GE Digital Connectors

iFIX Real-time values (OPC)

This connector is used to get real time values from iFIX via the iFIX OPC server. This can be used to retrieve data from iFIX both locally on an iFIX node or remotely.

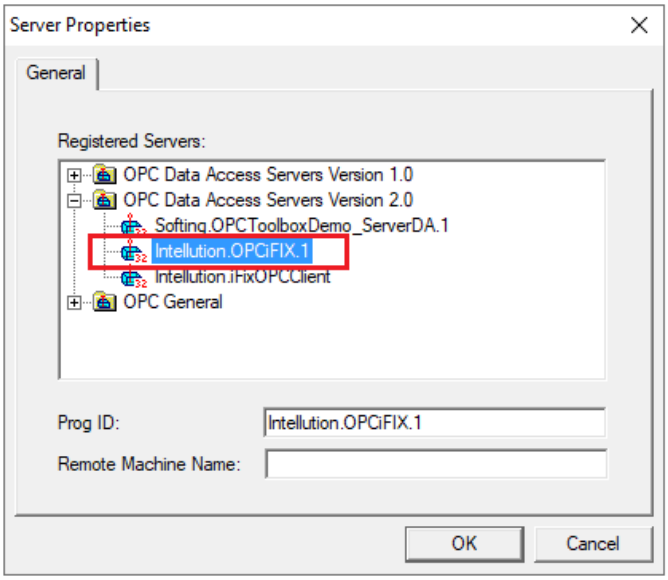
Prerequisites

Verify Communication

Communication between the OPC server and an OPC client must be verified. If an OPC client is not provided with the server, **XLReporter** provides an independent OPC client to verify connectivity and data retrieval from any OPC DA server. This client is found on **XLReporter's** product CD under **Tools, OPC, OPC_DA**. It can also be downloaded from **www.SmartSights.com**.

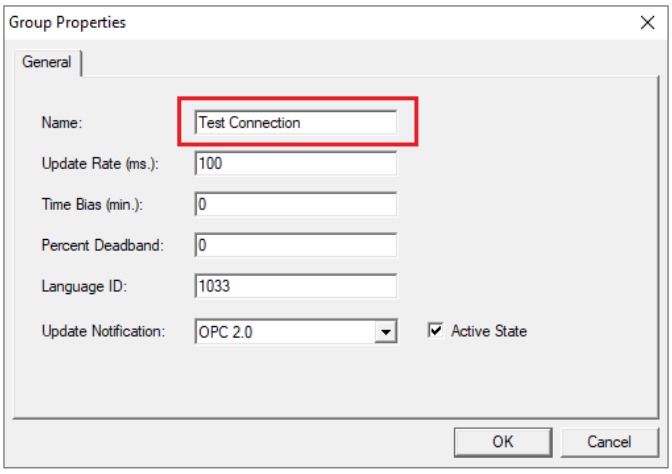
To run, double-click **SampleClientDA.exe**.

To connect to an OPC server, select **Edit**, **New Server Connection** to open the **Server Properties window**.



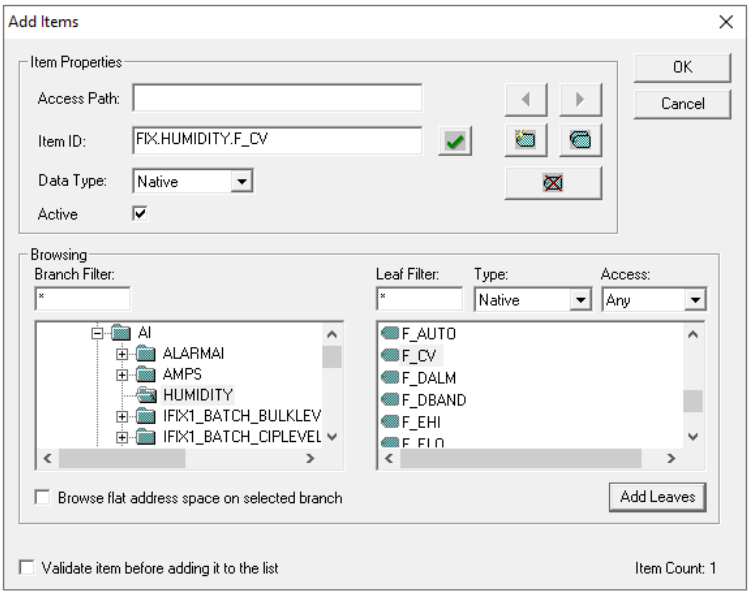
Expand the **OPC Data Access Servers Version 2.0**, select *Intellution.OPCiFIX.1* and click **OK**.

From the **Edit** menu select **New Group**.

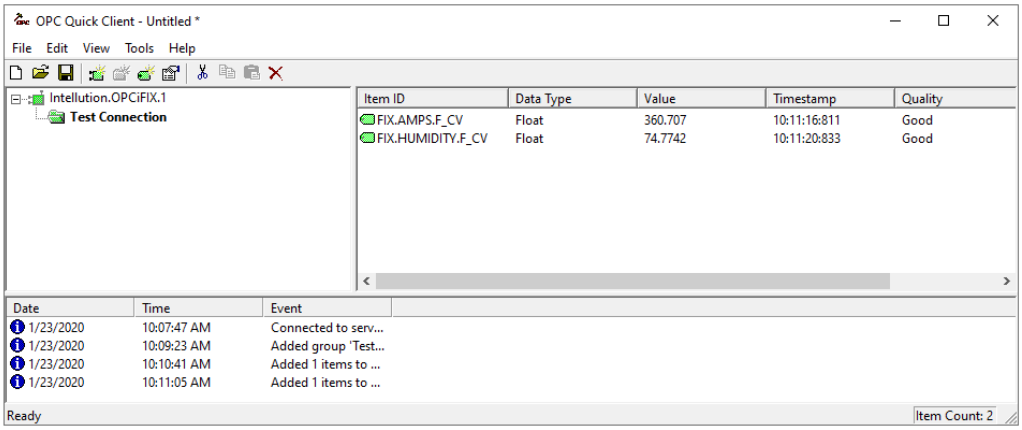


Specify **Name** and click **OK**.

Click on the group name created, and select **Edit**, **New Item**.



This opens the **Add Items** window. In the browsing section, drill into the tree and select **Leaf** items on the right. To select a leaf, highlight and click the **Add Leaves** button. Click **OK** when selection is complete.



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, contact GE Digital technical support to troubleshoot and correct these issues.

Remote Communication

If XLReporter is not installed on the machine where iFIX is installed, the workstation must also have the OPC core components installed. To determine if the core components are installed verify the following file exists:

- C:\Windows\SysWow64\OPCEnum.exe (64-bit OS)
- C:\Windows\system32\OPCEnum.exe (32-bit OS)

If the components are not installed then they are provided in the XLReporter installation folder under *_repairtools\OPC*. Alternatively, these can be downloaded from www.opcfoundation.org.

Server Settings

In order to connect to iFIX remotely both the machine where the server is running and the machine where the client is running must have matching Windows user accounts and the client must be logged in with a matching account.

In addition, on the machine with iFIX, certain DCOM settings must be enabled. For details on what DCOM settings to enable, see OPC and DCOM: 5 Things You Need to Know.

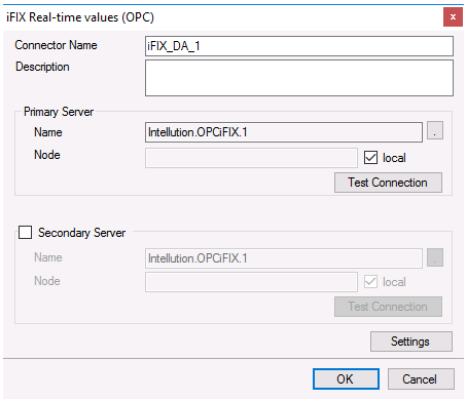
Windows Firewall

If the Windows Firewall is enabled on the machine where iFIX is running TCP Port 135 must be opened in order for remote clients to connect.

Connector

To configure the connector to **iFIX,** from the **Project Explorer** select **Data**, **Connectors**.

- Click **Add**
- Select **GE Digital, iFIX Real-time values (OPC)**
- Click **OK**



Primary Server

These settings define the **Name** and **Node** of the OPC DA server. Typically, the **Name** is defaulted correctly. If the iFIX server is on the local machine, leave **local** checked, otherwise uncheck and specify either the name or IP address of the machine where iFIX is running.

Use the **Test Connection** button to verify a connection to the server.

Secondary Server

These settings define the (optional) secondary iFIX to connect to if a connection to the **Primary Server** fails.

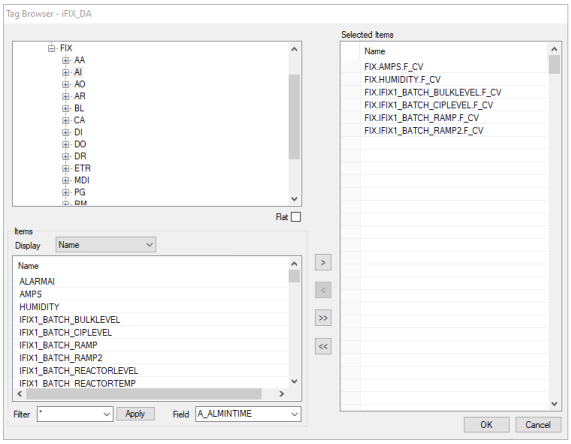
Settings

For information on the specific settings, see the **DATA CONNECTIVITY, OPC** document.

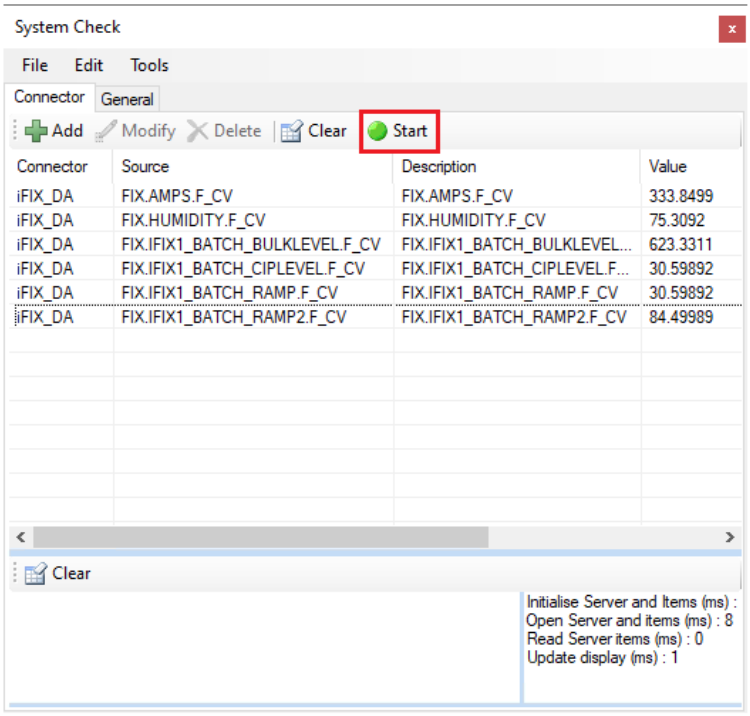
Verify Data Communication

To verify communication, open the **Project Explorer** and select the **Tools** tab. Launch the **System Check** application.

- Click **Add**
- Choose the *iFIX Real-time values (OPC)* connector from the dropdown list.
- Click the pushbutton ([…]) next to **Items** to open the Tag Browser window.



- Select on or more tags, click **OK**

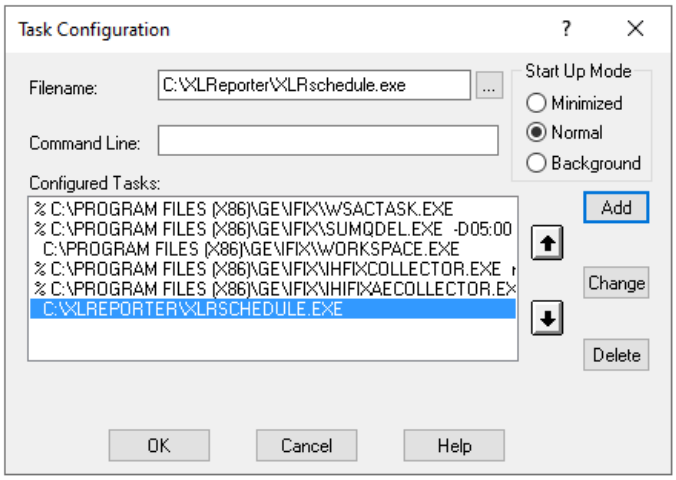


- Click **Start** to verify the communication

Scheduler Startup

The **XLReporter Scheduler** is used to process reports automatically in the background. The scheduler can be configured to start from an iFIX task so it starts when the HMI is started.

To configure, open the **System Configuration (SCU)** from the **iFIX** program group. Select **Configure, Tasks**.



- For **Filename** browse and select **XLRschedule.exe** from the **XLReporter** installation folder (*C:\XLReporter* by default).
- Set **Start Up Mode** to *Normal*.
- Click **Add**.
- Use the down arrow to move this to the bottom of the **Configured Tasks** list.
- Click **OK**.

Save and close the SCU. The next time iFIX is started, **XLReporter's Scheduler** will start with it.

