



Modbus OPC Server 3.x Quick Start

APPLICATIONS NOTE

January 2003

Description: Quick Start for configuring and running the Modbus OPC Server 3.x.

OS Requirement: The operating system required is Win XP/2000/NT/95/98/Me.

General Requirement:

The **Modbus OPC Server** allows you to configure OPC Tags which acquire process data from Modbus compliant devices.

Capabilities:

- Supports Modbus RTU and ASCII serial communications protocols.
- Supports up to 4 communication ports
- Supports OPC Data Access v1.01a and v2.x
- Supports OPC Alarm & Event v1.01 standard.
- Supports Folders and Sub-Folders for easy configuration and manageability
- Tag Multiplier let you create hundreds of tags in seconds
- Configuration Export/Import CSV (comma separated variable format) for bulk editing tag lists in for instance Text Editors or MS-EXCEL.
- OPC tags can be scaled and have ranges
- Simulation capabilities.

Configure the Modbus Server

To configure the Modbus OPC Server, the following steps have to be completed.

1. Start the **Modbus Configurator**.

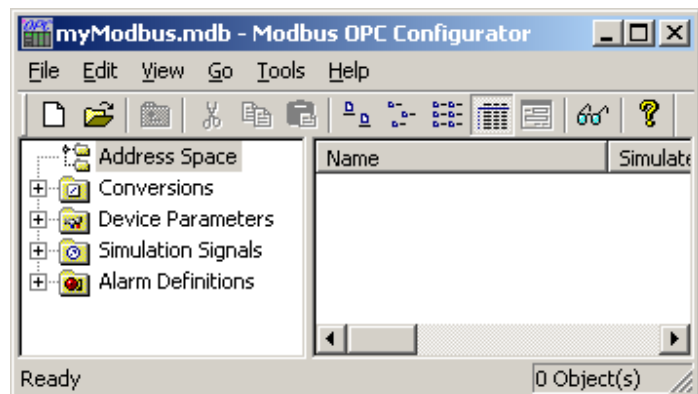
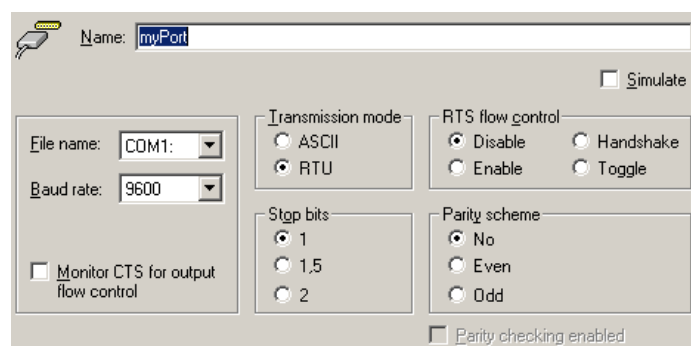


Fig.1 Modbus Configurator

2. Select **File, New** from the menu and specify a name for the configuration. For example **myModbus.mdb**
3. Select the **Save** button and the configuration file will be created.

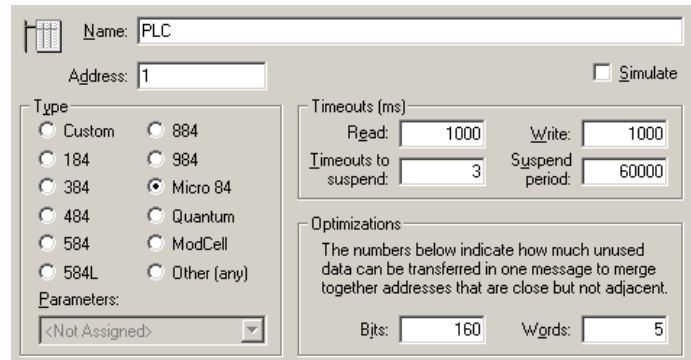
4. Select **File, Make Active...** and click the **Yes** button. This will ensure that the OPC Server will be using your new configuration.
5. Right mouse click on **Address Space** in the left window, and select **New, Port**



6. Specify a name for the port, e.g. **myPort**
7. Specify the correct settings for the communication with your Modbus Device. These settings need to match the settings of your Modbus device!
8. Click the select the **Apply** button.

