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Help version 1.097

What is the EFM Exporter?

How do I navigate the EFM Exporter?

What attribute enumerations are supported by the CSV and database exporters?

How do I import and export a CSV file into the EFM Exporter?

Which system tags does the EFM Exporter support?

What error messages does the EFM Exporter produce?

In pipeline management of the oil & gas industry, it is necessary to collect both real-time and historical flow measurement data. Real-time data is used for monitoring well-site tank levels or equipment at compressor stations, and may also be used for controlling valves, pumps, and so forth. The historical flow data (sometimes referred to as "the audit trail") is used for allocations and custody transfer, which is a term used by the oil & gas industry for managing invoices and payments when one company's pipeline feeds into another company's pipeline. The data can also be used by operations to monitor performance. Because it is used for billing purposes, this data is extremely sensitive and needs to be accurate, reliable, and auditable.

Historical flow data is often referred to as Electronic Flow Measurement (EFM). The data consists of hourly and daily flow averages calculated by flow computers reading raw data from one or more flow meters. It also consists of configuration data, alarms, and events. The hourly and daily averages are calculated and stored because it often is not possible to access real-time flow values due to remote geographic locations and the number of flow computers. Furthermore; radio, cellular, and satellite communications are frequently needed to reach these devices. Due to the low bandwidth of these networks and the large number of devices with which a company might be communicating, it is necessary to schedule specific times to communicate with the devices.

The EFM Exporter manages the scheduled polling and exporting of EFM data from flow computers. Customers can group meters under specific poll schedules, and upload data into flow measurement and accounting solutions (like Flow-Cal and PGAS) as well as to user-defined CSV and database formats. Furthermore, the EFM Exporter uses consistent appearance and navigation for oil & gas companies that manage both liquid and gas products.

- Flow-Cal V5 (CFX)
- Flow-Cal Transaction Queue
- CSV
- Database
- PGAS V8

The EFM Exporter uses a tiered, device-count-based licensing model. A license can be purchased that enables the product to run for an unlimited amount of time for a fixed maximum number of unique EFM devices. The license limit does not prevent the addition of new EFM devices beyond the allowed EFM device count, nor does it signal the product to enter Demo Mode; it prevents EFM data uploads beyond the allowed license count.

The licensed and configured EFM device counts are reported in the Event Log on server startup, when the runtime server re-initializes, or when a unique EFM device is added or removed in the configuration that exceeds the EFM device limit allowed by the license. A unique device is defined as one instanced of the channel-device combination. Any number of meters may be added to a device without consuming an additional device license.

Below is an example startup server informational Event Log message indicating a 1000 EFM Device license installed with 789 unique EFM devices configured in the project:

"License Type: Counted, License Limit: 1000, Devices: 789 licensed, 0 unlicensed."

Below is an example Event Log warning message when a license is exceeded. In this example, there is a 1000 EFM device license installed and 1007 unique EFM devices in the project:

"The licensed device count of 1000 has been exceeded by 7 device(s)."

If the license limit is exceeded, existing unique EFM device references can be removed to return within the limits of the license or to allow new unique EFM devices to be added and utilized. When the EFM device count is back under the license limit, an Event Log message is no longer posted to indicate the product has exceeded the limits.

: When the license limit is exceeded, the EFM Exporter processes the licensed number of unique EFM devices configured; the devices considered licensed can vary based on the order they are loaded in the server during startup.

When no license is installed, the product enters Demo Mode, which allows a time-based limit that stops working when the demonstration period expires.

The EFM Exporter only works with EFM drivers, which are drivers that expose meters and usually contain some level of EFM-specific configuration. EFM drivers share several functions that affect the EFM Exporter.

EFM drivers are responsible for interleaving real-time data (tag) requests and EFM polls. This allows real-time tag updates to continue for a channel while EFM data is being polled for a device.

While interleaving, the priority in order of highest to lowest is as follows: writes, reads, and exception-based reads. EFM polls are considered reads.

EFM drivers are responsible for caching the latest EFM data that has been gathered from the device to ensure that each poll only requests new EFM data. For example, after startup, the first poll requests all the History data in the device. The next poll only retrieves the new History data recorded after the first poll.

All EFM drivers clear their cached state when a new project is loaded. Once cleared, the first poll requests all the data in the device. All other scenarios that cause the cached state to clear are driver-specific. For more information, refer to the specific driver's help file.

Drivers can also clear the cache through the user interface. For more information, refer to the specific driver's help file.

Some devices have shared data. For example, a device may have one Alarm archive for all meters. The driver is responsible for ensuring that the Shared EFM data is only read once per poll, even if multiple meters are defined that rely on the same shared data.

If EFM data is missed because of a communications error, the driver continues to cache the latest good data that is retrieved from the device. When communications return, the EFM Exporter re-polls the device at the scheduled poll interval and the driver queries for new data (which includes the missing data). Client applications can trigger a poll to speed this process.

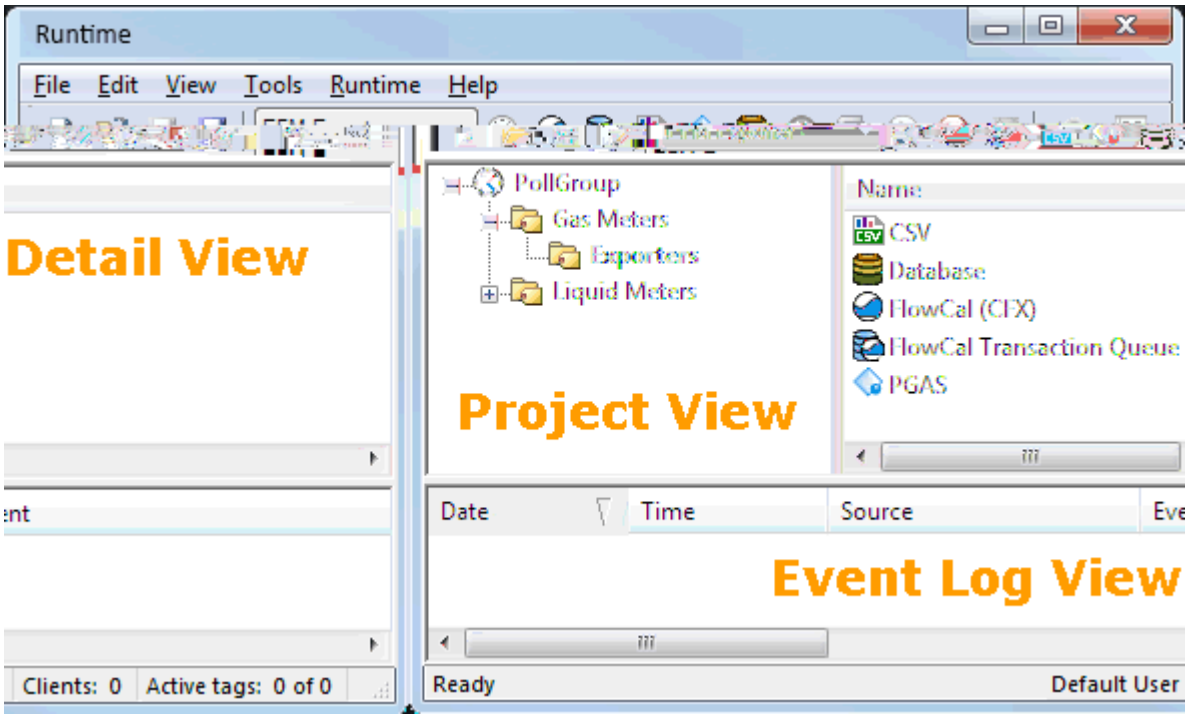
Users are responsible for understanding the physical device's time zone and Daylight Saving Time capabilities. Configuring the EFM-compatible driver's time zone and Daylight Saving Time to match the physical device ensures that record times are accurately converted by the exporters that perform that function.

EFM pointer files are used by EFM drivers to persist flow computer EFM archive positions across server restarts. Preserving this state information allows EFM drivers to minimize the amount of data uploaded from a flow computer after the server restarts. The pointer files are maintained in the server's application data directory, which is a directory that is configured when the server is installed. The server maintains these pointer files across server restarts, upgrades, and uninstallations, except when the option is selected when uninstalling.

The server can be forced to upload all available EFM data from a flow computer by performing a "Clear Cache" on the device associated with the desired meters. For instructions on clearing the cache, refer to the specific driver's help file.

EFM drivers expose system tags that allow clients to control a device's EFM pointer file and cache. For more information, refer to the _____.

The EFM Exporter interface is divided into three panes: the Project View, the Detail View, and the Event Log View.

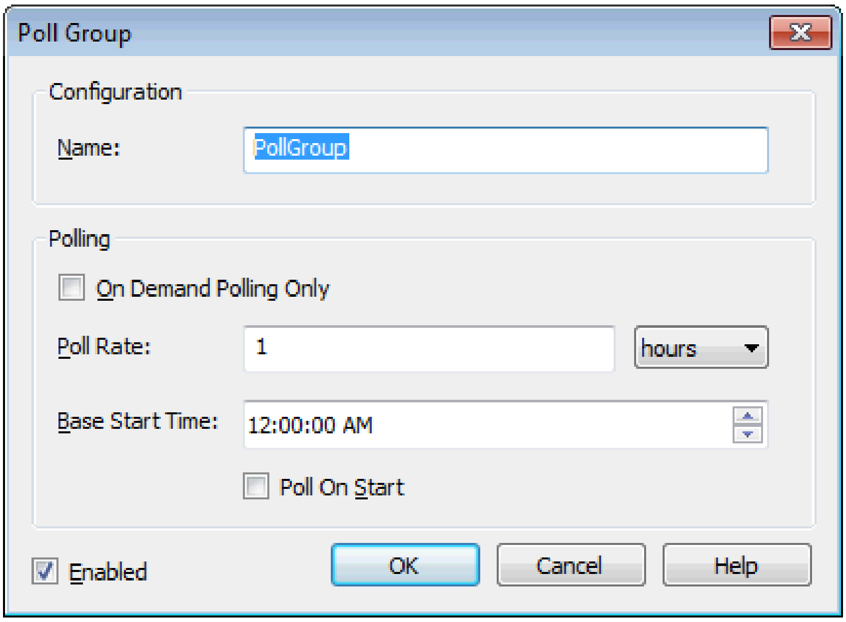


Descriptions of the views are as follows:

- This view displays poll groups, which control when EFM data is collected. Each poll group contains a folder for gas meters and liquid meters, which in turn contain a folder for exporters. Meters represent a meter that is attached to a device or flow computer. There may be multiple meters for one device. Exporters represent the output formats that are supported by the plug-in. The poll group polls child meters for EFM data and then passes that data to the exporters (which are the output formats supported by the EFM Exporter). For more information, refer to _____, _____, and _____.
- This view depends on the folder that is selected in the Project View. When the gas meters or liquid meters folder is selected, the Detail View displays the meters that are assigned to the poll group. When the exporters folder is selected, the Detail View displays the exporters that are utilized in the poll group. For more information, refer to _____.
- This view displays error, warning, and information messages for the plug-in and the server. The source of EFM Exporter events is "EFM Exporter".

The poll group controls when EFM data is collected from the child meters and exported through the child exporters.

EFM data is not stored in an intermediate database: it comes directly from the meter and goes directly to the exporter.



Descriptions of the parameters are as follows:

- This parameter specifies a unique name for the poll group. The default setting is "PollGroup".
- When checked, this option specifies that polling only occurs on writes to the poll group's poll tag. The server does not schedule polls. The default setting is unchecked. The poll group's poll tag is available through OPC and other client interfaces that are supported by the server. This allows SCADA systems to control polling.
- This parameter specifies the amount of time between EFM data polls, and may be set in terms of Minutes, Hours, or Days. The valid range is 1 minute to 90 days. The default setting is 1 hour. On Demand polls and polls on Start does not affect scheduled polls.
- This parameter specifies the base 24-hour time at which polling starts. The default setting is 12:00 AM.

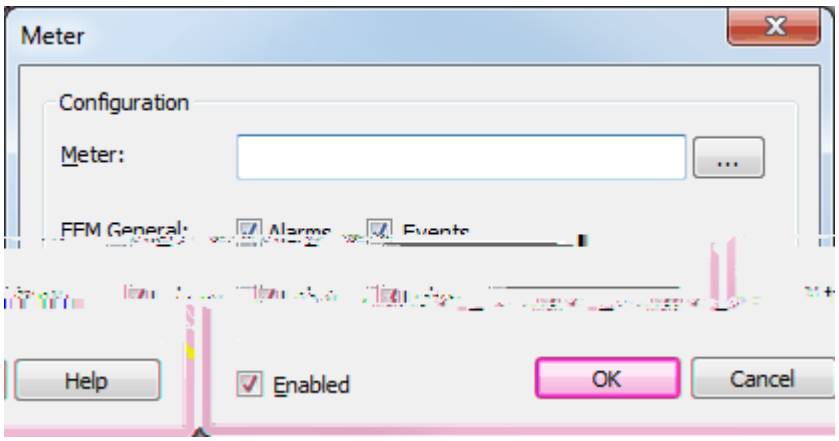
1. If the poll rate is greater than 24 hours, this time represents the time of day to start the first poll. For example, if the Base Start Time is set to 10:01:00 AM, the poll rate is 24 hours, and it is currently 1:10:00 PM, the first poll occurs the next day at 10:01:00 AM. If the poll rate is less than 24 hours, polling begins at the next available interval (as if it started at the Base Start Time)

Each EFM Device has one or more gas or liquid meter(s) that may contain optional EFM data. When polling, EFM data is gathered for each meter in the following order:

- Configuration
- Liquid Product
- History (Hourly, Daily, and Batch)
- Alarms
- Events

1. Batch and Liquid Product meter data is only available to liquid meters.
2. A gas meter poll only collects new History, Alarms, and Events data for a gas meter. A liquid meter poll only collects new History, Alarms, Events, and Batch data for a liquid meter. These types of EFM data are optional.

The device configuration controls the data that is gathered as well as how the data is mapped to EFM. For more information, refer to the specific driver's help file.



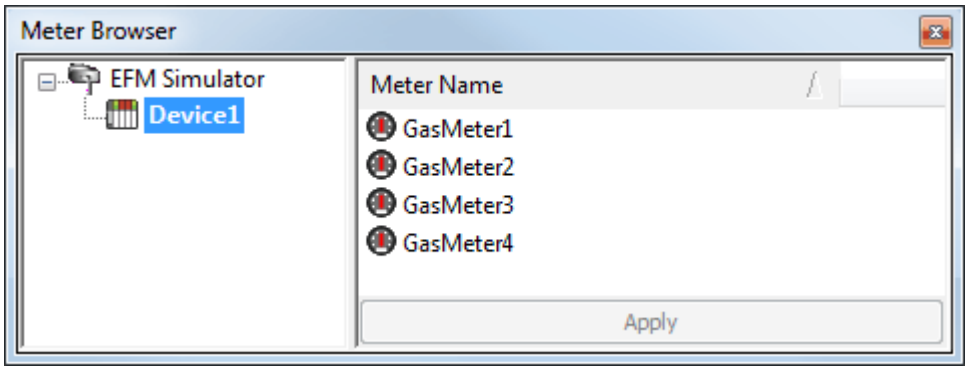
Descriptions of the parameters are as follows:

- This parameter specifies the meter name. When browsing, the meter name is automatically generated using the format <*Channel*>.<*Device*>.<*MeterName*>, where <*Channel*> and <*Device*> are created and named in the server's Channels/Devices Project View, and the <*MeterName*> is set in the <*Device*> configuration. For example, "EFM Simulator.Device1.GasMeter1".
  To browse the server configuration for meters, click the browse icon. For more information, refer to _____.
- This parameter specifies the type of data that the EFM Exporter reads for the meter. Options include Alarms and Events. All options are checked by default when applicable. Descriptions of the options are as follows:
  - When checked, meter Alarms are uploaded. The device configuration defines what constitutes a meter Alarm.
  - When checked, meter Events are uploaded. The device configuration defines what constitutes a meter Event.
- This parameter specifies the history data to be collected for the meter. Options include hourly and daily. All options are checked by default when applicable. Descriptions of the options are as follows:
  - When checked, hourly meter data is collected. The device configuration controls the EFM data in an hourly record.

- When checked, daily meter data is collected. The device configuration controls the EFM data in a daily record.
- When checked, batch meter data is collected. The device configuration controls the EFM data in a batch record. This option is only available for liquid meters.

- When checked, this option enables data export in the meter. When unchecked, the EFM Exporter does not pull any data from the meter. The default setting is checked.

Only EFM-enabled devices of the specific meter type are displayed. For example, when adding a new meter to the gas meters folder, users are only able to browse for available gas EFM meters. liquid EFM meters are not displayed.



It is not recommended that users include a device under multiple poll groups. The server caches EFM data (like last poll time) for each device. If a device is in more than one poll group, this can result in inconsistent data being exported by each poll based on poll timing. For example, data collected for a device by the first poll group is not re-collected by the next poll group.

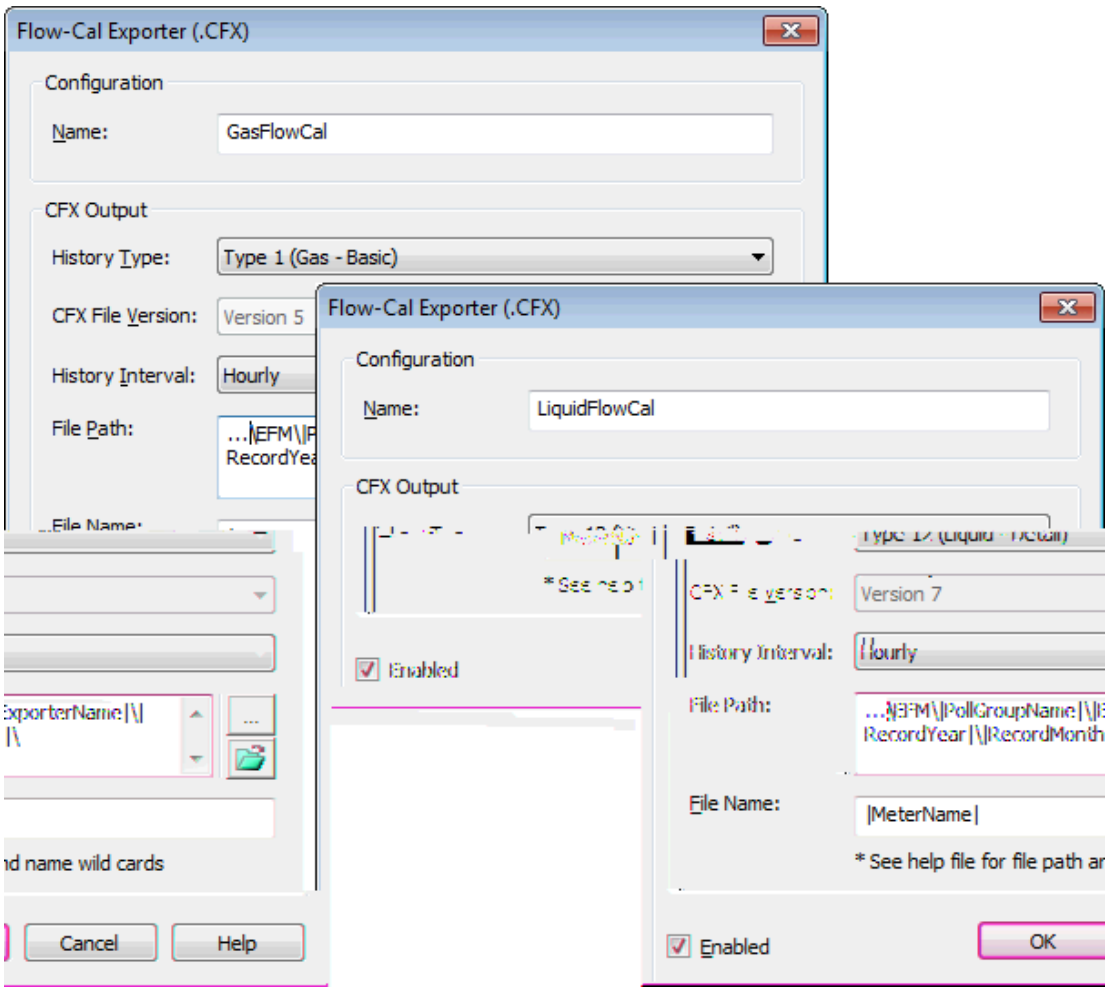
Exporters take the data that was collected from each meter during a poll and then export it to a given format. Exporters ignore meter data that they are not configured to export. If an exporter requires meter data that is not available, it outputs an Event Log message. An exporter's configuration and behavior is unique, and depends on the exporter type. For more information on a specific exporter, select a link from the list below.

