EFM Simulator

©2015 Kepware, Inc.

Table of Contents

Table of Contents ... **2**
EFM Simulator Help ... 3
Overview ... 3
Device Setup ... **4**
EFM Meters ... 4
Simulated Meter Data ... 5
Using the EFM Simulator ... **7**
Liquid Product Data ... 10
Data Types Description ... **11**
Address Descriptions ... **12**
Error Descriptions ... **13**
Address <address> is out of range for the specified device or register. ... 14
Data Type <type> is not valid for device address <address>. ... 14
Device address <address> contains a syntax error. ... 14
Device address <address> is read only. ... 14
Missing Address. ... 14
Index ... **15**

EFM Simulator Help

Help version 1.012

CONTENTS

Overview
What is the EFM Simulator?

Device Setup
How do I configure a device for use with this driver?

Using the EFM Simulator
How do I configure and utilize an EFM Simulator project?

Data Types Description
What data types can be used with an EFM simulated device?

Address Descriptions
How are addresses specified on an EFM simulated device?

Error Descriptions
What error messages does the EFM Simulator produce?

Overview

The EFM Simulator Driver provides a reliable way to simulate EFM data for testing the EFM Exporter Plug-In without an external device.

Device Setup

Supported EFM Output Types

Alarms
Configuration
Events
History

Supported Device Models

Gas EFM
Liquid EFM

Maximum Number of Channels and Devices

The maximum number of supported channels is 100. The maximum number of devices supported per channel is 999.

