

Integrated OPC Server for MBus

The Software application "OPC Server for MBus" allows OPC Clients to retrieve information and data from MBus compatible networks and devices.

With a simple engineering process the application can retrieve data on a scheduled basis from devices such as heat meters, water meters and electricity meters.



ENGINEERING GUIDELINES

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Product codes

OPC Server for MBus	OPC-MBUS-003
PC – MBus Master Cable	iPC-MBUS-CAB
Embedded Controller hardware option	EPC-ANYD-203

Product notes

The OPC Server software solution is intended for use with the OPC Client systems
The solution is supplied as a single installation file including all necessary files.

The solution was developed and tested by INTEGRATED.

1. Introduction

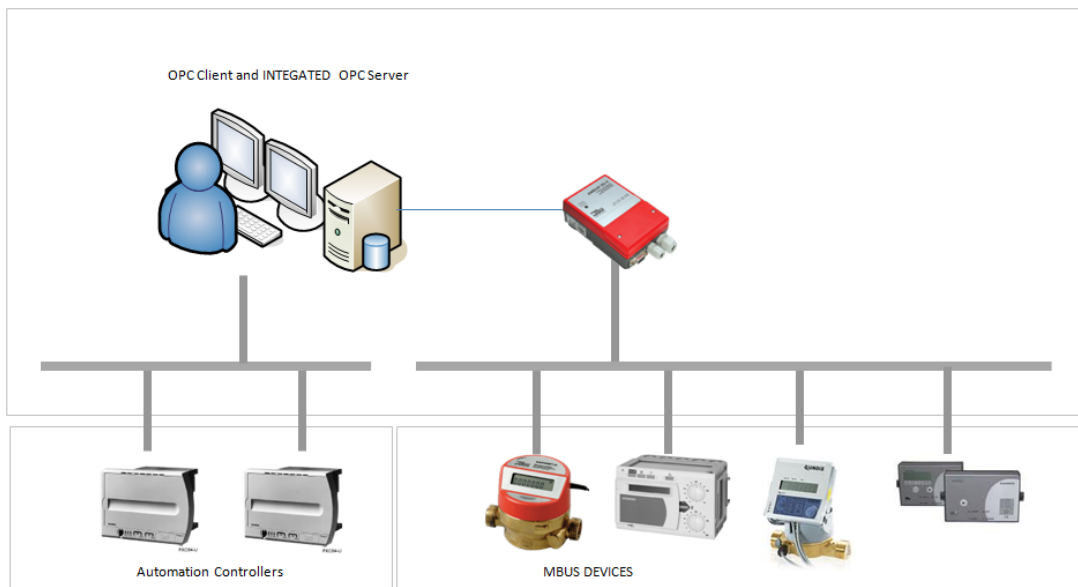
The OPC Server software enables communications between the OPC Clients and MBus enabled devices on a network. This documentation is provided to customers as a guideline for engineering the interface, detailing the required data points and mapping information.

The Software Server from INTEGRATED passes requests information from the MBus devices via the MBus master and passes the information, such as Energy Usage, Water Temperature to the OPC TAGS for an OPC Client to read.

2. Topology

The diagram below details the concept of the interface software. The OPC Server is typically installed on the same PC as the OPC Client. The OPC Server communicates with a Mbus master using RS232 or RS485.

System Topology example



3. Software Installation

The software is delivered as a zipped file containing the relevant install packages.

Installing the OPC Server

If the OPC Server for MBus is supplied as a software package without hardware, please follow the simple installation procedure below:

- Unzip the Delivered File to a temporary directory.
- If necessary for the target PC, run the OPC Core components.msi available from the OPC Foundation and follow the messages on the screen. Install the software onto the default directory. When successfully complete continue to next step.
- For the Server installation, run the setup.exe program from windows and follow the messages on the screen. Install the software onto the default directory. When successfully complete continue to next step.
- You are now ready to configure and Engineer the OPC Server for MBus to suit the Site requirements.

Installing the MBus Tool

A Software MBus tool is supplied with the application. This can be used to interrogate the connected meters to collate information necessary to configure and engineer the OPC Server.

- Unzip the Delivered File to a temporary directory.
- For the Tool installation, run the setup.exe program from windows and follow the messages on the screen. Install the software onto the default directory. When successfully complete continue to next step.

Installing the Dongle Driver

The OPC Server is protected with a Hardware Dongle that is supplied as part of the purchase.