The "Toggle On/Off" icon located in the EFM Exporter toolbar provides access to quick enabling or disabling. When a parent folder (such as "PollGroup") is toggled off, all child folders beneath it are also be disabled. Furthermore, when the poll group or meters folders are toggled off, users cannot enable an exporter.

The Flow-Cal Exporter keeps a local cache of the EFM data that was collected for each meter, allowing new data to be appended as it is collected. The cache grows until the exported data is consumed.

The Flow-Cal Exporter exports gas EFM meter data to V5 CFX files and liquid EFM meter data to V7 CFX files. Whether a new file is created per poll or data appended to an existing file depends on the configuration of the file path and file name parameters. The Flow-Cal Exporter keeps a cache per meter, allowing it to append data to an existing file. The cache is cleared when the client application deletes the exported file.

Times written to the CFX file use the local device time zone.



Descriptions of the parameters are as follows:

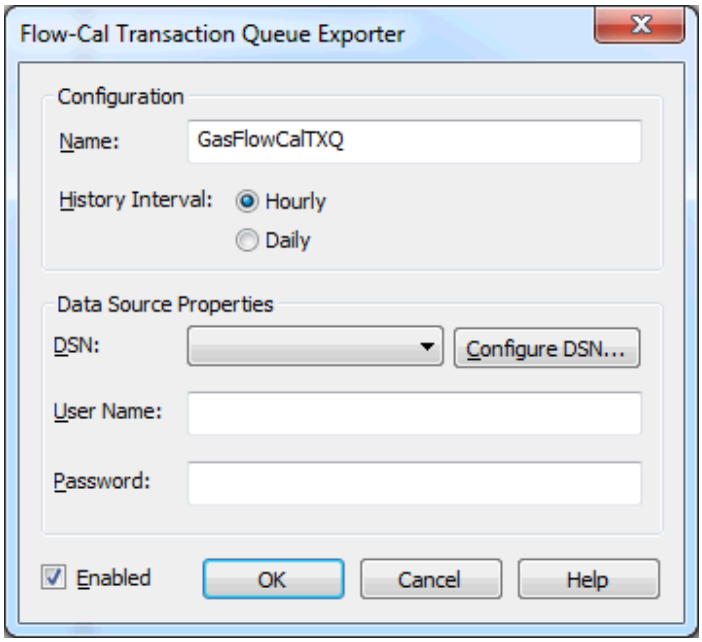
- This parameter specifies a unique name for the exporter. Each exporter must have a unique name that can neither start with an underscore nor contain a period. The maximum length is 1024 characters. The default setting is "GasFlowCal" for gas and "LiquidFlowCal" for liquid.
- This parameter specifies the type of history records to be exported. Different options are presented based on the type of meter being configured. Flow-Cal history records for Gas data include Type 1 (Gas - Basic), Type 2 (Gas - NX19/G1/G2), Type 3 (Gas - Analysis), and Type 4 (Gas - Exotic). The default setting is Type 1 (Gas - Basic). Flow-Cal history records for Liquid data include Type 11 (Liquid - Basic), Type 12 (Liquid - Detail), and Type 13 (Liquid - Analysis). The default setting is Type 12 (Liquid - Detail). Descriptions of the options are as follows:
  - This type contains basic flow information for meters without online chromatographs (such as gas volume percentages).
  - This type contains data for NX19, Gross 1, and Gross 2 calculation methods (which are AGA and industry standard methods for calculating flow).

- This type contains

The Flow-Cal Transaction Queue Exporter exports gas EFM meter data to a Flow-Cal Transaction Queue database using an ODBC DSN connection. Records are created for each EFM type: Config, Alarms, Events, and History. Records are generated using the EFM data set and inserted into the database for the Flow-Cal software to read. The exporter does not support polling/ exporting liquid EFM meter data.

- 32-bit Oracle Instant Client with ODBC driver installed on the machine where the server is running
- User account with write permissions in the Flow-Cal Transaction Queue database
- Local 32-bit DSN configured to connect to the Flow-Cal Transaction Queue database

Database values for the WRITE_TIMESTAMP and WRITE_DATE columns use the time zone set on the machine running the server; all other date and timestamp values use the time zone set on the EFM device.



Descriptions of the parameters are as follows:

- This parameter specifies the name of the Flow-Cal Transaction Queue Exporter being configured. When a new Flow-Cal Transaction Queue Exporter is created, this parameter generates a name that is unique across all other exporters within the poll group. The default setting is "GasFlowCalTXQ". Each additional exporter created has an automatically incremented integer attached to the end of the default name.
- (Hourly or Daily): This parameter specifies the type of history data to be output from the meter. Each Flow-Cal Transaction Queue Exporter can be set to Hourly or Daily. To export both Hourly and Daily historical records, configure two exporters with one set to Hourly and the other set to Daily. Both exporters may export to the same DSN.
- : Specify the existing database connection object (a prerequisite for the Flow-Cal Transaction Queue Exporter). Contact a systems Administrator for the correct DSN selection and configuration settings for connecting to the Flow-Cal Transaction Queue database.

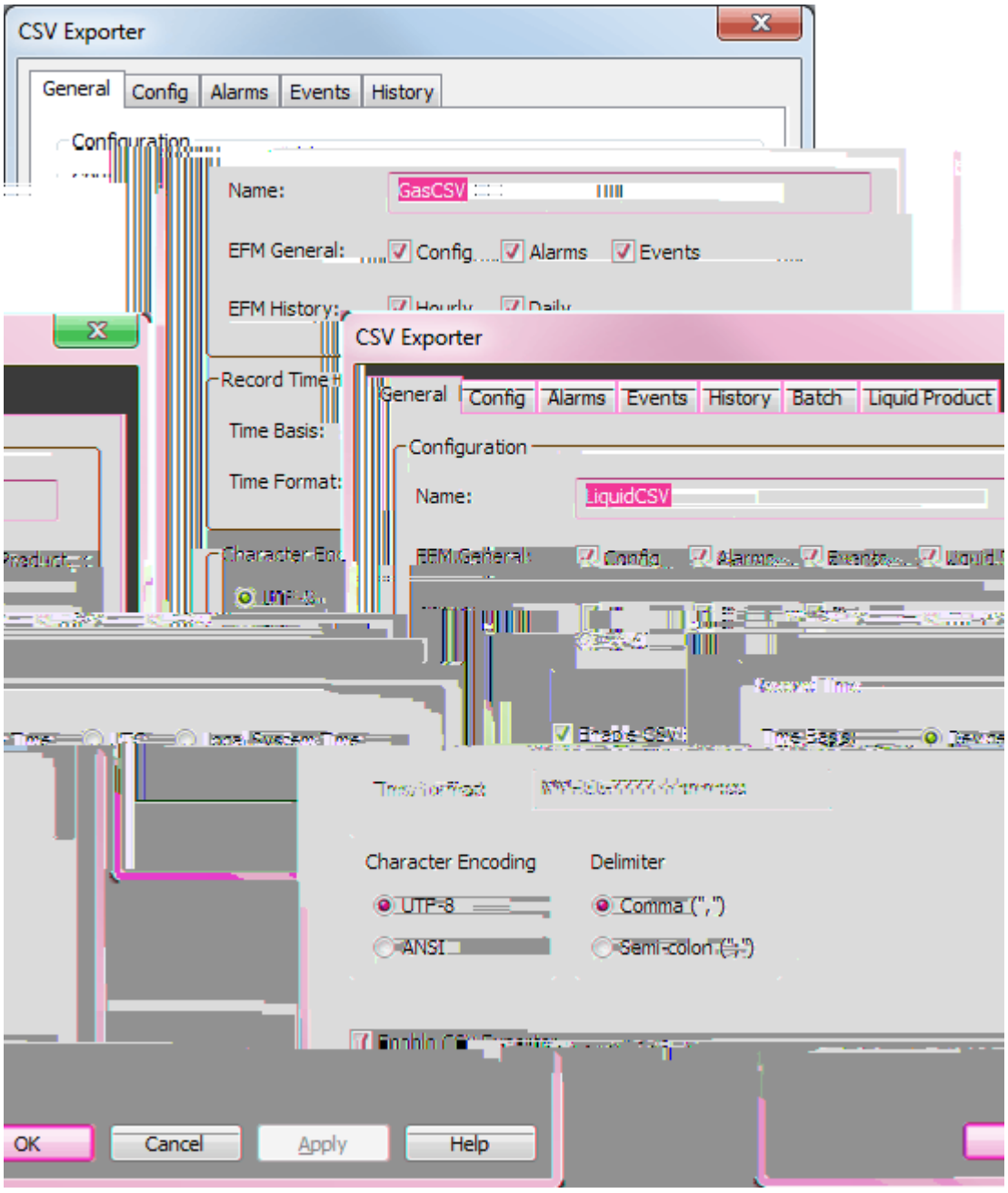
  : If changes are made to the DSN configuration in the Microsoft ODBC Data Source Administrator, the exporter must be disabled and re-enabled to use the new DSN configuration. Starting and stopping the server also applies the new DSN configuration to the exporter.
- : This button launches the Windows 32-bit ODBC Data Source Administrator, which can configure a DSN.
- : This parameter specifies the account to be used for the DSN connection.
- : This parameter specifies a password for the specified user account; only necessary if the data source requires it.

- : When checked, this option allows exporting in the Flow-Cal Transaction Queue Exporter. When unchecked, the exporter does not send data to the Flow-Cal Transaction Queue database. The default setting is checked.

The CSV exporter exports gas or liquid meter EFM data to CSV files. The exporter supports multiple meters per export, differentiating each meter with a unique file name and file path.

An output file is created for each enabled EFM type; for gas meters, that can be Config, Alarms, Events, and History; for liquid meters, that can be Config, Liquid Product, Alarms, Events, History, and Batch.

When actively reading or writing CSV data, the CSV exporter enforces a file-locking scheme that prohibits external entities from opening the output file until the read or write is complete.



Descriptions of the parameters are as follows:

- This parameter specifies the name of the CSV exporter that is being configured. When a new CSV exporter is created, this parameter generates a name that is unique across all other exporters. The name can be customized from the defaults of "GasCSV" and ñLiquidCSVò. Each additional file created has an automatically incremented integer attached to the end of the name.
- This parameter specifies which of the EFM types are output to the target. Gas options include Config, Alarms, and Events. Liquid options include Config, Alarms, Events, and Liquid Products. All options are checked by default. Descriptions of the options are as follows:
  - When checked, Configuration data is enabled for export.
  - When checked, Alarms data is enabled for export.
  - When checked, Events data is enabled for export.
  - When checked, Liquid Product data is enabled for export. This option is only available for liquid exporters.

  Outputs may also be enabled or disabled through their specific tab.

- This parameter specifies the type of history data output for the meter. Gas options include hourly and daily. Liquid options include hourly, daily, and batch. All options are enabled by default. Descriptions of the options are as follows:
  - When checked, hourly history data is enabled for export.
  - When checked, daily history data is enabled for export.
  - When checked, Batch Output is enabled for export. This option is only available for liquid exporters.

  Outputs may also be enabled or disabled through their specific tab.

- This parameter specifies the format of the EFM time records. Options include Device Time, UTC, and Local System Time. The default setting is Device Time. Descriptions of the options are as follows:
  - When selected, the EFM time records are the default time of the device.
  - When selected, the EFM time records are in Coordinated Universal Time (UTC).
  - When selected, the EFM time records are the time of the local system.

  This setting does not affect any wildcards that may be set in the Time Format parameter.

- This parameter allows users to edit the Time Format of the output file. Wildcards include MM, DD, YYYY, hh, mm, ss, and AMPM. Users can arrange the wildcards in any order and delimit them as desired. All other characters are output as written. The default setting is MM-DD-YYYY hh:mm:ss.

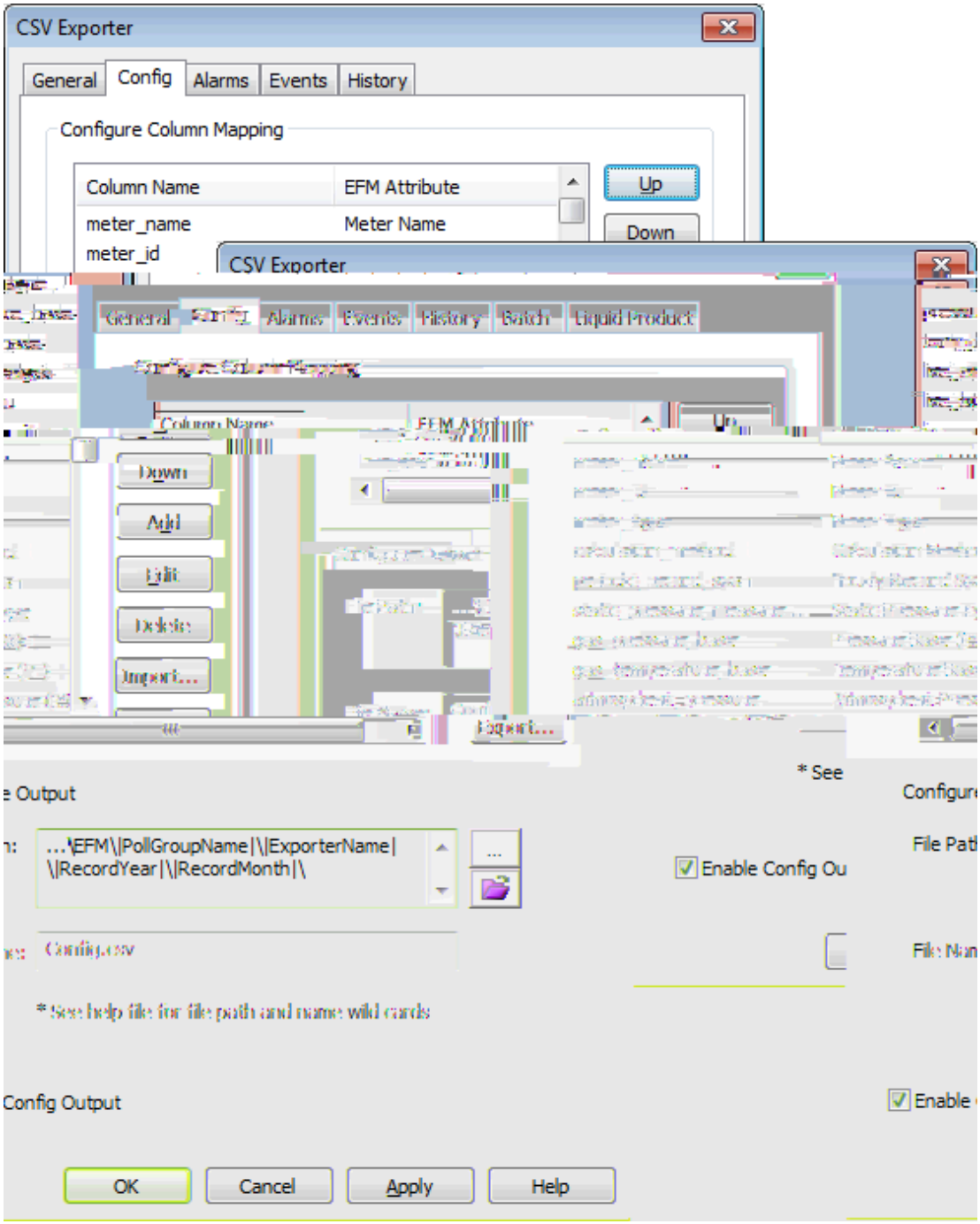
  If the string is changed to YYYY-DD-MM hh:mm:ss and the output CSV is loaded to Microsoft Excel, the string is interpreted in a special way and displayed according to Excel's own date/time column rules.

  Records are stored in memory as UTC. To load and convert record times to a different Time Basis, manage Daylight Saving Time, and so forth, all elements of the time/date must be recorded. For example, if a user enters "DD-MM-YY hh:mm (AMPM)" and the current record time is "09/12/2012 16:05", the value output to the file is "12-09-12 4:05 (PM)".

- This parameter specifies the character encoding, which affects the text that is generated on one computer or system and consumed on another computer or system. Options include UTF-8 and ANSI. The default setting is UTF-8. Descriptions of the options are as follows:
  - When selected, the code points are represented by sequences of bytes that are up to 4 bytes long. UTF-8 (or 8-bit Unicode Transformation Format) is a variable length character encoding for Unicode that is ANSI compatible and compact. Information about the length of the sequence is encoded in the upper bits of each byte of the sequence.
  - When selected, ASCII encoding is extended to different languages. The lower 127 characters retain the ASCII character mapping and the top 128 characters vary depending on the system.

    If a file is selected for import that does not contain a Byte Order Mark (BOM), the import assumes UTF-8.
- This parameter specifies the separator character used in writing. It is ignored when reading. Options include comma and semi-colon. The default setting is comma.
- When checked, this option enables polling in the CSV exporter. When unchecked, the CSV exporter does not poll. The default setting is checked.

The Config Output supports one set of records for a given meter. The attribute lists depends on whether the CSV exporter is for a gas meter or a liquid meter.



