Text File Connectors

Overview

XLReporter offers two text connectors.

- **Text Historian Connector**
  This connector is intended for time stamped data that is continuously recorded to files that are created periodically.
- **Discrete Connector**
  This connector is intended for data that is recorded to files during an event frame e.g., during a batch, machine cycle. In this case, the files are created for each event frame.

Text Historian Connector (time series)

This connector is used to get historical data from one or more text files stored in a common folder. The connector "stitches" a set of text files together so they can be treated as a single entity and consequently provide similar behavior to a historian.

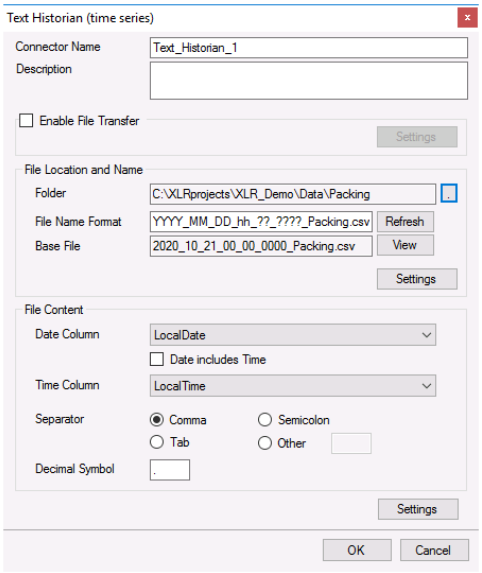
The naming convention for the file name must reflect the content of the file, e.g., if file contains records time stamped for 1st, Oct 2020 then a file name *01_10_2020* or *Packing_2020_10_1* or similar would be suitable.

This connector only supports text files that are encoded as *ANSI* (also referred to an *UTF-8*), *UTF-8 with BOM* (Byte Order Mark) or *UNICODE little endian*.

Connector

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

- Click **Add**
- Select **Text File**, **Text Historian (time series)**
- Click **OK**



The connector supports direct access to the files or transfer them automatically from a remote location e.g., Operator Panel by checking **Enable File Transfer**. For details more information, see the **File Transfer** section below.

When the **Folder** containing the files is selected, the **File Name Format** is determined from the most recent file in the folder, displayed as the **Base File**. In addition, the **File Content** settings are automatically filled out (if possible). If the **File Name Format** is not determined correctly, it can be changed manually and clicking the **Refresh** button re-establishes the **Base File** and **File Content** settings.

File Name Format supports the following characters (case sensitive)**:**

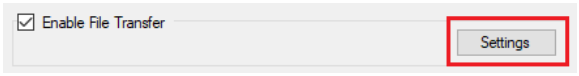
- YYYY – year 4 digits
- YY – year 2 digits
- MM – month
- DD – day
- hh – hour
- mm – minute
- ? – single character wild card
- * - multiple character wildcard

Click **View** to view the **Base File**. If the file does not appear or is shown incorrectly, this could mean that the file is not adhering to a Text File standard i.e., first row contains headings, and each subsequent row of data. This situation can be "repaired" using the **Settings** option (see the **File Settings** section below).

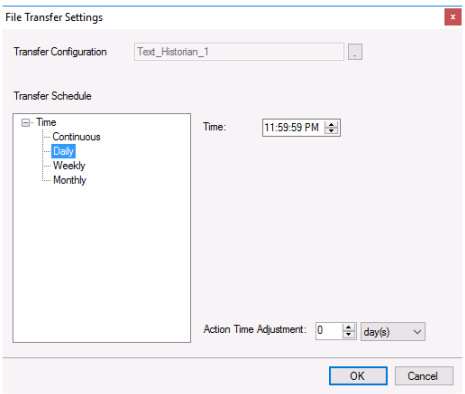
The **Date Column** and **Time Column** lists contain all the columns that were found from the **Base File** and an attempt is made to select the most suitable columns. This can be changed if needed.

File Transfer

If the text files are in a remote location e.g., Operator Terminal or Data Logger, they can be scheduled to be transferred to the local machine.