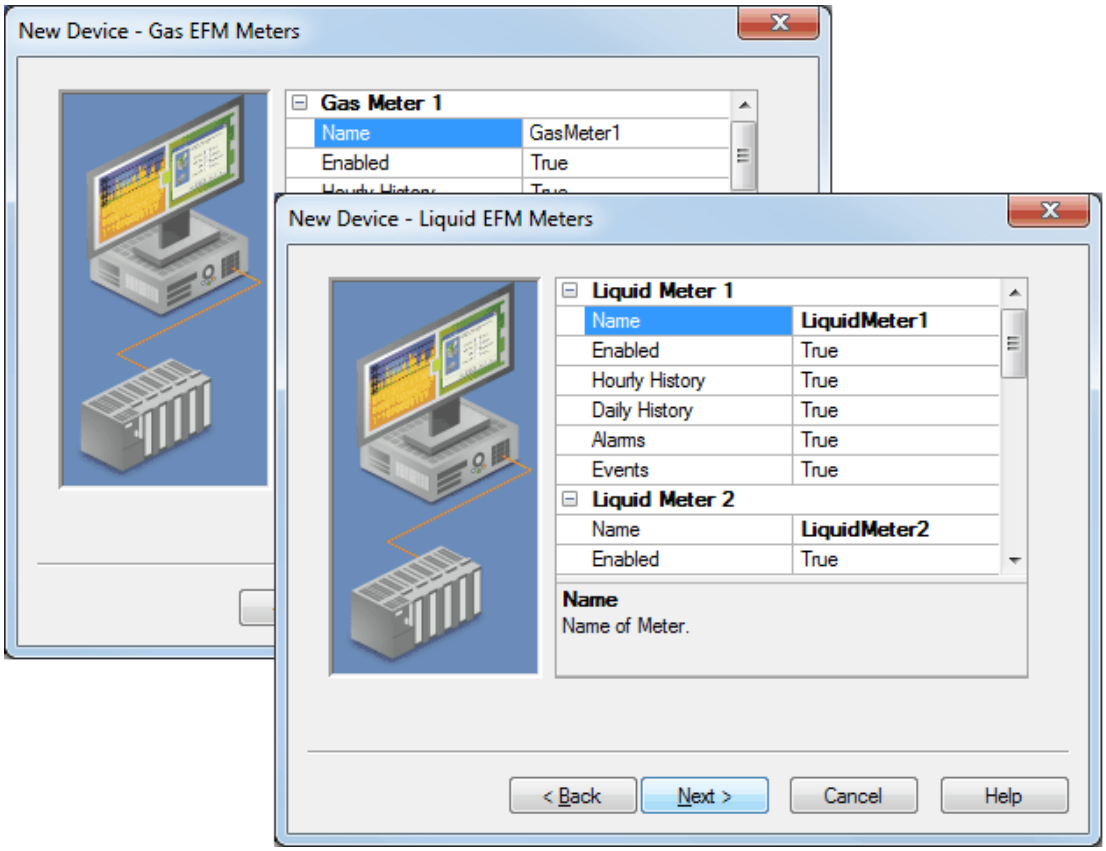
Device ID

The EFM Simulator Driver supports decimal Device IDs in the range of 1 to 999. Unique Device IDs are required when creating multiple devices on the same channel. The default setting is 1.

EFM Meters

EFM Meters gather record line pressure, temperature, and differential pressure in pipes to determine total gas or liquid flow. This dialog is used to specify settings for a Gas or Liquid EFM Meter. Although its default name depends on the selected device model, its supported parameters are the same.

Note: The EFM Simulator Driver supports a maximum of four meters per device.



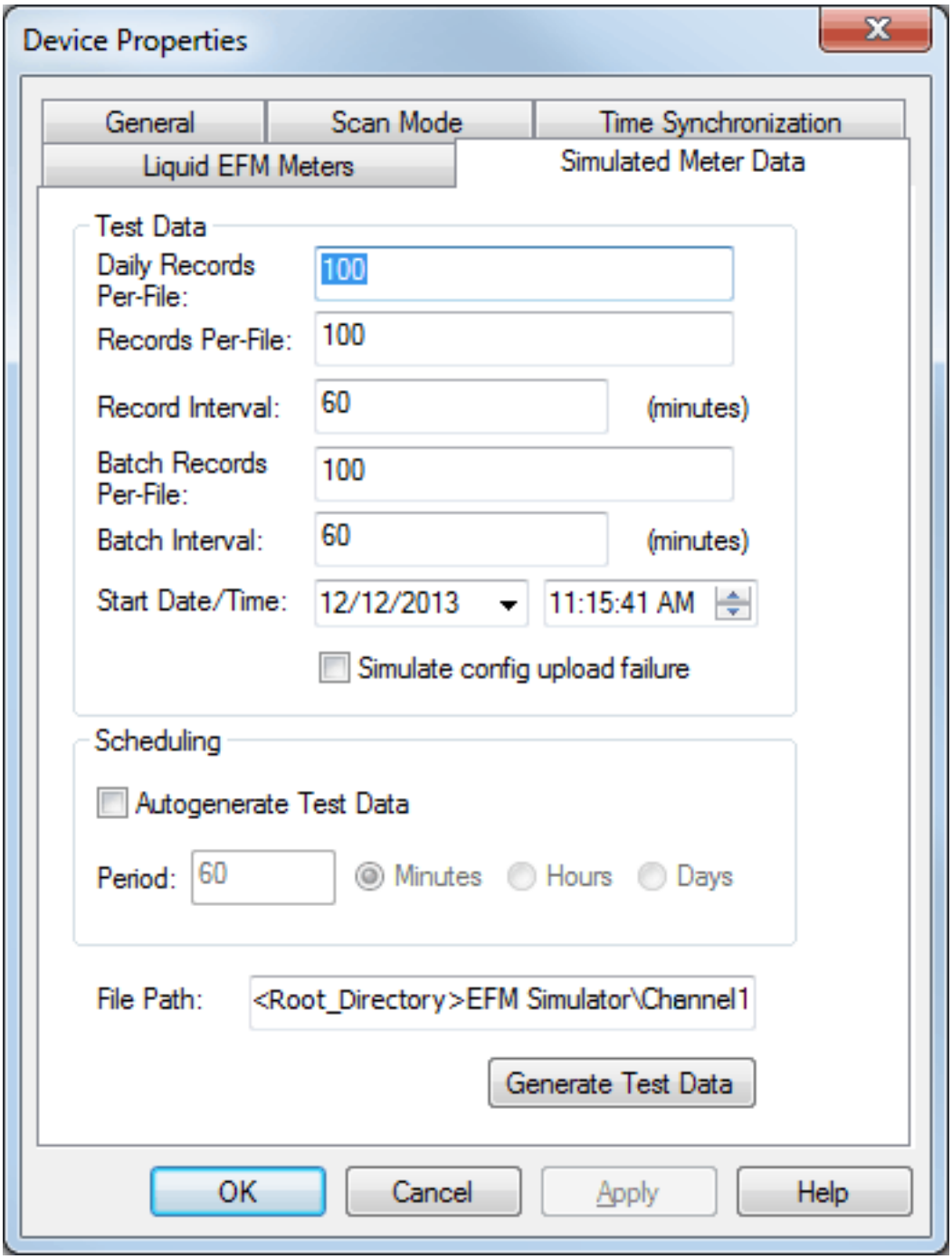
Descriptions of the parameters are as follows:

- **Name:** This parameter specifies the name of the meter. The default settings are <*device model*>Meter1 through <*device model*>Meter4.
- **Enabled:** This parameter specifies whether the meter is enabled. The default setting is True.

- **Hourly History:** This parameter specifies whether the meter's Hourly History output is enabled. The default setting is True.
- **Daily History:** This parameter specifies whether the meter's Daily History output is enabled. The default setting is True.
- **Alarms:** This parameter specifies whether the meter's Alarms output is enabled. The default setting is True.
- **Events:** This parameter specifies whether the meter's Events output is enabled. The default setting is True.

Simulated Meter Data

This dialog is used to specify settings for the simulated meters. To access these parameters, right-click on the device and then click **Device Properties** | **Simulated Meter Data**.



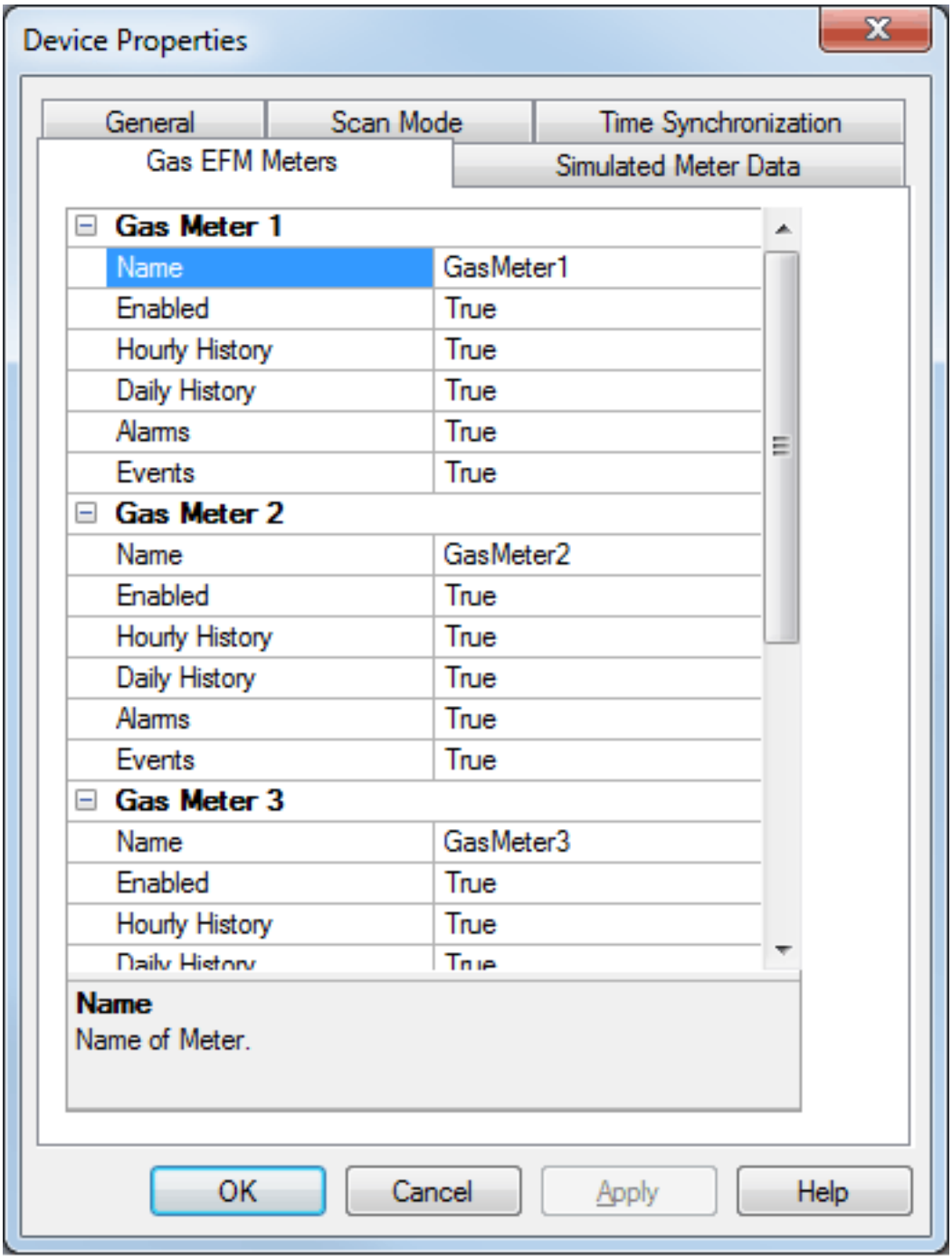
Descriptions of the parameters are as follows:

- **Daily Records Per-File:** This parameter specifies how many records will be included in the Daily History file. The valid range is 1 to 1000. The default setting is 100.
- **Records Per-File:** This parameter specifies how many records will be included per file. The valid range is 1 to 1000. The default setting is 100.
- **Record Interval:** This parameter specifies the amount of time between each record (in minutes). The valid range is 1 to 50,400. The default setting is 60 minutes.
- **Batch Records Per-File:** This parameter specifies how many batch records will be included per file. The valid range is 1 to 1000. The default setting is 100.
  Note: This parameter is only supported by the Liquid EFM model.
- **Batch Interval:** This parameter specifies the amount of time between each record (in minutes). The valid range is 1 to 50,400. The default setting is 60 minutes.
  Note: This parameter is only supported by the Liquid EFM model.
- **Start Date:** This parameter specifies the date of the first generated record.
- **Start Time:** This parameter specifies the time stamp of the first generated record.
- **Simulate config upload failure:** When checked, this option will cause subsequent polls to simulate configuration file read errors. The default setting is unchecked.
- **Autogenerate Test Data:** When checked, this option specifies that test data will be automatically generated at the demand of the client. The default setting is unchecked.
- **Period:** This parameter specifies the period at which test data will be automatically generated. The valid range is 1 to 129,600 and may be specified in units of minutes, hours, or days. The default setting is 60 minutes.
- **File Path:** This field specifies the location where the test data will be placed.
- **Generate Test Data:** When clicked, this button will generate test XML.
  Note: For more information on the contents of the generated file, refer to the EFM Exporter Plug-In help file.