Descriptions of the parameters are as follows:

- This field lists all attributes that are available by default. The order of the attributes may be customized using the navigational buttons.
  Not all attributes are supported by all EFM-enabled drivers. For more information on supported

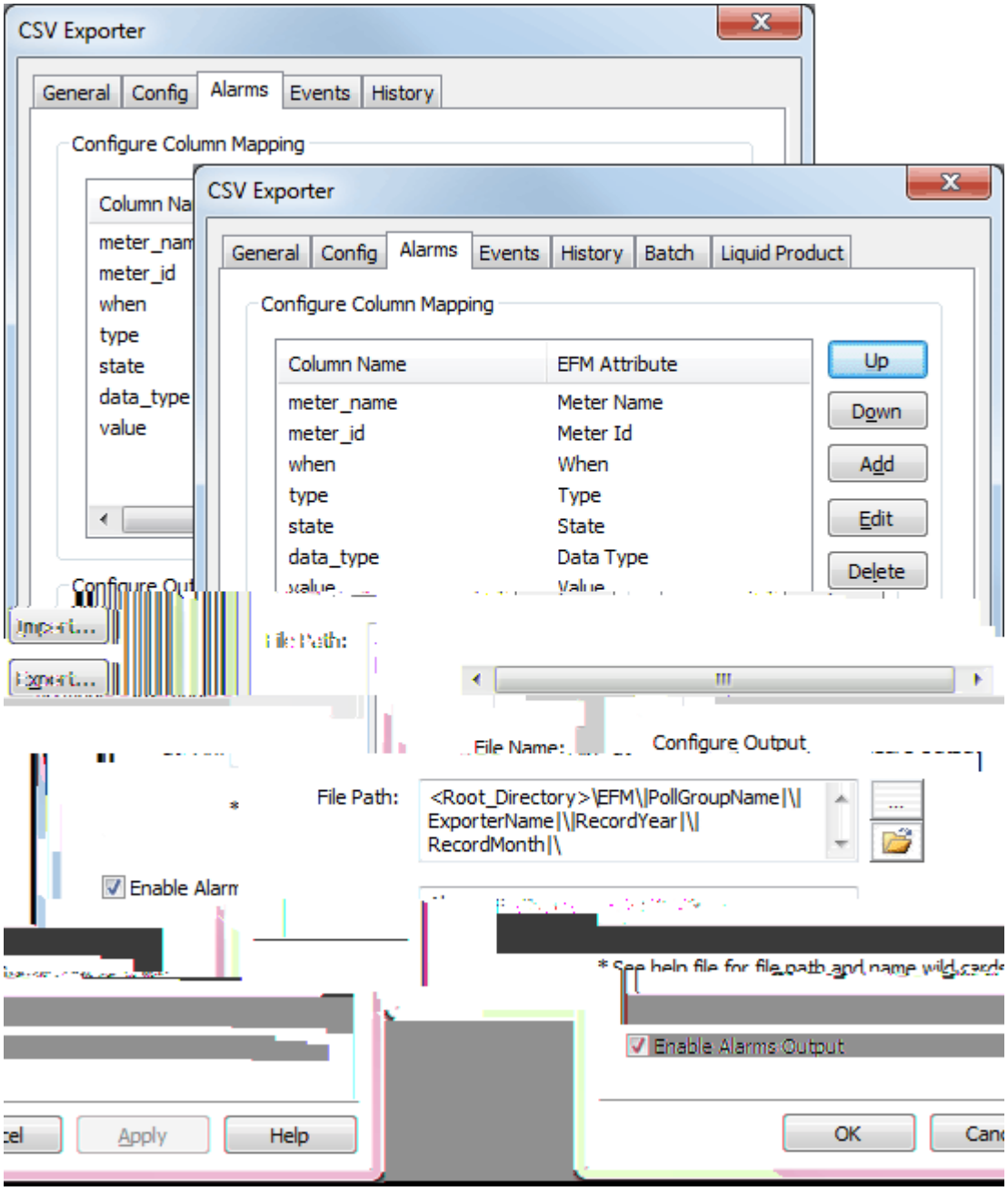
attributes, refer to the driver's help documentation.

- When selected, this button moves the selected attribute up one spot in the list.
- When selected, this button moves the selected attribute down one spot in the list.
- When selected, this button adds an attribute to the record at the top of the list. The same attribute can be added to the record more than once. For more information, refer to _____ _____.
- When selected, this button is used to edit a selected attribute. For more information, refer to _____.
- When selected, this button deletes the selected attribute

Static Pressure Type	Gauge = 1 Absolute = 2
Unit Volume	Million Cubic Meters = 1 Thousand Cubic Meters = 2[2] Hundred Cubic Meters = 3 Cubic Meters = 4 Million Cubic Feet = 5 Thousand Cubic Feet = 6[3] Hundred Cubic Feet = 7 Cubic Feet = 8
Unit K Factor	Counts Per Million Cubic Meters = 1 Counts Per Thousand Cubic Meters = 2[2] Counts Per Hundred Cubic Meters = 3 Counts Per Cubic Meter = 4 Counts Per Million Cubic Feet = 5 Counts Per Thousand Cubic Feet = 6[3] Counts Per Hundred Cubic Feet = 7 Counts Per Cubic Foot = 8

1. This table refers to attributes that are specific to gas meters.
2. This is the default if the units are Metric.
3. This is the default if the units are English.

The Alarms Output supports more than one set of records for a given meter.



Descriptions of the parameters are as follows:

- a u : This field lists all attributes that are available by default. The order of the attributes may be cu ƈ

be a

- When selected, this button invokes the Import CSV Header dialog, which is used to locate and select a CSV header for import into the record.
  Importing a column header from an existing file eliminates the existing map. Users must then go through the columns and assign the attributes.
- When selected, this button exports the configured column names to a file of the user's choice.
- This parameter specifies the output file location on the file system. Although a path is generated by default (using wildcards for the Poll group name, exporter name, record year, and record month), users can browse to and select a different location. To browse for and select a new file location, click the icon. To open the file path without wildcards, click the icon.
- This parameter specifies the name of the record. It can be used for more than one set of records. The default setting is "Alarms.csv".
- When checked, the Alarms Output is enabled for polling. The default setting is checked.

The Alarms Output type includes the following parameters:

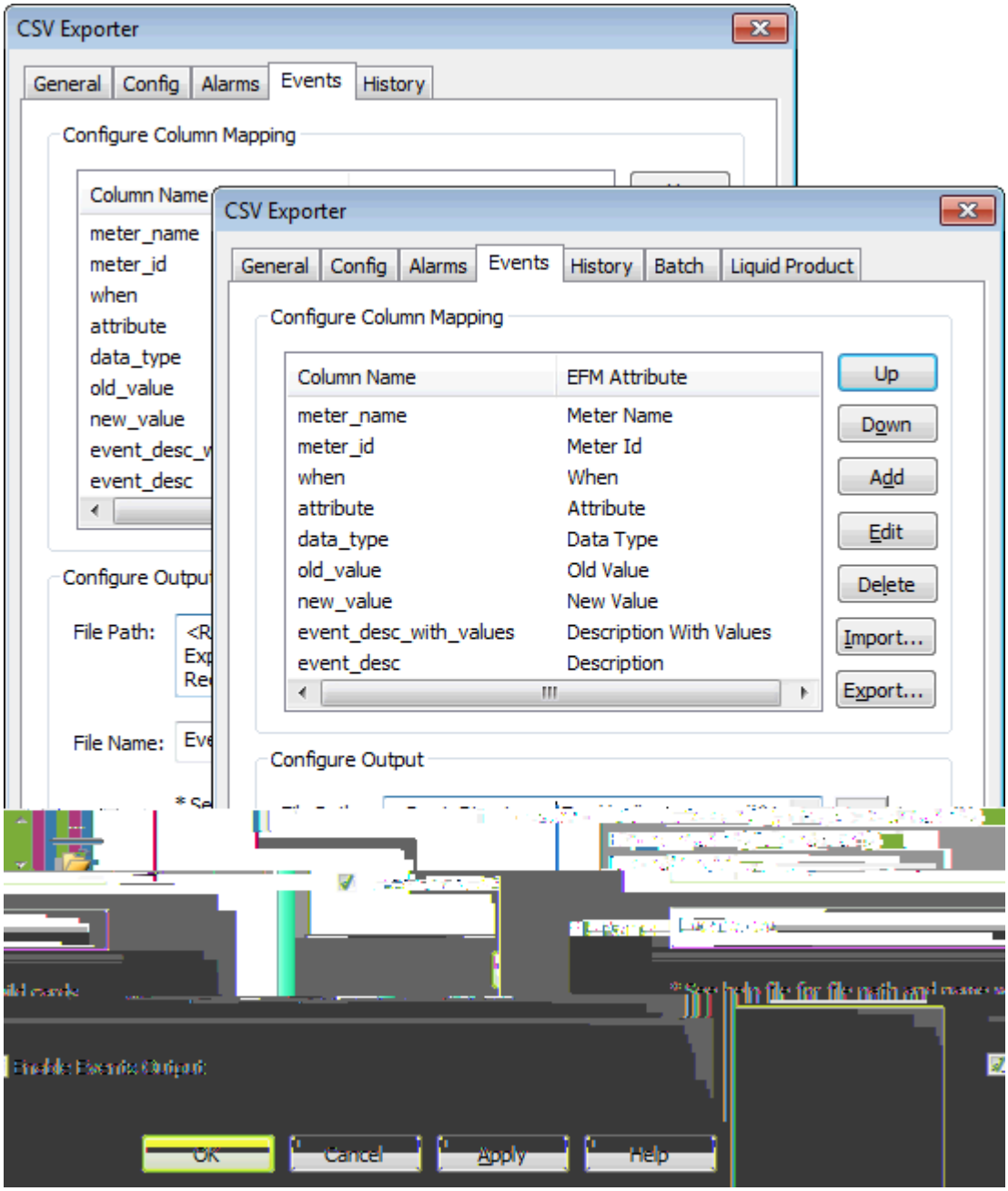
- A timestamp (displayed in Device, Host system, or UTC time format) that marks when the alarm occurred.
- The type of alarm.
- The state of the alarm.
- The value of the alarm.
- The data type of the alarm value.

The type, state, and alarm value data type fields are output as numeric codes. For more information, refer to the table below.

Alarm Data Type	Output corresponds to the Win32 VARTYPE data type.*
Alarm State	Off = 1 On = 2 Hi = 3 Lo = 4
Alarm Type	None = 0 Differential Pressure = 1 Static Pressure = 2 Temperature = 3 Cutoff = 4 Backflow = 5 Battery = 6

*Values for this data type correspond to the VARENUM enumeration, which is documented by Microsoft/MSDN at _____.

The Events Output supports more than one set of records for a given meter.

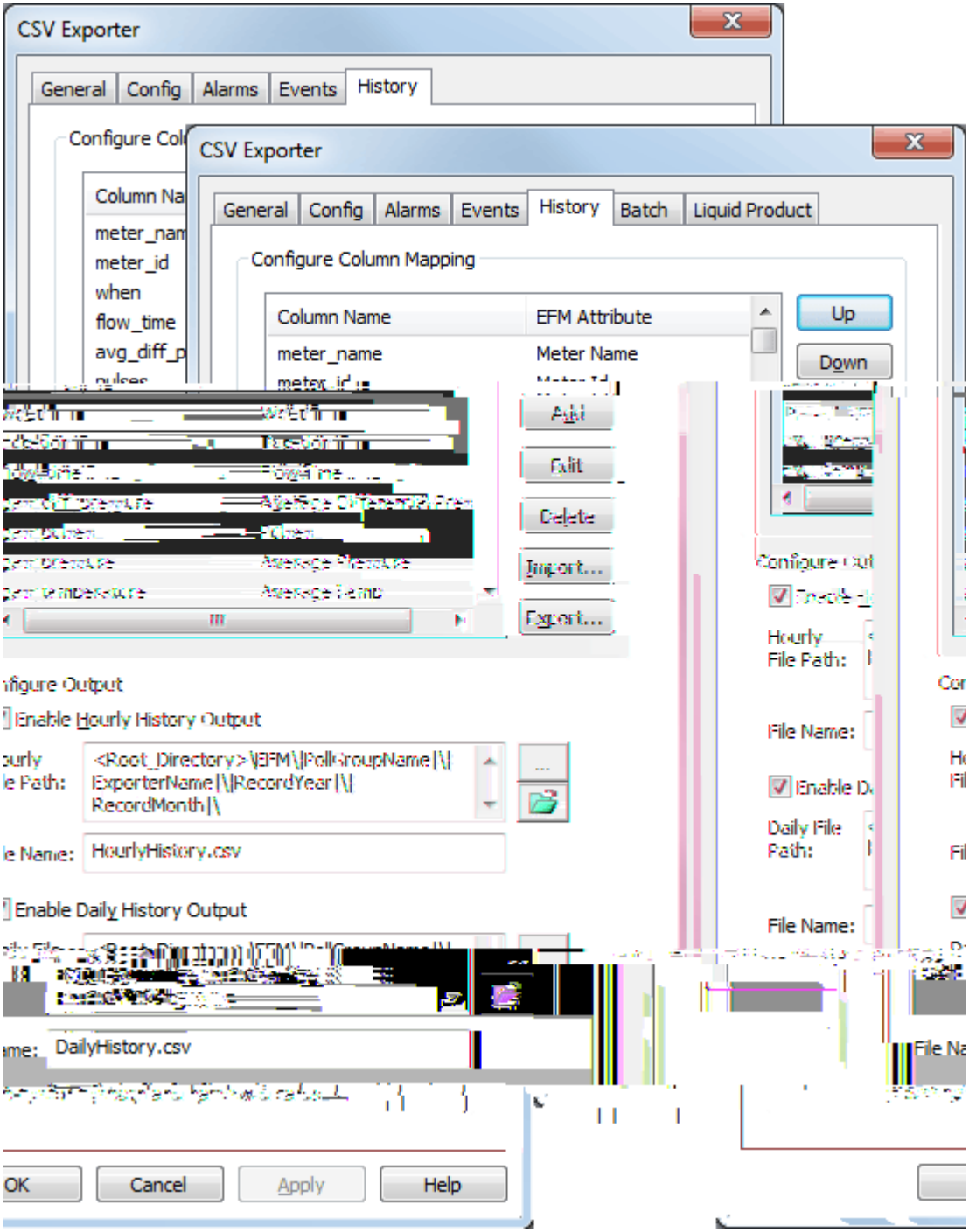


Descriptions of the parameters are as follows:

- This field lists all attributes that are available by default. The order of the attributes may be

- When selected, this button invokes the Import CSV Header dialog, which is used to locate and select a CSV header for import into the record.
  Importing a column header from an existing file eliminates the existing map. Users must then go through the columns and assign the attributes.
- When selected, this button exports the configured column names to a file of the user's choice.
- This parameter specifies the output file location on the file system. Although a path is generated by default (using wildcards for the poll group name, exporter name, record year, and record month), users can browse to and select a different location. To browse for and select a new file location, click the icon. To open the file path without wildcards, click the icon.
- This parameter specifies the name of the record. It can be used for more than one set of records. The default setting is "Events.csv".
- When checked, the Events Output is enabled for polling. The default setting is checked.

The History Output supports more than one set of records for a given meter. The attribute lists depends on whether the CSV exporter is for a gas meter or a liquid meter.

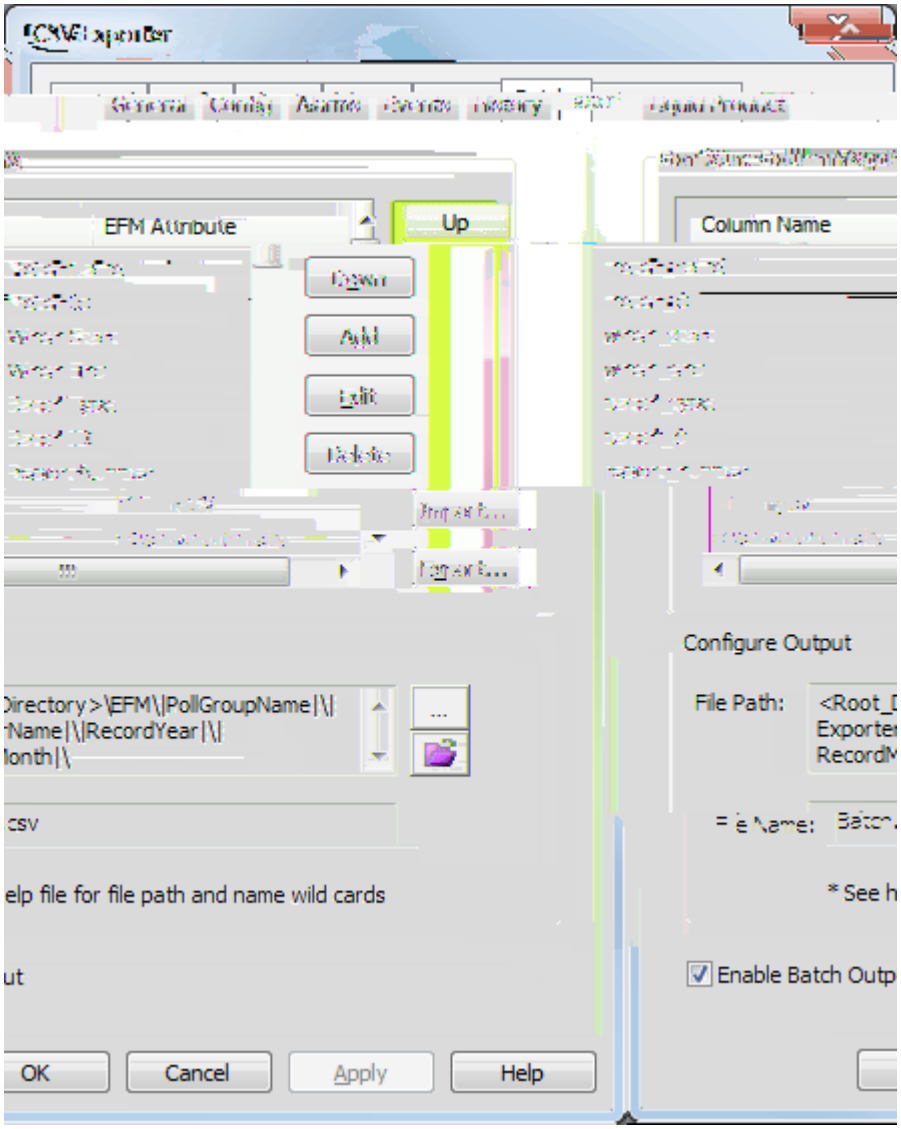


Descriptions of the parameters are as follows:

- This field lists all attributes that are available by default. The order of the attributes may be customized using the navigational buttons.
  Not all attributes are supported by all EFM-enabled drivers. For more information on supported attributes, refer to the driver's help documentation.
- When selected, this button moves the selected attribute up one spot in the list.
- When selected, this button moves the selected attribute down one spot in the list.
- When selected, this button adds an attribute to the record at the top of the list. The same attribute can be added to the record more than once. For more information, refer to _____ _____.

- When selected, this button is used to edit a selected attribute. For more information, refer to _____.
- When selected, this button deletes the selected attribute from the record.
- When selected, this button invokes the Import CSV Header dialog, which is used to locate and select a CSV header for import into the record.
  Importing a column header from an existing file eliminates the existing map. Users must then go through the columns and assign attributes.
- When selected, this button exports the configured column names to a file of the user's choice.
- When checked, polling for the Hourly History Output is enabled. The default setting is checked.
- This parameter specifies the Hourly History output file location on the file system. Although a path is generated by default (using wildcards for the poll group name, exporter name, record year, and record month), users can browse to and select a different location. To browse for and select a new file location, click the icon. To open the file path without wildcards, click the icon.
- This parameter specifies the name of the Hourly History record. It can be used for more than one set of records. The default setting is "HourlyHistory.csv".
- When checked, polling for the Daily History Output is enabled. The default setting is checked.
- This parameter specifies the Daily History Output's file path. Although a path is generated by default (using wildcards for the poll group name and exporter name), users can browse to and select a different location. To browse for and select a new file location, click the icon. To open the file path without wildcards, click the icon.
- This parameter specifies the name of the Daily History record. It can be used for more than one set of records. The default setting is "DailyHistory.csv".

The Batch Output supports more than one set of CSV records for a given liquid meter.

