

Enron Modbus for Flow Devices

Easy Guide

Introduction

The **Enron Modbus driver for KEPServerEX®** provides the ability to communicate with Enron Modbus-compatible devices. When used with the **EFM Exporter**, it provides historical Electronic Flow Measurement (EFM) communications for scheduling and exporting EFM History, Alarms, and Events data.

Follow the steps below to create an Enron Modbus channel and device, properly configure a meter, and test your meter address mapping by exporting historical data using the EFM Exporter advanced plug-in.

Follow the Steps

Step 1:

Locate the documentation for the flow device that you are connecting to the Enron Modbus driver

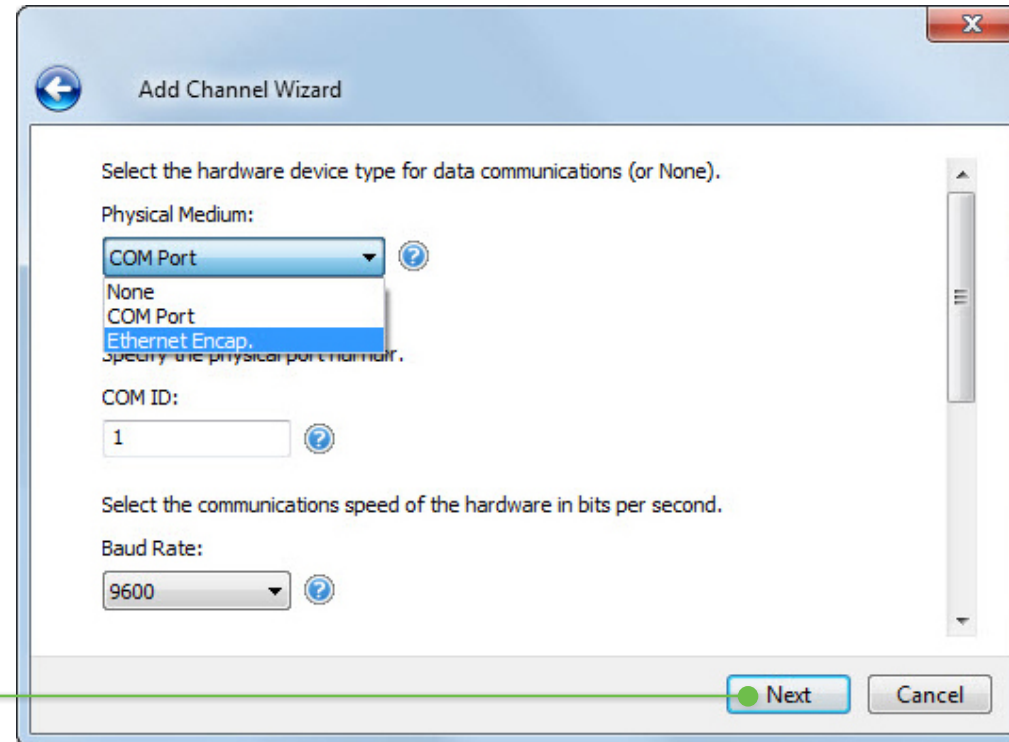
The documentation or user manual for your flow device is necessary for successful setup. The default values in the Enron Modbus Device Wizard do not guarantee connectivity.

The following steps reference the “Realflo User and Reference Manual” for communicating with a Schneider Electric SCADAPack 330 RTU.

Step 2:

Create an Enron Modbus channel and device

In the server Configuration, create a new channel. Select the Enron Modbus driver and then click **Next**. In the **Add Channel Wizard**, enter the communications interface information for the flow device (including the **COM Port** and corresponding **COM ID**) or choose **Ethernet Encapsulation**. Then, click **Next** and complete channel setup.



Create a new device, making sure to enter the correct Device ID. For devices using Ethernet Encapsulation, enter the IP address, port, and protocol. Then, click **Next**.

Specify the register offsets that will allow you to access flow data for each connected meter. Defining the offsets in **Device Settings** applies them to any meter added under the device by default.

Offset values are defined for each of the variable types. Refer to the flow device's user manual to obtain the proper offsets. Leave all other values at their default settings and then click **Next**.

Realflo User Manual

Meter Run 2 Data Variables

Meter run 2 data variables use the same structure as Meter run 1 data variables described above. Meter run 2 variables are offset from Meter run 1 variables according to the following table.