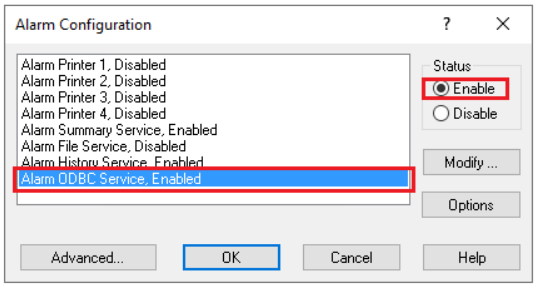
iFIX Alarms

This connector is used to get alarms from iFIX when they are logged to a relational database.

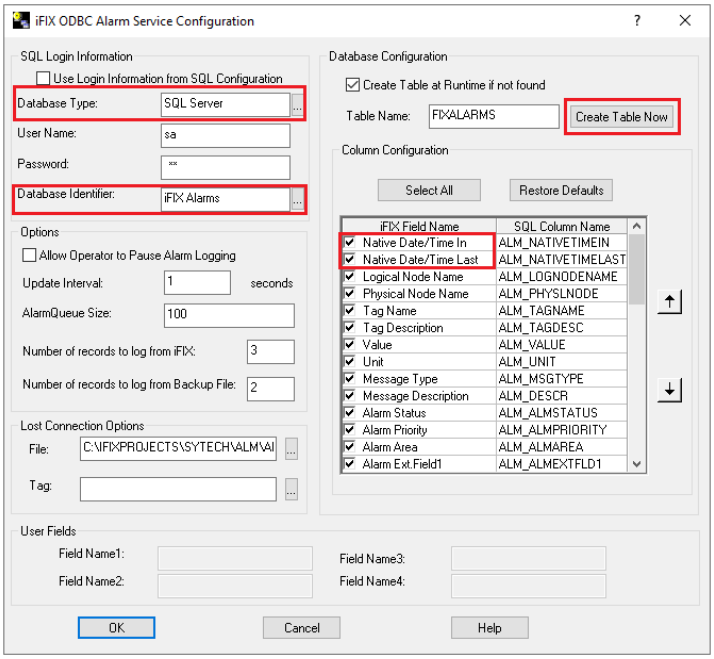
Set up Alarm Logs

To set up iFIX alarm logging to a database, open **System Configuration**, from the **iFIX** program group.

Select **Configure, Alarms** to open the **Alarm Configuration** window.



- Select **Alarm ODBC Service.**
- Set **Status** to **Enable**.
- Click **Modify** to open **Alarm ODBC Service Configuration**.
- Click **Configure** to view and edit the settings.

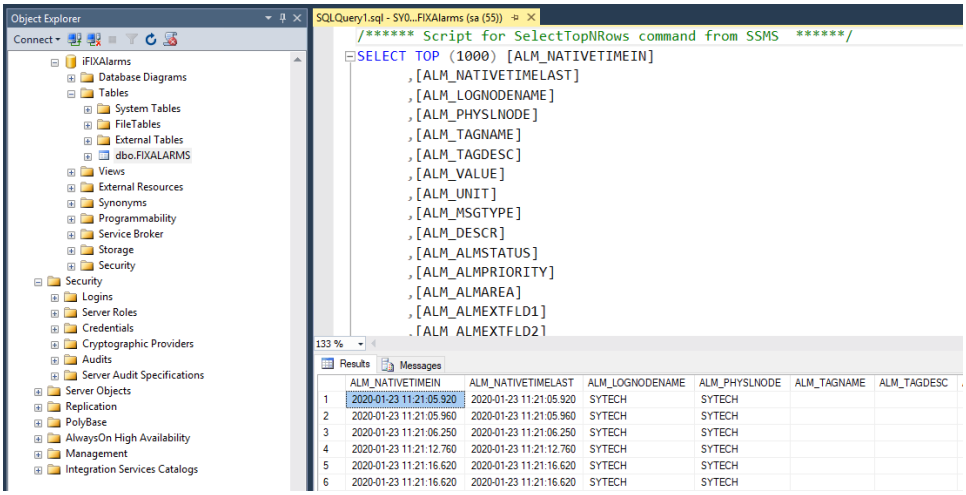


- Select the **Database Type** and the **Database Identifier** (DSN)
- Click **Create Table Now.**
- Specify the columns to configure. Be sure to select *Native Date/Time In* and *Native Date/Time Last* in **Column Configuration.**
- Click **OK** to save the configuration.

Prerequisites

Verify Database

Open **Microsoft SQL Server Management Studio** and connect to the SQL Server or SQL Server Express instance set up for the iFIX Alarm Logs.



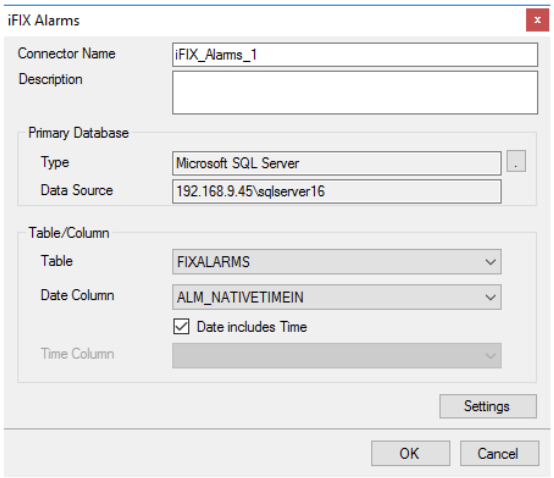
Expand **Database,** the database configured for the alarms and **Tables**. Select the alarm table, right-click and choose **Select Top 1000 Rows**.

If no data is returned contact GE Digital technical support and correct these issues.

Connector

To configure the connector to **iFIX,** from the **Project Explorer** select **Data**, **Connectors**.

- Click **Add**
- Select **GE Digital, iFIX Alarms.**
- Click **OK**



Primary Database

This setting defines the SQL Server connection where the iFIX Alarms are configured to log to. Use the browse button […] to define the database connection.

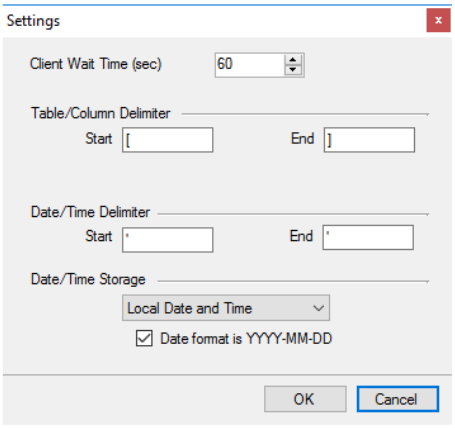
Table/Column

Once the **Primary Database** is configured, set **Table** to the table where the alarms are being logged. This should match the **Database Identifier** configured in iFIX.

Set the **Date Column** to *ALM_NATIVETIMEIN* or *ALM_NATIVETIMELAST* and check **Date includes Time**.

Settings

The **Settings** button opens the **Settings** dialog that defines characteristics of the database that are used to retrieve data.



Typically, these settings are defaulted correctly for the **Primary Server**.

If queries timeout, increase the **Client Wait Time**.

The delimiter and timestamp settings are typically filled in automatically for the database and can be modified for other databases.

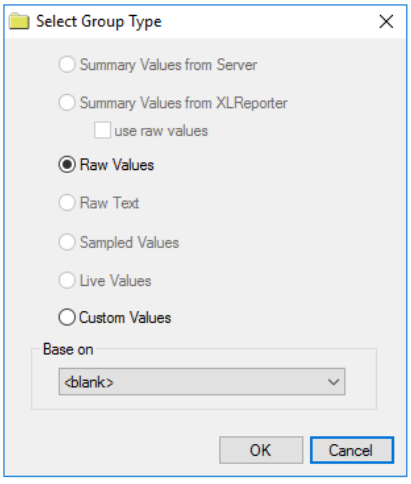
The **Date/Time Storage** settings define how timestamps are stored in the database. Using this setting the timestamps are manipulated when data is retrieved so that local timestamps are submitted in and returned.

Many databases require the Date format to be **YYYY-MM-DD** so that no interpretation needs to occur based on the Region settings of the Windows Operating System. It is recommended to always have this option checked.

Data Group

The following describes the historical data group settings specific to the **iFIX Alarms** connector.

Group Types



For **iFIX Alarms** the following group types are available:

Raw Values

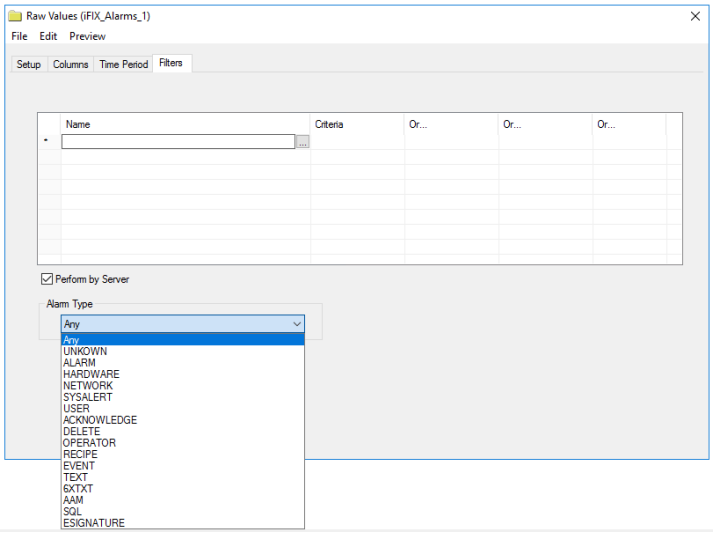
This group retrieves every value logged to the alarms database between the start and end time specified.

Custom Values

This option opens the Database Group builder where a query can be configured to retrieve data from any table available in the database connected to by the connector.

Group Settings

Filters Tab



If the **Perform by Server** option is checked, any filter configured in this tab is put into the *WHERE* clause of the query sent to the database to retrieve data for the group. Otherwise, the configured filtering is performed by the reporting engine after the values are returned. It is recommended to leave this setting checked as the performance is much better.

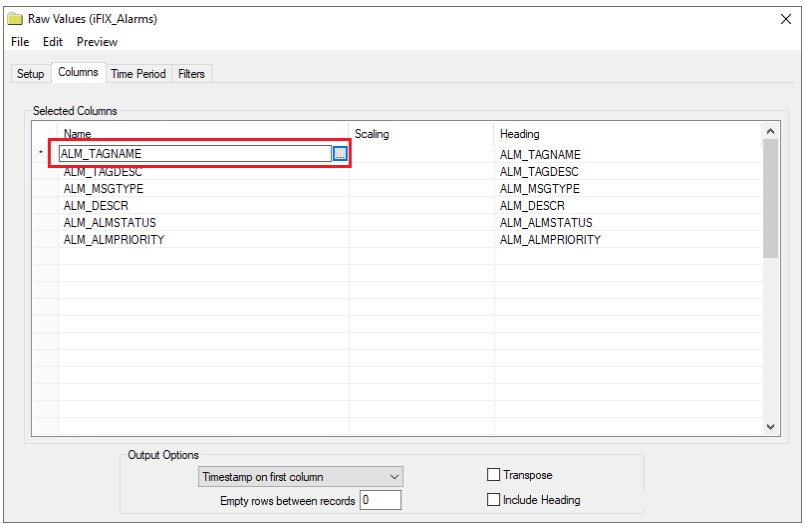
The **Alarm Type** setting is used to retrieve either a specific type of alarm or *Any* to retrieve every time of alarm. For more information on alarm types, see the iFIX documentation.

Verify Data Communication

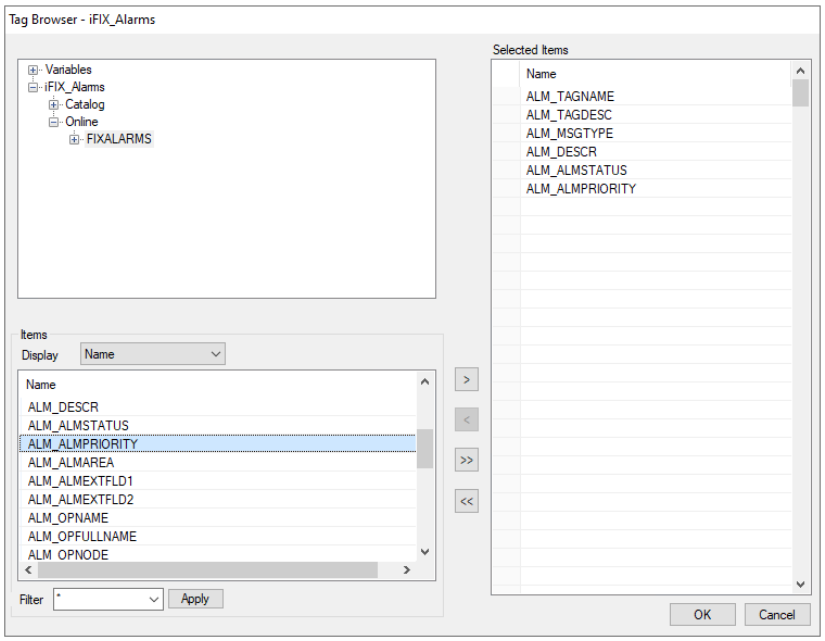
To verify communication, open the **Project Explorer** and select the **Tools** tab. Open **Connector Groups**. Select the *GE iFIX Alarms* connector and then select **Add**.

