data** tab. In **Connectors**, select **Add**. Select **Tatsoft, FactoryStudio Real-time Values**.



Connectors for FactoryStudio require a **Primary Server**. Click the browse pushbutton (...) to select the server.



If FactoryStudio is on a remote machine, the **Node** must be specified. The **Node** can be selected from the drop down list or manually entered as a machine name or IP address. Otherwise, set the **Node** to *local* and click **Refresh**.

From the Server drop-down list select the *Tatsoft* server.

Verifying the Data Connector

To verify that the **Data Connector** is functional, open **XLReporter's Project Explorer**. From the **Tools** tab, start the **System Check** application and select the **Connector** tab.

Select **Add**, choose your **FactoryStudio Connector** from the dropdown list, and click the pushbutton ([...]) next to **Items** to open the **Tag Browser** window.

Select a tag and verify that they update with the current value, using **Start** in the **System Check** window.

Historical Data

With process data stored in a database, the variety of reports that can be produced by **XLReporter** increases many fold.

In addition to raw values, informative metrics such as run times and statistics are obtained by simply selecting the tags and time frame of interest. e.g. hourly average, maximum and minimum for each hour of the day.

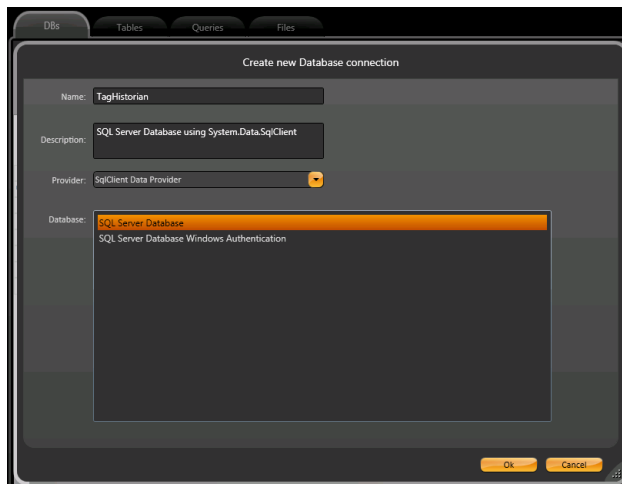
XLReporter performs raw calculations and time weighted calculations. The time weighted calculations would be used when the data is not logged periodically e.g. logging on change.

Setting up Data Logging

FactoryStudio logs historical data by defining the **TagHistorian** and a **Historian Table** to log. By default the **TagHistorian** dataset is configured to log to an internal server. In order for third party applications to access historical data, the **TagHistorian** dataset must be configured to store data to a database like Microsoft SQL Server or MySQL.

To make this change, from the FactoryStudio menu, open the project. From the menu select **Edit, Datasets**.

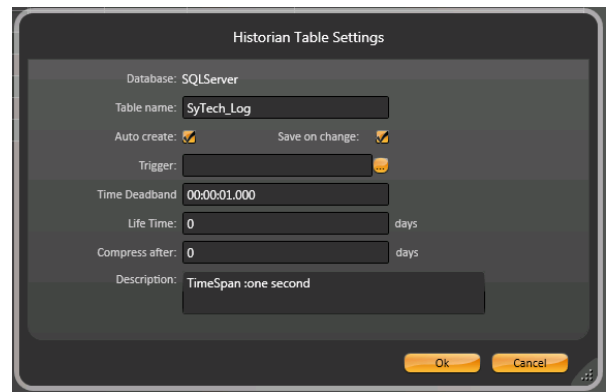
Rename the existing **TagHistorian** dataset. Then, on the **DBs** tab select **Create new....** When defining the new database connection, set the **Name** to *TagHistorian*.



Define Tags to Log

From the menu select **Edit, Tags**. Under the **Objects** tab, specify each tag you wish to log.

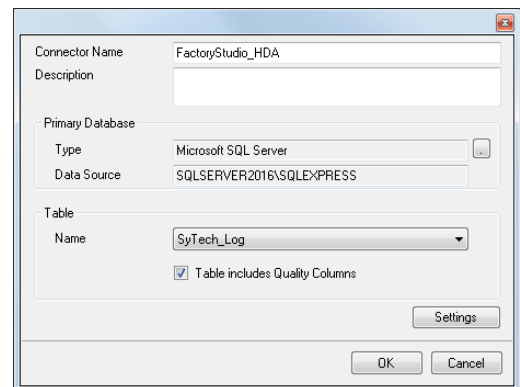
On the **Historian** tab, click **New** to define a **Historian Table** to log. The **Life Time** setting controls how much data is preserved. It can be set to 0 to preserve every record.



Creating a Historical Data Connector

To connect **XLReporter** to a FactoryStudio database, you will need to create a **Connector**. To do this, open **XLReporter's Project Explorer**, and open **Connectors** from the **Data** tab. In **Connectors**, select **Add**.