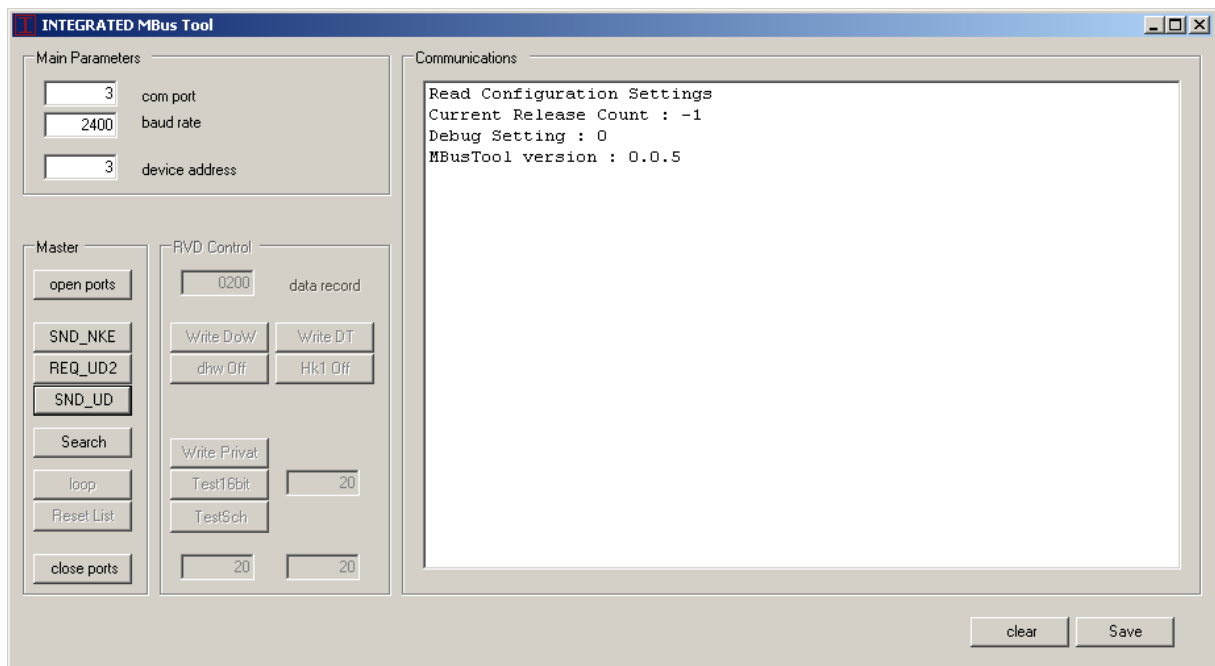
- Unzip the Delivered File to a temporary directory.
- Install the Hardware Dongle and follow the windows messages to install the drivers form the temporary directory. When successfully complete continue to next step.

4. MBus Software Utility

To assist in the engineering of the OPC Server, an MBus Software Utility Tool is supplied as part of the solution.

The tool will allow the user to search the trunk connected for the meters, recording which meter addresses are answering.

The tool then allows specific interrogation of the Meter by address to record the information that the meter is configured to supply.



Searching the Trunk

Start the application and you will see a windows application as shown above. Select the 'com port' that you are using, Enter the baud rate. Press 'open port'.

Press 'Search' and the application will scan through the Primary Addresses 1 to 255 asking for a reply. Devices that are present and respond will be shown in the list.

Searching the Device

Enter the device address in 'device address' then press 'REQ_UD2'. The device should respond with its configured answer. The data will be shown in the list.

Press 'Save' to store the answers in a file for future reference.

5. Software Engineering

With the information regarding the site installation the engineering can begin. See the section 'Engineering the Database' and 'Configuring the Server'

6. Running the OPC Server for the First Time

Once the Engineering is complete, run the OPC Server from the Start Menu

Registering the OPC Server

In order for the OPC Clients to recognise the OPC Server, it is necessary to register the Server. Right Click on the System Tray icon and the menu will appear. Select 'Register Server'

The system is now ready.

7. Operating the Software

Starting the OPC Server from the Start Menu

From the Start Menu select OPC MBus. An icon will appear in the system tray.

Starting the OPC Server from an OPC Client

Once registered, the OPC Server can be started from an OPC Client. Start the OPC Client and follow the applications guidelines to connecting to an OPC Server.

Stopping the with an OPC Client Connected

If there is an OPC Client connected do not attempt to stop the OPC Server – first disconnect the OPC Client.

Note: Communications to the MBus trunk is only enabled when an OPC Client is connected.

8. System Tray Icon Status

System Tray Status – Start-up

On start-up of the application the icon in the system tray will show a green background. The diagram below shows an example of the icon



System Tray Status – Client Connected

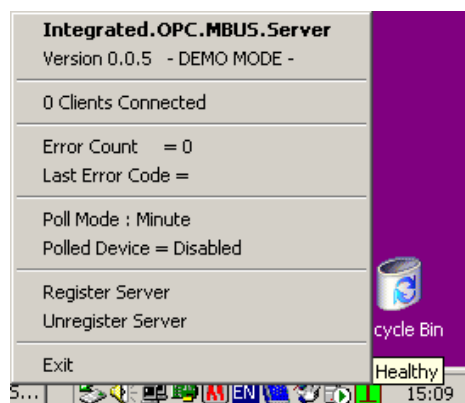
If an OPC Client connects to the OPC MBus Server, the system tray icon will change to a clear background. The diagram below shows an example of the icon



When there are no clients connected to the OPC MBus Server, the icon changes back to a green background

9. System Tray Menu Status

Right click on the System tray icon and a menu will be shown detailing the status of the application



10. Engineering the Database

Located in the Application Directory is a File named "Integrated.OPC.MBus.Engineering.xls". It is an excel compatible file that is used to store the configuration and engineering details such as the addresses of the MBus devices, the Communications Port of the PC etc. Detailed below are the various 'Sheets' and their usage.