- Set the **Group Type** to *Raw Values* and click **OK**.

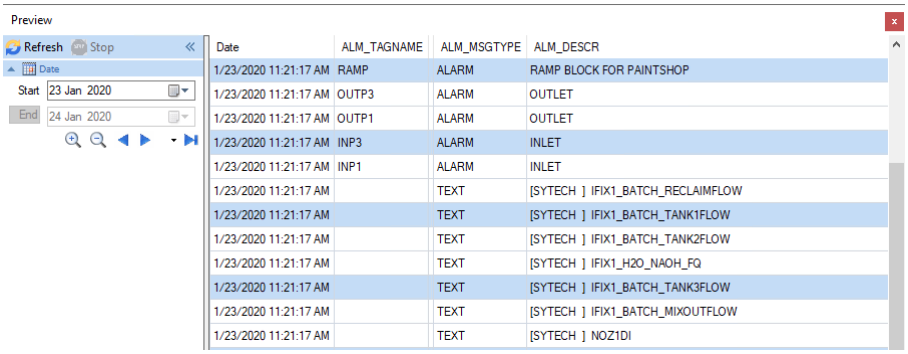
Under the Columns tab:



- Select the first row under the **Name** column and click the browse pushbutton ([…]).



- In the Tag Browser expand **Online, FIXALARMS** and add **Items** from the lower left.
- Click **OK** to add these to the group.
- To retrieve data, select **Preview**.

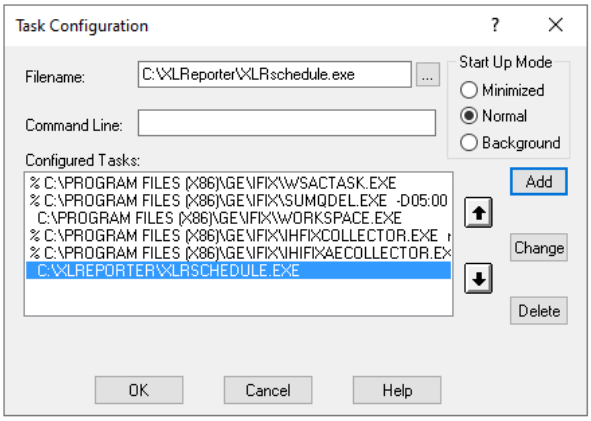


In the **Preview** window, use the date picker to select a date and time where alarms are recorded in the database. Click **Refresh** to view the data. The first 60 alarms starting at the date and time specified should be displayed.

Scheduler Startup

The **XLReporter Scheduler** is used to process reports automatically in the background. The scheduler can be configured to start from an iFIX task so it starts when the HMI is started.

To configure, open the **System Configuration (SCU)** from the **iFIX** program group. Select **Configure, Tasks**.



- For **Filename** browse and select **XLRschedule.exe** from the **XLReporter** installation folder (*C:\XLReporter* by default).
- Set **Start Up Mode** to *Normal*.
- Click **Add**.
- Use the down arrow to move this to the bottom of the **Configured Tasks** list.
- Click **OK**.

Save and close the SCU. The next time iFIX is started, **XLReporter's Scheduler** will start with it.

Historian

This connector is used to get historical data from the GE Historian (formerly Proficy Historian) using the Historian OLEDB Provider. This can be configured both locally on the Historian machine and from a remote machine.

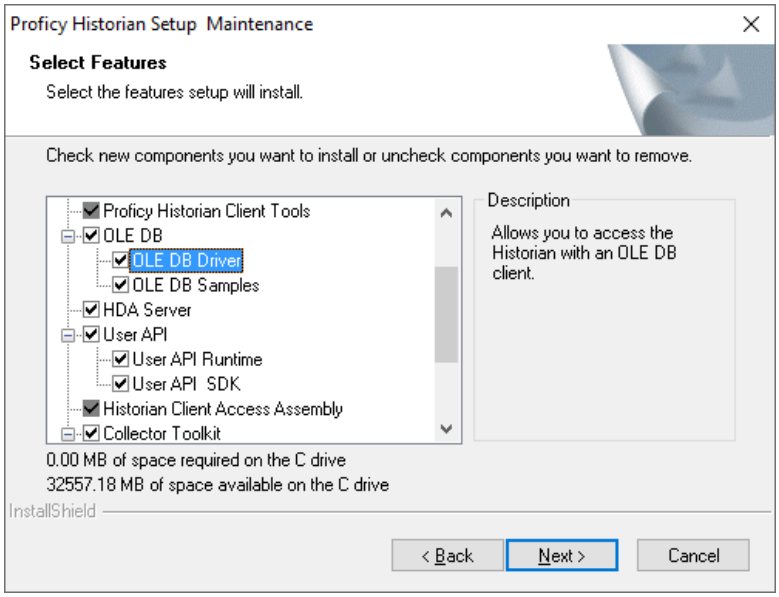
Set up Historian

Client Tools

On the machine where **XLReporter** is installed, the Historian Client Tools must also be installed. These are available on the Historian installation media.

From the **Historian Installation Program**, select **Install Client Tools**.

At minimum, the **OLE DB Driver** must be selected to install. Selecting this forces the **Historian Client Tools** to be selected as well.

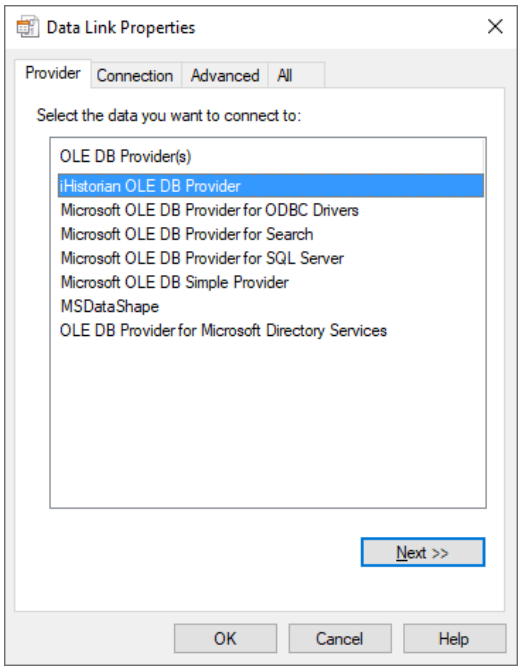


Prerequisites

Verify Driver

To verify the OLE DB Provider exists on the machine,

- On the Windows desktop, create a new text document.
- Rename the text document to *Test.udl.*
- Double click the file to open.

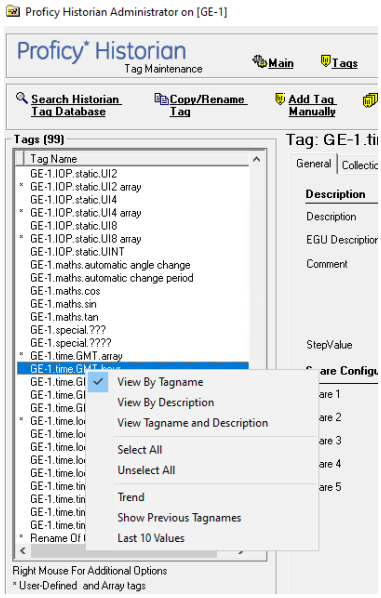


- On the **Provider** tab, verify that the *iHistorian OLE DB Provider* is listed.

Verify Data Storage

From the **GE Historian** program group, select **Historian Administrator**.

- At the top click the **Tags** link.
- Click **Search Historian Tag Database.**
- Leave the Search window blank and click **OK**. All the available tags are now listed.



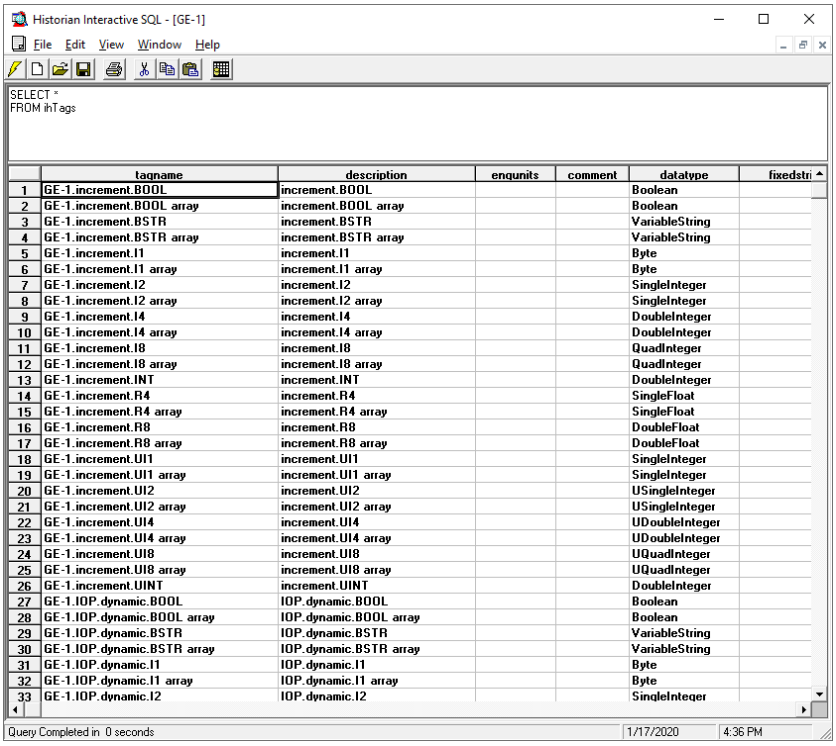
- Right click a tag in the list and choose **Last 10 Values.**

This displays the last 10 values logged to the historian for the selected tag.

Verify Data Retrieval

The **Historian Interactive SQL** application can be used to verify data retrieval. To open, from the GE Historian program group select Historian Interactive SQL.

- Connect to the historian.



	tagname	description	engunits	comment	datatype	fixedstri
1	GE-1.increment.BOOL	increment.BOOL			Boolean	
2	GE-1.increment.BOOL array	increment.BOOL array			Boolean	
3	GE-1.increment.BSTR	increment.BSTR			VariableString	
4	GE-1.increment.BSTR array	increment.BSTR array			VariableString	
5	GE-1.increment.I1	increment.I1			Byte	
6	GE-1.increment.I1 array	increment.I1 array			Byte	
7	GE-1.increment.I2	increment.I2			SingleInteger	
8	GE-1.increment.I2 array	increment.I2 array			SingleInteger	
9	GE-1.increment.I4	increment.I4			DoubleInteger	
10	GE-1.increment.I4 array	increment.I4 array			DoubleInteger	
11	GE-1.increment.I8	increment.I8			QuadInteger	
12	GE-1.increment.I8 array	increment.I8 array			QuadInteger	
13	GE-1.increment.INT	increment.INT			DoubleInteger	
14	GE-1.increment.R4	increment.R4			SingleFloat	
15	GE-1.increment.R4 array	increment.R4 array			SingleFloat	
16	GE-1.increment.R8	increment.R8			DoubleFloat	
17	GE-1.increment.R8 array	increment.R8 array			DoubleFloat	
18	GE-1.increment.UI1	increment.UI1			SingleInteger	
19	GE-1.increment.UI1 array	increment.UI1 array			SingleInteger	
20	GE-1.increment.UI2	increment.UI2			USingleInteger	
21	GE-1.increment.UI2 array	increment.UI2 array			USingleInteger	
22	GE-1.increment.UI4	increment.UI4			UDoubleInteger	
23	GE-1.increment.UI4 array	increment.UI4 array			UDoubleInteger	
24	GE-1.increment.UI8	increment.UI8			UQuadInteger	
25	GE-1.increment.UI8 array	increment.UI8 array			UQuadInteger	
26	GE-1.increment.UINT	increment.UINT			DoubleInteger	
27	GE-1.IOP.dynamic.BOOL	IOP.dynamic.BOOL			Boolean	
28	GE-1.IOP.dynamic.BOOL array	IOP.dynamic.BOOL array			Boolean	
29	GE-1.IOP.dynamic.BSTR	IOP.dynamic.BSTR			VariableString	
30	GE-1.IOP.dynamic.BSTR array	IOP.dynamic.BSTR array			VariableString	
31	GE-1.IOP.dynamic.I1	IOP.dynamic.I1			Byte	
32	GE-1.IOP.dynamic.I1 array	IOP.dynamic.I1 array			Byte	
33	GE-1.IOP.dynamic.I2	IOP.dynamic.I2			SingleInteger	

- Queries can be entered at the top of the window. Enter the following query:

  SELECT *FROM ihTags

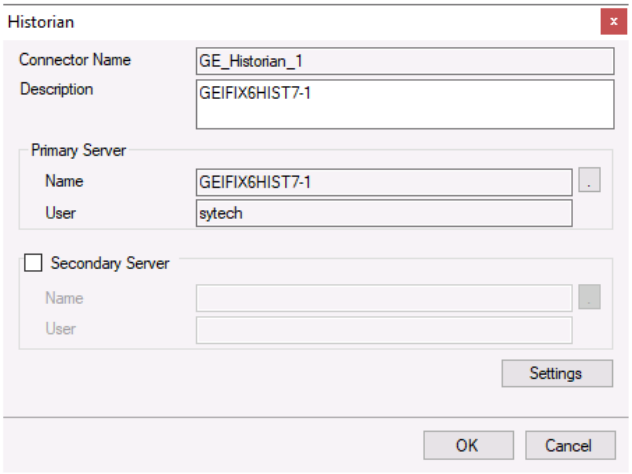
- Click the  button to execute the query

This should list all tags configured in the historian.