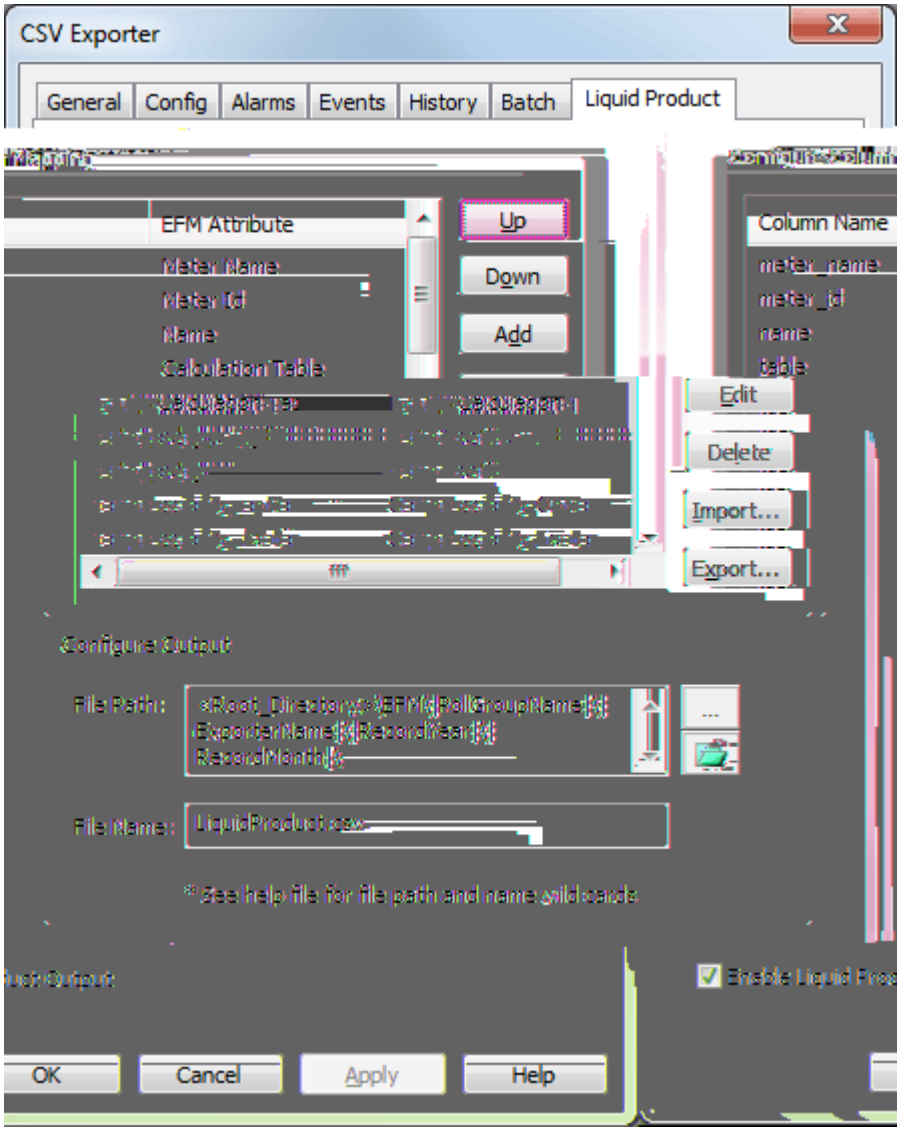


Descriptions of the parameters are as follows:

- This field lists all attributes that are available by default. The order of the attributes may be customized using the navigational buttons.
  Not all attributes are supported by all

- This parameter specifies the output file location on the file system. Although a path is generated by default (using wildcards for the poll group name, exporter name, record year, and record month), users can browse to and select a different location. To browse for and select a new file location, click the icon. To open the file path without wildcards, click the icon.
- This parameter specifies the name of the Hourly History record. It can be used for more than one set of records. The default setting is "Batch.csv".
- When checked, Batch output is enabled for polling. The default setting is checked.

The Liquid Product Output supports the liquid product CSV records for a given liquid meter.

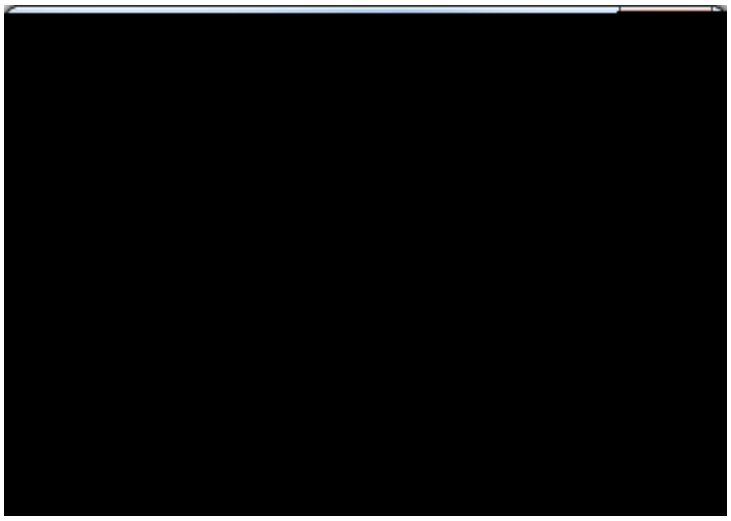


Descriptions of the parameters are as follows:

- This field lists all attributes that are available by default. The order of the attributes may be customized using the navigational buttons.
  Not all attributes are supported by all EFM-enabled drivers. For more information on supported attributes, refer to the driver's help documentation.

- When selected, this button moves the selected attribute up one spot in the list.
- When selected, this button moves the selected attribute down one spot in the list.
- When selected, this button adds an attribute to the record at the top of the list. The same attribute can be added to the record more than once. For more information, refer to _____ _____.
- When selected, this button is used to edit a selected attribute. For more information, refer to _____.
- When selected, this button deletes the selected attribute from the record.
- When selected, this button invokes the Import CSV Header dialog, which is used to locate and select a CSV header for import into the record.
  Importing a column header from an existing file eliminates the existing map. Users must then go through the columns and assign attributes.
- When selected, this button exports the configured column names to a file of the user's choice.
- This parameter specifies the output file location on the file system. Although a path is generated by default (using wildcards for the poll group name, exporter name, record year, and record month), users can browse to and select a different location. To browse for and select a new file location, click the icon. To open the file path without wildcards, click the icon.
- This parameter specifies the name of the Hourly History record. It can be used for more than one set of records. The default setting is "LiquidProduct.csv".
- When checked, Liquid Product output is enabled for polling. The default setting is checked.

This dialog is used to add or edit an EFM attribute in the record.

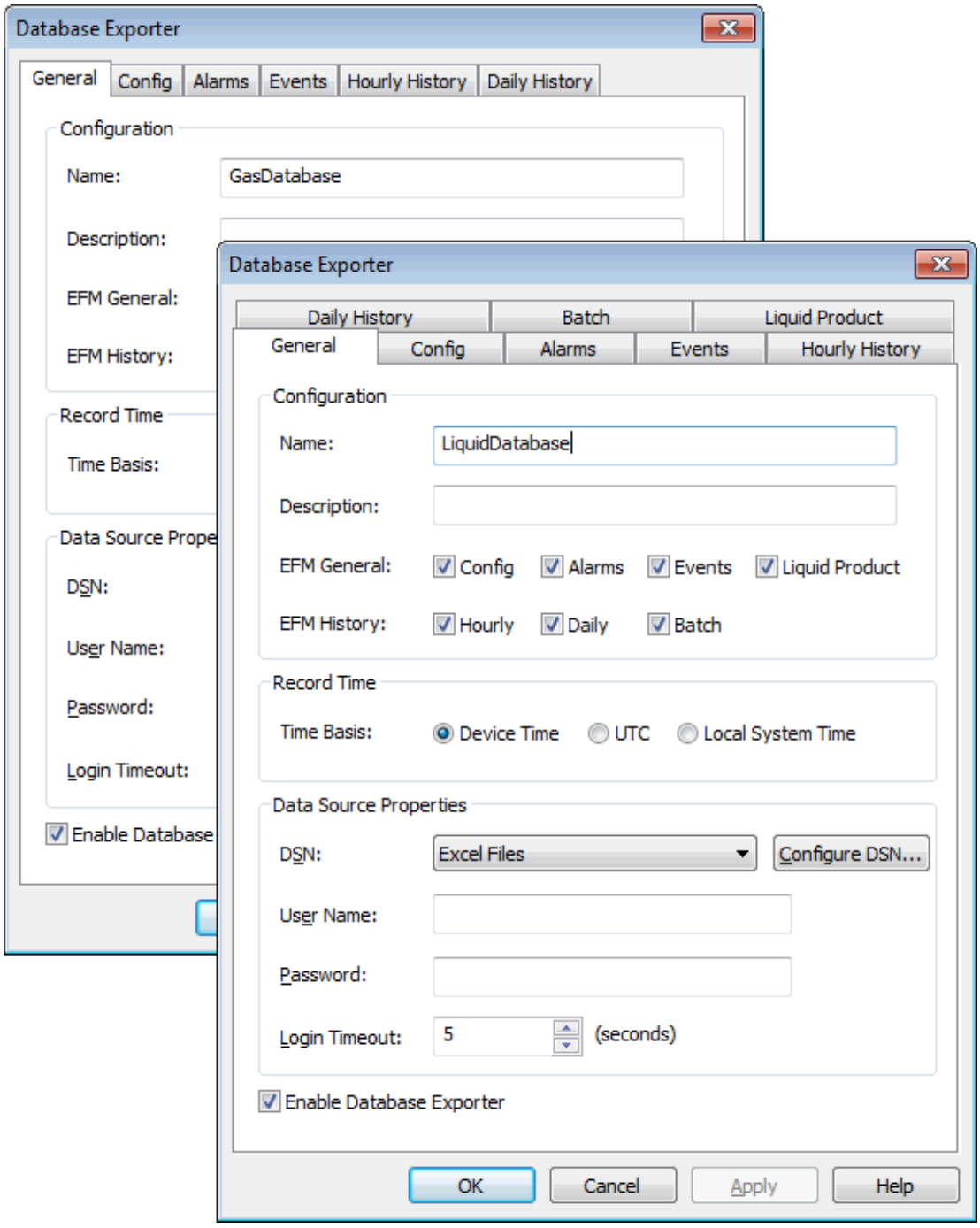


Descriptions of the parameters are as follows:

- This parameter specifies the column name for the new EFM attribute. The default setting is ColumnName.
- This drop-down menu lists all attributes that are available for selection. An attribute can be mapped to more than one column and appear multiple times in the row of CSV data. The default setting is <none>.
  An attribute that is specified as <none> is displayed as an empty column in the row of CSV data. This may be useful for adding lines of space to an output record.
- This specifies the attribute's default data type. The default setting is <none>.

The order of the items in the Attribute list is significant. The topmost item represents the leftmost CSV column; the bottom item represents the rightmost CSV column.

The database exporter exports gas or liquid meter EFM data to SQL or ODBC databases for analytical and storage purposes. It supports multiple meters per export differentiating each meter with a unique table. An output file is created for each enabled EFM type; for gas meters, that can be Config, Alarms, Events, and History; for liquid meters, that can be Config, Liquid Product, Alarms, Events, History, and Batch.



Descriptions of the parameters are as follows:

- This parameter specifies a unique name for the exporter. Each EFM Exporter must have a unique name that can neither start with an underscore nor contain a period. The maximum length is 1024 characters. The name can be customized from the defaults of "GasDatabase" and ñLiquidDatabaseò.

- This optional parameter describes the database exporter and may be included in the export.

- This parameter specifies which of the EFM types are output to the target. Gas options include Config, Alarms, and Events. Liquid options include Config, Alarms, Events, and Liquid Product. All options are checked by default. Descriptions of the options are as follows:
  - When checked, Config Output is enabled for export.
  - When checked, Alarms Output is enabled for export.
  - When checked, Events Output is enabled for export.
  - When checked, Liquid Product Output is enabled for export. This option is only available for liquid exporters.

  Outputs may also be enabled or disabled through their specific tab.

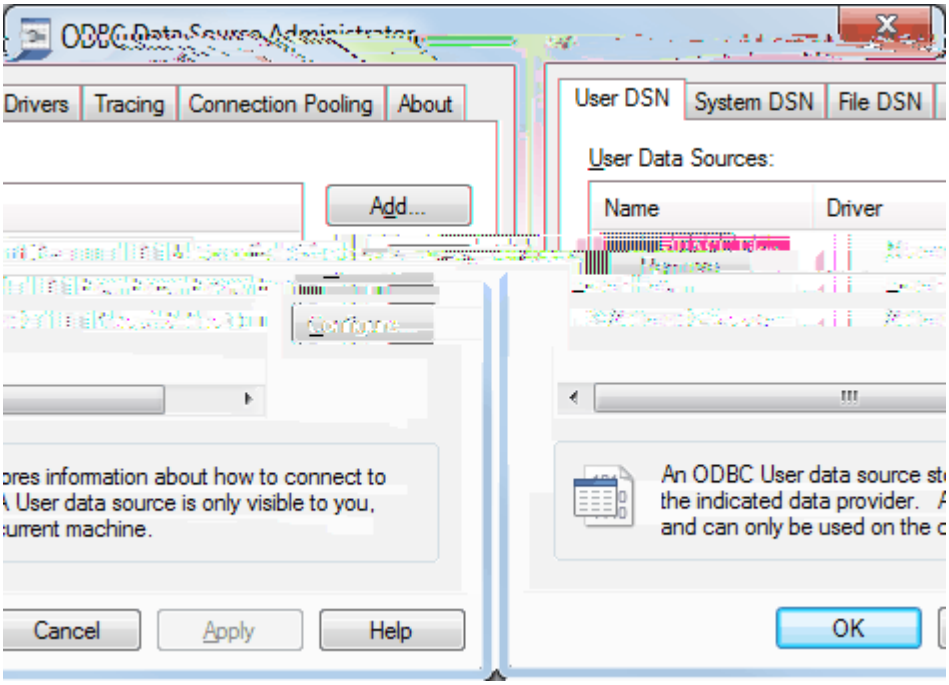
- This parameter specifies the type of history data to be output for the meter. Gas options include hourly and daily. Liquid options include hourly, daily, and batch. All options are checked by default. Descriptions of the options are as follows:
  - When checked, Hourly History Output is enabled for export.
  - When checked, daily meter data is enabled for export.
  - When checked, Batch Output is enabled for export. This option is only available for liquid exporters.

  : Outputs may also be enabled or disabled through their specific tab.

- This parameter specifies the format of the EFM time records. Options include Device Time, UTC, and Local System Time. The default setting is Device Time. Descriptions of the options are as follows:
  - When selected, the EFM time records are the default time of the device.
  - When selected, the EFM time records are in Coordinated Universal Time (UTC).
  - When selected, the EFM time records are the time of the local system.
- This parameter specifies the DSN for the database. If the DSN is not listed, it must be configured. For more information, refer to _____.

  : If changes are made to the DSN configuration in the Microsoft ODBC Data Source Administrator, the exporter must be disabled and re-enabled to use the new DSN configuration. Starting and stopping the server also applies the new DSN configuration to the exporter.

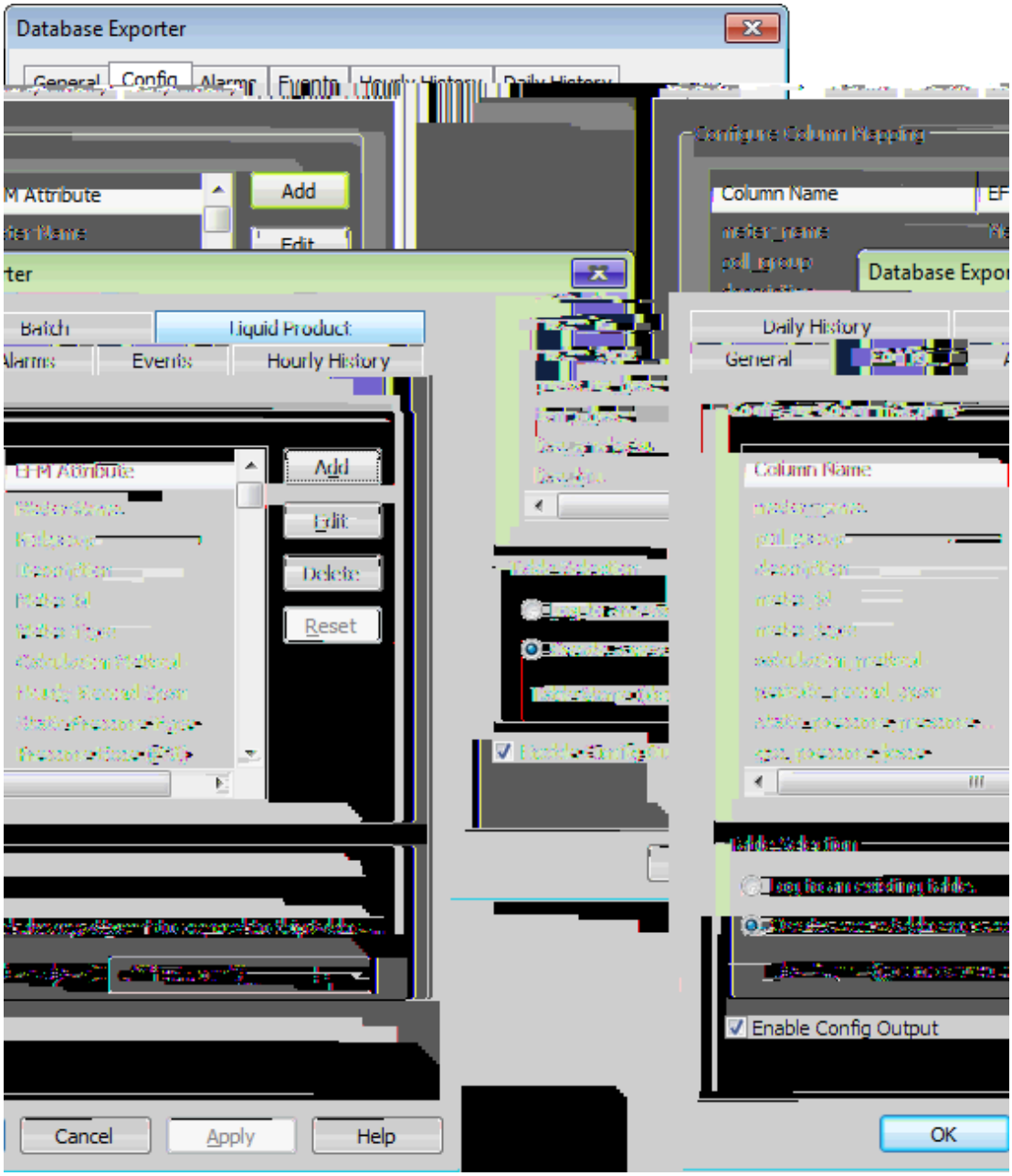
- This parameter specifies a user name for the DSN. It is only necessary if the data source requires it.
- This parameter specifies a password for the DSN. It is only necessary if the data source requires it.
- This parameter specifies how long the server waits for a response when attempting to connect to the DSN. At the end of that time, the connection attempt times out. The valid range



3. Next, click .
4. In , locate and select the driver for the specific database. Then, click .
5. Continue through the DSN Wizard.

The dialogs and fields presented in the DSN Wizard depends on the database connected and the DSN configured. If presented with a button, select it to verify that the DSN setup is functional.

The Config Output supports one set of records for a given meter. The attribute lists depends on whether the database exporter is for a gas meter or a liquid meter.



Descriptions of the parameters are as follows:

- This field lists all attributes that are available by default. Not all attributes are supported by all EFM-enabled drivers. For more information on supported attributes, refer to the driver's help documentation.
- When selected, this button adds an attribute to the record at the bottom of the list. The same attribute can be added to the record more than once. For more information, refer to _____ _____.
- When selected, this button edits a selected attribute. For more information, refer to _____ _____.
- When selected, this button deletes the selected attribute from the record.
- When selected, this button clears the column mappings. It is only available when the Table Selection is set to Log to an existing table.

- This option specifies the table. Options include Log to an existing table and Create a new table once and always attempt to append to this table. The default setting is Create a new table once and always attempt to append to this table.
- This parameter specifies the table name. The drop-down menu queries existing tables when the Table Selection option is set to Log to an existing table. The default table name is efmgasconfig for gas meters and efmliquidconfig for liquid meters.
- When checked, the Config Output is enabled for export. The default setting is checked.