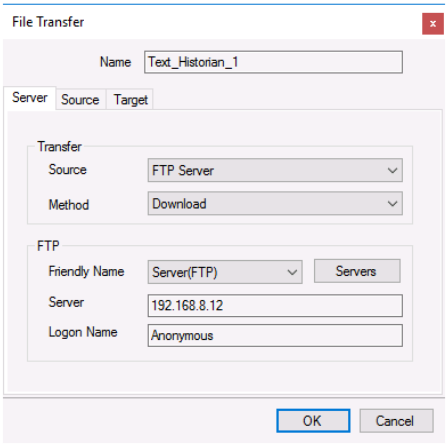


Check **Enable File Transfer** and click **Settings** button to open the **File Transfer Settings**.



Transfer Configuration

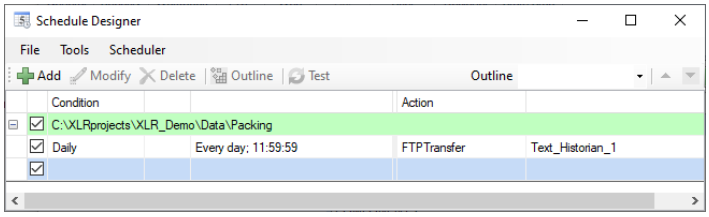
The **Transfer Configuration** is set to the name of the connector. Click the browse button […].



For details on **File Transfer**, see the **Transfer Reports to an FTP Server** document.

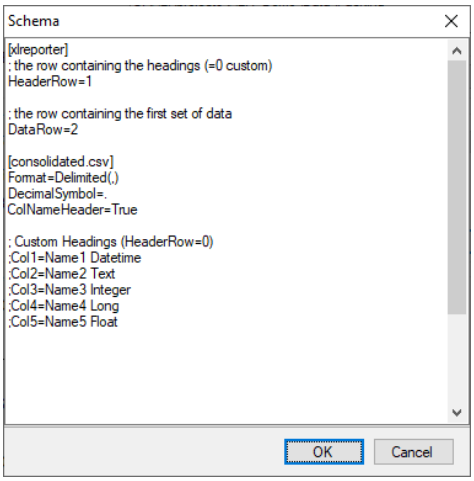
Transfer Schedule

Clicking **OK** for the **File Transfer** setting creates a new line into the schedule. This can be viewed and modified from the **Schedule Designer**.



File Settings

When the text file content is non-standard the **Settings** option in **File Location and Name** can be used for a certain level of customization.



There are two sections in this display, one section is **[xlreporter]** and the other is **[consolidated.csv].**

A row starting with semi-colon (;) is treated as a comment.

[xlreporter]

Usually, the first row of the file contains the headings and the remaining rows the data. If this is not the case, then set **Header Row** and **Data Row** accordingly.

For example, consider the following text file:

```
Date: June 8, 2021
Station: Plant 7
Operator: Jim

LocalDate,LocalTime,Flow,Pressure,Torque,Level,Rate,State,Speed,Temp
6/8/2021,0:00:00,2021,6,8,0,0,0,10,20
6/8/2021,0:01:00,2021,6,8,0,1,0,20,30
6/8/2021,0:02:00,2021,6,8,0,2,0,30,40
6/8/2021,0:03:00,2021,6,8,0,3,0,40,50
6/8/2021,0:04:00,2021,6,8,0,4,0,50,60
6/8/2021,0:05:00,2021,6,8,0,5,0,60,70
6/8/2021,0:06:00,2021,6,8,0,6,0,70,80
6/8/2021,0:07:00,2021,6,8,0,7,0,80,90
6/8/2021,0:08:00,2021,6,8,0,8,0,90,100
6/8/2021,0:09:00,2021,6,8,0,9,0,100,110
6/8/2021,0:10:00,2021,6,8,0,10,0,110,120
6/8/2021,0:11:00,2021,6,8,0,11,0,120,130
6/8/2021,0:12:00,2021,6,8,0,12,0,130,140
6/8/2021,0:13:00,2021,6,8,0,13,0,140,150
```

The following would need to be specified:

HeaderRow=5

DataRow=6

If the text file does not contain headers, set **HeaderRow** to *0* and, under the **[consolidated.csv]** section, set **ColNameHeader** to *False*. Since there are no headers, you must add each header manually. See **Custom Column Names** below for details.