Connector

To configure the connector to **Historian,** from the **Project Explorer** select **Data**, **Connectors**.

- Click **Add**
- Select **GE Digital, Historian.**
- Click **OK**



Primary Server

This defines the connection to the GE Historian. The browse button […] is provided to define.

The **Server Name** can be the physical name of the machine where the historian runs, the IP address of the machine or left blank to use the default historian defined in the Historian Interactive SQL application.

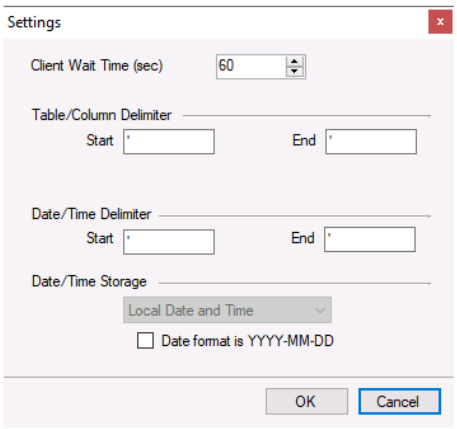
The **User Name** and **Password** settings are provided is required to connect to the GE Historian.

Secondary Server

These settings define the (optional) secondary GE Historian server to connect to if a connection to the **Primary Server** fails.

Settings

The **Settings** button opens the **Settings** dialog that defines characteristics of the database that are used to retrieve data.



Typically, these settings are defaulted correctly based on GE Historian.

If queries timeout, increase the **Client Wait Time**.

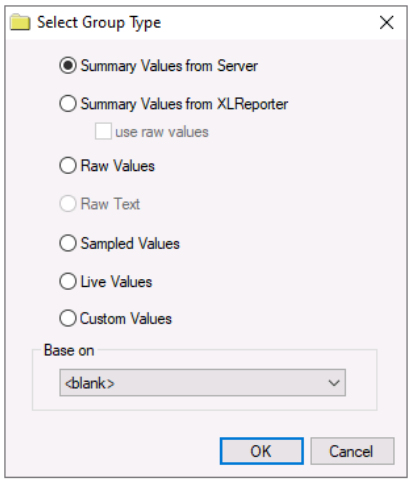
The delimiter and timestamp settings are typically filled in automatically for the database and can be modified for other databases.

Many databases require the Date format to be **YYYY-MM-DD** so that no interpretation needs to occur based on the Region settings of the Windows Operating System. It is recommended to always have this option checked.

Data Group

The following describes the historical data group settings specific to the **GE Historian** connector.

Group Types



For **GE Historian** the following group types are available:

Summary Values from Server

This group type retrieves summary calculations directly from the historian. For GE Historian, the following calculations are available:

- Average
- Maximum
- Time of Maximum
- Minimum
- Time of Minimum
- Count
- Total
- Standard Deviation
- Interpolated
- Raw Average
- Raw Standard Deviation
- Raw Total
- Time Good
- First Raw Value
- First Raw Time
- Last Raw Value
- Last Raw Time
- State Count
- State Time

Summary Values from XLReporter

This group type retrieves sampled values from the historian and performs calculations on those samples for reporting.

By default, summary values are calculated time weighted and values are propagated based on the last known value. However, to change this so that summary values are calculated strictly on the data returned check **use raw values**.

Raw Values

This group retrieves values logged to the historian between the start and end time specified.

Sampled Values

This group retrieves lab sample values from the historian between the start, end and interval specified.

Live Values

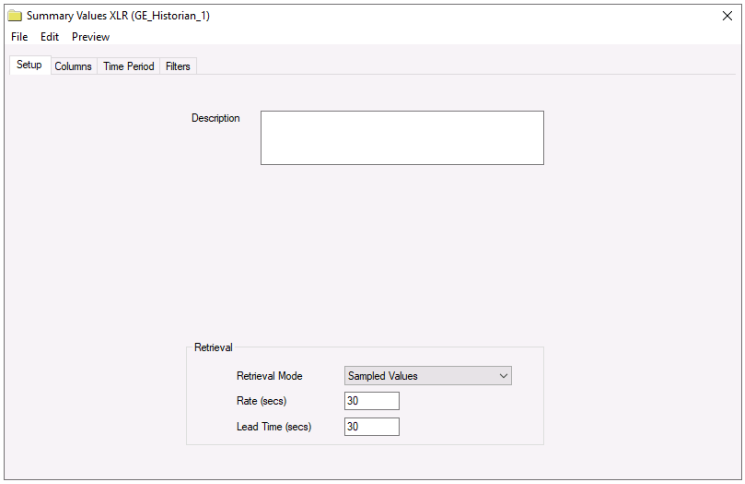
This group retrieves the last recorded values in the historian for every selected tag.

Custom Values

This option opens the Database Group builder where a query can be configured to retrieve data from any table available in the database connected to by the connector.

Group Settings

Setup Tab (Summary Values for XLReporter)

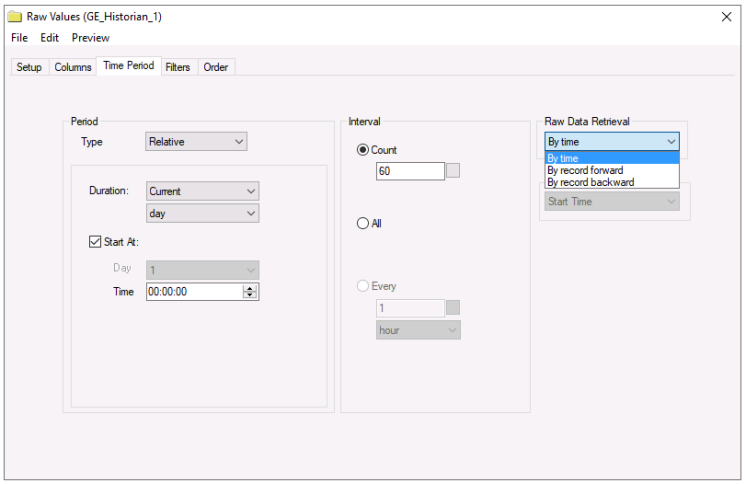


The **Retrieval** settings define how data is retrieved for the calculations selected for the group. The following settings are available:

- **Retrieval Mode**
  This setting defines how data is retrieved from the historian. For GE Historian *Sampled Values* and *Raw Values* are available.

  Sampled Values use the *Lab Sample* retrieval mode.
- **Rate**
  The interval (in seconds) that sampled values are retrieved from the historian.
- **Lead Time**
  The amount of time (in seconds) to retrieve data before the start time.

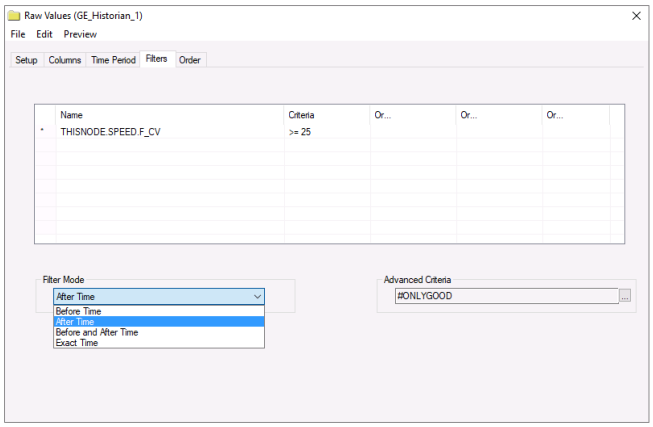
Time Period Tab (Raw Values)



For Raw Values, the **Raw Data Retrieval** defines the time period for the group. The following options are available:

- *By time*
  Using this option, raw data is retrieved between the **Start** and **End** configured.
- *By record forward*
  Using this option, raw data is retrieved from the **Start** going forward for the number of samples defined in the **Interval Count** setting. The **End** is ignored.
- *By record backward*
  Using this option, raw data is retrieved from the **Start** going backwards for the number of samples defined in the **Interval Count** setting. The **End** is ignored.

Filters Tab



All filtering is performed on the Historian server.

Filter Mode

The **Filter Mode** determines how values are interpolated when the filtering is applied.

- *Exact Time* means that data is retrieved for the exact times when the filter condition(s) are true.
- *Before Time* means that data is retrieved from the time of the last false filter condition(s) up until the time of the true condition for each filter.
- *After Time* means that data is retrieved from the time of the true filter condition(s) up until the time of the next false condition for each filter.
- *Before and After Time* means that data is retrieved from the time of the last false filter condition(s) up until the time of the next false condition for each filter.

  For more information, see the GE Historian documentation.

Advanced Criteria

Advanced Criteria provides specific, server-based criteria which can be applied to the data returned from Historian. For more information, see **criteriastring** in the GE Historian documentation.

Order By Tab (Raw Values)

For **Raw Values,** the **Order By** tab is provided to order by the *Timestamp* as well as any other selected column on the **Columns** tab.

Verify the Data Connector

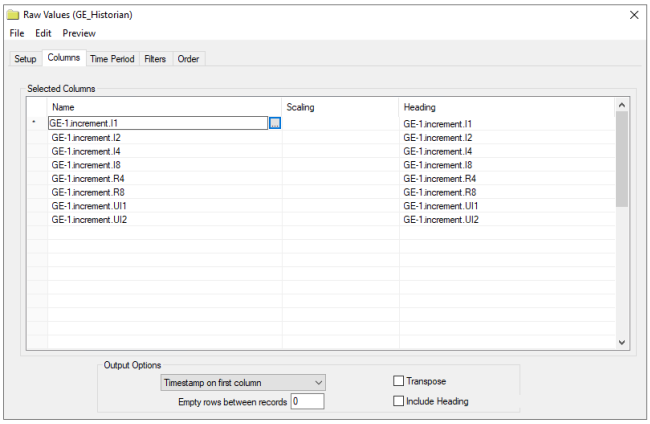
XLReporter retrieves data from the Data Connector using a History Group.

From the **Project Explorer** select, **Tools**, **Connector Groups**

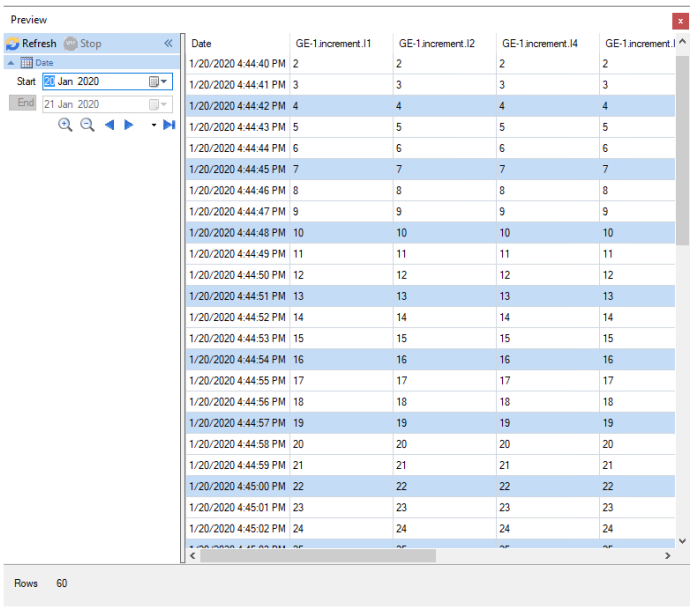
Select the GE Historian connector and then select Add.

- Set the Type Raw Values and click OK.

On the **Columns** tab of the group, select the tag Name(s).



Select **Preview**, pick a *Start* date and click **Refresh**.



Date	GE-1.increment.I1	GE-1.increment.I2	GE-1.increment.I4	GE-1.increment.I
1/20/2020 4:44:40 PM	2	2	2	2
1/20/2020 4:44:41 PM	3	3	3	3
1/20/2020 4:44:42 PM	4	4	4	4
1/20/2020 4:44:43 PM	5	5	5	5
1/20/2020 4:44:44 PM	6	6	6	6
1/20/2020 4:44:45 PM	7	7	7	7
1/20/2020 4:44:46 PM	8	8	8	8
1/20/2020 4:44:47 PM	9	9	9	9
1/20/2020 4:44:48 PM	10	10	10	10
1/20/2020 4:44:49 PM	11	11	11	11
1/20/2020 4:44:50 PM	12	12	12	12
1/20/2020 4:44:51 PM	13	13	13	13
1/20/2020 4:44:52 PM	14	14	14	14
1/20/2020 4:44:53 PM	15	15	15	15
1/20/2020 4:44:54 PM	16	16	16	16
1/20/2020 4:44:55 PM	17	17	17	17
1/20/2020 4:44:56 PM	18	18	18	18
1/20/2020 4:44:57 PM	19	19	19	19
1/20/2020 4:44:58 PM	20	20	20	20
1/20/2020 4:44:59 PM	21	21	21	21
1/20/2020 4:45:00 PM	22	22	22	22
1/20/2020 4:45:01 PM	23	23	23	23
1/20/2020 4:45:02 PM	24	24	24	24

Limitations

When retrieving data from the Historian, the request can time out if it takes too long to get the data. By default, the timeout setting is *60 seconds*. To change this setting, in the **Historian Administrator** click the **Data Stores** link at the top. Under the **Global Options** tab, in the **Data Queries** section, change **Maximum Query Time (seconds)**. Click **Update** when finished.