In case you do not have a real Modbus device connected yet, you can select **Simulate**

9. Right mouse click on **myPort** in the left window, and select **New, Device**
10. Specify a name for the Device, for instance **PLC** and a valid Node Address for your Modbus device. E.g. **1**
11. Click the **Apply** button



12. Right mouse click on the folder **PLC** in the left window, and select **New, Data Item**
13. Specify a name for the item, for instance **Temperature**
 - a. Set the Modbus Type to **UINT** (unsigned integer value)
 - b. Set the location type to **Holding Register**



- c. Specify where the **Temperature** can be found in the PLC memory. For instance Starting Address **21**
- d. **Uncheck** "Use Conversion" since we want to see raw values during testing.

Fig.4 Settings for the Tag.

14. Click the **Apply** button.
15. Right mouse click once more on the folder **Boiler** in the left window, and select **New, Data Item**
16. Specify a name for the item, for instance **Pressure**
 - a. Set the Modbus Type to **UINT** (unsigned integer value)
 - b. Set the location type to **Holding Register**
 - c. Specify where the **Pressure** can be found in the PLC memory. For instance Starting Address **22**
 - d. **Uncheck** "Use Conversion".

17. Click on **PLC** in the left window and select from the menu **View, Monitor View** to see live values.

Item ID	Value	Timestamp	Quality	Subquality	Limit
myPort.PLC.Pressure	25955	06/29/01 17:23:07.009	Good	Non-specific	Not Limited
myPort.PLC.Temperature	25955	06/29/01 17:23:07.009	Good	Non-specific	Not Limited

18. You can select **File, Exit** in order to exit the Modbus Configurator.

Any OPC Client, for instance GraphWorX32 can browse to the Modbus OPC Server and use the OPC Tag.

explore the advanced features like **Scaling, Alarming** and **Simulation**.

Scaling

Scaling is used to convert the raw device data into meaningful engineering data. The next example shows how a temperature sensor provides a value from 0 to 65535 and we want to convert this to an engineering value -10 to 300 Degrees Celcius.

1. Start the **Modbus Configurator**.
2. Right mouse click on **Conversions** in the left window, and select **New, Conversion**
3. Specify **TempConversion** as the name for the conversion.
4. Set the High Instrument Range **IR** to **65535**
5. Set the Low Engineering Units **EU** to **-10**
6. Set the High Engineering Units **EU** to **300**
7. Click the **Apply** button

8. Finally you set **Use Conversion** in your **Temperature** tag. (see fig.4.) and specify **TempConversion** as the conversion to.

Alarming

Alarm limits can be configured for each tag in your Modbus configuration. You can directly connect industry standard OPC Alarm & Event Clients to your server such as the ICONICS Alarm Viewer, Logger and Multimedia annunciator.

1. Right mouse click on **Alarm Definitions** in the left window, and select **New, Limit Alarm Definition**
2. Specify **TempAlarm** as the name for the conversion.
3. configure the alarm settings as seen in the next figure.

Advanced Capabilities

In case you would like to compare the ICONICS Modbus OPC Server with some third party OPC Servers you may want to



Limit	Value	Message Body	Severity	Req. Ack.
☒ HiHi	90	too hot	500	☒
☒ Hj	80	too warm	500	☒
☐ Return to normal		Return to Normal	500	☐
☒ Lo	30	too cold	500	☒
☒ LoLo	20	almost freezing	500	☒

9. Finally you set **Generate Alarms** in your **Temperature** tag. (see fig.4.) and specify **TempAlarm** as the Limit Alarm.

Similar to the Conversion and Alarming you can configure your tag to behave in **simulation mode**. This would be useful if you do not have a real Modbus device connected to your comm. Port.