M-BUS CONFIGURATION TUTORIAL

DESCRIPTION

THIS DOCUMENT GUIDES YOU THROUGH THE PROCESS OF SETTING UP A COMMSERVER FOR DATA ACQUISITION FROM HEAT METERS (USING MBUS). SOFTWARE AND LICENSE INSTALLATION.

1. CommServer software can be downloaded from CommServer vortal:
   http://www.commsvr.com/DownloadCenter/ProductSoftware/PR2105CommServer_Software.aspx

2. TRIAL license can be downloaded from:

3. To install CommServer software: Click twice on the installer application (e.g. CommServerSetup_3_61_01.exe), then follow the installation wizard (Detailed information about the installation procedure can be found in the CommServer Manual).

4. To install a TRIAL license:
   a. Run Network Configuration. By default START -> PROGRAMS -> CAS -> COMMSERVER -> NETWORK CONFIGURATION.
   b. Select Help->About to open the About window:

   ![Network Configuration Window](image1)

   c. Change tab to License tab:

   ![License Tab](image2)

   This tab provides information about the installed licenses.
   By clicking on any installed license you can see detailed information about the selected license (license type, duration, constraints and limitation, etc.).
d. To install a new license, click on the “Install new license” button and choose the license to be installed.

After successful installation of the new license, a message “Installation succeeded” appears.
e. Now, CommServer software has the TRIAL license installed. This license removes many limitations of the demo license and gives you the whole functionality for 14 days. This license can be used to test CommServer functionality.

f. To have full functionality in the production environment, an end user license must be purchased. To buy this license, click on the “Request for license” button and send a License Request email.

It is important to change the following in the email:
- User name: End-user name
- User organization: End-user company name
- User email: End-user email address

It is important to send us a license file from the target (end user) PC because the license contains information about hardware of the target machine (called Hardware Key) and will be valid only on the PC that was used during license acquisition. The license or the Hardware Key can’t be changed manually - any modification of the license file will damage it and the license will be useless.

Note:
Any new license shall be installed on a user’s account that is used to run CommServer.

Note:
After installation of CommServer and the license it is recommended that you follow the procedure described in the “First startup” section at:
CONFIGURATION (USING MBUS COMMUNICATION).

Before any communication between CommServer and a meter occurs, CommServer must be configured. Before you proceed to configuration make sure that the connection in the physical layer is prepared (Mbus module is connected to the Mbus wire and the PC is connected to the Mbus wire via a special converter (RS232 to Mbus or Ethernet to Mbus)). During configuration, additional addresses are required: Mbus address of the meter and IP (with port number) address is required when an Ethernet to Mbus converter is used. Mbus communication configuration for CommServer can be prepared using the standard CommServer configuration tool: NetworkConfig.

1. To start configuration, launch NetworkConfig software, default START -> PROGRAMS -> CAS -> COMMSERVER -> NETWORK CONFIGURATION.

2. Click the right mouse button on Channels and select Add. Click on OK button in a window that appears.

3. Click the right mouse button on the added channel and select Add.
The following window appears:

Now it is necessary to choose Data Provider that is used for communication. Click on three dots inside Data Provider property. A new window appears and you are able to select Data Provider; in this case use M-Bus RS (or Mbus TCP/UDP when an Ethernet to Mbus converter is used):
Confirm the selection by pressing OK.

Now the Data Provider must be configured:

![Configuration window]

The following settings for any PC serial COM port are recommended to be used in M-Bus communication:

- Baud rate: 2400 bps (or 300 bps – rarely, please check your meter configuration)
- Parity: Even
- Data bits: 8
- Stop bit: 1

PortName is a COM port number (e.g. 1 means COM1) in PC.

Note: If communication over Ethernet is used, TCP or UDP connection has to be configured.

After this step has been completed, Data Provider is configured and the application window looks like in the picture below:
4. Now, add the Segment. Click the right mouse button on Protocol and select Add. A new window appears. It is not necessary to change any settings now (default values can be used, except when an Ethernet to Mbus converter is used - then the IP address and the port number (after colon) must be configured as the segment address). After this step has been completed, the application window looks like in the picture below:
5. Now, add the Port (sometimes called Interface). Click the right mouse button on Segment and select Add. A new window appears.