The Config Output supports a number of enumerated values. For more information, refer to the table below.

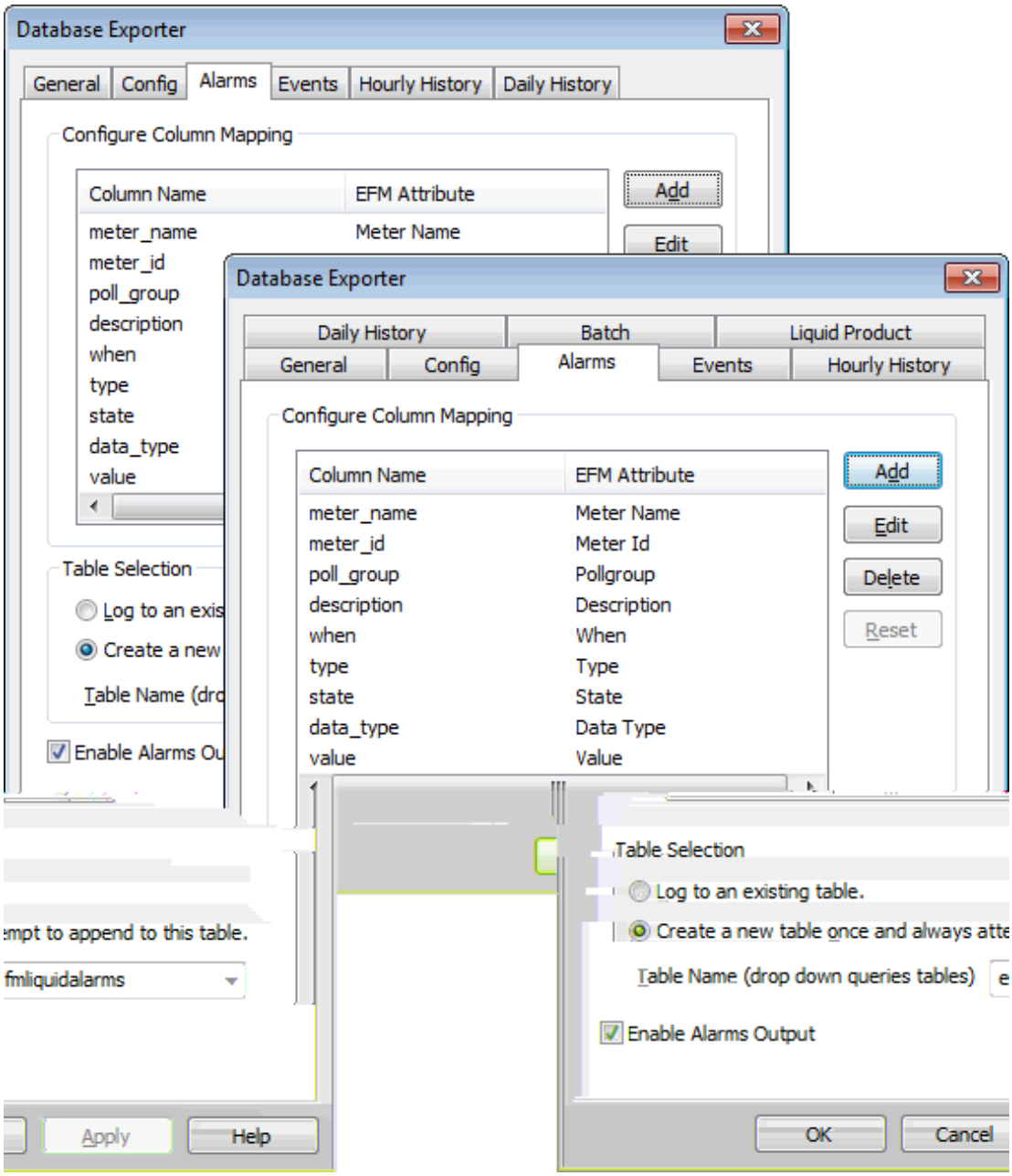
Meter Type	Orifice = 1 Positive Displacement = 2 Turbine = 3 Ultrasonic = 4 Liquids = 5 Vcone = 6 Coriolis = 7 Line Pack = 8
Calculation Method	Aga3 1985 = 1 Aga3 1992 = 2 Aga5 = 3 Aga7 = 4 Vcone4 = 5 Aga11 = 6 Line Pack Calc = 7
Meter Tap	Flange = 1 Pipe = 2
Static Pressure Tap	Up = 1 Down = 2
Units of Measurement	English = 1 Metric = 2
Hourly Record Span	Leading = 1 (Leading | Contract Hour 8 = 8:00-8:59) Trailing = 2 (Trailing | Contract Hour 8 = 7:01-8:00)
BTU Base	Wet = 1 Dry = 2 As Delivered = 3
Pipe and Plate Material	Stainless Steel = 1 Carbon Steel = 2 Monel = 3
FPV Method	Nx 19 = 1 Aga8 Detail = 2 Aga8 Gross1 = 3 Aga8 Gross2 = 4
Static Pressure Type	Gauge = 1 Absolute = 2
Unit Volume	Million Cubic Meters = 1 Thousand Cubic Meters = 2* Hundred Cubic Meters = 3 Cubic Meters = 4 Million Cubic Feet = 5 Thousand Cubic Feet = 6** Hundred Cubic Feet = 7 Cubic Feet = 8
Unit K Factor	Counts Per Million Cubic Meters = 1 Counts Per Thousand Cubic Meters = 2* Counts Per Hundred Cubic Meters = 3 Counts Per Cubic Meter = 4 Counts Per Million Cubic Feet = 5

	Counts Per Thousand Cubic Feet = 6** Counts Per Hundred Cubic Feet = 7 Counts Per Cubic Foot = 8

*This is the default if the Units are Metric.

**This is the default if the Units are English.

The Alarms Output supports more than one set of records for a given meter.



Descriptions of the parameters are as follows:

- This field lists all attributes that are available by default. Not all attributes are supported by all EFM-enabled drivers. For more information on supported attributes, refer to the driver's help documentation.
- When selected, this button adds an attribute to the record at the bottom of the list. The same attribute can be added to the record more than once. For more information, refer to _____ _____.
- When selected, this button is used to edit a selected attribute. For more information, refer to _____.
- When selected, this button deletes the selected attribute from the record.
- When selected, this button clears the column mappings. It is only available when the Table Selection is set to Log to an existing table.
- This option specifies the table. Options include Log to an existing table and Create a new table once and always attempt to append to this table. The default setting is Create a new table once and always attempt to append to this table.
- This parameter specifies the table name. The drop-down menu queries existing tables when the Table Selection option is set to Log to an existing table. The default table name is efmgasalarms for gas meters and efmliquidalarms for liquid meters.
- When checked, the Alarms Output is enabled for export. The default setting is checked.

The Alarms Output type includes the following parameters:

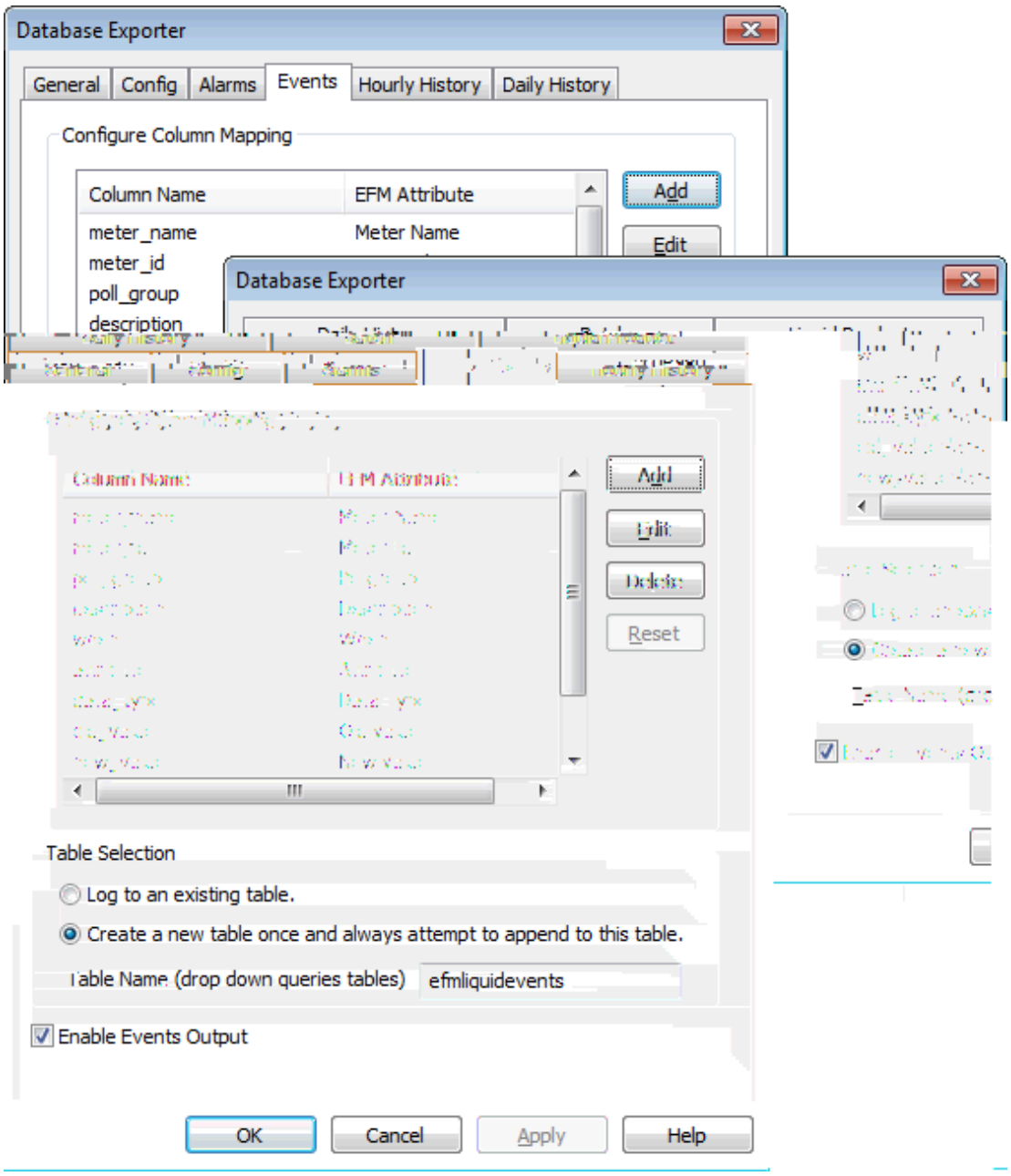
- The meter's name.
- The meter's unique ID.
- The name of the EFM poll group that can be stored in the EFM record.
- The user-defined description of the EFM poll group for identification.
- A timestamp (displayed in Device, Host system, or UTC time format) that marks when the alarm occurred.
- The type of alarm.
- The state of the alarm.
- The value of the alarm.
- The data type of the alarm value.

The alarm type, state, and data type fields are output as numeric codes. For more information, refer to the table below.

Alarm Type	None = 0 Differential Pressure = 1 Static Pressure = 2 Temperature = 3 Cutoff = 4 Backflow = 5 Battery = 6 All = 7
Alarm State	Off = 1 On = 2 Hi = 3 Lo = 4
Alarm Data Type	Output corresponds to the Win32 VARTYPE data type.*

*Values for this data type correspond to the VARENUM enumeration, which is documented by Microsoft/MSDN at _____.

The Events Output supports more than one set of records for a given meter.

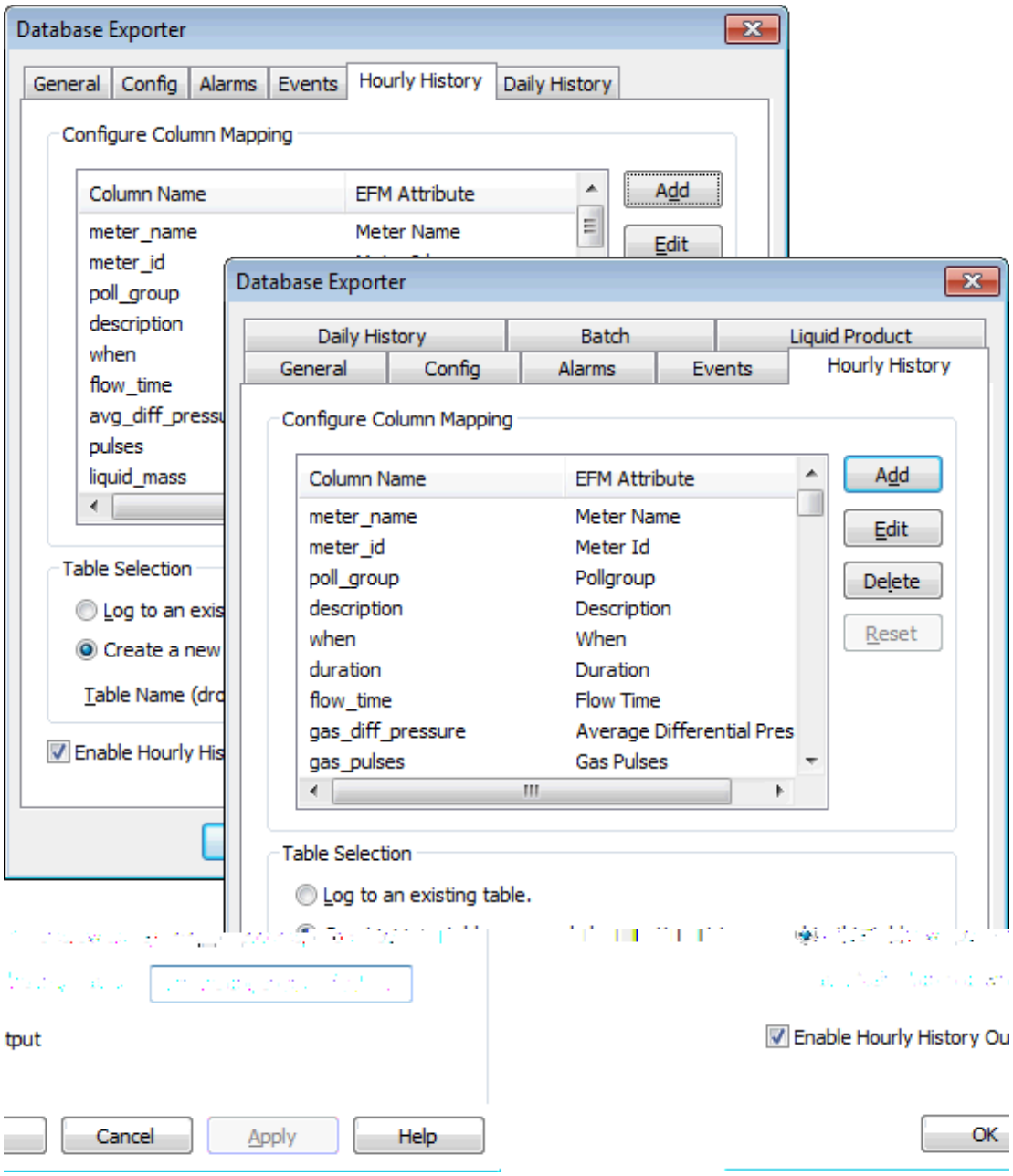


Descriptions of the parameters are as follows:

- This field lists all attributes that are available by default. Not all attributes are supported by all EFM-enabled drivers. For more information on supported attributes, refer to the driver's help documentation.
- When selected, this button adds an attribute to the record at the bottom of the list. The same attribute can be added to the record more than once. For more information, refer to _____ _____.
- When selected, this button is used to edit a selected attribute. For more information, refer to _____.
- When selected, this button deletes the selected attribute from the record.
- When selected, this button clears the column mappings. It is only available when the Table Selection is set to Log to an existing table.

- This option specifies the table. Options include Log to an existing table and Create a new table once and always attempt to append to this table. The default setting is Create a new table once and always attempt to append to this table.
- This parameter specifies the table name. The drop-down menu queries existing tables when the Table Selection option is set to Log to an existing table.The default table name is efmgasevents for gas meters and efmliquidevents for liquid meters.
- When checked, the Events Output is enabled for export. The default setting is checked.

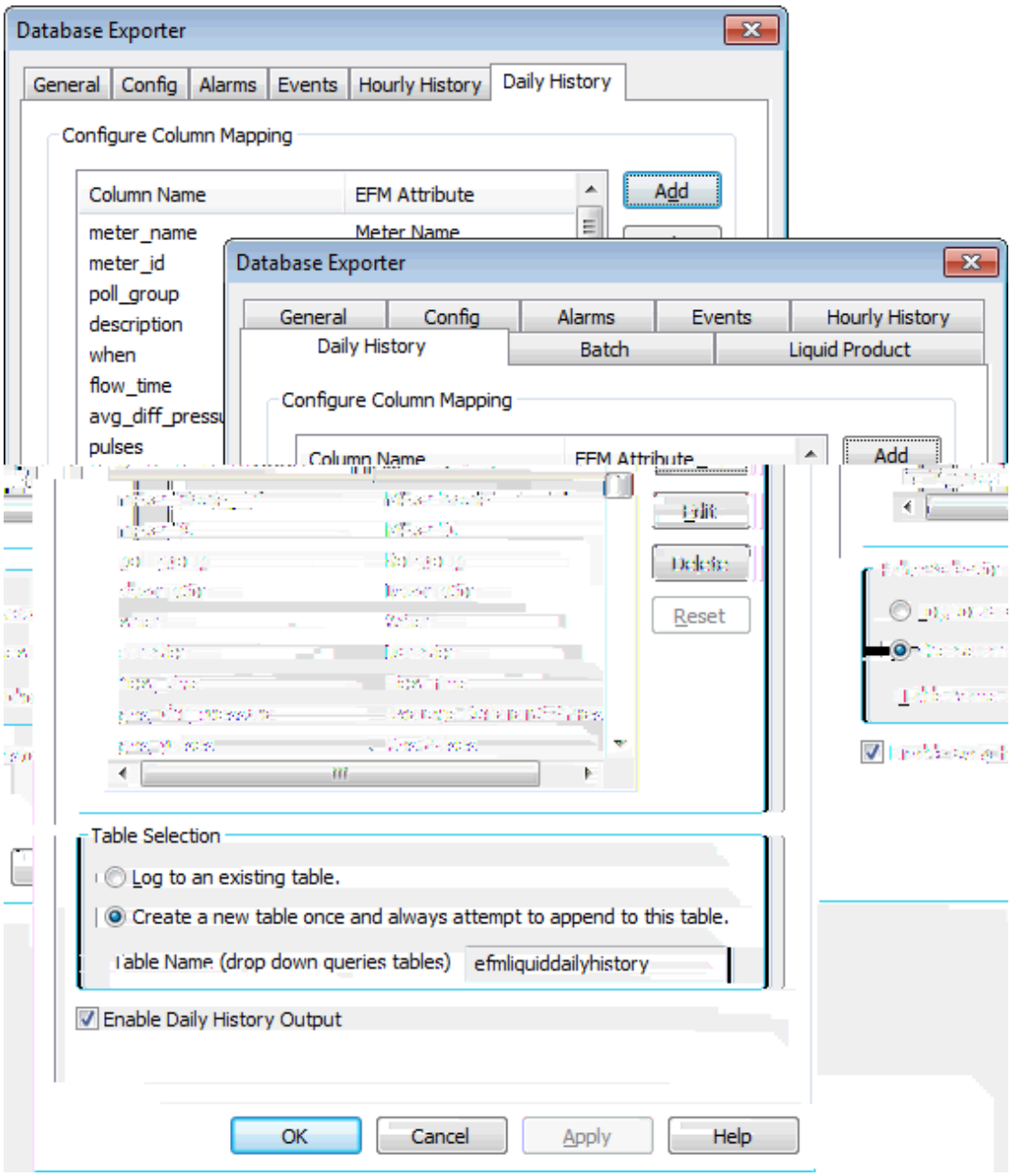
The Hourly History Output supports more than one set of records for a given meter. The attribute lists depends on whether the database exporter is for a gas meter or a liquid meter.