Select **Tatsoft, FactoryStudio Historical Values**.



Under **Primary Database** connect to the database you specified for the **TagHistorian** dataset. Once connected, in the **Table** section, select the **Table name** as defined in the **Historian Table** settings in FactoryStudio.

By default, the historian logs a value and quality for every tag selected. If you want **XLReporter** to consider quality when retrieving values, check **Table includes Quality Columns**.

Verifying the Historical Data Connector

Create a **Connector Group** to verify that data can be retrieved from the connector. **Connector Groups** are designed in **Project Explorer, Tools, Connector Groups**. Select your FactoryStudio historical connector and then select **Add**. Select the **Type** and click **OK**.

On the **Columns** tab of the group, select the tag **Name** and **Calculation** for each tag in the group.

On the **Time Period** tab, select the **Start Time**, **End Time** and **Interval** for the group. By default this is set to one hour intervals over the current day.

On the **Filters** tab, select tags by which to filter the results returned by the group. The **Criteria** conditions specified are combined with an OR relationship horizontally, and an AND relationship vertically.

The **Preview** pushbutton at the upper-left of the history group display can be pressed to preview the result of the current configuration.

Date	FLOW01	FLOW02	FLOW03	FLOW04
10/1/2013	71.2474484761556	64.4929216066596	32.4819311432082	65.688044611613
10/1/2013 1:00:00 AM	66.253656657951	53.1530425389608	34.9591117477417	60.1344185511271
10/1/2013 2:00:00 AM	78.7583703368968	66.8680634486596	33.7002785682678	59.7737679799398
10/1/2013 3:00:00 AM	71.6822314666748	54.3723221460978	31.9870604516076	64.7280777893066
10/1/2013 4:00:00 AM	66.194588028737	57.8011047554016	35.0655181084765	73.272684733073
10/1/2013 5:00:00 AM	78.0965364278158	75.86154464528402	37.538506884257	82.4242586771647
10/1/2013 6:00:00 AM	72.5651168823242	61.0702749252319	46.949959689334	88.977421315511
10/1/2013 7:00:00 AM	76.1162572224935	63.2840409914653	62.1044570287069	90.6483974456787
10/1/2013 8:00:00 AM	60.947635524782	77.509205754598	61.897953414917	86.8526187896728
10/1/2013 9:00:00 AM	77.3452765146891	50.0590043703715	62.6666134516398	78.9163791656494
10/1/2013 10:00:00 AM	78.5410724639893	69.888274761963	67.167688508728	69.612035363873
10/1/2013 11:00:00 AM	64.9920135498047	61.0962741938273	68.3760368118286	62.1896630142212
10/1/2013 12:00:00 PM	66.6623261769613	59.0080049832662	71.7531196594238	59.242639541626
10/1/2013 1:00:00 PM	77.9669768015544	60.4404863357544	76.0119204203288	61.799915787687
10/1/2013 2:00:00 PM	66.6261160532633	46.4779631932577	76.7051423390706	68.9683601379395
10/1/2013 3:00:00 PM	59.6842877705882	56.9765511830648	65.9398724238078	78.2438307444255

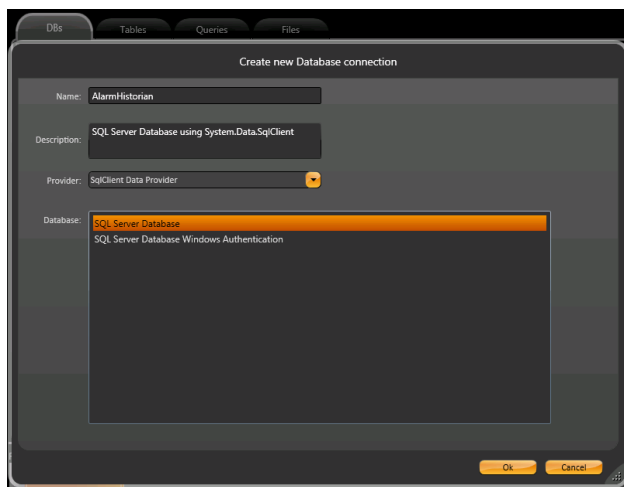
Preview

Alarm Data

FactoryStudio logs Alarm data by defining the **AlarmHistorian** dataset. Just like with historical data, by default, alarm data is logged to an internal server. In order to make alarm data accessible to third party applications, the AlarmHistorian dataset must be redefined to log to a database such as Microsoft SQL server or MySQL.

To make this change, from the FactoryStudio menu, open the project. From the menu select **Edit, Datasets**.

Rename the existing **AlarmHistorian** dataset. Then, on the **DBs** tab, select **Create new...**. When defining the new database connection, set the **Name** to *AlarmHistorian*.