[consolidated.csv]

The settings in this section follow those for the **Text File Driver from Microsoft** so a detailed description of each can be found on the internet.

Below are some common settings

Custom Column Names

If the text file(s) does not contain headers or the headers that are included are not usable/descriptive, then custom column names can be used.

Add the following **for every column** in the file:

Colx= Name Type

- *x* is 1 based
- *Name* is the custom name of the column
- *Type* is the column data type e.g., Text

For example, if the file contains a *Timestamp, Speed, Pressure, Temperature* and *Name*, the following would be set:

Col1=DateAndTime DateTime

Col2="Mixer Speed" Double

Col3="Mixer Pressure" Double

Col4=Temperature Double

Col5="Operator Name" Text

Enclose column names containing a space with double quotes.

Custom Date Format

If the format of the date values in the file is not the same as that of the operating system, then the format must be explicitly stated as follows

DateTimeFormat=Format

- *Format* is a valid *Date* or *Date and Time* format.

For example, if the date format in the text file is in universal format 2010-01-01 but the operating system is not, then the following would be set:

DateTimeFormat=yyyy-MM-dd

Note that this format also applies to columns that just contain time. In those cases, the time format should also be added to the setting. For example:

DateTimeFormat=yyyy-MM-dd hh:nn:ss

Notice that minute is denoted as *nn*.

Max Scan Rows

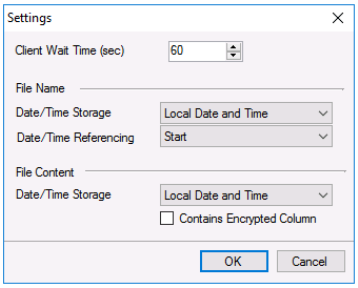
When determining the column type for each column, the first 25 rows are scanned by default. In some cases, the first 25 rows may not accurately represent what the column type should be. If this is the case, the number of rows to scan must be explicitly stated as follows:

MaxScanRows=X

When set to *0*, the whole file is scanned. Note that setting this to 0 could affect performance if there are thousands of rows to be scanned in the file.

Connector Settings

The bottom **Settings** button gives access to settings that define how the name and file content are interpreted at runtime.



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

File Name

The **File Name** settings define how the values date and time keywords defined for the **File Name Format** behave.

If the date/time elements in the file names represent date/time in UTC format, set **Date/Time Storage** to *UTC Date and Time*, otherwise select *Local Date and Time*.

If the records in the files start at the date/time found in the file name, set **Date/Time Referencing** to *Start*, otherwise if the records in the end at the date/time found in the file name set *End*.

File Content

If the **Date Column** (and **Time Column** if specified) in the text files are stored in UTC format, set **Date/Time Storage** to *UTC Date and Time*, otherwise select **Local Date and Time**.

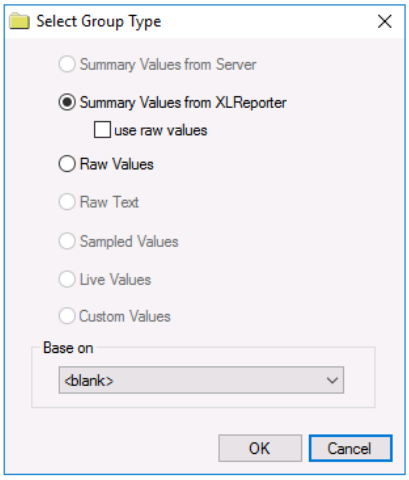
Some text files contain one or more columns of encrypted data to validate the file. Good examples of this are Alarm and Audit Log text files produced by Rockwell Software's FactoryTalk View ME application.

If the text files contain one or more of these encrypted columns the **Contains Encrypted Column** option must be checked.

Data Group

To extract data from the text file, a data group is used. A quick method of configuring a group is from the **Project Explorer**, **Tools**, **Connector Groups**.