Descriptions of the parameters are as follows:

- This field lists all attributes that are available by default. Not all attributes are supported by all EFM-enabled drivers. For more information on supported attributes, refer to the driver's help documentation.
- When selected, this button adds an attribute to the record at the bottom of the list. The same attribute can be added to the record more than once. For more information, refer to _____ _____.
- When selected, this button is used to edit a selected attribute. For more information, refer to _____.
- When selected, this button deletes the selected attribute from the record.
- When selected, this button clears the column mappings. It is only available when the Table Selection is set to Log to an existing table.
- This option specifies the table. Options include Log to an existing table and Create a new table once and always attempt to append to this table. The default setting is Create a new table once and always attempt to append to this table.
- This parameter specifies the table name. The drop-down menu queries existing tables when the Table Selection option is set to Log to an existing table. The default table name is efmgashourlyhistory for gas meters and efmliquidhourlyhistory for liquid meters.
- When checked, the Hourly History Output is enabled for export. The default setting is checked.

The Daily History Output supports more than one set of records for a given meter. The attribute lists depends on whether the database exporter is for a gas meter or a liquid meter.

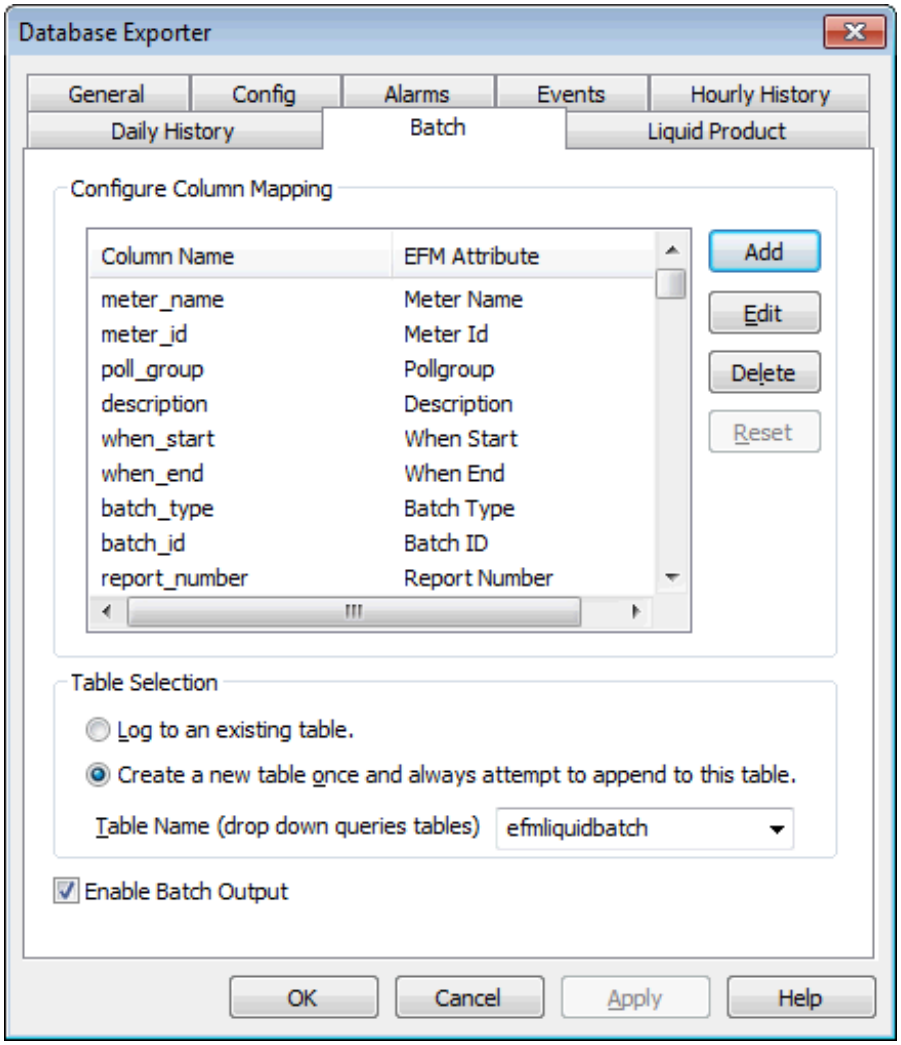


Descriptions of the parameters are as follows:

- This field lists all attributes that are available by default. Not all attributes are supported by all EFM-enabled drivers. For more information on supported attributes, refer to the driver's help documentation.
- When selected, this button adds an attribute to the record at the bottom of the list. The same attribute can be added to the record more than once. For more information, refer to _____ _____.
- When selected, this button is used to edit a selected attribute. For more information, refer to _____.
- When selected, this button deletes the selected attribute from the record.
- When selected, this button clears the column mappings. It is only available when the Table Selection is set to Log to an existing table.

- This option specifies the table. Options include Log to an existing table and Create a new table once and always attempt to append to this table. The default setting is Create a new table once and always attempt to append to this table.
- This parameter specifies the table name. The drop-down menu queries existing tables when the Table Selection option is set to Log to an existing table. The default table name is efmgasdailyhistory for gas meters and efmliquiddailyhistory for liquid meters.
- When checked, the Daily History Output is enabled for export. The default setting is checked.

The Batch Output supports more than one set of records for a given liquid meter.

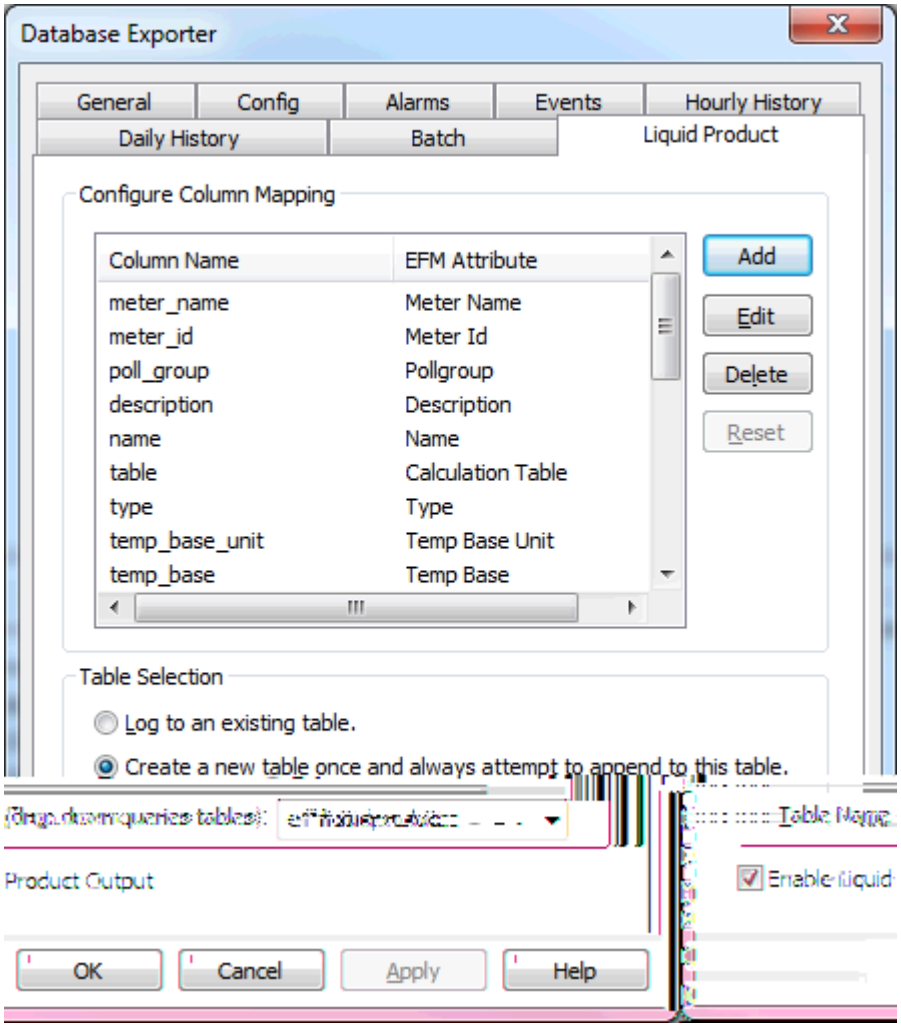


Descriptions of the parameters are as follows:

- This field lists all attributes that are available by default. Not all attributes are supported by all EFM-enabled drivers. For more information on supported attributes, refer to the driver's help documentation.
- When selected, this button adds an attribute to the record at the bottom of the list. The same attribute can be added to the record more than once. For more information, refer to _____ _____.

- When selected, this button is used to edit a selected attribute. For more information, refer to _____.
- When selected, this button deletes the selected attribute from the record.
- When selected, this button clears the column mappings. It is only available when the Table Selection is set to Log to an existing table.
- This option specifies the table. Options include Log to an existing table and Create a new table once and always attempt to append to this table. The default setting is Create a new table once and always attempt to append to this table.
- This parameter specifies the table name. The drop-down menu queries existing tables when the Table Selection option is set to Log to an existing table. The default table name is efmliquidbatch.
- When checked, the Batch Output is enabled for export. The default setting is checked.

The Liquid Product Output supports more than one set of records for a given liquid meter.



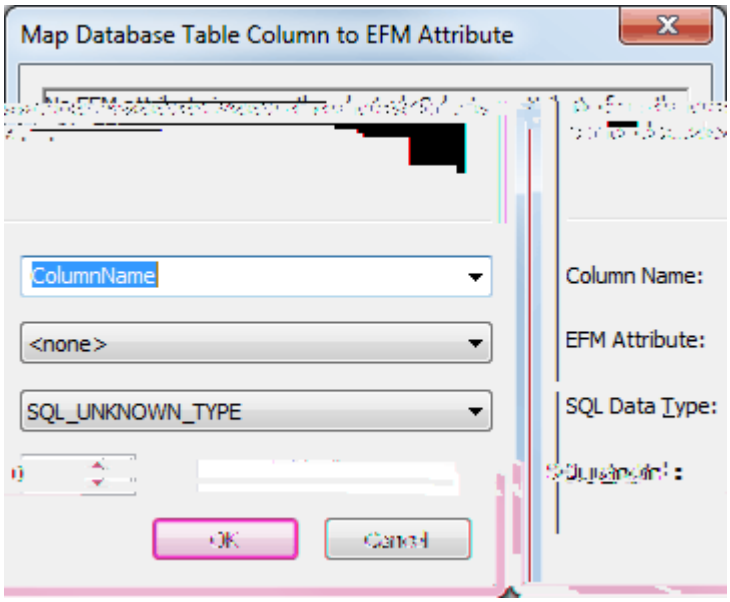
Descriptions of the parameters are as follows:

- This field lists all attributes that are available by default.
Not all attributes are supported by all EFM-enabled drivers. For more information on supported

attributes, refer to the driver's help documentation.

- When selected, this button adds an attribute to the record at the bottom of the list. The same attribute can be added to the record more than once. For more information, refer to _____ _____.
- When selected, this button is used to edit a selected attribute. For more information, refer to _____.
- When selected, this button deletes the selected attribute from the record.
- When selected, this button clears the column mappings. It is only available when the Table Selection is set to Log to an existing table.
- This option specifies the table. Options include Log to an existing table and Create a new table once and always attempt to append to this table. The default setting is Create a new table once and always attempt to append to this table.
- This parameter specifies the table name. The drop-down menu queries existing tables when the Table Selection option is set to Log to an existing table. The default table name is efmliquidproduct.
- When checked, the Liquid Product Output is enabled for export. The default setting is checked.

This dialog is used to add or edit an EFM attribute in the record.



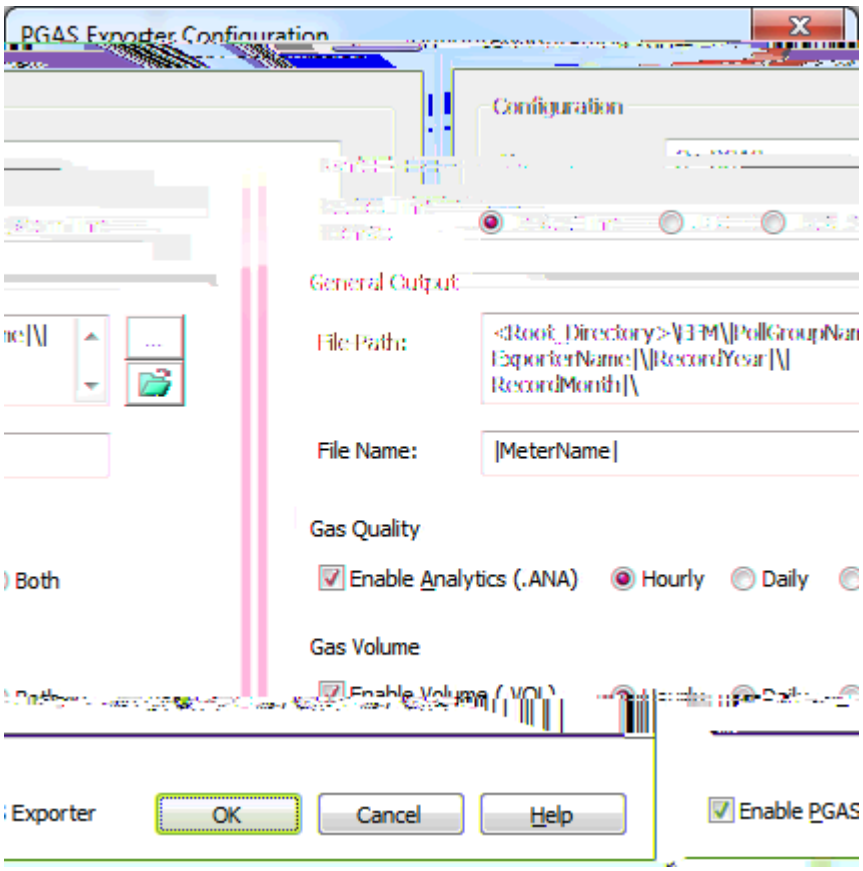
Descriptions of the parameters are as follows:

- This parameter specifies the column name for the new EFM attribute. When the output's Table Selection option is set to Log to an existing table, the Column name drop-down menu queries the selected table for available column names. The default setting is ColumnName.
- This drop-down menu lists all EFM attributes that are available for selection. An attribute can be mapped to more than one column and appear multiple times in the row of data. An attribute that is specified as <none> is displayed as an empty column. The default setting is <none>.

  Do not attempt to map an EFM attribute to any table column that contains a generated key (such as IDENTITY in MS SQL Server, AUTO_INCREMENT in MySQL, or SERIAL in PostgreSQL).
- This parameter specifies the EFM attribute's SQL data type. The default setting is SQL_ UNKNOWN_TYPE.

- This parameter specifies the length of the SQL data Type. It is only enabled when the SQL data Type is SQL_UNKNOWN_TYPE, CHAR, VARCHAR, LONGVARCHAR, WVARCHAR, or WLONGVARCHAR. The valid range is 1 to 255. The default setting is 0.

The PGAS Exporter exports four types of EFM record outputs: Alarms, Events, Analytics, and Volume. Each output contains a unique PGAS extension. The Analytics and Volume outputs may be enabled on a per-type basis.



Descriptions of the parameters are as follows:

- This parameter specifies the name of the PGAS Exporter that is being configured. When a new PGAS Exporter is created, this parameter generates a name that is unique across all other exporters. The default setting is "GasPGAS". Each additional exporter that is created has an automatically incremented integer attached to the end of the default name.
  The PGAS Exporter supports file name wildcards.
- This parameter specifies the format of the PGAS records. Options include Device Time, UTC, and Local System Time. The default setting is Device Time. Descriptions of the options are as follows:
  - When selected, the PGAS time records are the default time of the device.
  - When selected, the PGAS time records are in Coordinated Universal Time (UTC).
  - When selected, the PGAS time records are the time of the local system.
- This parameter specifies the location to be used to export data for the PGAS Exporter. A default file path is provided for new exporter configurations. To browse for and select a new file location, click the icon. To open the file path without wildcards, click the icon.
- This parameter specifies the file name. For more information, refer to "Wildcards" below. The default setting is |MeterName|.
  When specifying a file name, users are not required to enter a file extension. An extension that is provided but does not match the type required by the PGAS Exporter is removed, and the PGAS extension is added. When no extension is provided, the PGAS extension is appended.
- When checked, this option enables the export of PGAS Analytics data. Once enabled, users can specify how often the data is exported. Options include hourly, daily, and both. The default setting is hourly. Descriptions of the options are as follows:

- When checked, hourly PGAS Analytics data is exported. The device configuration controls the EFM data in an hourly record.
- When checked, daily PGAS Analytics data is exported. The device configuration controls the EFM data in a daily record.
- When checked, both hourly and daily PGAS Analytics data is exported.

- When checked, this option enables the export of PGAS Volume data. Once enabled, users can specify how often the data is exported. Options include hourly, daily, and both. The default setting is hourly. Descriptions of the options are as follows:
  - When checked, hourly PGAS Volume data is exported. The device configuration controls the EFM data in an hourly record.
  - When checked, daily PGAS Volume data is exported. The device configuration controls the EFM data in a daily record.
  - When checked, both hourly and daily PGAS Volume data is exported.
- When checked, this option enables polling in the PGAS Exporter. When unchecked, the PGAS Exporter does not poll. The default setting is checked.

The value that is configured for each output type is stored in the user application profile. Future EFM PGAS Exporter configurations is pre-populated with this information.

For more information on a specific mapping, select a link from the list below.

There are several PGAS attributes for which there is no equivalent EFM Exporter configuration mapping.

Meter ID	METER_ID
When	ALARM_DATE
N/A	PRIORITY_LEVEL
{type+ state+ data_type}	ALARM_TEXT
N/A	TRIGGER_VALUE
N/A	ALARM_VALUE

Meter ID	ANALYSIS_ID
Sample Time	SAMPLE_DATE
N/A	EFFECTIVE_DATE
N/A	SAMPLE_TYPE
N/A	SAMPLE_ID
<element%>	METHANE_MOL
<element%>	ETHANE_MOL
<element%>	PROPANE_MOL

<element%>	IBUTANE_MOL
<element%>	NBUTANE_MOL
<element%>	IPENTANE_MOL
<element%>	NPENTANE_MOL
<element%>	NHEXANE_MOL
<element%>	NHEPTANE_MOL
<element%>	NOCTANE_MOL
<element%>	NNONANE_MOL
<element%>	NDECANE_MOL
<element%>	N2_MOL
<element%>	CO2_MOL
<element%>	H20_MOL
<element%>	H2S_MOL
<element%>	H2_MOL
<element%>	CO_MOL
<element%>	O2_MOL
<element%>	HE_MOL
<element%>	AR_MOL
Specific Gravity	GRAVITY
Atmospheric Pressure	SAMPLE_PRESSURE_BASE
N/A	DRY_ENERGY_FACTOR
N/A	SAT_ENERGY_FACTOR
BTU	AS_DELIVERED_ENERGY_FACTOR
Average Pressure	SAMPLE_PRESSURE
Average Temperature	SAMPLE _TEMPERATURE
N/A	GENERIC1
N/A	GENERIC2
N/A	GENERIC3
N/A	GENERIC4
N/A	GENERIC5
N/A	GENERIC6
N/A	GENERIC7
N/A	GENERIC8
N/A	LAB_CODE
N/A	

Meter ID	METER_ID
When	EVENT _DATE
*	METER_CALC_COLUMN_NAME
New Value**	NEW_VALUE
Old Value**	OLD_VALUE
*	PRIORITY_LEVEL*
Attribute Description**	DESCRIPTION
Event Description with values**	COMMENT

*For more information, refer to the table below.