Range	Data Type	Description
3200 - 3299	Short integer	Meter Run 2 Data Variables <ul style="list-style-type: none">Identical structure to Meter Run 1 Data Variables.Offset by value of 100
5200 - 5299	Long integer	Meter Run 2 Data Variables <ul style="list-style-type: none">Identical structure to Meter Run 1 Data Variables.Offset by value of 100
7350 - 7599	Float	Meter Run 2 Data Variables <ul style="list-style-type: none">Identical structure to Meter Run 1 Data Variables.Offset by value of 250

KEPServerEX Device Wizard

Add Device Wizard

Specify the offset of the Short configuration register range for each successive meter.

Short Offset: ?

Specify the offset of the Long configuration register range for each successive meter.

Long Offset: ?

Specify the offset of the Float configuration register range for each successive meter.

Float Offset: ?

Next **Cancel**

Step 3:

Configure the meter(s)

Ensure that the register address ranges are set accurately according to the flow device's user manual.

Expand the device and select **Address Ranges**. Then, double-click each address range to modify as needed.

Realflo User Manual

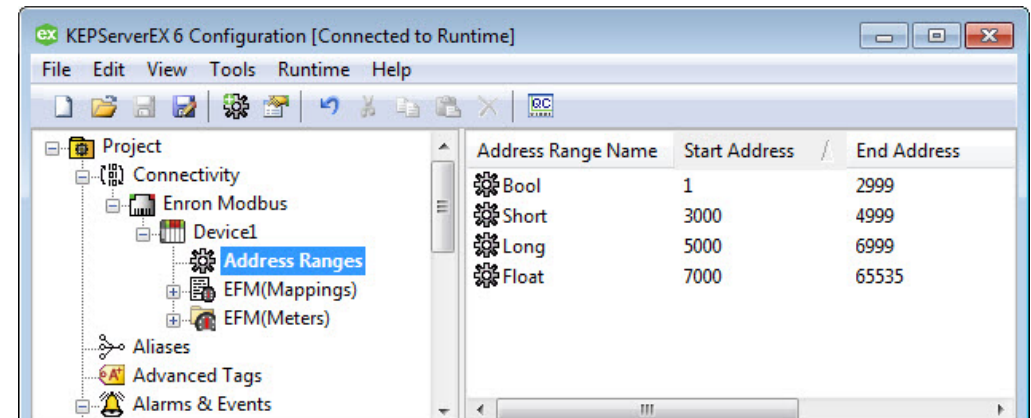
Register Addresses

The addresses in the messages refer to system addresses, not type specific addresses. The commands will return exception errors if the command refers to addresses outside the valid range for the command.

There are ranges of Enron registers to hold short integers, long integers and single precision floats. The ranges are as follows.

Range	Data Type
32	Event/Alarm archive
701 - 720	Hourly/Daily archive
741 - 750	Hourly Gas Quality History
1001 - 2999	Boolean
3001 - 4999	Short integer
5001 - 6999	Long integer
7000 - 9999	Float

KEPServerEX Configuration



To modify the default EFM Mapping, locate the device, expand **EFM(Mappings)**, and double-click **Default**. In the left pane, select **Configuration**. Either locate the register addresses of the attributes in your flow computer's manual or delete the address information in all of the populated fields.

Note: Configuration attributes are only required by KEPServerEX when using proprietary EFM export file types like PGAS or FLOWCAL CFX; the attributes are optional for generic export types like CSV or database.

The preceding "B" in the address stands for the base address, or the address for Meter 1. With the Enron Modbus protocol standard, data for meters is expected to be organized at regular register offsets. For example, Temperature for Meter 1 is stored in register 7148, Temperature for Meter 2 is stored in register 7248, and so forth.

In the left pane, select **History** to enter the history record ordering information. The mapping assumes that the first float in the record is Date and the second float is Time. Thus, Index 0 refers to the third value in the record after Date and Time. Refer to the flow device's user manual for information regarding the archive record format. After mapping the values, click **OK**.