Group Types



The following group types are available:

- **Summary Values from XLReporter**

This type delivers calculated aggregates from the from the text file(s) such as hourly averages over a day. The group requires a set of columns, calculation types, a time period and an interval over which the calculation is performed.

By default, the aggregates are calculated on time weighted values from the file. Check **use raw values** to change the calculation to raw values from the file.

- **Raw Values**

This type retrieves raw values logged in the text file(s). The group requires a set of columns and a time period.

Verify the Data Connector

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

Select the *Text Historian (time series)* 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.**

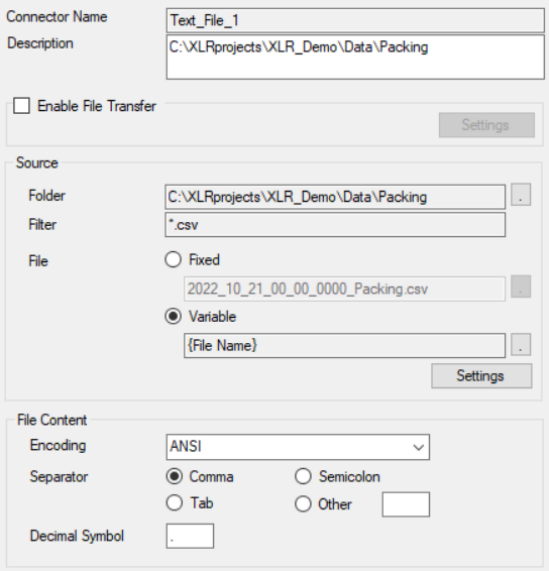
Discrete Connector

This connector is used to get values from a single text file. While the **Text Historian** expects the file name to reflect the content of the file, this connector expects the file name to be a description of the content e.g., for all the data recorded for a batch a possible name would be *Product123-Lot3*.

Connector

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

- Click **Add**
- Select **Text File, Discrete**
- Click **OK**



The **Source** section defines the **Folder** where the text files are located and a **Filter**.

The **File** setting can be:

- **Fixed**
  In this case, the connector will always use this file. This would be applicable in cases when the file is overwritten by new content.
- **Variable**
  In this case, the connector will use the file name stored in the variable specified, *File Name* by default. The variable is usually set by the scheduler or from an on-demand report.

Usually, the first row of the file contains the headings and the remaining rows the data. If this is not the case, click the **Settings** button in the **Source** section and then refer to the **File Setting** chapter in the **Text Historian**.

Encoding

This setting is used to specify the encoding of the files. The default encoding options are *ANSI*, *UTF-8 with BOM* or *UNICODE little endian*. If one of these are detected **Encoding** automatically, otherwise it is defaulted to *ANSI*.

Encoding can be specified directly by providing the code page. For example, if the file is encoded as *UNICODE big endian*, set **Encoding** to *1201*. The code pages can be easily found on the internet.

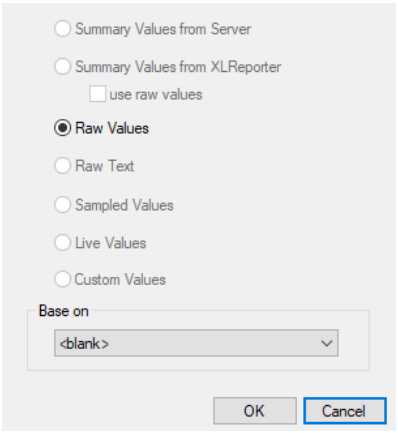
File Transfer

If the text files are in a remote location e.g., Operator Terminal or Data Logger, they can be scheduled to be transferred to the local machine. For more information, see the **File Transfer** section of the **Text Historian** chapter.

Data Group

To extract data from the text file, a data group is used. A quick method of configuring a group is from the **Project Explorer**, **Tools**, **Connector Groups**.