Using the EFM Simulator

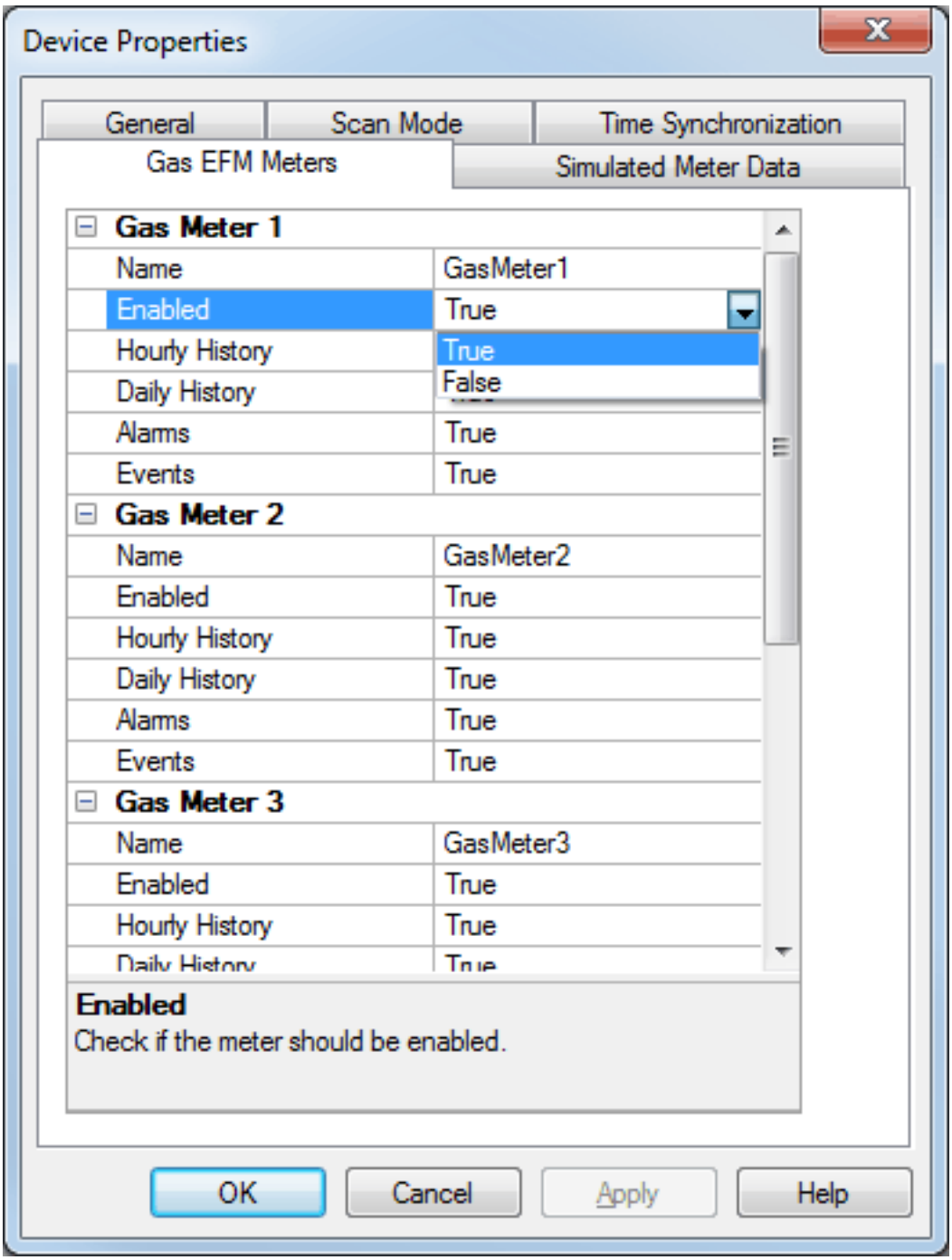
For information on using the EFM Simulator, refer to the example instructions below.

1. To start, create a channel using the EFM Simulator. Select the default values, and then click **Finish**.
2. Next, create a device. Select the default values, and then click **Finish**.
3. Right-click on the newly created device and then select **Properties**.
4. Next, open the **Gas EFM Meters** tab.