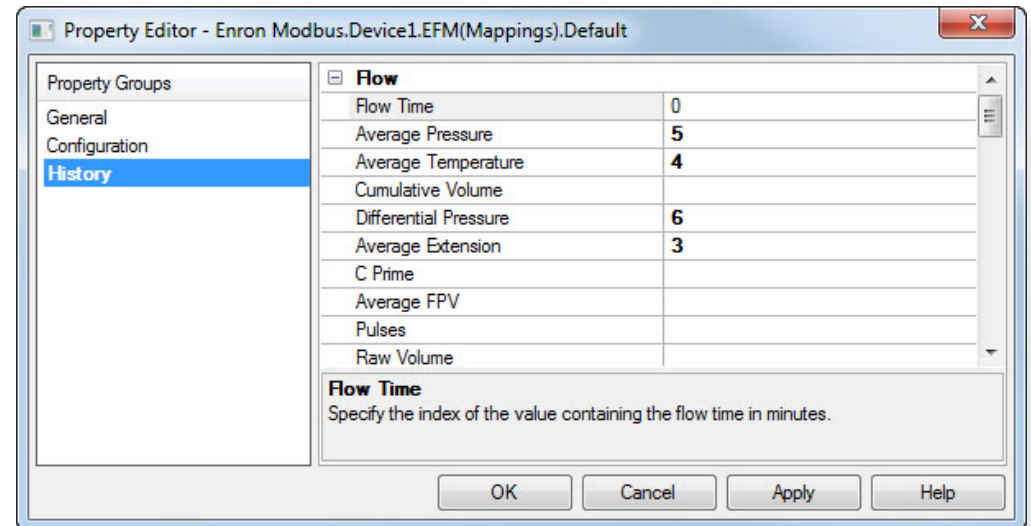
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Hourly / Daily Record Format

Each hourly and daily record is in the following format.

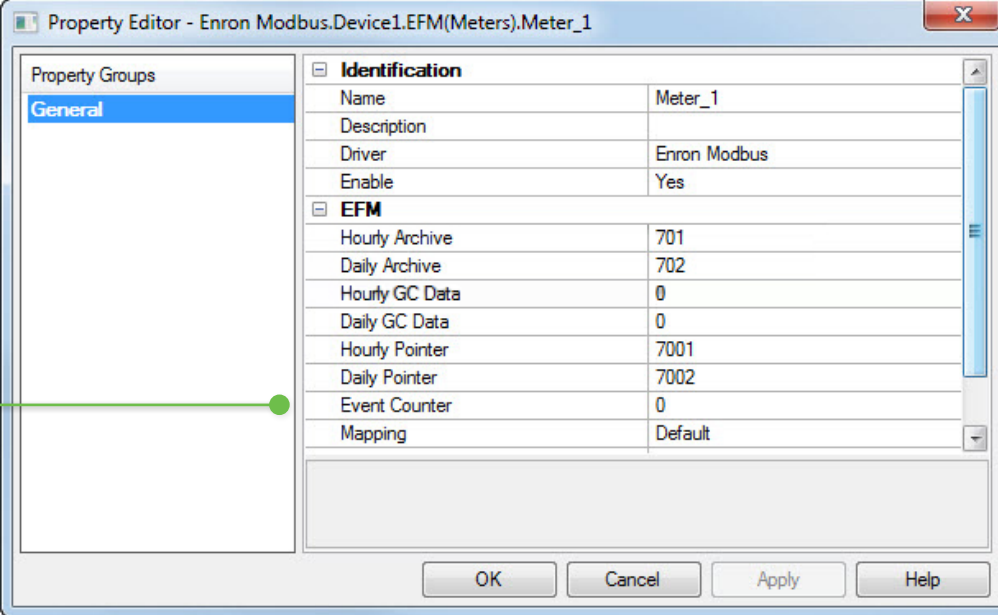
- Date (format: MMDDYY)
- Time (format: HHMMSS)
- Flow duration
- Volume
- Energy
- Flow Extension or Flow Product or Uncorrected Flow Volume.
- Temperature
- Pressure
- Differential Pressure or Meter Pulses
- Volume * 1000
- Mass
- Relative Density

KEPServerEX EFM Mapping



Note: The terms used in your flow device's user manual might differ from the terms used in KEPServerEX. For example, your device's user manual might use the term "Flow duration," which is equivalent to "Flow Time" in KEPServerEX.

Expand **EFM(Meters)** and double-click **Meter_1** to open the **Property Editor**. Refer to the flow device's user manual for the registers corresponding to the hourly and daily archives for each meter. Set the event counter to **0** since alarm events are not included in this example.



Property Editor - Enron Modbus.Device1.EFM(Meters).Meter_1	
Property Groups	
General	
Identification	
Name	Meter_1
Description	
Driver	Enron Modbus
Enable	Yes
EFM	
Hourly Archive	701
Daily Archive	702
Hourly GC Data	0
Daily GC Data	0
Hourly Pointer	7001
Daily Pointer	7002
Event Counter	0
Mapping	Default