**This column is populated as appropriate information is available.

This column denotes a key event, which is a special type of event that PGAS is capable of natively understanding.

Orifice Plate Size	ORIFICE_SIZE
Pipe Diameter	TUBE_DIAMETER
Temperature Base	TEMP_BASE
Pressure Base	CONTRACT_PRES_BASE
N/A	FPV_ENABLE_PRES
Atmospheric Pressure	SITE_ATMOS_PRES
Factor FR	NORMALIZE_FR_FACTOR
Factor FY	NORMALIZE_Y_FACTOR
Plate Material	PLATE_MATERIAL
Pipe Material	TUBE_MATERIAL
Meter Tap	DIFF_TAP_TYPE
Static Pressure Tap	STAT_TAP_LOCA
DP Calibration Range High	DIFF_HI_RANGE
SP Calibration High	STATIC_HI_RANGE
Temperature Calibration Range Low	TEMP_LO_RANGE
Temperature Calibration Range High	TEMP_HI_RANGE
N/A	ORIFICE_SERIAL_NUM
N/A	IN_SITU
N/A	STATION_STATUS
N/A	METER_STATUS
N/A	STATION_NAME
Meter ID	METER_NAME
N/A	STATION_PURPOSE
N/A	LOC_ADDRESS1
N/A	LOC_ADDRESS2
N/A	LOC_CITY
N/A	LOC_STATE
N/A	LOC_COUNTRY
N/A	LOC_ZIPCODE
N/A	LOC_DISTRICT
N/A	LOC_ELEVATION
N/A	LOC_LATITUDE
N/A	LOC_LONGITUDE
N/A	LOC_MAPCODE
N/A	DISCONNECT_DATE
N/A	INITIAL_FLOW_DATE
N/A	TEST_GROUP_BE
N/A	METER_SERIAL_NUM

N/A	METER_MAKE
N/A	METER_MODEL
Meter Factor	METER_FACTOR
N/A	FIXED_FACTOR_FLAG
N/A	COMPENSATING_INDEX_FLAG
N/A	INDEX_NUMBER_OF_DIALS
N/A	METER_INSTALLATION_DATE
N/A	METER_PURCHASE_DATE
N/A	INDEX_INSTRUMENT_UNIT_OF_DIALS
N/A	EFM_SERIAL_NUMBER
N/A	EFM_MAKE
N/A	EFM_MODEL
N/A	INSTRUMENT_PURCHASE_DATE
N/A	INSTRUMENT_INSTALLATION_DATE

Meter ID	METER_ID
N/A	PRODUCTION_ DATE_START
When	PRODUCTION_DATE_END
Flow Time	FLOW_TIME_MINUTES
Total Volume	EFM_VOLUME
Total Energy	EFM_ENERGY
Average Extension	FLOW_EXTN
Average Different Pressure	DIFF_PRESS
Average Pressure	STAT_PRESS
Average Temperature	FLOW_TEMP
Raw Volume	ROTARY_CURR_UNCO_VOL
N/A	ROTARY_PREV_UNCO_VOL
Pulses	ROTARY_AVG_FREQ
C Prime	C_PRIME
N/A	FA
N/A	FB
N/A	FG
N/A	FPB
N/A	FPM
N/A	FPV
N/A	FR
N/A	FTB
N/A	FTF
N/A	Y
N/A	F_MASS
N/A	C_D_FT
N/A	RHO_T_P
N/A	RHO_B_GAS
Average N2	EFM_N2_MOL
Average CO2	EFM_CO2_MOL
Average Specific Gravity	EFM_GRAVITY
Average BTU	EFM_ENERGY_FACTOR
N/A	DP_MAN_OVR
N/A	DP_LO_ALM
N/A	DP_HI_ALM
N/A	DP_TX_FAIL

N/A	SP_MAN_OVER
N/A	SP_LO_ALM
N/A	SP_HI_ALM
N/A	SP_TRK_
N/A	TEMP_MAN_OVR
N/A	TEMP_LO_ALM

The file path and file name support both record and server wildcards. Record wildcards are replaced with data from the records. Server wildcards are replaced with data from the server. For more information, refer to the tables below.

RecordYear	Replaced by the record year (yyyy).
RecordMonth	Replaced by the record month (mm).
RecordDay	Replaced by the record day (dd).
RecordHour	Replaced by the record hour (hh).
RecordMinute	Replaced by the record minute (mm).

The meter's contract hour is factored into the record wildcards, allowing file organization per contract hour. For example, a contract hour of 9:00 that is used with the file "C:\|RecordDay|\myfile.xxx" organizes files by day (where xxx file extensions are .ana for PGA, .cfx for FlowCal, and .csv for CSV). Each day contains data from 9:00 AM to 9:00 AM. Furthermore, the meter's hourly record span (leading/trailing or data preceding/following) controls how the contract hour is interpreted. If leading, the first record is from 9:00 to 9:59. If trailing, the first record is from 8:01 to 9:00.

Meter	The meter component of the full meter name, as displayed in the Detail View.
MeterID	The meter identification associated with the physical meter. If the meter ID is not available or unmapped in the driver, the wildcard is replaced by <Channel>_<Device>_<Meter>_NoMeterID.
Channel	

EFM Event and Alarm records contain an enumerated data type attribute. The following table documents the alarm and event enumeration supported by the CSV and database exporters.

None	0
Short	2
Long	3
Real	4
Double	5
String	8
Boolean	11
Char	16
Byte	17
Word	18
DWord	19

There are several EFM configuration parameters that the EFM exporter represents as enumerated values. The following tables document the configuration enumerations supported by the gas CSV and database exporters.

Orifice	1
Positive Displacement	2
Turbine	3
Ultrasonic	4
Liquids	5
Vcone	6
Coriolis	7
Line Pack	8

TRUE	1
FALSE	0

TRUE	1
FALSE	0

TRUE	1
FALSE	0

TRUE	1
FALSE	0

Aga3 1985	1
Aga3 1992	2
Aga5	3

Aga7	4
Vcone4	5
Aga11	6
Line Pack	7

Flange	1
Pipe	2

Up	1
Down	2

English	1
Metric	2

Leading	1
Trailing	2

Wet	1
Dry	2
As Delivered	3

TRUE	1
FALSE	0

TRUE	1
FALSE	0

TRUE	1
FALSE	0

TRUE	1
FALSE	0

TRUE	1
FALSE	0

TRUE	1
FALSE	0

TRUE	1
FALSE	0

Stainless Steel	1
Carbon Steel	2
Monel	3

Stainless Steel	1
Carbon Steel	2
Monel	3

Nx19	1
Aga8 Detail	2
Aga8 Gross1	3
Aga8 Gross2	4

Gauge	1
Absolute	2

Million Cubic Meters	1
Thousand Cubic Meters	2
Hundred Cubic Meters	3
Cubic Meters	4
Million Cubic Feet	5
Thousand Cubic Feet	6
Hundred Cubic Feet	7
Cubic Feet	8

Counts Per Million Cubic Meters	1
Counts Per Thousand Cubic Meters	2
Counts Per Hundred Cubic Meters	3
Counts Per Cubic Meter	4
Counts Per Million Cubic Feet	5
Counts Per Thousand Cubic Feet	6
Counts Per Hundred Cubic Feet	7
Counts Per Cubic Foot	8

The EFM exporter represents configuration change events by associating an event record with a configuration attribute. The following table documents the attribute enumerations supported by the CSV and database exporters.

If the attribute field is empty, then the event record contains a "new_value" string that describes the user event. These event types cannot be associated with a configuration attribute by an EFM driver.

Meter ID	0
Meter Type	1
Pressure Base	2
Temp Base	3
Live Analysis	4
Live BTU	5
Live Gravity	6
Live Temp	7
Calculation Method	8
Pipe Diameter	9
Pipe Ref Temp	10
Meter Tap	11
Static Pressure Tap	12
Unit	13
Orifice Plate Size	14
Orifice Ref Temp	15
DP Low Flow Cutoff	16
Atmospheric Pressure	17
BTU	18
Specific Gravity	19
Viscosity	20
CO2	21
N2	22
C1	23
C2	24
C3	25
ISOC4	26
NC4	27
ISOC5	28
C5	29
NEOC5	30
C6	31
C7	32
C8	33
C9	34
C10	35
O2	36
H2O	37
H2S	38
HE	39
H2	40
CO	41
AR	42
Hourly Record Span	43
Contract Hour	44
Contract Day	45
Sample Time	46
Time Zone	47
DST	48
BTU Base	49
Factor FA	50
Factor FB	51
Factor FG	52
Factor FPV	53

Factor FR	54
Factor FT	55
Factor FWV	56
Factor FY	57
Fixed Factor	58
Pipe Material	59
Plate Material	60
FPV Method	61
Static Pressure Type	62
DP Calib Range High	63
DP Transd Range High	64
SP Calib High	65
SP Calib Low	66
SP Transd Range High	67
Temp Calib Range High	68
Temp Calib Range Low	69
Temp Transd Range High	70
Temp Transd Range Low	71
DP Low Alarm	72
DP Backflow Alarm	73
DP High Alarm	74
SP Low Alarm	75
SP High Alarm	76
Temp Low Alarm	77
Temp High Alarm	78
K Factor	79
Meter Factor	80
Accumulated Volume	81
Unit Volume	82
Unit K Factor	83
Specific Heats	85

There are several EFM alarm parameters that the EFM Exporter represents as enumerated values. The following tables document the alarm enumerations supported by the CSV and database exporters.

Diff Pressure	1
Static Pressure	2
Temperature	3
Cutoff	4
Backflow	5
Battery	6

Off	1
On	2
Hi	3
Lo	4

The EFM Exporter supports the import and export of data in a Comma Separated Variable (CSV) file. CSV import and export supports the efficient configuration of large numbers of poll groups, meters, and exporters. CSV functions are only available at the poll group object level. Parameters that are not defined in the CSV file are assigned appropriate default values. For more information on a specific aspect of CSV Import/Export, select a link from the list below.

_____

_____

_____

_____

The easiest way to create an import CSV file is to create a template. For more information, refer to the instructions below.

1. To start, create a poll Group. Specify the desired configuration and polling settings, and then click .
2. Next, right-click on and then select .
3. In , click the browse icon to locate and select a meter. Then, click | .
4. Next, right-click on and create a new exporter of choice. Once finished, click .
5. Right-click on and select . Save it as a CSV file.
6. Use this template in a spreadsheet application that supports CSV files, and then modify the file as desired.

Microsoft Excel is an excellent tool for editing large groups of tags outside the server. Once a template CSV file has been exported, it can be loaded directly into Excel for editing.

Exporting a poll Group generates a CSV text file that contains one section for meters and multiple sections for each exporter type. Each section contains a heading record followed by a record for each item defined under the poll Group. Column names must match those listed; however, columns may be in any order.

The required columns are listed in .

Alarms	This is true if Alarms should be requested for the meter. The default setting is true.
Batch	This is true if Batch History should be collected for the meter. The default setting is true. This only applies to liquid meters.
Enabled	This is true if the meter is enabled, but false otherwise. No data is gathered for disabled meters. The default setting is true.
Events	This is true if Events should be requested for the meter. The default setting is true.
History Daily	This is true if Daily History should be collected for the meter. The default setting is true.
History Hourly	This is true if Hourly History should be collected for the meter. The default setting is true.
	This is the address for the meter inside the server. It includes the channel and device name, as well as the meter name. For example, "Channel1.Device1.Meter1".
Name	This is the meter's internal server name. It should start with "Meters" and is usually the meter address with all periods replaced with underscores. If left blank, the name is automatically generated based on the meter column.
	"Meter"

The required columns are listed in .

Enabled	This is the enabled state of the exporter. When disabled, the exporter does not generate CFX files. The default setting is true.
File Name	This is the name for CFX files. Wildcards can be used. The default setting is |MeterName|.
History Interval	This is the type of history data to export. Valid options include hourly and daily. The default setting is hourly.
History Type	This is the type of history record to export. Options depend on the type of meter being configured. Valid options include the following: Type 1 (Gas - Basic) Type 2 (Gas - NX19/G1/G2) Type 3 (Gas - Analysis) Type 4 (Gas - Exotic) Type 11 (Liquid - Basic) Type 12 (Liquid - Detail) Type 13 (Liquid - Analysis) The default setting for Gas Data is Type 1 (Gas - Basic). The default setting for Liquid Data is Type 12 (Liquid - Detail).
Name	This is the fully qualified name of the exporter. If the exporter name is not set by the user, the default setting is "Gas Meters.Exporters.GasFlowCal" for gas and "Liquid Meters.Exporters.LiquidFlowCal" for liquid.
	"FlowCal"
Root Directory	This is the Root Directory or file path for CFX files. Wildcards can be used. The default setting is the user's documents directory.

The required columns are listed in .

	This is the fully qualified name of the exporter. If the exporter name is not set by the user, the default setting is "Gas Meters.Exporters.GasFlowCalTXQ."
DSN	This is the connection for the database (data source name).
Enabled	This is the enabled state of the exporter. When disabled (false), the exporter does not export to the database. The default setting is true.
History Interval	This is the type of history data to export. Valid options include hourly and daily. The default setting is hourly.
Password	This is the encrypted password for the DSN; only necessary if the data source requires it.
	ñFlowCalTXQò
User Name	This is the user name for the DSN; only necessary if the data source requires it.

The required columns are listed in .

Alarms EFM Mapping	This is the EFM Mapping for the CSV exporter's Alarms Output. It is read only and cannot be edited.
Alarms Enabled	This is the enabled state of the Alarms Output. When disabled, the output does not poll. The default setting is true.
Alarms Filename	This is the name of the Alarm Output record. The default setting is "Alarms.csv".
Alarms Root Directory	This is the Alarms Output's file path.

Character Encoding	This affects the text that is generated on one computer or system and consumed on another computer or system. Valid options include UTF-8 and ANSI. The default setting is UTF-8.
Configuration EFM Mapping	This is the EFM Mapping for the CSV exporter's Config Output. It is read only and cannot be edited.
Configuration Enabled	This is the enabled state of the Config Output. When disabled, the output does not poll. The default setting is true.
Configuration Filename	This is the name of the Config Output record. The default setting is "Config.csv".
Configuration Root Directory	This is the Config Output's file path.
Enabled	This is the enabled state of the exporter. When disabled, the exporter does not generate CSV files. The default setting is true.
Events EFM Mapping	This is the EFM Mapping for the CSV exporter's Events Output. It is read only and cannot be edited.
Events Enabled	This is the enabled state of the Events Output. When disabled, the output does not poll. The default setting is true.
Events Filename	This is the name of the Events Output record. The default setting is "Events.csv".
Events Root Directory	This is the Events Output's file path.
Delimiter	This is the separator character used in writing. Valid options include comma and semi-colon. The default setting is comma.
History Daily Enabled	This is the enabled state of the Daily History Output. When disabled, the output does not poll. The default setting is true.
History Daily Filename	This is the name of the Daily History Output record. The default setting is "DailyHistory.csv".
History Daily Root Directory	This is the Daily History Output's file path.
History EFM Mapping	This is the EFM Mapping for the CSV exporter's History Output. It is read only and cannot be edited.
History Hourly Enabled	This is the enabled state of the Hourly History Output. When disabled, the output does not poll. The default setting is true.
History Hourly Filename	This is the name of the Hourly History Output record. The default setting is "HourlyHistory.csv".
History Hourly Root Directory	This is the Hourly History Output's file path.
Batch EFM Mapping	This is the EFM Mapping for the CSV Exporter's Batch Output. It is read only and cannot be edited. Only supported for liquid CSV data.
Batch Enabled	This is the enabled state of the batch Output. When disabled, the output does not poll. The default setting is true (enabled). Only supported for liquid CSV data.
Batch File Name	This is the name of the batch Output record for liquid CSV data. The default setting is "Batch.csv".
Batch Root Directory	This is the liquid CSV batch Output file path.
Liquid Product EFM Mapping	This is the EFM Mapping for the CSV exporter Liquid Product Output. It is read only and cannot be edited. Only supported for liquid CSV data.
Liquid Product Enabled	This is the enabled state of the Liquid Product Output. When disabled, the output does not poll. The default setting is true (enabled). Only supported for liquid CSV data.
Liquid Product File Name	This is the name of the Liquid Product Output record. The default setting is "LiquidProduct.csv". Only supported for liquid CSV data.
Liquid Product Root Directory	This is the Liquid Product Output CSV file path.
Name	This is the fully qualified name of the exporter. If the exporter name is not set by the user, the default setting is "Gas Meters.Exporters.GasCSV" for a gas exporter and "Liquid Meters.Exporters.LiquidCSV" for a liquid exporter.
	"CSV"
Time Basis	This is the format of the EFM time records. Valid options include the following:

	Device Time UTC Local System Time The default setting is Device Time.
Time Format	This modifies the output file's time Format. Wildcards include MM, DD, YYYY, hh, mm, ss, and AMPM. The default setting is MM-DD-YYYY hh:mm:ss.

The required columns are listed in .

Enabled	This is the enabled state of the exporter. When disabled, the exporter does not generate PGAS files. The default setting is true.
Filename	This is the name for PGAS files. Wildcards can be used. The default setting is |MeterName|.
Gas Quality (.ANA) Enabled	This enables the export of PGAS Analytics data.
Gas Quality (.ANA) History Type	This is how often the gas Quality data is exported. Valid options include: Hourly Daily Both The default setting is hourly.
Gas Volume (.VOL) Enabled	This enables the export of PGAS Volume data.
Gas Volume (.VOL) History Type	This is how often the gas Volume data is exported. Valid options include: Hourly Daily Both The default setting is hourly.
Name	This is the fully qualified name of the exporter. If the exporter name is not set by the user, the default setting is "Gas Meters.Exporters.GasPGAS."
	"PGAS"
Root Directory	This is the Root Directory or file path for PGAS files. Wildcards can be used. The default setting is the user's documents directory.
Time Basis	This is the format of the PGAS records. Valid options include the following: Device Time UTC Local System Time The default setting is Device Time.

The required columns are listed in .