Calculated and Sampled Values

When retrieving calculated or sampled values from Historian there is a limit to the amount of values that can be returned. By default, this is *100,000*. To change this setting, in the **Historian Administrator** click the **Data Stores** link at the top. Under the **Global Options** tab, in the **Data Queries** section, change **Maximum Query Intervals**. Click **Update** when finished.

Note that this is a value count and not a row count. For example, to retrieve 1 second values for 2 tags, 172,800 values are retrieved (86,400 * 2) so just for this request; the default limit would have to be increased.

Historian Plus

This connector is used to get historical data from the GE Historian (formerly Proficy Historian) using the *ihUser* interface. This connector can only be configured locally on the Historian machine. There is no remote access.

This connector should be used when a large amount of data is required from the GE Historian. It is designed to retrieve large amounts of raw data without timing out.

This connector requires GE Historian 5.5 or above.

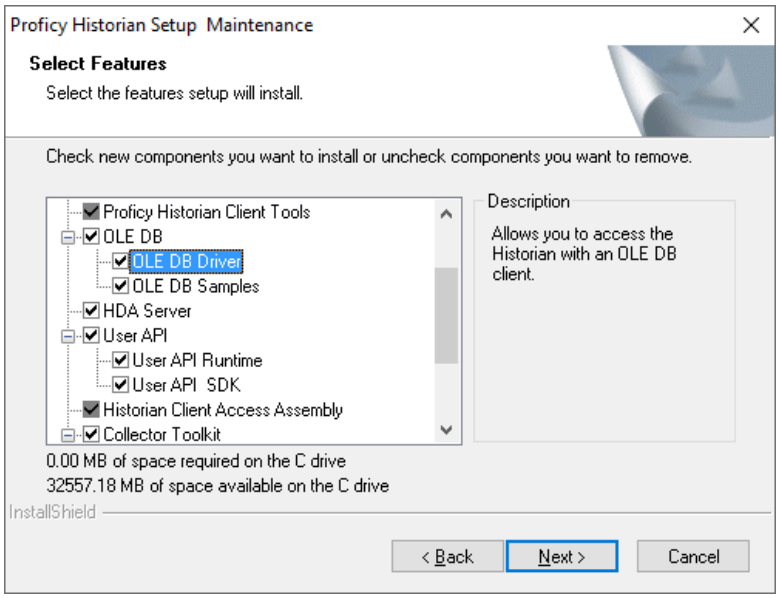
Set up Historian

Client Tools

On the machine where **XLReporter** is installed, the Historian Client Tools must also be installed. These are available on the Historian installation media.

From the **Historian Installation Program**, select **Install Client Tools**.

The **OLE DB Driver** must be selected to install. Selecting this forces the **Historian Client Tools** to be selected as well.

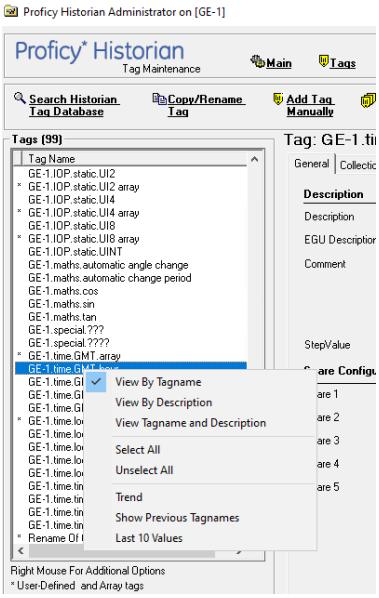


Prerequisites

Verify Data Storage

From the **GE Historian** program group, select **Historian Administrator**.

- At the top click the **Tags** link.
- Click **Search Historian Tag Database.**
- Leave the Search window blank and click **OK**. All the available tags are now listed.



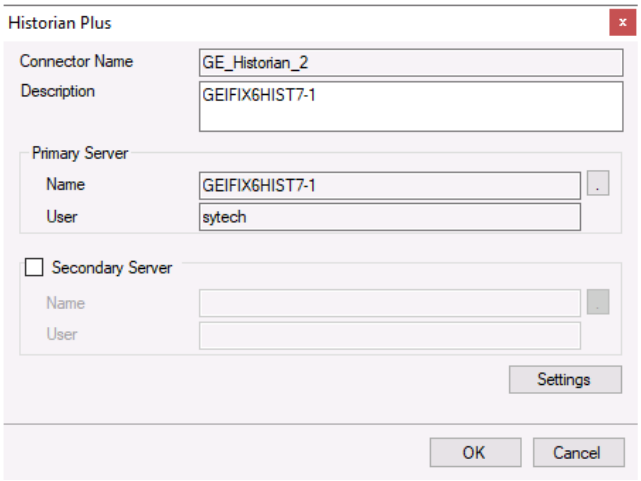
- Right click a tag in the list and choose **Last 10 Values.**

This displays the last 10 values logged to the historian for the selected tag.

Connector

To configure the connector to **Historian Plus,** from the **Project Explorer** select **Data**, **Connectors**.

- Click **Add**
- Select **GE Digital, Historian Plus.**
- Click **OK**



Primary Server

This defines the connection to the GE Historian. The browse button […] is provided to define.

The **Server Name** can be the physical name of the machine where the historian runs, the IP address of the machine or left blank to use the default historian defined in the Historian Interactive SQL application.

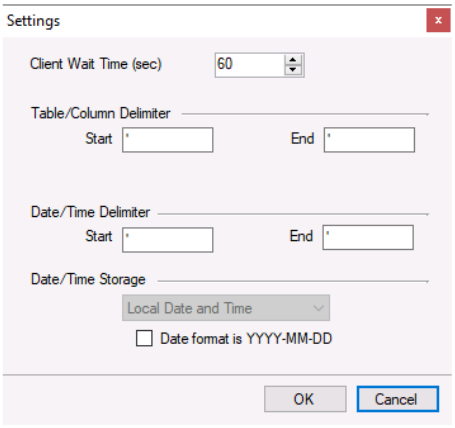
The **User Name** and **Password** settings are provided is required to connect to the GE Historian.

Secondary Server

These settings define the (optional) secondary GE Historian server to connect to if a connection to the **Primary Server** fails.

Settings

The **Settings** button opens the **Settings** dialog that defines characteristics of the database that are used to retrieve data.



Typically, these settings are defaulted correctly based on GE Historian.

If queries timeout, increase the **Client Wait Time**.

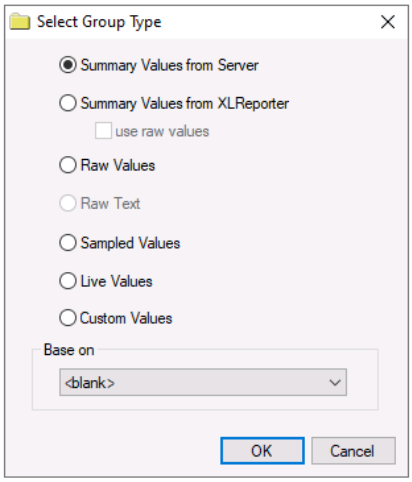
The delimiter and timestamp settings are typically filled in automatically for the database and can be modified for other databases.

Many databases require the Date format to be **YYYY-MM-DD** so that no interpretation needs to occur based on the Region settings of the Windows Operating System. It is recommended to always have this option checked.

Data Group

The following describes the historical data group settings specific to the **GE Historian** connector.

Group Types



For **GE Historian** the following group types are available:

Summary Values from Server

This group type retrieves summary calculations directly from the historian. For GE Historian, the following calculations are available:

- Average
- Maximum
- Minimum
- Count
- Total

- Standard Deviation
- Interpolated
- Raw Average
- Raw Standard Deviation
- Raw Total
- Time Good
- First Raw Value
- Last Raw Value
- State Count
- State Time

Summary Values from XLReporter

This group type retrieves sampled values from the historian and performs calculations on those samples for reporting.

By default, summary values are calculated time weighted and values are propagated based on the last known value. However, to change this so that summary values are calculated strictly on the data returned check **use raw values**.

Raw Values

This group retrieves values logged to the historian between the start and end time specified.

Sampled Values

This group retrieves lab sample values from the historian between the start, end and interval specified.

Live Values

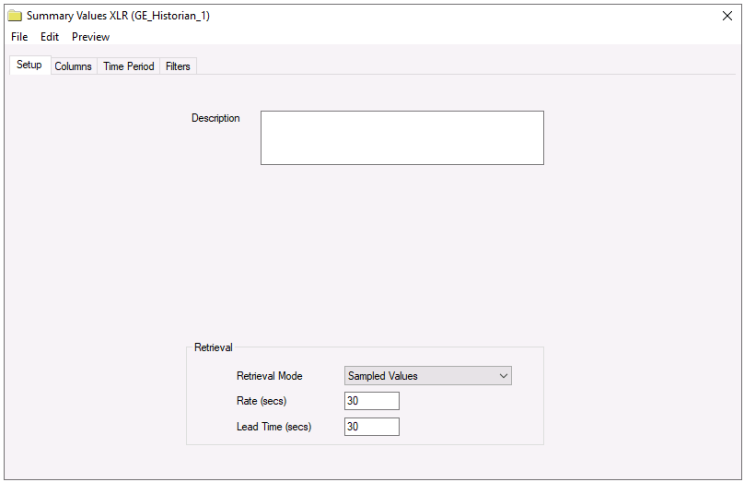
This group retrieves the last recorded values in the historian for every selected tag.

Custom Values

This option opens the Database Group builder where a query can be configured to retrieve data from any table available in the database connected to by the connector.

Group Settings

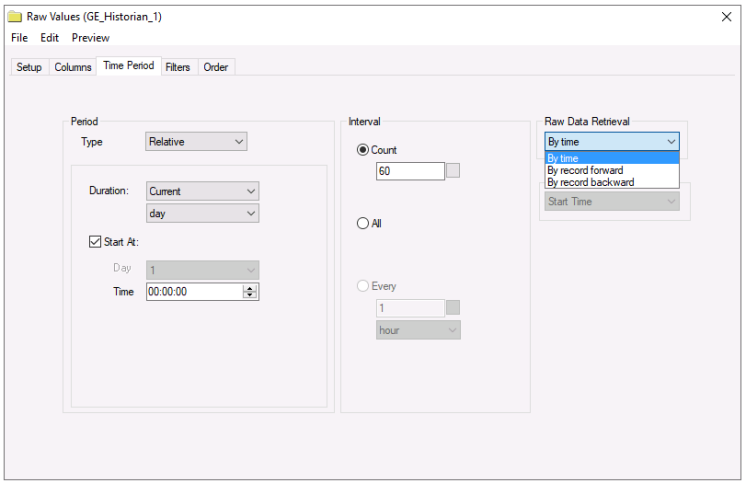
Setup Tab (Summary Values for XLReporter)



The **Retrieval** settings define how data is retrieved for the calculations selected for the group. The following settings are available:

- **Retrieval Mode**
  This setting defines how data is retrieved from the historian. For GE Historian *Sampled Values* and *Raw Values* are available.
  Sampled Values use the *Lab Sample* retrieval mode.
- **Rate**
  The interval (in seconds) that sampled values are retrieved from the historian.
- **Lead Time**
  The amount of time (in seconds) to retrieve data before the start time.

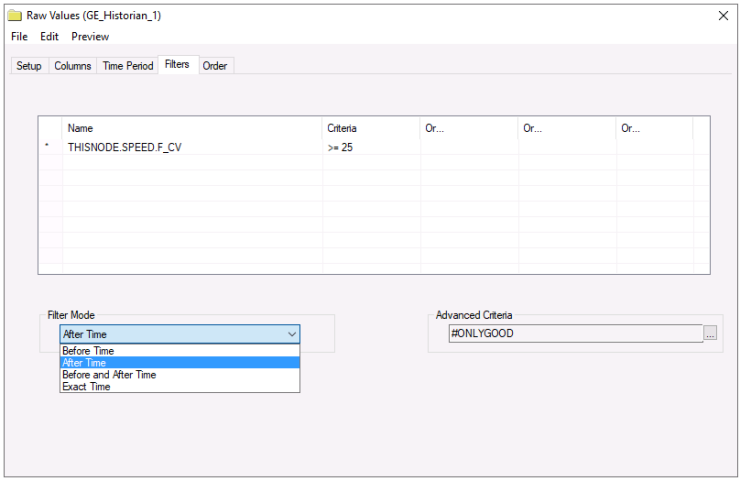
Time Period Tab (Raw Values)



For **Raw Values**, the **Raw Data Retrieval** defines the time period for the group. The following options are available:

- *By time*
  Using this option, raw data is retrieved between the **Start** and **End** configured.
- *By record forward*
  Using this option, raw data is retrieved from the **Start** going forward for the number of samples defined in the **Interval Count** setting. The **End** is ignored.
- *By record backward*
  Using this option, raw data is retrieved from the **Start** going backwards for the number of samples defined in the **Interval Count** setting. The **End** is ignored.