OK Cancel Apply Help

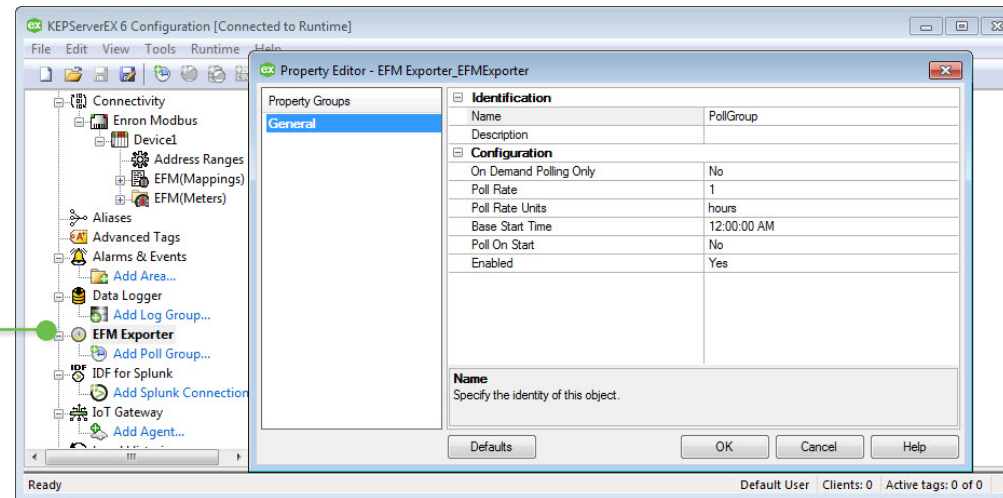
Note that Meter_1 is the only meter enabled by default.

Caution: The default mapping values in the Enron Modbus device properties will not provide automatic connectivity to your flow device. These are intended to help you understand the address mapping and may not match the address space in your particular device.

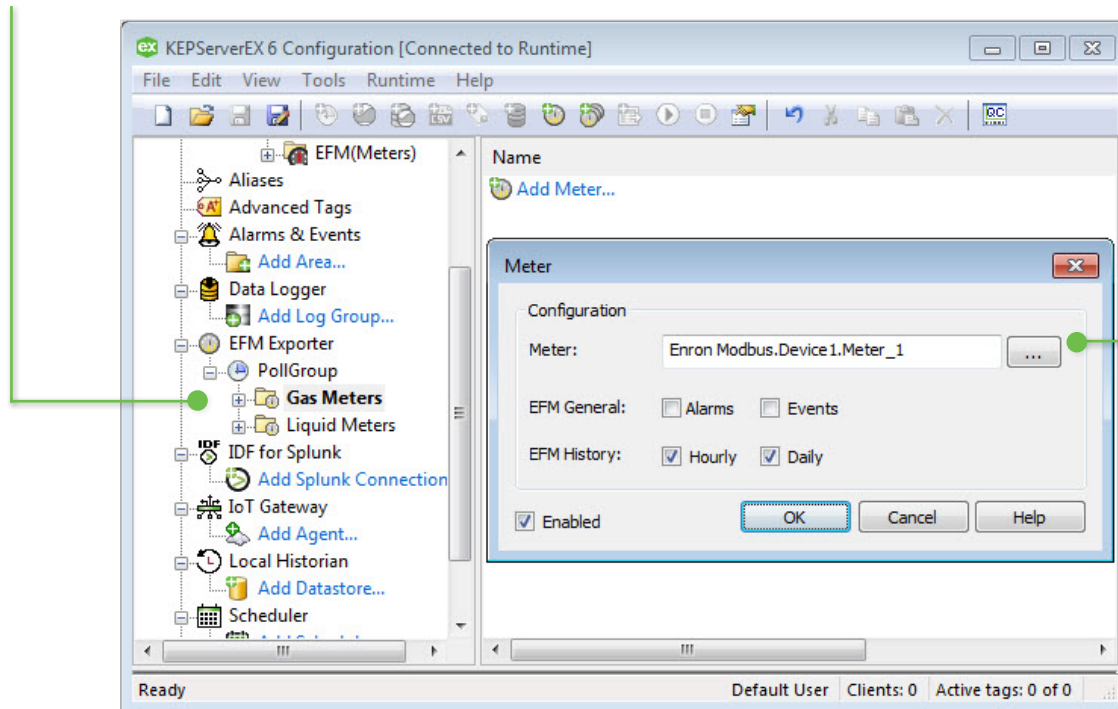
Step 4:

Use the EFM Exporter to export historical data

In the Project tree view, scroll down to the **EFM Exporter** and click **Add Poll Group**. Keep all the default settings and then click **OK**.