This is an important step in which the meter address (by means of Mbus) shall be assigned. Replace the Address property with the valid meter address in the MBUS network. It is important to select the correct Meter address. Next, add New station (just click on “New station” and configure the name for the station as desired). For other settings (InactTime and InactTimAFailure default settings can be used). In this step Port and Station are added; the picture below shows the current configuration:
6. Now, add the Group. Click the right mouse button on Station and select Add. A new window appears:

In this window select TimeScan in milliseconds – this time settings indicate how often you want to read data from the meter. In MBUS it is not recommended to request data very often. It is recommended to change the TimeScan settings to a value greater than 20s (i.e. 20000 milliseconds) and to set TimeOut (the time after which the tag in OPC will have a BAD quality if the value is not refreshed) to a value 5-10 times greater than TimeScan. Now the configuration looks like in the picture below:

7. Now it is time to add Data Block. Click the right mouse button on Group and select Add. M-Bus DataProvider (according to Mode 1 described in the Mbus specification) reads data as classes containing records with various types of information. Each M-Bus class is represented in CommServer as a block: blocks contain metadata (description of a particular record content) and process data. Metadata and data from each record can be made available in the OPC address space as tags. The sequence of tags and tags type shall correspond to record fields.

To read a data block, a request with the selected data type (class) and device address on the network is sent to the device (called a station in the CommServer configuration). The M-Bus device address is configured as a port (interface) address property. For the performance reasons and optimization of the license usage, a simplified class is associated with each class defined by the specification, that allows you to define blocks containing only process data values from the received M-Bus records – metadata is neglected. To publish M-Bus data as OPC tags, the user has to create groups to define the scanning policy, and blocks to define an appropriate class of data. M-Bus DataProvider allows reading the following classes of data:

- **Class2_Data** – This class contains process data that are measured by the device.
- **Class2_Data_Short** – This class contains the same data as **Class2_Data**, but a description of data is excluded. Only values of the received data records are returned to CommServer as consecutive tags.
During configuration of the block, address and name properties are unimportant because they are not used in M-Bus communication. Below find an example of block configuration:

![Block Configuration Example]

Class2_Data is very useful when you want to discover what data are available in a particular meter, but in this case some documentation is available and you can configure to read Class2_Data_Short.

In the normal environment (when the set of data that is returned by the meter is well known) it is recommended to read Class2_Data_Short.

8. Now, add OPC Tags to your configuration. Click the right mouse button on Block and select Add. A new window appears:

![OPC Tag Configuration Example]

It is recommended to change the name to a more readable one. The best solution is to use names from the documentation of the meter or from the CommServer Mbus manual (if the meter is on the list of supported meters).

Below an example for Kamstrup Multical C66 is given. Default settings can be used for other settings.
This heat meter can be requested for the following data types: Class2_Data and Class2_Data_Short. Consecutive tags returned by this meter for Class2_Data_Short are as follows:

1. Energy [J]
2. Volume [m³]
3. On Time [h]
4. Flow Temperature [C]
5. Return Temperature [C]
6. Temperature Difference [K]
7. Power [W]
8. Volume Flow [m³/h]
9. Energy [J]
10. Volume [m³]
11. Time Point (data)

Note that it is not necessary to configure all items that are returned by the meter (e.g. if you are interested in the first four values you can configure to read only those four items). After this step has been completed, the configuration looks like in the picture below:
To add another meter, repeat steps from 4 to 7 (only the address in the MBus network must be set according to the meter, **step: 4**).

An example configuration with two configured meters is shown in the picture below:

9. Saving the configuration is the last step. It is recommended that the configuration is saved in a default location (with a default name) as DefaultConfig.xml in the CommServer installation folder. By default, it is `%PROGRAMFILES%\CAS\COMMSERVER\DefaultConfig.xml`. The name and path of the configuration file can be changed; for detailed information see the CommServer Manual.
USING CONFIGURATION TEMPLATE.

Configuration templates for some types of Heat Meters are provided to help the user in configuration. Those templates are prepared during communication tests with a particular meter type. Below please find instructions on how to use templates:

1. Rename the configuration template file from DefaultConfig_HEAT_METER_TYPE.xml to DefaultConfig.xml.

2. Copy this configuration file to the CommServer installation folder; by default it is \%PROGRAMFILES\%CASCOMMSERVER. Overwrite the existing file.

3. Run Network Configuration and open DefaultConfig.xml. The following changes must be done to the configuration:
   a. The first thing is PortName. PortName is the number of the COM port in the PC used to communicate with the M-Bus transceiver. It can be changed in the Protocol settings. Marked red in the picture below:

   ![Network Configuration Screen Shot](image)

   b. Next the meter address (in MBus network) must be changed. It can be changed in the Port settings. Marked red in the picture below:

   ![Network Configuration Screen Shot](image)

   c. Finally, save the configuration as DefaultConfig.xml. Now, CommServer can be launched and data from the meter shall be available in OPC. The OPC Viewer – a sample OPC client can be used to read data from CommServer.

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