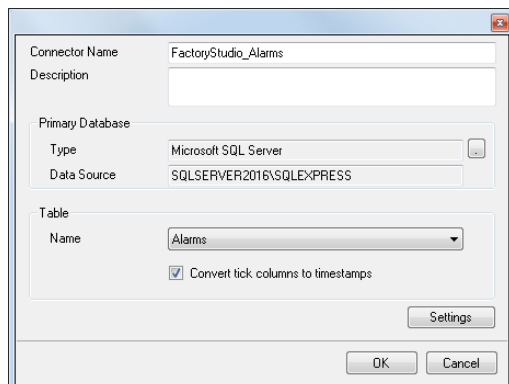


Alarms can then be configured by selecting **Edit, Alarms**.

Creating an Alarm Data Connector

To connect **XLReporter** to a FactoryStudio database, you will first need to create a **Connector**. To do this, open **XLReporter's Project Explorer**, and open **Connectors** from the **Data** tab. In **Connectors**, select **Add**.

Select **Tatsoft, FactoryStudio Alarms**.



Under **Primary Database** connect to the database you specified for the **AlarmHistorian** dataset. Once connected, in the **Table** section, select *Alarms*. This table was created when you configured the **AlarmHistorian** dataset.

By default, the timestamp columns logged for every alarm are logged as ticks (100-nanosecond intervals since January 1st, 0001 at midnight). By checking **Convert tick columns to timestamps**, the timestamp columns returned by XLReporter are shown as timestamps in the locale format.

Verifying the Alarm Data Connector

Create a **Connector Group** to verify that data can be retrieved from the connector. **Connector Groups** are designed in **Project Explorer, Tools, Connector Groups**. Select your FactoryStudio Alarm connector and then select **Add**. Select the **Type** and click **OK**.

On the **Columns** tab of the group, select the Columns from the Alarms table you wish to retrieve in the group.

On the **Time Period** tab, select the **Start Time** and **End Time** for the group. By default this is set to the first 60 alarms over the current day.

On the **Filters** tab, specify additional filtering to limit the type or amount of alarms returned.

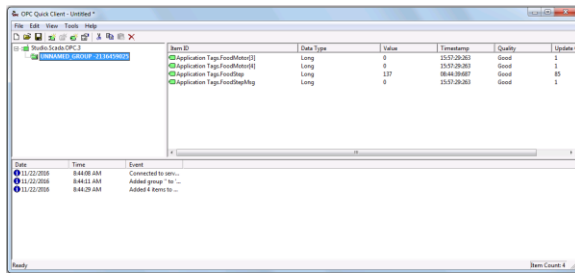
The **Preview** pushbutton at the upper-left of the history group display can be pressed to preview the result of the current configuration.

Troubleshooting - Real Time Data

If you are experiencing issues connecting to or retrieving data from Tatsoft's FactoryStudio with **XLReporter**, a generic OPC test client is provided to test the OPC Server.

This client is available from the Tools folder of the **XLReporter** install CD and can be downloaded from www.SyTech.com.

To open, double-click **SampleClientDA.exe**. This opens the **OPC Quick Client** window.



OPC Quick Client

To connect to an OPC server, select **Edit, New Server Connection** to open the **Server Properties** window. Select the Tatsoft OPC server and click **OK**.

Once the connection is made, select **Edit, New Group**. Specify **Name** and click **OK**.

Click on the group name created, and select **Edit, New Item**. This opens the **Add Items** window. Browse for tags and double click any to select. Once tag selection is complete click **OK** to return to the **OPC Quick Client** window.

All of the selected tags appear along with their real time values, type, quality, and timestamp.

If at any point you experience an issue with this client, it is an indication that there is something wrong with the FactoryStudio OPC server, since now two OPC clients have demonstrated issues.

At this point, contact Tatsoft technical support to troubleshoot and correct these issues.

Troubleshooting History and Alarm Data

If you are experiencing issues connecting to Tatsoft FactoryStudio history or alarm data or retrieving data with **XLReporter**, you can use **SQL Server Management Studio** to validate the setup. This can be installed as part of Microsoft SQL Server.

To open, from the **Microsoft SQL Server** program group, select **SQL Server Management Studio**. This opens the Login window.

Connect to the SQL Server instance where Factory Studio is logging to. Once connected, locate the database, right-click and select **New Query**.

To see the query submitted from the history group, open the connector group and click **Preview**. If an error has occurred, the query will be displayed.

To copy the query, click the message to open a second window containing the query. On the keyboard, press **CTRL + C** to copy the query onto the clipboard. Then use **CTRL + V** to paste the query into the **SQL Server Management Studio** window.

Once the query is entered, click **Execute** to execute the query. If successful, the results appear beneath the query. Otherwise, an error message appears indicating what went wrong.

If the issue cannot be resolved based on the error message, contact Tatsoft technical support.