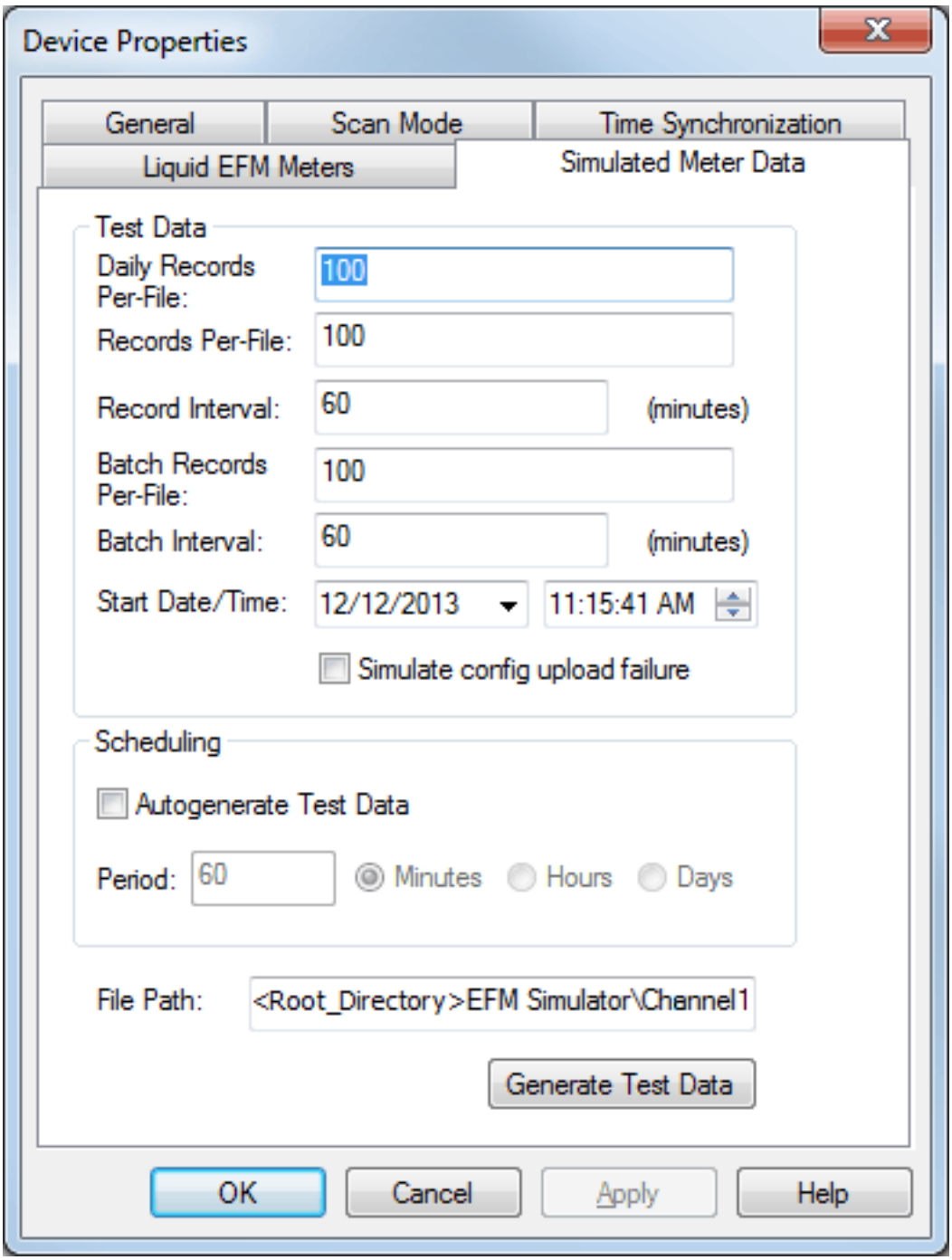


5. This tab displays all accessible meters and is used to specify their settings. Users can assign unique names, turn them on or off, and specify the type of data that they will provide. To do so, simply click on a field and select the desired value from the drop-down menu located in the right-hand column. For

example, changing Meter 1 from on to off would look as follows:



6. Once finished, click **Apply**.
7. Next, open the **Simulated Meter Data** tab. This tab contains information about the data that users can simulate, including the amount, the time interval between data records, and when the data starts. The EFM Simulator can also be configured to automatically generate new data every few minutes, hours, or days.



Note: Users also have the ability to simulate a configuration upload failure, which provides the opportunity to observe what will happen if the device configuration files are corrupt and/or missing.

8. To view the location of the stored simulated data, locate **File Path**.

   Note: When configuring automatic test data generation, users must have a client connected in order for it to work. Data will not be created without a client. Users must also be aware of both how many records are being generated and the interval between records. Many files will be created if the default values are used while polling for data on a short interval. Although this depends on the size of the project, testing even with just a few meters can cause this to happen.

9. After all the parameters have been configured, click **Generate Test Data**. A confirmation message will be posted to the Event Log if the generation was successful.

Note: This step is not necessary if the device is configured for automatic test data generation.