Sheet: Project

The first Sheet in the file is titled, Project. It is used to store information regarding the Project. There must be only one line.

Release

The release cell is used to track the changes made to the file for the Project. Any changes made to the file, for example Device addresses, Port Number, Data-point text must be accompanied by an increment to the 'Release' Number – else changes will be ignored.

License

The License cell is used to register the installation. This number should not be changed.

Name

The Name cell is used throughout the application for the site and should reflect a meaningful representation of the installation.

Author

The Author cell should reflect the last user to modify the file.

Sheet: Port

The Port sheet is used to define the communications properties such as the baud rate and the frequency. This version of the application supports only a single trunk

Trunk

This must be left as '1' as this version of the application supports only a single trunk. If you require more communications ports, please contact the INTEGRATED.

Port

This cell represents the communications port of the Computer on which the application runs. Use the device manager to interrogate the Settings of the Computer.

Baud Rate

This cell represents the speed of communications. The application supports a single baud rate Typically this is set to '2400'

DataBit

This cell represents the databit settings for the MBus communications.

Typically this is set to '8'

StopBit

This cell represents the stopbits for the communications

Typically this is set to '1'

Parity

This cell represents the Parity for the communications

Typically this is set to 'E' for Even.

ScanCycle

This cell represents the frequency of communications. The value is used to define how often the application will poll the engineered devices for data. This is an important value as some mbus devices do not enjoy being polled too often.

0 = Continuous. The application will poll each engineered device, an on completion of the last device, start again with the first.

1 = Minute. The application will poll the engineered devices, upon completion wait until the next minute to start again.

2 = Hourly

3 = Daily

4 = Monthly

The actual start time details can be adjusted in the configuration file.

Sheet: Trunk

Area, Plant, Unit

These fields are used to identify the MBus device and the Data. The fields represent the names used to create the OPC TAGS.

Description

The field denotes details regarding the device.

Template

Each Device defined in the list refers to a Template in the 'Mapping' sheet that contains the data-points.

Trunk

This is the Trunk that the device is connected to. This version of the application is limited to a single trunk.

Address

This is the MBus Primary address that the device will respond to.

SND_NKE

Some devices need an MBus command SND_NKE before answering with data. Refer to the manufacturers' documentation before using this.

Notes

General information regarding the device.

Sheet: Mapping

This Sheet contains the device specific information regarding the data-points returned by the devices.

Key references are

Template Number – referenced by the device in the 'Trunk' sheet

Datapoint Name – this is a key reference to the data returned from the device

Unit, Tarrif and Storage. – these are keys to refer tot he specific data returned form the device.

In order to collate the data required for the engineering, use the MBus Software utility Tool.

11. Configuring the Server

In the application directory the file "OPCMBus.exe.config" stores more details related to the operation of the Application.

Register.

This value represents the last 'Release' version built. Do not change this value

Debug.

This value is used to configure the level of debug logging. See the Logging Section for more details

EngConfig

This value is the pointer to the Engineering file. So not change this value

EngMinute

This value represents the 'seconds' used to trigger the next communications cycle when the ScanCycle is set to 'minutes'

EngHour

This value represents the 'minutes' of the hour used to trigger the next communications cycle when ScanCycle is set to 'hour'

EngDaily

This value represents the 'hour' of the day used to trigger the next communications cycle when ScanCycle is set to 'Daily'

EngMonth

This value represents the 'day' of the month used to trigger the next communications when ScanCycle is set to 'Month'

12. MBus enabled functions

SND_NKE,
SND_REQ2

13. Status TAGs

<u>Data point description</u>	<u>OPC TAG text</u>	<u>Data Type</u>
Total Error Count	EngErrCount	
Last Error Message	EngErrMsg	byte
The current device being polled	EngMeterPoll	byte

14. Error Messages

<u>Error Number</u>	<u>Description</u>	<u>Notes</u>
00	Normal	all ok
01	Device Fail	An Engineered MBus device failed to answer

15. Licensing Dongle

In order to protect the application from piracy a Hardware Dongle is supplied.

If the dongle is not installed, the Application will run for 30 minutes, after which time the OPC TAGS will not be updated.

The System Tray menu will indicate "- DEMO -" if no Dongle is installed.

16. Supported Operating Systems

Currently the solution has been tested on the following Operating Systems:

<u>Operating System</u>	<u>Version</u>	<u>Notes</u>
Windows 2000	service pack 4	professional version
Windows XP	service pack 2	professional version

17. Supported and Tested Clients

The OPC Server has been successfully tested with the following OPC Clients :

<u>Product Name</u>	<u>Version</u>	<u>Notes</u>
MBS OPC Explorer MATRIKON OPC Explorer Citect SCADA Siemens SX-OPEN Sauter Nova Pro	5.5	used with Siemens DESIGO INSIGHT