Filters Tab



All filtering is performed on the Historian server.

Verify the Data Connector

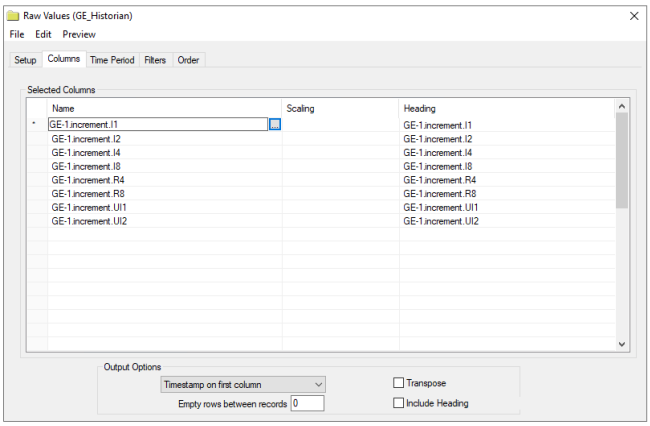
XLReporter retrieves data from the Data Connector using a History Group.

From the **Project Explorer** select, **Tools**, **Connector Groups**

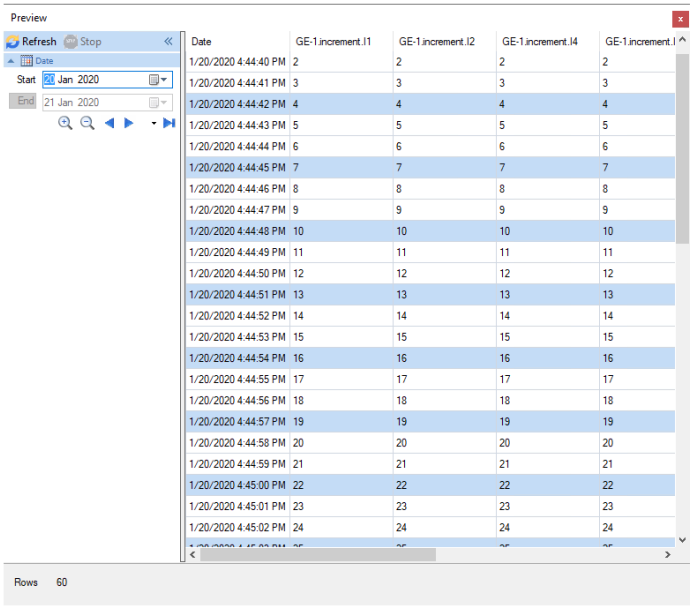
Select the GE Historian connector and then select Add.

- Set the Type Raw Values and click OK.

On the **Columns** tab of the group, select the tag Name(s).



Select **Preview**, pick a *Start* date and click **Refresh**.



Filter Mode

The **Filter Mode** determines how values are interpolated when the filtering is applied.

- *Exact Time* means that data is retrieved for the exact times when the filter condition(s) are true.
- *Before Time* means that data is retrieved from the time of the last false filter condition(s) up until the time of the true condition for each filter.
- *After Time* means that data is retrieved from the time of the true filter condition(s) up until the time of the next false condition for each filter.
- *Before and After Time* means that data is retrieved from the time of the last false filter condition(s) up until the time of the next false condition for each filter.

For more information, see the GE Historian documentation.

Advanced Criteria

Advanced Criteria provides specific, server-based criteria which can be applied to the data returned from Historian. For more information, see **criteriastring** in the GE Historian documentation.

Historian Alarms

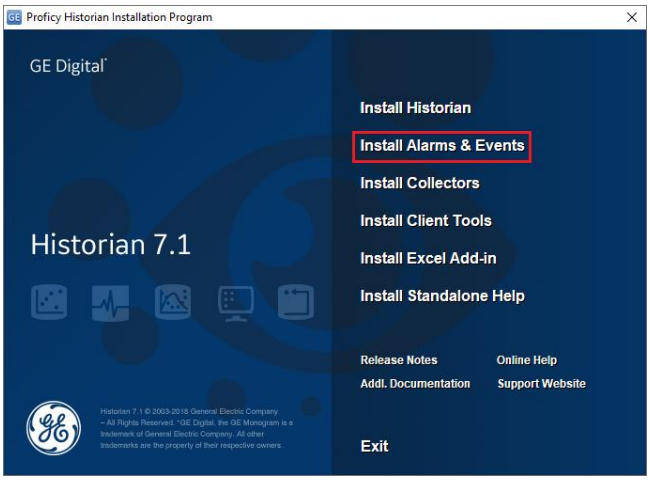
This connector is used to get alarms from the GE Historian (formerly Proficy Historian) using the Historian OLEDB Provider. This can be configured both locally on the Historian machine and from a remote machine.

Set up Alarm Logging

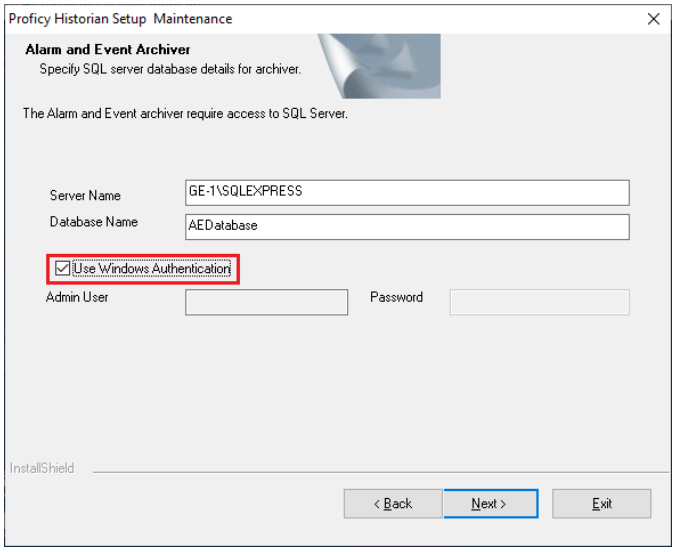
Historian collects alarm and event data from an OPC Alarm & Event compliant server, and stores it alongside Historian process data.

Installation

To install, run **InstallLauncher.exe** as an **Run as Administrator**.



Select the **Install Alarm and Events** option in the historian installation wizard to install the **Historian Alarm Archiver** service.



During the **Maintenance** step of the installation,

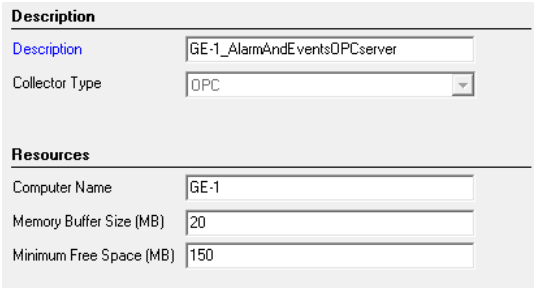
- Set **Server Name** to the SQL Server instance where the alarms will be logged.
- Set **Database Name** to the name of the database in the SQL Server instanace for alarms. If this database does not exist, it will be created along with the tables needed.
- Check the box for **Use Windows Authentication** to connect to SQL Server. The Windows user you are logged in as should have *sysadmin* permissions to the SQL server in order to create the database and the reqired tables.

Alarm Configuration

In order for Historian to log the alarms to the newly created database, a **Collector** must be pointed to the Alarm and Events **OPC Server PROGID.**

Open the **Historian Administrator** from the GE **Historian** program group.

- Select **Collectors** at the top of the **Historian Administrator.**

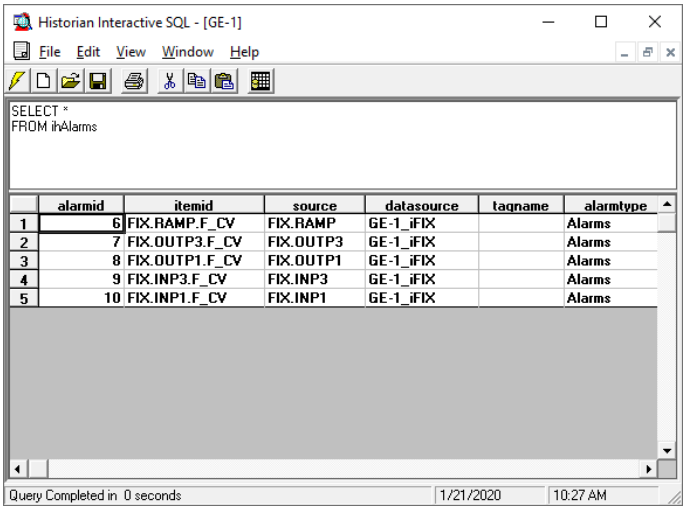


- Configure the settings on the **General, Configuration, Advanced, and Redundancy** tabs to commence alarm logging

Verify the Alarm Data

To check that alarms are logging, open the **Historian Interactive SQL** utility from the Historian program group.

- Log into the Historian.



- At the top, enter the following query:

SELECT * FROM ihAlarms

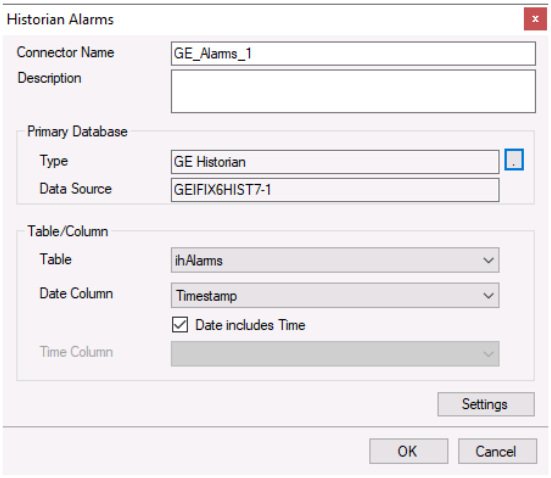
- Click the  button to execute the query

The query should return any records logged to the ihAlarms table in the SQL Server database.

Connector

To configure the connector to **iFIX,** from the **Project Explorer** select **Data**, **Connectors**.

- Click **Add**
- Select **GE Digital, Historian Alarms.**
- Click **OK**



Primary Database

This defines the connection to the GE Historian. The browse button […] is provided to define.

The **Server Name** can be the physical name of the machine where the historian runs, the IP address of the machine or left blank to use the default historian defined in the Historian Interactive SQL application.

The **User Name** and **Password** settings are provided is required to connect to the GE Historian.

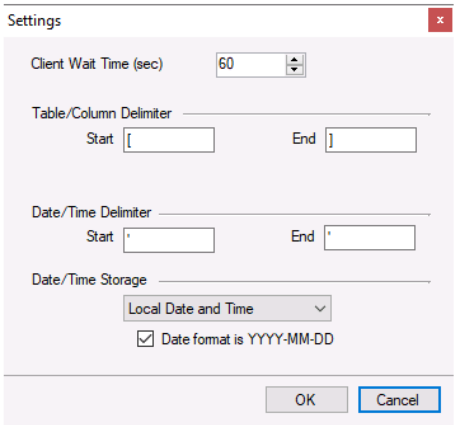
Table/Column

Once the **Primary Database** is configured, set **Table** to the table where the alarms are being logged. This should be *ihAlarms*.

Set the **Date Column** to *Timestamp* and check **Date includes Time**.

Settings

The **Settings** button opens the **Settings** dialog that defines characteristics of the database that are used to retrieve data.



Typically, these settings are defaulted correctly for the GE Historian.

If queries timeout, increase the **Client Wait Time**.

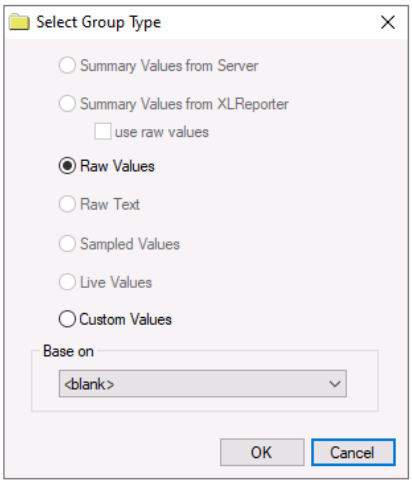
The delimiter and timestamp settings are typically filled in automatically for the database and can be modified for other databases.

Many databases require the Date format to be **YYYY-MM-DD** so that no interpretation needs to occur based on the Region settings of the Windows Operating System. It is recommended to always have this option checked.

Data Group

The following describes the historical data group settings specific to the **GE Historian Alarms** connector.

Group Types



For **GE Historian Alarms** the following group types are available:

Raw Values

This group retrieves every value logged to the alarms database between the start and end time specified.