10. Once finished, select **Apply** | **OK**.

Liquid Product Data

The EFM Simulator Driver will generate a Liquid Product Record for each of the following products:

- Light Sweet Crude
- Gasoline
- Fuel Oil
- Jet Fuel
- Natural Gas Liquids
- Cyclohexane
- Benzene
- Cumene
- Styrene
- Toluene

Only the liquid product name will be generated. When Liquid Periodic/Daily historical data is generated, records will be randomly associated with one liquid product. The liquid product name will be included in the Configuration Data. When Liquid Batch historical data is generated, each batch record can be associated with a liquid product. The liquid product name will be included in each batch record.

Data Types Description

The EFM Simulator Driver only supports the String data type, which is a null terminated ASCII character array.

Address Descriptions

The syntax below is supported for EFM Simulator Driver tags. Each of these tags represents one of the EFM types that can be read from an EFM meter. Each output type can be enabled for up to four meters per device.

Gas Meter Tags
<*Channel Name*>.<*Device Name*>._EFM.<*Meter Name*>._alarms
<*Channel Name*>.<*Device Name*>._EFM.<*Meter Name*>._configuration
<*Channel Name*>.<*Device Name*>._EFM.<*Meter Name*>._events
<*Channel Name*>.<*Device Name*>._EFM.<*Meter Name*>._historydaily
<*Channel Name*>.<*Device Name*>._EFM.<*Meter Name*>._historyhourly

Liquid Meter Tags
<*Channel Name*>.<*Device Name*>._LiquidEFM.<*Meter Name*>._alarms
<*Channel Name*>.<*Device Name*>._LiquidEFM.<*Meter Name*>._batch
<*Channel Name*>.<*Device Name*>._LiquidEFM.<*Meter Name*>._configuration
<*Channel Name*>.<*Device Name*>._LiquidEFM.<*Meter Name*>._events
<*Channel Name*>.<*Device Name*>._LiquidEFM.<*Meter Name*>._historydaily
<*Channel Name*>.<*Device Name*>._LiquidEFM.<*Meter Name*>._historyhourly
<*Channel Name*>.<*Device Name*>._LiquidEFM.<*Meter Name*>._liquidproduct

Important: This driver is not intended to expose real-time data.

Error Descriptions

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

Address <address> is out of range for the specified device or register.
Data Type <type> is not valid for device address <address>.
Device address <address> contains a syntax error.
Device address <address> is read only.
Missing address.

Address <address> is out of range for the specified device or register.

Error Type:
Warning

Possible Cause:
A tag address that has been specified statically references a location that is beyond the range of supported locations for the device.

Solution:
Verify that the address is correct; if it is not, re-enter it in the client application.

Data Type <type> is not valid for device address <address>.

Error Type:
Warning

Possible Cause:
A tag address that has been specified statically has been assigned an invalid data type.

Solution:
Modify the requested data type in the client application.

Device address <address> contains a syntax error.

Error Type:
Warning

Possible Cause:
A tag address that has been specified statically contains one or more invalid characters.

Solution:
Re-enter the address in the client application.

Device address <address> is read only.

Error Type:
Warning

Possible Cause:
A tag address that has been specified statically has a requested access mode that is not compatible with what the device supports for that address.

Solution:
Change the access mode in the client application.

Missing Address.

Error Type:
Warning

Possible Cause:
A tag address that has been specified statically has no length.

Solution:
Re-enter the address in the client application.

Index

A

Address <address> is out of range for the specified device or register. 14
Address Descriptions 12
Alarms 4-5
ASCII character array 11
Autogenerate 6

B

Batch 6

C

Channel 4, 12
Configuration 4

D

Data Type <type> is not valid for device address <address>. 14
Data Types Description 11
Device 4
Device address <address> contains a syntax error. 14
Device address <address> is read only. 14
Device Setup 4

E

EFM Meters 4
Error Descriptions 13
Events 4-5

G

Gas Meter 12

H

Help Contents 3

History 4-5

I

Interval 6
invalid data type 14

L

Liquid Meter 12
Liquid Product Data 10

M

Missing address. 14

O

Overview 3

R

range 14
Records 6
register 14

S

Setup 4
simulate 3
Simulated Meter Data 5
Start Date 6
Start Time 6
syntax error 14

U

Using the EFM Simulator 7