Group Types



The following group types are available:

- **Raw Values**

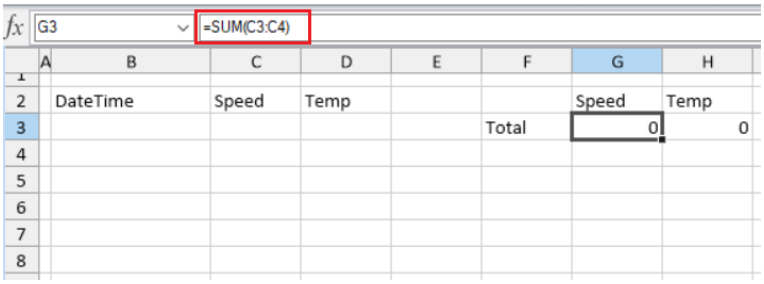
This type retrieves raw values logged in the text file(s). The group requires a set of columns.

Summary Values

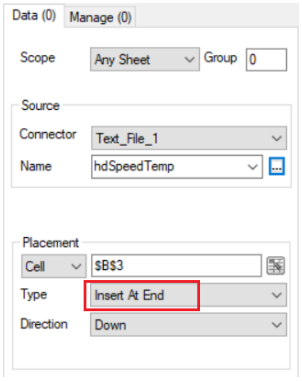
Unlike the **Text Historian**, this connector only supports raw data retrieval. If summary values are required (like the **Text Historian**) then this is done within the workbook using various features provided.

Summary Table (Placement)

If the requirement is to produce summary values over the entire text file, set the formula of the table to the top two rows where the data is to appear.



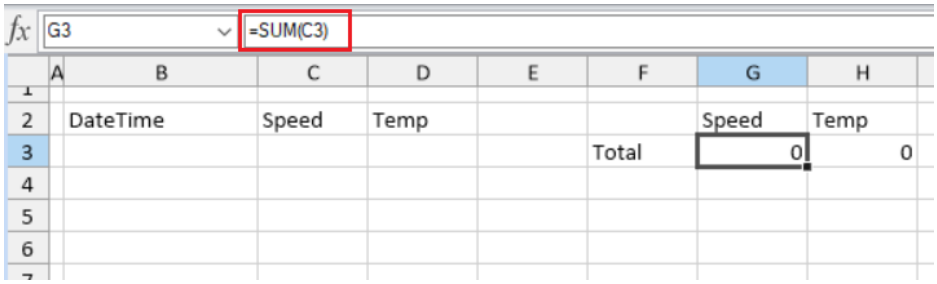
In **Data** connection set the **Placement** to *Insert At Start* or *Insert At End*.



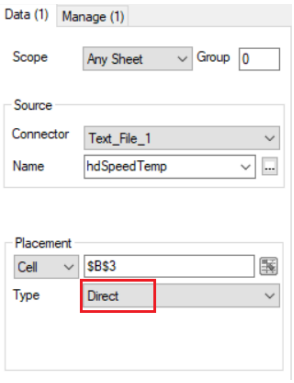
For more information on **Data Connections** and **Placement**, see the **Data Connections** document.

Summary Table- Formula Range

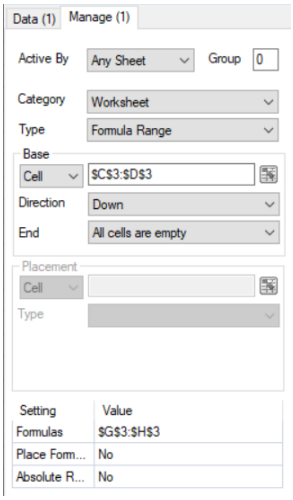
This approach is like the above in that in a worksheet in the template use formulas, but in this case set these formulas to the top row where data will appear.



In **Data** connection set the placement to *Direct*.



Use the **Manage** connection **Formula Range** to adjust the range of any formulas based on the amount of data.