Custom Values

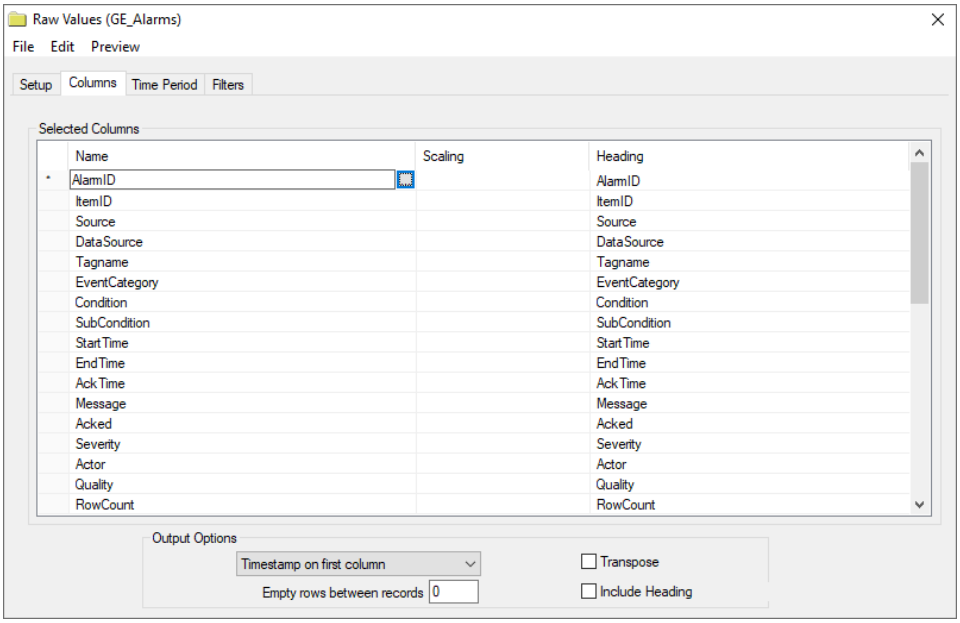
This option opens the Database Group builder where a query can be configured to retrieve data from any table available in the database connected to by the connector.

Verify Data Communication

To verify communication with the Alarms and Events Server, open the Project Explorer and select the Tools tab.

- Open **Connector Groups**
- Select the **GE Alarms** connector and then select **Add**.
- Set the **Group Type** to *Raw Values* and click **OK**.

Under the **Columns** tab:

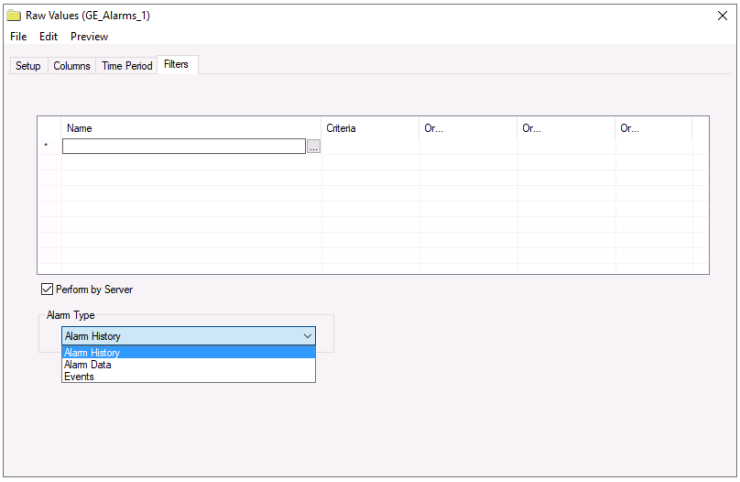


- Select the first row under the **Name** column
- Click the browse pushbutton ([…]).
- In the Tag Browser expand **Online, ihAlarms** and add **Items** from the lower left.
- Click **OK** to add these to the group.

To retrieve data, select **Preview.** In the **Preview** window, use the data picker to select a date and time where alarms are recorded in the database. Click **Refresh** to view data. The first 60 alarms starting at the date and time specified should be displayed.

Group Settings

Filters Tab



If the **Perform by Server** option is checked, any filter configured in this tab is put into the *WHERE* clause of the query sent to the database to retrieve data for the group. Otherwise, the configured filtering is performed by the reporting engine after the values are returned. It is recommended to leave this setting checked as the performance is much better.

The **Alarm Type** defines how the alarms are returned from the Proficy Historian.

- *Alarms* returns an entire alarm life cycle as a single record.
- *Alarm History* returns separate records for every alarm transition.
- *Events* returns the simple and tracking events.

For more information, see ihAlarms in the Proficy Historian documentation.

Cimplicity Real-time values

This connector is used to get real time values from Cimplicity via the Cimplicity OPC server.

Setup Cimplicity

Verify the Project

In order for XLReporter to connect to the Cimplicity OPC Server, the Cimplicity project must be running. To do so,

- From the Windows Start menu, open **Cimplicity Options**
- Under the **Projects** tab, verify the project is listed in the running projects list.

Add the Project to the OPC Server

To add the project to the CIMPLICITY OPC server, do the following:

- From the Windows Start menu, open **OPC Server** within the **Proficy HMI/SCADA - CIMPLICITY** program group.
- Select **Edit, Server Configuration….**
- In **OPC Server Configuration**, click **Add** to add the project.
- In **Project Properties**, select the **Project name** from the drop-down list.
- Specify the CIMPLICITY **User name** and **Password** to be used for the OPC Server.
  This is recommended to be a highly privileged user who has access to all the points (e.g., Administrator)
- Back in **OPC Server Configuration**, select the newly added entry and click **Show this name space**.
- Make sure the **Reconcile Cache** check box is checked.
- Click **OK**.

Prerequisites

Verify Communication

Communication between the OPC server and an OPC client must be verified. If an OPC client is not provided with the server, **XLReporter** provides an independent OPC client to verify connectivity and data retrieval from any OPC DA server. This client is found on **XLReporter's** product CD under **Tools, OPC, OPC_DA**. It can also be downloaded from **www.SmartSights.com**.

To run, double-click **SampleClientDA.exe**.

To connect to an OPC server, select **Edit**, **New Server Connection** to open the **Server Properties window**.

Expand the **OPC Data Access Servers Version 2.0**, select *CIMPLICITY.HMI.OPCServer.1* and click **OK**.

From the **Edit** menu select **New Group**.

Specify **Name** and click **OK**.

Click on the group name created, and select **Edit**, **New Item**.

This opens the **Add Items** window. In the browsing section, drill into the tree and select **Leaf** items on the right. To select a leaf, highlight and click the **Add Leaves** button. Click **OK** when selection is complete.

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, contact GE Digital technical support to troubleshoot and correct these issues.

Remote Communication

If XLReporter is not installed on the machine where Cimplicity is installed, the workstation must also have the OPC core components installed. To determine if the core components are installed verify the following file exists:

- C:\Windows\SysWow64\OPCEnum.exe (64-bit OS)
- C:\Windows\system32\OPCEnum.exe (32-bit OS)

If the components are not installed then they are provided in the XLReporter installation folder under *_repairtools\OPC*. Alternatively, these can be downloaded from www.opcfoundation.org.

Server Settings

In order to connect to Cimplicity remotely both the machine where the server is running and the machine where the client is running must have matching Windows user accounts and the client must be logged in with a matching account.

In addition, on the machine with Cimplicity, certain DCOM settings must be enabled. For details on what DCOM settings to enable, see OPC and DCOM: 5 Things You Need to Know.

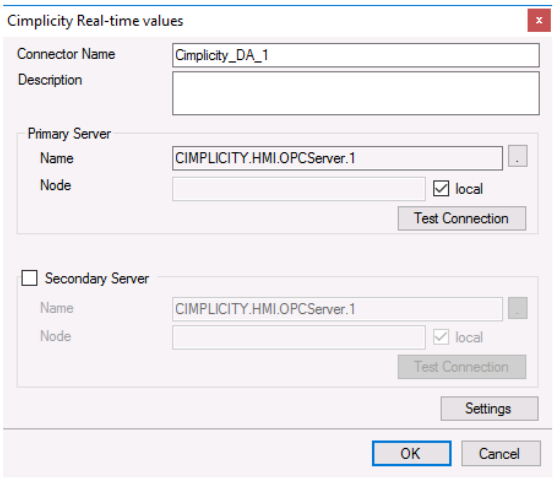
Windows Firewall

If the Windows Firewall is enabled on the machine where Cimplicity is running TCP Port 135 must be opened in order for remote clients to connect.

Connector

To configure the connector to **Cimplicity,** from the **Project Explorer** select **Data**, **Connectors**.

- Click **Add**
- Select **GE Digital, Cimplicity Real-time values.**
- Click **OK**



Primary Server

These settings define the **Name** and **Node** of the OPC DA server. Typically, the **Name** is defaulted correctly. If the Cimplicity server is on the local machine, leave **local** checked, otherwise uncheck and specify either the name or IP address of the machine where Cimplicity is running.

Use the **Test Connection** button to verify a connection to the server.

Secondary Server

These settings define the (optional) secondary Cimplicity to connect to if a connection to the **Primary Server** fails.

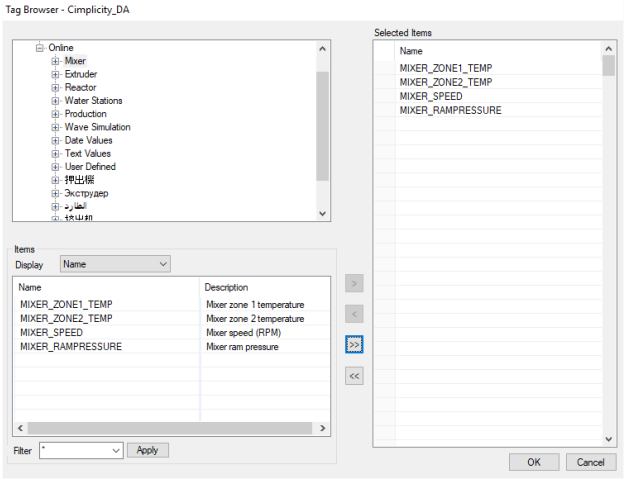
Settings

For information on the specific settings, see the **DATA CONNECTIVITY, OPC** document.

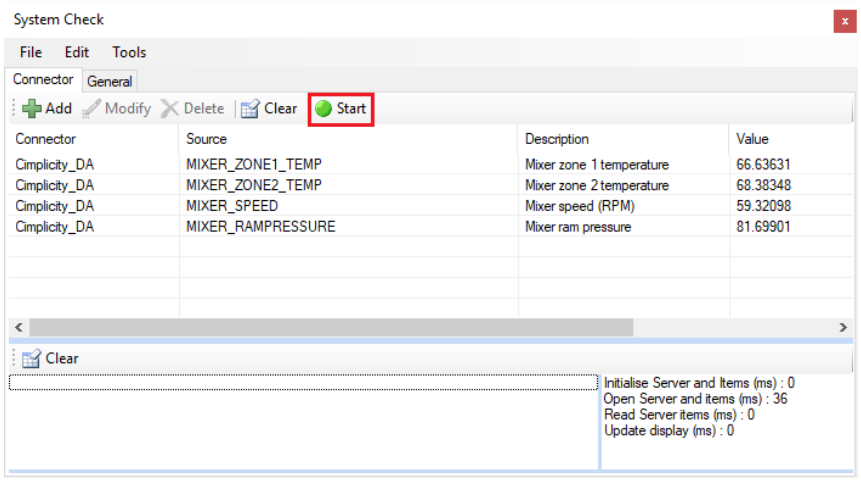
Verify Data Communication

To verify communication, open the **Project Explorer** and select the **Tools** tab. Launch the **System Check** application.

- Click **Add**
- Select the Cimplicity connector from the dropdown list.
- Click the pushbutton ([…]) next to Items to open the Tag Browser window.



- Select one or more tags, click **OK**
- Click **Start** to verify the communication.



Primary Server

These settings define the **Name** and **Node** of the OPC DA server. Typically, the **Name** is defaulted correctly. If the Cimplicity server is on the local machine, leave **local** checked, otherwise uncheck and specify either the name or IP address of the machine where Cimplicity is running.

Use the **Test Connection** button to verify a connection to the server.

Secondary Server

These settings define the (optional) secondary Cimplicity to connect to if a connection to the **Primary Server** fails.

Settings

For information on the specific settings, see the **DATA CONNECTIVITY, OPC** document.

Cimplicity Historical values

This connector is used to get historical values from the Cimplicity Database Logger.

Set up Cimplicity

To set up data logging in Cimplicity, from the **CIMPLICITY Workbench**, double-click **Database Logger**.

To determine what database the historical data is logged to select **Edit, Logging Properties**.

Under the **Default Point Connection** tab, choose an existing **ODBC data source**. If there is not one there that fits your needs, you can create a new ODBC data source from **XLReporter's Project Explorer**, under the **Tools** tab by selecting **Database, DSN Settings**.

There are 2 methods of historical data logging, **Point Data** logging and **Group Point** logging. With **Point Data** logging every configured point is logged as a separate record. With **Group Point** logging every configured point is logged as a single record at the same time.