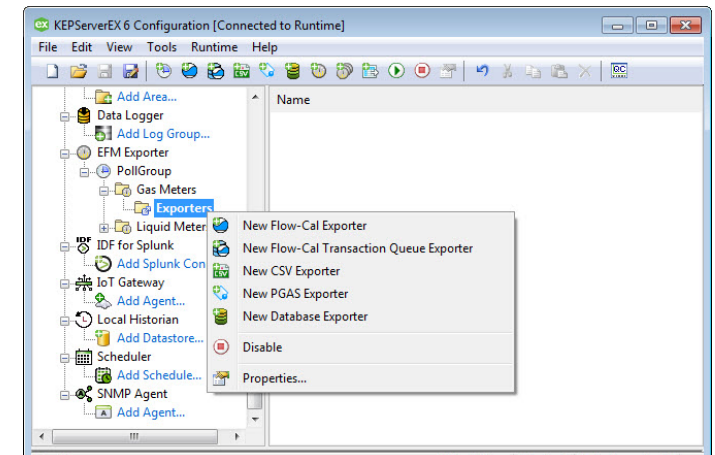


Select **Gas Meters**, and then click **Add Meter**.



In **Meter**, click the ellipsis and then select **Meter_1**. Deselect **Alarms** and **Events** so that only **Hourly** and **Daily** are selected. Click **OK**.

Expand **Gas Meters** and select **Exporters**. Right-click and select **New CSV Exporter** from the context menu. Keep the default settings, and then click **OK**.

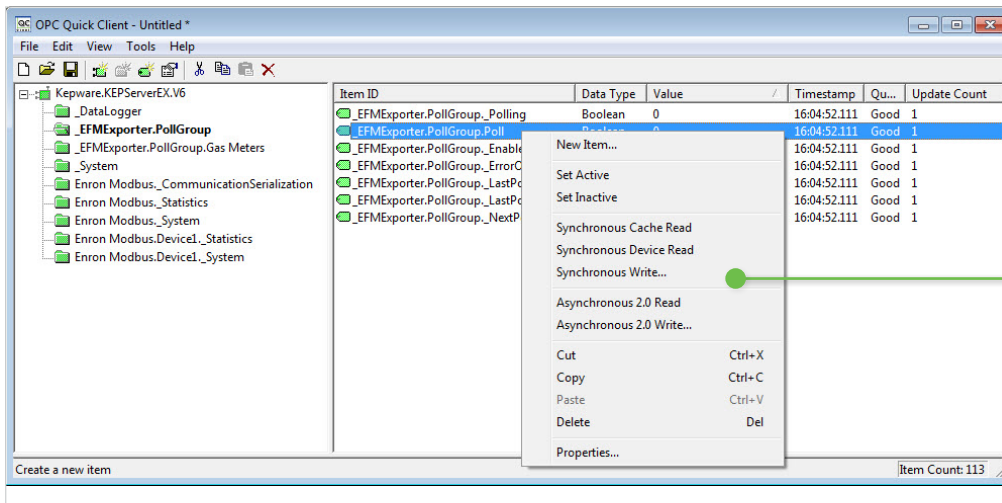


Double-click **Config**. Then, click **File Path** and append “\|RecordYear|\” to the end to create a folder with the year on the path. Copy the path value.

Note: \|RecordYear| is a wildcard that is replaced with the record year. Refer to the EFM Exporter product manual for more information.

In the left pane under **GasCSV**, double-click **History**. Paste the file path for both **Hourly File Path** and **Daily File Path**, and then select **OK** when complete.

Next, right-click the **Alarms** folder and select **Disable**. Likewise, right-click the **Events** folder and select **Disable**. This disables the alarms and events that are not used in this example.





To trigger the demand poll, launch the **Quick Client** by clicking the QC icon in the toolbar. Locate and right-click on the **_EFMExporter.PollGroup.Poll** tag, and then select **Synchronous Write...** and write a **1**. The value will immediately revert to 0.

If successful, you will see the folder created in the path specified.

If unsuccessful, you might see two messages in the Event Log of KEPServerEX Configuration. In this case, there is a connectivity issue with the device, so the Enron Modbus driver gives a “Device is not responding” message and the EFM Exporter gives a message that the data wasn’t written.

If you see these messages, please ensure your device configuration is correct. If the problem persists, please contact Kepware Technical Support.

Date	Time	Source	Event
 6/19/2017	4:00:10 PM	Enron Modbus	Enron Modbus.Device1 Device is not responding. ID = '1'.
 6/19/2017	4:00:10 PM	EFM Exporter	Meter 'PollGroup.Gas Meters.Enron Modbus_Device1_Meter_1' returned bad quality EFM data. EFM data for this meter will not be included in the output.

Learn More

- For detailed technical driver and configuration information, read the [Enron Modbus product manual](#).
- For detailed technical information on exporting EFM data, read the [EFM Exporter product manual](#).

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