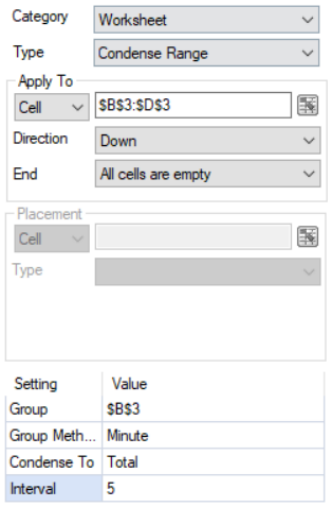


Summary Values – Condense Range

The **Manage** connection **Condense Range** is used to produce a summary of aggregates calculated over a specified **Group Method**. The method requires a column for the grouping process and then the grouping itself is numeric, textual or datetime.

	DateTime	Speed	Temp			DateTime	Speed	Temp
3	1/1/2021 11:01:00	1	2			1/1/2021 11:01:00	15	30
4	1/1/2021 11:02:00	2	4			1/1/2021 11:06:00	40	80
5	1/1/2021 11:03:00	3	6			1/1/2021 11:11:00	65	130
6	1/1/2021 11:04:00	4	8			1/1/2021 11:16:00	90	180
7	1/1/2021 11:05:00	5	10					
8	1/1/2021 11:06:00	6	12					
9	1/1/2021 11:07:00	7	14					
10	1/1/2021 11:08:00	8	16					
11	1/1/2021 11:09:00	9	18					
12	1/1/2021 11:10:00	10	20					
13	1/1/2021 11:11:00	11	22					
14	1/1/2021 11:12:00	12	24					
15	1/1/2021 11:13:00	13	26					
16	1/1/2021 11:14:00	14	28					
17	1/1/2021 11:15:00	15	30					
18	1/1/2021 11:16:00	16	32					
19	1/1/2021 11:17:00	17	34					
20	1/1/2021 11:18:00	18	36					
21	1/1/2021 11:19:00	19	38					
22	1/1/2021 11:20:00	20	40					

In the above example, the condensed range is derived by summing groups of 5 minutes.



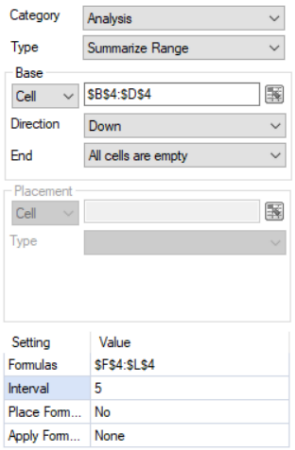
In practice the condensed range is placed in the same location as the raw data and is shown separately above for illustration.

Summary Values – Summary Range

The Management connection **Summarize Range** is used to produce a summary of aggregates using a row count (**Interval**) and specified worksheet formula.

2							Speed				Temp		
3	DateTime	Speed	Temp		DateTime	Min	Max	Avg	Min	Max	Avg	
4	1/1/2021 11:01:00	1	2		1/1/2021 11:01:00	1	5	3	2	10	6	
5	1/1/2021 11:02:00	2	4		1/1/2021 11:06:00	6	10	8	12	20	16	
6	1/1/2021 11:03:00	3	6		1/1/2021 11:11:00	11	15	13	22	30	26	
7	1/1/2021 11:04:00	4	8		1/1/2021 11:16:00	16	20	18	32	40	36	
8	1/1/2021 11:05:00	5	10									
9	1/1/2021 11:06:00	6	12									
10	1/1/2021 11:07:00	7	14									
11	1/1/2021 11:08:00	8	16									
12	1/1/2021 11:09:00	9	18									
13	1/1/2021 11:10:00	10	20									
14	1/1/2021 11:11:00	11	22									
15	1/1/2021 11:12:00	12	24									
16	1/1/2021 11:13:00	13	26									
17	1/1/2021 11:14:00	14	28									
18	1/1/2021 11:15:00	15	30									
19	1/1/2021 11:16:00	16	32									
20	1/1/2021 11:17:00	17	34									
21	1/1/2021 11:18:00	18	36									
22	1/1/2021 11:19:00	19	38									
23	1/1/2021 11:20:00	20	40									

In the above example, the summary range is derived by statistics of 5 minutes



Note that the raw data can be cleared in the report when **Place Formulas** is set *No*.

For more information, please refer to **Data Management** documentation.