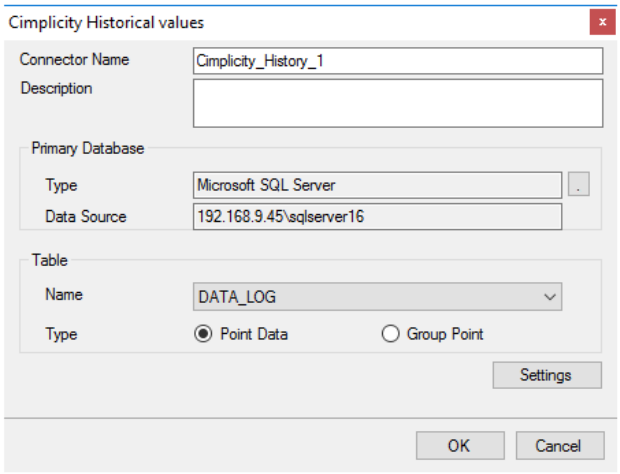
Cimplicity has provided a default table for both **Point Data** logging (*DATA_LOG*) and Group Point logging (*GROUP_LOG*). You can either add points to these tables or create your own by selecting **File, New Table**.

To add points to a table, right-click the table and select **Add Points**.

Connector

To configure the connector to **Cimplicity,** from the **Project Explorer** select **Data**, **Connectors**.

- Click **Add**
- Select **GE Digital, Cimplicity Historical values.**
- Click **OK**



Primary Database

This defines the connection to the database where the Cimplicity Data Logger is logging. The browse button […] is provided to define.

Table

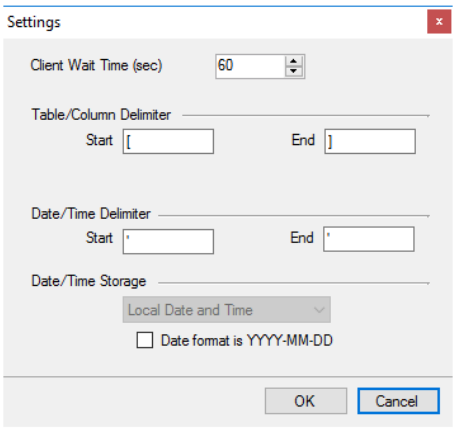
Once the connection is made, under **Table**, specify the **Name** of the table containing the logged data.

The default **Table** for *Point Data* is *DATA_LOG*. The default table for *Group Point* is *GROUP_LOG*.

As stated above, **Point Data**, causes every configured point to be logged as a separate record (also known as a *Narrow Table*) and **Group Point** causes every configured point to be logged as a single record (also known as a *Wide Table*). For more information, see the **Cimplicity** documentation.

Settings

The **Settings** button opens the **Settings** dialog that defines characteristics of the database that are used to retrieve data.



Typically, these settings are defaulted correctly for the **Primary Database**.

If queries timeout, increase the **Client Wait Time**.

The delimiter and timestamp settings are typically filled in automatically for the database and can be modified for other databases.

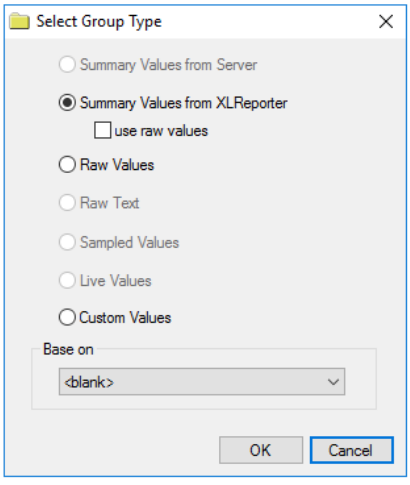
The **Date/Time Storage** settings define how timestamps are stored in the database. Using this setting the timestamps are manipulated when data is retrieved so that local timestamps are submitted in and returned.

Many databases require the Date format to be **YYYY-MM-DD** so that no interpretation needs to occur based on the Region settings of the Windows Operating System. It is recommended to always have this option checked.

Data Group

The following describes the historical data group settings specific to the **Cimplicity Historical Values** connector.

Group Types



For **Cimplicity Historical Values** the following group types are available:

Summary Values from XLReporter

This group type retrieves sampled values from the database and performs calculations on those samples for reporting.

By default, summary values are calculated time weighted and values are propagated based on the last known value. However, to change this so that summary values are calculated strictly on the data returned check **use raw values**.

Raw Values

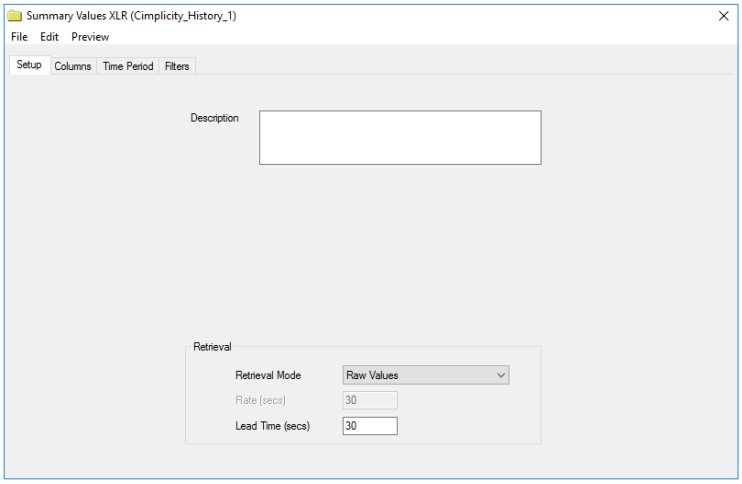
This group retrieves every numeric value logged to the database between the start and end time specified.

Custom Values

This option opens the Database Group builder where a query can be configured to retrieve data from any table in the database.

Group Settings

Setup Tab



Retrieval (Summary Values for XLReporter Group)

The **Retrieval** settings define how data is retrieved for the calculations selected for the group. The following settings are available:

- **Retrieval Mode**
  This setting defines how data is retrieved from the historian. For Cimplicity only *Raw Values* are available.
- **Lead Time**
  The amount of time (in seconds) to retrieve data before the start time.

Verify the Data Connector

XLReporter retrieves data from the **Data Connector** using a **History Group**. To verify communication, open the **Project Explorer** and select the **Tools** tab and open **Connector Groups**

Select the **Cimplicity Historical values** connector and then select Add.

- Set the Type **Raw Values** and click OK.

On the **Columns** tab of the group, select the tag Name(s) using the ([...]) pushbutton.

Select **Preview**, pick a Start date and click **Refresh**.

Cimplicity Alarms

This connector is used to get alarms from Cimplicity when they are logged to a relational database.

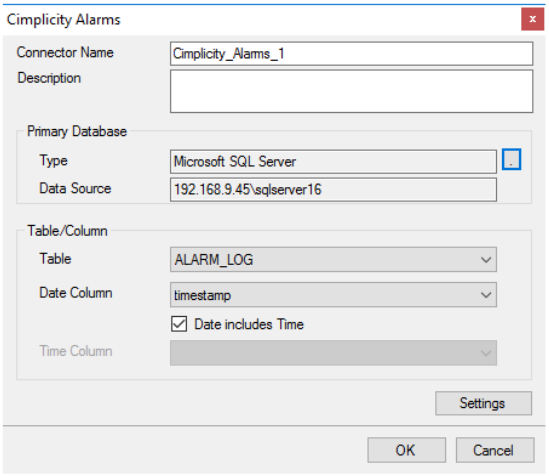
Set up Cimplicity

To add points to the Cimplicity alarm log you can do so either through the **Point Properties** dialog box or by adding to the *ALARM_LOG* table in the **Database Logger**.

Connector

To configure the connector to **Cimplicity Alarms,** from the **Project Explorer** select **Data**, **Connectors**.

- Click **Add**
- Select **GE Digital, Cimplicity Alarms.**
- Click **OK**



Primary Database

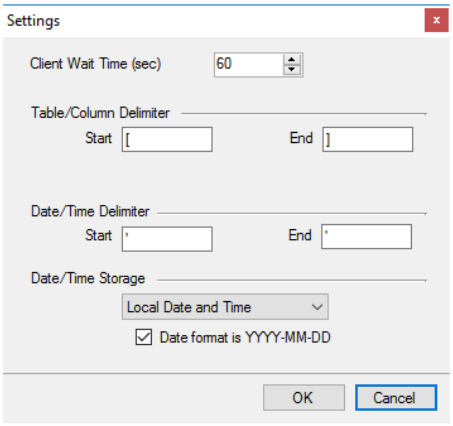
This defines the connection to the database where the Cimplicity alarms are logging. The browse button […] is provided to define.

Table/Column

Once the connection is made, under **Table**, specify the **Name** of the table containing the alarms. This is *ALARM_LOG*. Set **Date Column** to *timestamp* and check **Date includes time**.

Settings

The **Settings** button opens the **Settings** dialog that defines characteristics of the database that are used to retrieve data.



Typically, these settings are defaulted correctly for the **Primary Database**.

If queries timeout, increase the **Client Wait Time**.

The delimiter and timestamp settings are typically filled in automatically for the database and can be modified for other databases.

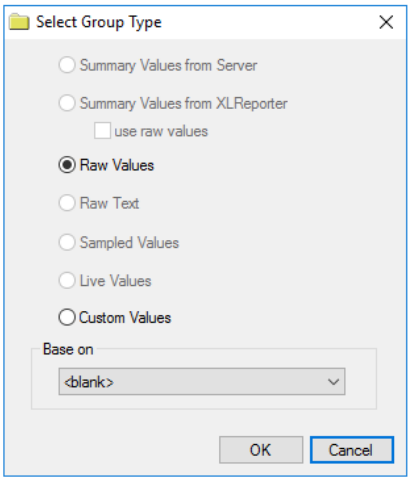
The **Date/Time Storage** settings define how timestamps are stored in the database. Using this setting the timestamps are manipulated when data is retrieved so that local timestamps are submitted in and returned.

Many databases require the Date format to be **YYYY-MM-DD** so that no interpretation needs to occur based on the Region settings of the Windows Operating System. It is recommended to always have this option checked.

Data Group

The following describes the historical data group settings specific to the **Cimplicity Alarms** connector.

Group Types



For **Cimplicity Alarms** the following group types are available:

Raw Values

This group retrieves every value logged to the alarms database between the start and end time specified.

Custom Values

This option opens the Database Group builder where a query can be configured to retrieve data from any table available in the database connected to by the connector.

Group Settings:

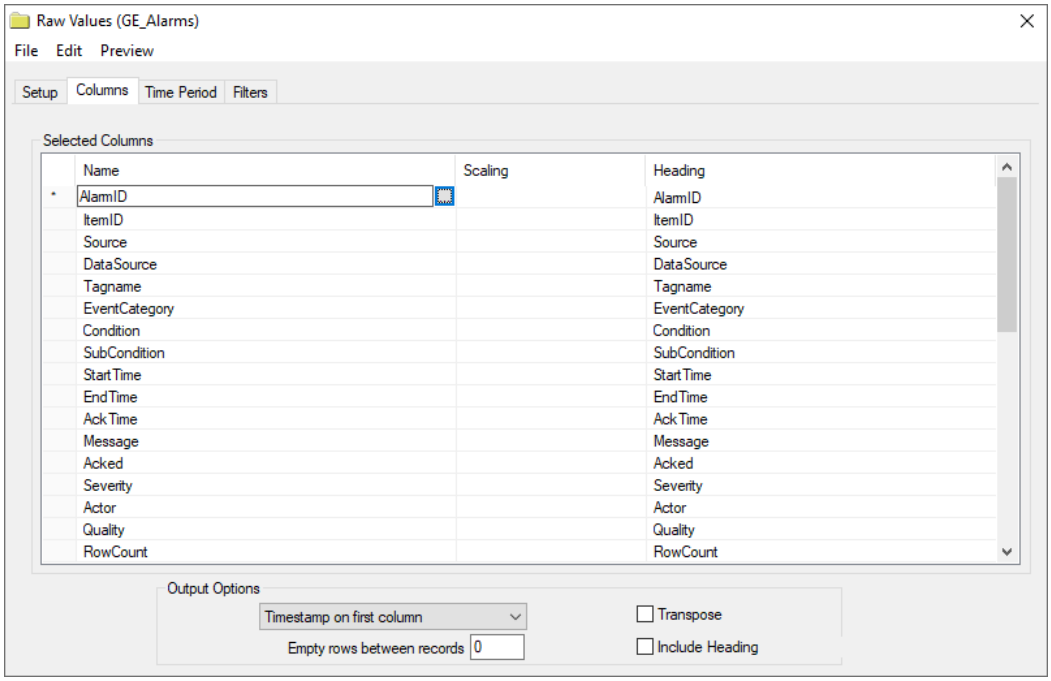
Filters Tab

If the **Perform by Server** option is checked, any filter configured in this tab is put into the *WHERE* clause of the query sent to the database to retrieve data for the group. Otherwise, the configured filtering is performed by the reporting engine after the values are returned. It is recommended to leave this setting checked as the performance is much better.

Verify Data Communication

To verify communication with the Alarms and Events Server, open the Project Explorer and select the Tools tab. Open Connector Groups.

- Select the **Cimplicity Alarms** connector and then select **Add**.
- Set the **Group Type** to **Raw Values** and click **OK**.
- Under the **Columns** tab:



- Select the first row under the Name column
- Click the browse pushbutton ([…]).
- In the **Tag Browser** expand Online, ALARM_LOG and add Items from the lower left.
- Click **OK** to add these to the group.

To retrieve data, select **Preview**. In the Preview window, use the data picker to select a date and time where alarms are recorded in the database. Click **Refresh** to view data. The first 60 alarms starting at the date and time specified should be displayed.