Alarms EFM Mapping	This is the EFM Mapping for the database exporter's Alarms Output. It is read only and cannot be edited.
Alarms Enabled	This is the enabled state of the Alarms Output. When disabled, the output does not poll. The default setting is true.
Alarms Table Generation	This is the Alarms Output's table type. Valid options include Log to an existing table and Create a new table once and always attempt to append to this table. The default setting is

Type	Create a new table once and always attempt to append to this table.
Alarms Table Name	This is the table name of the Alarms Output. The default setting is "efmgasalarms" for gas and ñefmliquidalarmsò for liquid.
Configuration EFM Mapping	This is the EFM Mapping for the database exporter's Config Output. It is read only and cannot be edited.
Configuration Enabled	This is the enabled state of the Config Output. When disabled, the output does not poll. The default setting is true.
Configuration Table Generation Type	This is the Config Output's table type. Valid options include Log to an existing table and Create a new table once and always attempt to append to this table. The default setting is Create a new table once and always attempt to append to this table.
Configuration Table Name	This is the table name of the Config Output. The default setting is "efmgasconfig" for gas and ñefmliquidconfigò for liquid.
Daily History EFM Mapping	This is the EFM Mapping for the database exporter's Daily History Output. It is read only and cannot be edited.
Daily History Enabled	This is the enabled state of the Daily History Output. When disabled, the output does not poll. The default setting is true.
Daily History Table Generation Type	This is the Daily History Output's table type. Valid options include Log to an existing table and Create a new table once and always attempt to append to this table. The default setting is Create a new table once and always attempt to append to this table.
Daily History Table Name	This is the table name of the Daily History Output. The default setting is "efmgasdailyhistory" for gas and ñefmliquiddailyhistoryò for liquid.
Description	This is the description of the database exporter.
DSN	This is the DSN for the database.
Enabled	This is the enabled state of the exporter. When disabled, the exporter does not generate database files. The default setting is true.
Events EFM Mapping	This is the EFM Mapping for the database exporter's Events Output. It is read only and cannot be edited.
Events Enabled	This is the enabled state of the Events Output. When disabled, the output does not poll. The default setting is true.
Events Table Generation Type	This is the Events Output's table type. Valid options include Log to an existing table and Create a new table once and always attempt to append to this table. The default setting is Create a new table once and always attempt to append to this table.
Events Table Name	This is the table name of the Events Output. The default setting is "efmgasevents" for gas and ñefmliquideventsò for liquid.
Hourly History EFM Mapping	This is the EFM Mapping for the database exporter's Hourly History Output. It is read only and cannot be edited.
Hourly History Enabled	This is the enabled state of the Hourly History Output. When disabled, the output does not poll. The default setting is true.
Hourly History Table Generation Type	This is the Hourly History Output's table type. Valid options include Log to an existing table and Create a new table once and always attempt to append to this table. The default setting is Create a new table once and always attempt to append to this table.
Hourly History Table Name	This is the table name of the Hourly History Output. The default setting is "efmgashourlyhistory" for gas and ñefmliquidhourlyhistoryò for liquid.
Batch EFM Mapping	This is the EFM Mapping for the database exporter's Batch Output. It is read only and cannot be edited. Only supported for liquid data.
Batch Enabled	This is the enabled state of the Batch Output. When disabled, the output does not poll. The default setting is true (enabled). Only supported for liquid data.
Batch Table Generation Type	This is the Batch Output table type. Valid options include Log to an existing table and Create a new table once and always attempt to append to this table (default). Only supported for liquid data.
Batch Table Name	This is the table name of the Batch Output. The default setting is ñefmliquidBatchò. Only supported for liquid data.
Liquid Product EFM Mapping	This is the EFM Mapping for the database exporter Liquid Product Output. It is read only and cannot be edited. Only supported for liquid data.
Liquid Product	This is the enabled state of the Liquid Product Output. When disabled, the output does not

Enabled	poll. The default setting is true (enabled). Only supported for liquid data.
Liquid Product Table Generation Type	This is the Liquid Product Output table type. Valid options include Log to an existing table and Create a new table once and always attempt to append to this table (default). Only supported for liquid database.
Liquid Product Table Name	This is the table name of the Liquid Product Output. The default setting is ñefmliquidproductò. Only supported for liquid data.
Login Timeout	This is how long the server waits for a response when attempting to connect to the DSN. The default setting is 5 seconds.
Name	This is the fully qualified name of the exporter. If the exporter name is not set by the user, the default setting is "Gas Meters.Exporters.GasDatabase" for gas and "Liquid Meters.Exporters.LiquidDatabase" for liquid.
Password	This is the password for the DSN. It is only necessary if the data source requires it.
	"Database"
Time Basis	This is the format of the EFM time records. Valid options include the following: Device Time UTC Local System Time The default setting is Device Time.
User Name	This is the user name for the DSN. It is only necessary if the data source requires it.

Once the CSV file has been created and exported, it can be re-imported into the EFM Exporter by clicking | . This option is only available when a poll Group is selected.

When utilizing a CSV file that does not use a comma or semi-colon delimiter, users should do one of the following:

- Save the project in XML. Then, perform mass configuration on the XML file instead of using CSV.
- Perform a search-and-replace on the delimiter in the CSV file and then replace the delimiter with a comma or semicolon. The delimiter being used by the OPC server (either comma or semicolon) must be set to the replacement character.

For information on specifying which character to use as the variable (comma or semicolon), refer to "Options - General" in the server help file.

Syntax Example: _EFMExporter.<*PollGroup Name*>._Enable

_Enable	Parameter	The _Enable tag allows the poll group and all child exporter and meter elements to be enabled and disabled. Disabling a poll group terminates polling its meters.	Read/Write
_ErrorOnLastPoll	Status	The _ErrorOnLastPoll tag is a Boolean tag that reports the status of the previous poll. If an error occurs during a poll, this tag reports TRUE. To obtain the start and end time of the failed poll, read the _LastPollStart and _LastPollEnd tags respectively.	Read Only
_LastPollEnd	Status	The _LastPollEnd tag reports the time that the last poll completed. All times are reported in UTC. If no poll has completed, the tag reports 01/01/1601 00:00:00.000.	Read Only
_LastPollStart	Status	The _LastPollStart tag reports the time that the last poll started. All times are reported in UTC. If no poll has started, the tag reports 01/01/1601 00:00:00.000.	Read Only
_NextPollStart	Status	The _NextPollStart tag reports the time that the next poll starts. All times are reported in UTC. If no next poll is scheduled, the tag reports 01/01/1601 00:00:00.000.	Read Only
_Polling	Status	The _Polling tag is a Boolean tag that reports TRUE whenever a poll is in progress and FALSE otherwise.	Read Only
_Poll	Parameter	The poll tag allows external clients to issue On Demand polls by writing a value to the tag.	Read/Write

Example Syntax: _EFMExporter.<*Poll Group Name*>.Gas Meters.<*Meter Name*>._Enable

_Enable	Parameter	The _Enable tag allows a meter to be enabled and disabled. Meters cannot be enabled while a parent element is disabled. Disabling a meter terminates polling of that meter within a poll group.	Read/Write
_ErrorOnLastPoll	Status	The _ErrorOnLastPoll tag is a Boolean tag that reports the status of the previous poll. If an error occurs during a poll, this tag reports TRUE.	Read Only
_Polling	Status	The _Polling tag is a Boolean tag that reports TRUE whenever a poll is in progress and FALSE otherwise. A poll is considered finished once its data has been exported.	Read Only
_Poll	Parameter	The poll tag allows external clients to issue On Demand polls by writing a value to the tag. Additionally, multiple meters can be polled simultaneously by writing to the _Poll tag.	Read/Write

Example Syntax: _EFMExporter.<*Poll Group Name*>.Gas Meters.Exporters.<*Exporter*>._Enable

_Enable	Parameter	The _Enable tag allows an exporter to be enabled and disabled. Exporters cannot be enabled while a parent element is disabled. Disabling a meter terminates polling of that meter within a poll group.	Read/Write

The system tags displayed in the table below are supported by all EFM drivers except the EFM Simulator Driver.

Example Syntax: <*Channel Name*>._System._ResetEFMCache
Example Syntax: <*Channel Name*>.<*Device Name*>._System._ResetEFMCache

_ ResetEFMCache	Channel	Writing any non-zero numeric value to the _ResetEFMCache clears the EFM cache and resets the EFM pointer file for each device in the channel. This operation causes the driver to poll all meters for all available EFM data for each flow computer in the channel. The EFM pointer reset and clear cache does not occur until the first meter in each device is polled with the EFM Exporter.	Write Only
_ ResetEFMCache	Device	Writing any numeric value to the _ResetEFMCache clears the EFM cache for all of the device's EFM meters and resets the device's EFM pointer file. This operation causes the driver to poll all meters in the flow computer for	

The following classes of messages may be generated. Click on the link for a list of message in the selected category.

The following messages may be generated. Click on the link for a description of the message.

tedn

Warning

Runtime

The meter_id attribute is not available or is unmapped in the driver contributing the EFM data.

1. Verify the meter_id attribute is available and correctly mapped.
2. Remove occurrences of the |MeterID| wildcard from all file paths and names.

Warning

Runtime

An attempt was made to change the configuration when data an

Runtime

An on demand poll that was triggered by a write to the poll group's poll tag has completed.

N/A

Information

Runtime

A poll has completed and the next poll has been scheduled.

N/A

Information

Runtime

A poll group just started and scheduled its first poll.

N/A

Warning

Runtime

The poll took longer to complete than the interval specified in the poll rate.

1. Check the poll rate to ensure that data is being requested at a reasonable rate.
2. Check for issues with communications.

3. Ensure that there are not too many meters beneath the poll group. If so, separate the meters among several poll groups.

Information

Runtime

An on demand poll was triggered by a write to the poll group's poll tag.

N/A

Information

Runtime

The meters are starting to be polled for EFM data.

N/A

Error

Runtime

The exporter failed to read a file that was previously exported to append new data. The file may have been deleted.

Ensure that the file path has proper access permissions, and may be read from by the server.

Error

Runtime

1. The output path is not available.
2. The output path does not have proper access permissions.
3. There is not enough disk storage.

1. Ensure that the server can access the output path.
2. Ensure that the output path has the proper access permissions to allow the server to create and write to files.
3. Ensure that there is enough disk space to move the file.

Error

Runtime

Data export has been disabled for the meter.

Ensure that data export is enabled in the meter.

Error

Configuration

An attempt was made to add a meter to a poll group that was already in the poll group.

N/A

Warning

Runtime

Flow-Cal EFM data could not be loaded from the specified file during data Store Conversion because the data is corrupt or inaccessible. Data that cannot be converted is not included in future exports.

Ensure that permissions have been set correctly for the directory.

Error

Runtime

1. The meter configuration is incorrect, and does not reflect the changes that were recently made to the device.
2. The driver is configured to upload either hourly or daily EFM historical data, but the EFM Exporter is not configured to export that type.
3. Data collection has been disabled for the device.

1. Fix the configuration by browsing to the meter or by deleting the offending meter.
2. Ensure that the driver and the EFM Exporter are configured to export the same type of EFM historical data.
3. Ensure that the device's option is checked.

For more information, refer to "Device Properties - General" in the server help file.

Warning

Runtime

The configuration was changed before the output data was consumed.

The data is cached in the specified path.

Error

Runtime

1. The exporter file (such as a CFX file) failed to save to a temporary location. This may be due to access permission issues or limited disk storage.
2. The path name exceeded the length that is allowed by the host system.

1. Ensure that the files can be created and written to the file path by the server. Also, ensure that the disk has enough space to store the file.
2. Shorten the channel name, device name, meter name, exporter name, and/or the exporter's path name.

The Service and Interactive server modes have different permissions.

Error

Runtime

Unsupported characters for the EFM Exporter are being used in the configuration.

Examples of characters that are not supported:

/, @, *, <, >, |, and :.

Using the View Selector, navigate to the Channels/Devices view. Rename the Channels, Devices and/or Meters in the project with the unsupported characters.

Information

Runtime

An application upgrade requires that the Flow-Cal EFM data store be updated for compatibility with the latest version.

N/A

The backup location of the legacy Flow-Cal data store is posted when the conversion completes. When performing a downgrade, users can restore the backup EFM files by renaming the backup file directory from "_EFMBackup" to "_EFM". The backup files are always stored in the serverôs Application data Folder, which is configured during installation.

Information

Runtime

An application upgrade requires that the Flow-Cal EFM data store be updated for compatibility with the latest version. Before conversion, a backup is made and deposited in the specified location. The backup location is specified when a backup is made.

N/A

Warning

Runtime

The extended error indicates the cause of the error. When conversion fails, any data that was not previously exported by the EFM Exporter is not be available in future exports.

1. Ensure that there is sufficient disk space.
2. Ensure that permissions have been set correctly for the directory.

Error

Runtime

A client wrote to the exporter's _Enable tag to enable it, but the exporter group was disabled.

Enable the exporter group.

Error

Runtime

A client wrote to the meter's _Enable tag to enable it, but the meter group was disabled.

Enable the meter group.

Error

Runtime

A client wrote the meterôs _Poll tag when the meter was already queued for a poll. This can occur when the poll tag is written during a scheduled poll or a poll group demand poll.

Ensure the client does not attempt to poll a meter twice.

Error

Runtime

A client wrote to the meter's _Poll tag while the meter was disabled.

Enable the meter to allow polling, poll a different meter, or wait to poll when the meter is enabled.

Warning

Runtime

1. Although an on-demand poll was triggered via the meter's poll tag, there are no enabled exporters currently configured.
2. The meter is unlicensed.

1. Add or enable meters and/or exporters to the poll group.
2. Verify the license level is adequate for the configured meters. Upgrade the license level or remove meters so that licensed device limit is not exceeded.

A count-based license evaluates the unique devices associated with any meters configured in the EFM Exporter *(see*

Runtime

A client wrote to the poll group's poll tag to trigger

3. Once all the mis-configured meter(s) are known, re-browse for the meters in the EFM Exporter and/or re-enter the valid meters in the EFM Exporter. Alternatively, re-initialize the server and look for errors in the event log for messages concerning mis-configured meters.

1. There is potential for the loss of records when the [<EFM data that failed>] includes [Configuration]. This can be remedied though a Clear Cache in the EFM driver or by reinitializing the Runtime.
2. For more information, refer to "Device Properties - General" in the server help file.

Information

Runtime

1. A poll completed for the meter, but no new record-based data (such as History, Alarm, or Event) was collected. Nothing was exported for the meter.
2. A poll completed for the meter, but no exporter was configured to consume the collected data. For example, this would occur if Hourly History data was collected but there are only exporters configured to consume Daily History.
3. The EFM data for the specified meter contains data from records that are shared between multiple meters. Although the data was uploaded from the device, the server was shutdown before the data could be consumed by the EFM Exporter.

1. Check the poll group's poll rate, and ensure that the meter is not being polled too quickly (and that it can store new data).
2. Ensure that the meter has an exporter configured to consume the data.
3. Enable the clear cache option in the device that contains the specified meter. For more information on clearing cached data, refer to the driver's help file.

Warning

Runtime

A meter was added to a meter group and the addition caused the licensed device limit to be exceeded.

- Upgrade the license to a level that supports the appropriate number of unique devices.
- Remove meters until the unique number of devices is below the licensed device limit.

The count-based license is based on unique devices associated with the meters added to the configuration *(see **Licensing the EFM E porter**)*.

The following messages may be generated. Click on the link for a description of the message.

Error

Runtime

The reading of the meter's configuration data failed. Configuration data is required.

Check the Event Log to see whether the driver has posted any error messages.

Error

Runtime

Changes were made to the CSV exporter's configuration. The .CSV file on disk has a different column configuration than the .CSV file being exported.

Remove the existing .CSV files from the export directory. Then, attempt another poll.

The number of columns contained in a file that exists in the export directory must match the number of columns in the records that are being exported.

The following messages may be generated. Click on the link for a description of the message.

_____
_____
_____

Error

Configuration

The path to the exporter group is invalid or not in the Name field.

Ensure that the path is correct. The path should have the format, ñ<meter group>.Exporters.<exporter name>ò.

Error

Configuration

The meter group name is invalid or not in the Name field.

Ensure that the meter group name is correct. The path should have the format: <meter group name>.Exporters.<exporter name>.

Error

Configuration

There are no records in the CSV file.

Ensure that the CSV file has at least one valid record or add one.

Error

Configuration

One of the field values contains too many characters.

Reduce the number of characters in the CSV field values.

Error

Configuration

One of the fields in the CSV record header is invalid.

Ensure that the CSV record headers are valid. Make corrections as necessary.

Error

Configuration

One of the fields in the CSV record header is duplicated.

Remove the duplicate field name from the CSV header.

Error

Configuration

The tag field identification record is missing.

Replace or add the tag field identification record.

The following messages may be generated. Click on the link for a description of the message.

Serious

The database exporter could not connect to the specified data source because the ODBC Driver encountered a memory exception while opening the table.

If the database is on a remote computer, double-check the user permissions and then verify that the network connection is active.

Serious

The database exporter could not connect to the specified data source due to the reason specified by the ODBC Driver.

Verify the DSN settings and then consult the ODBC Driver's help documentation.

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Warning ¬ Ƈ n ₽ S Ei

The database exporter could not create the specified table due to the reason specified

Specify a DSN that uses a supported ODBC driver.

For more information on supported DSNs, refer to _____.

Serious

The table specified in the database exporter does not exist.

Verify that the tables specified in the database exporter's configuration exist in the DSN.

Serious

The database exporter could not perform a transaction because the data source is not appendable.

Use the database software to verify that the user has append permissions on the specified table.

Serious

The database exporter could not open the recordset on the specified table because the ODBC Driver encountered a memory exception while opening the table.

If the database is on a remote computer, double-check the user permissions and then verify that the network connection is active.

Serious

The database exporter could not open the recordset on the specified table due to the reason specified by the ODBC Driver.

Verify the DSN settings and then consult the ODBC Driver's help documentation.

Serious

The database exporter is unable to retrieve the column names from the DSN because the table does not

The database exporter is unable to validate the specified table because the ODBC Driver encountered a memory exception while opening the table.

If the database is on a remote computer, double-check the user permissions and then verify that the network connection is active.

Serious

The database exporter is unable to validate the specified table due to the reason specified by the ODBC Driver.

Verify the DSN settings and then consult the ODBC Driver's help documentation.

Serious

The database exporter could not open the recordset on the specified table for an unknown reason.

Verify the DSN settings and then consult the ODBC Driver's help documentation.

The following messages may be generated. Click on the link for a description of the message.

Check the Event Log to see whether the driver has posted any error messages.

Warning

Configuration

The XML file contains an exporter configuration that is not valid for the specified meter group.

Verify that the XML gas meters or liquid meters groups only contain valid exporters.

Warning

Configuration

The XML project file contains a History Type that is not valid for the meter group. For example, an exporter in the gas meters group is configured with a History Type of Type 13.

Update the XML file to include a valid History Type.

The following messages may be generated. Click on the link for a description of the message.

Serious

The Flow-Cal Transaction Queue Exporter could not connect to the specified data source because the ODBC driver encountered a memory exception opening the table.

If the database is on a remote computer, check the user permissions and verify that the network connection is active.

Serious

The Flow-Cal Transaction Queue Exporter could not connect to the specified data source for the reason specified by the ODBC driver.

Verify the DSN settings and consult the ODBC driver help documentation.

Serious

The Flow-Cal Transaction Queue Exporter is unable to validate the table because the specified column name cannot be found.

Verify that the specified column name exists in the table or correct and try again.

Serious

The specified DSN is not a valid Oracle DSN.

Verify that the exporter is configured to use an Oracle DSN or change the DSN to be a valid Oracle DSN.

Serious

A table required by the Flow-Cal Transaction Queue Exporter does not exist.

Verify that the tables required by the Flow-Cal Transaction Queue Exporter exist in the DSN. Contact the Flow-Cal Transaction Queue administrator for more information.

Serious

The Flow-Cal Transaction Queue Exporter could not perform a transaction because the data source cannot be appended.

Contact your Flow-Cal Transaction Queue administrator to verify that the user has permission to append to the specified table.

Serious

The Flow-Cal Transaction Queue Exporter could not open the record set on the specified table because the ODBC driver encountered a memory exception while opening the table.

Contact the Flow-Cal Transaction Queue administrator to check the user permissions and, if the database is on a remote computer, verify that the network connection is active.

Serious

The Flow-Cal Transaction Queue Exporter could not open the record set on the specified table due to the reason specified by the ODBC driver.

Verify the DSN settings and consult the ODBC driver help documentation or the Flow-Cal Transaction Queue administrator.

The following messages may be generated. Click on the link for a description of the message.

Error

Runtime

The reading of the meter's configuration data failed. Configuration data is required.

Check the Event Log to see whether the driver has posted any error messages.

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