Verify the Data Connector

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

Select the *Text Discrete* 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 F*ile* and click **Refresh.**

Schedule Considerations

Once a **Text File Discrete** connector is created, it can be used as a schedule condition to run any supported action.

For more information, see the **Event Condition** section of the **Scheduler** document.

Discrete Connector (time series)

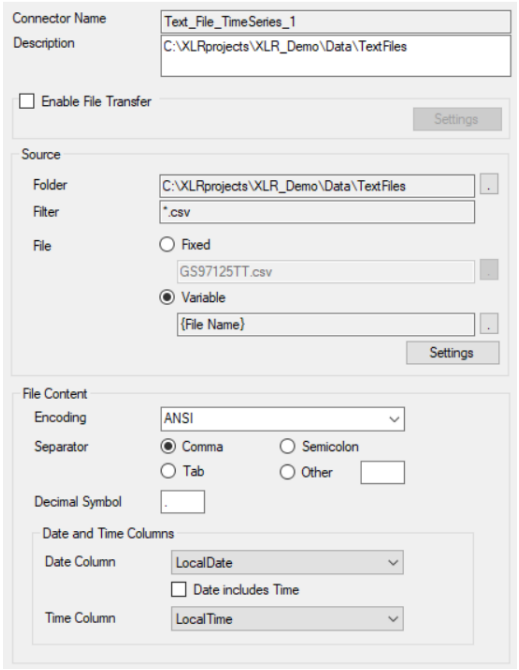
This connector is used to get values from a single text file. The difference between this connector and the Discrete connector is that text files for this connector must contain date and time either as a single column or as two separate columns.

Using this connector, calculations can be derived over intervals of time between the start and end of the file.

Connector

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

- Click **Add**
- Select **Text File, Discrete (time series)**
- Click **OK**



The **Source** section defines the **Folder** where the text files are located and a **Filter**.

The **File** setting can be:

- **Fixed**

  In this case, the connector will always use this file. This would be applicable in cases when the file is overwritten by new content.
- **Variable**

  In this case, the connector will use the file name stored in the variable specified, *File Name* by default. The variable is usually set by the scheduler or from an on-demand report.

Usually, the first row of the file contains the headings and the remaining rows the data. If this is not the case, click the **Settings** button in the **Source** section and then refer to the **File Setting** chapter in the **Text Historian**.

Encoding

This setting is used to specify the encoding of the files. The default encoding options are *ANSI*, *UTF-8 with BOM* or *UNICODE little endian*. If one of these are detected **Encoding** automatically, otherwise it is defaulted to *ANSI*.

Encoding can be specified directly by providing the code page. For example, if the file is encoded as *UNICODE big endian*, set **Encoding** to *1201*. The code pages can be easily found on the internet.

Date and Time Columns

These settings define the column(s) containing the date and time for every record.

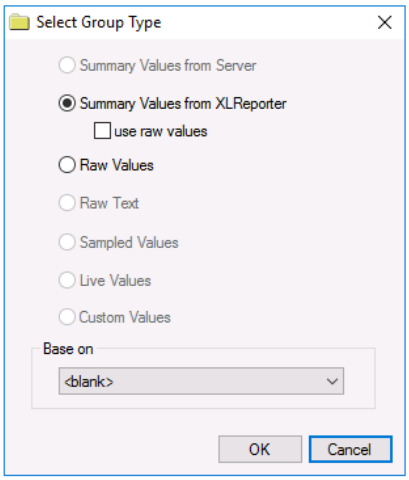
File Transfer

If the text files are in a remote location e.g., Operator Terminal or Data Logger, they can be scheduled to be transferred to the local machine. For more information, see the **File Transfer** section of the **Text Historian** chapter.

Data Group

To extract data from the text file, a data group is used. A quick method of configuring a group is from the **Project Explorer**, **Tools**, **Connector Groups**.

Group Types



The following group types are available:

- **Summary Values from XLReporter**

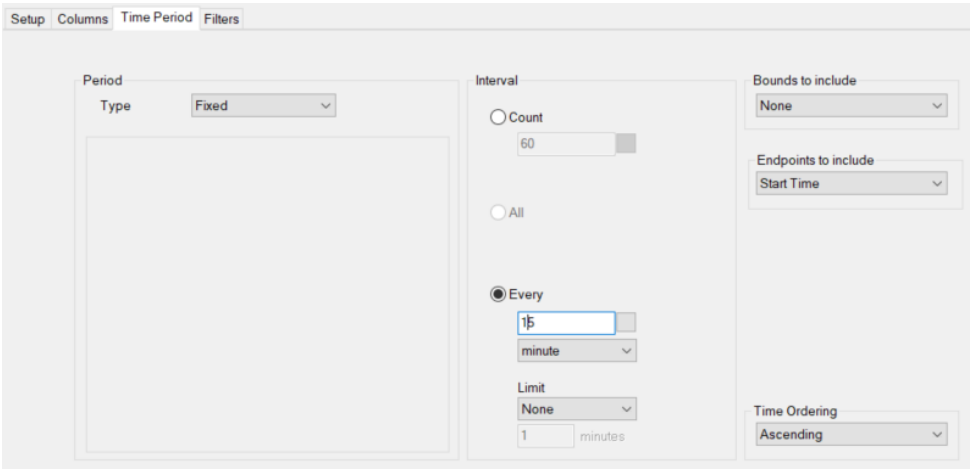
This type delivers calculated aggregates from the from the text file such as hourly averages over a duration of the file. The group requires a set of columns, calculation types and an interval over which the calculation is performed.

By default, the aggregates are calculated on time weighted values from the file. Check **use raw values** to change the calculation to raw values from the file.

- **Raw Values**

This type retrieves raw values logged in the text file. The group requires a set of columns.

Time Period Tab



For both **Summary Values** and **Raw Values** groups, the only Period Type supported is Fixed. This indicates that the start and end are fixed based on the timestamps of the first and last records found in the text file specified.

For example, if the first record in the text file is *October 9th, 2022 2:51:30 PM* and the last record is *October 9th, 2022 8:43:30 PM,* if the Interval is 15 minutes, the following is returned:

Date	(Line1)BeltSpeed interpolated	(Line1)Count interpolated	(Line1)TableSpeed interpolated
10/9/2022 2:51:30 PM	56.18652344	76	900
10/9/2022 3:06:30 PM	57.14043045	22	300
10/9/2022 3:21:30 PM	56.44924545	80	900
10/9/2022 3:36:30 PM	58.14740753	16	300
10/9/2022 3:51:30 PM	57.99805832	16	900
10/9/2022 4:06:30 PM	57.57528687	22	300
10/9/2022 4:21:30 PM	57.58375168	76	900
10/9/2022 4:36:30 PM	57.6383934	77	300
10/9/2022 4:51:30 PM	17	77	900
10/9/2022 5:06:30 PM	58.13820267	77	300
10/9/2022 5:21:30 PM	58.3497963	77	900
10/9/2022 5:36:30 PM	59.17463684	78	300
10/9/2022 5:51:30 PM	58.96770096	79	900
10/9/2022 6:06:30 PM	59.08017731	79	300
10/9/2022 6:21:30 PM	59.86834717	80	900
10/9/2022 6:36:30 PM	45	80	300
10/9/2022 6:51:30 PM	33	78	900
10/9/2022 7:06:30 PM	56.05905533	52	300
10/9/2022 7:21:30 PM	55.95050812	76	900
10/9/2022 7:36:30 PM	56.41798401	77	300
10/9/2022 7:51:30 PM	56.46791077	76	900
10/9/2022 8:06:30 PM	55.96927261	78	300
10/9/2022 8:21:30 PM	57.19455719	78	900
10/9/2022 8:36:30 PM	59.20304108	77	300

Verify the Data Connector

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

Select the *Text Discrete (time series)* 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 *Text File* and click **Refresh.**

Schedule Considerations

Once a **Text File Discrete (time series)** connector is created, it can be used as a schedule condition to run any supported action.

For more information, see the **Event Condition** section of the **Scheduler** document.