



Modbus Point Manager - Quick Start



APPLICATION NOTE

June 2017

Description: Modbus Point Manager adds full Modbus OPC integration into the Workbench and Platform Services architecture. This document will guide you through the steps of configuring your Modbus OPC Server within Workbench.

General Requirement: Basic knowledge of GENESIS64 and Modbus.

Introduction

Modbus Point Manager supports Modbus Ethernet TCP/IP Devices. The functionality of the Modbus Point Manager is based on ICONICS' standalone Modbus OPC Server V3.6, providing functionality such as:

- Configurable Device Types (Parameters)
- Multiple Sockets Per Device
- Protocol Diagnostics
- Runtime Statistics
- Performance Counters
- Address Space Template

Key Features of Modbus OPC Server

- Communication Channels - fully configurable
- Asynchronous Non-blocking Communications
- Optimal (Configurable) Modbus Messaging
- Advanced OPC data quality and data conversion to client's request.
- Supports multiple multi-drop I/O devices.
- Supports all popular PLC and RTU data types.
- Internal simulated for configuration and testing.
- Tag multiplier allows you to create hundreds of tags in seconds.
- Supports for OPC Data Access (DA) and Alarm and Events (AE) specifications.
- Flexible engineering units and signal ranges.
- TraceWorX diagnostics support (logging data into XML file)
- Sample OPC Client

Configuring the Modbus Point Manager

Start Modbus Point Manager by opening Workbench and going to **Data Connectivity → Modbus**.

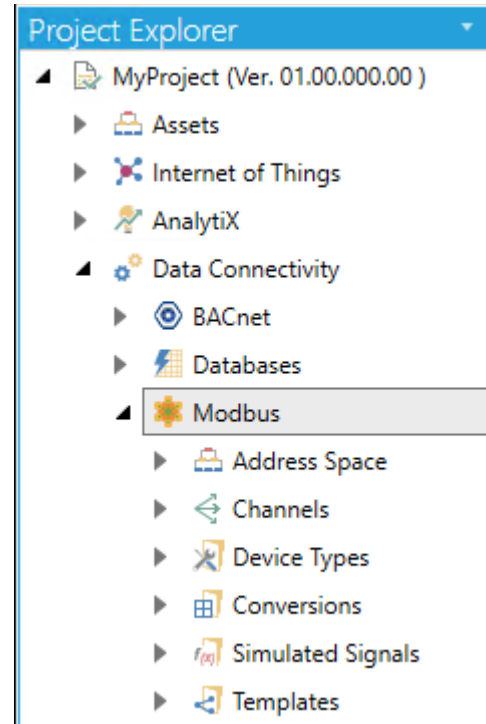


Figure 1 – Modbus provider in Workbench

Devices

In the Modbus configuration, a device represents a hardware device that communicates with the OPC server over TCP/IP.

The **Address Space** in the Modbus configuration, shown in the figure below, sets the properties and connection parameters for the following items:

- **Devices**
- **Folder Item**
- **Data Items**

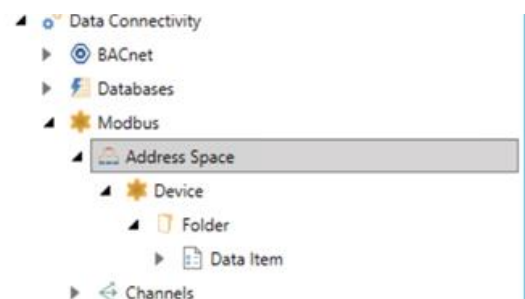


Figure 2 - Address Space

The Modbus configuration offers several levels in its hierarchy. The Modbus module uses the terms *Folder* and *Data Item*. A **folder**



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can contain additional folders and also data items. The **data items** are always the branches in the tree control hierarchy. Setting up a device requires configuration of its unique address, type, timeouts and optimization parameters, as shown in the figure below:

Add a New Device

From the Project Explorer, click on **Address Space**, then **Add Device**, as shown below.

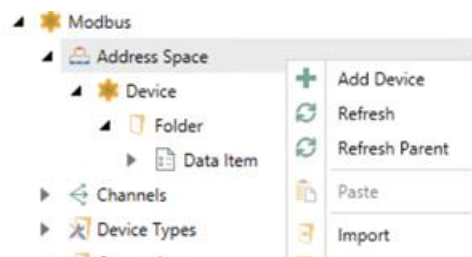


Figure 3 - Adding a New Device

Device Properties:

Description - Enter a description of the device in the text entry field. This will help to differentiate individual devices when multiple items are configured.

Enable - Click this checkbox to enable to the selected device.

Channel Type - Use the pulldown menu to select Modbus TCP/IP Ethernet. The remainder of the properties to complete will update according to the selection.

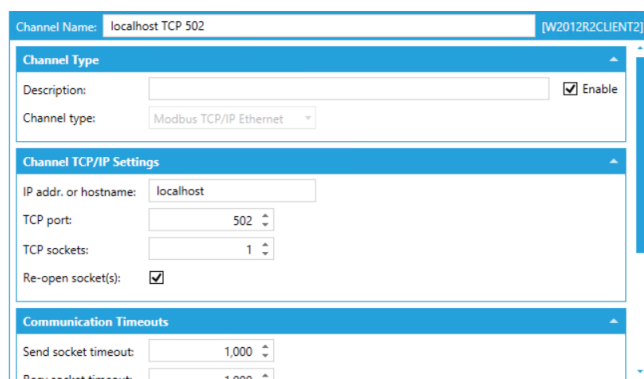


Figure 4 - TCP Channel

Device Type - Use the dropdown menu to select a **Device Type** from among those listed (Default Device Type, Ideal, Micro 84, ModCell, Modicon 184, Modicon 384, Modicon 484, Modicon 584, Modicon 584L, Modicon 884, Modicon 984, Quantum, or Simple).

Once you have completed making your settings, click **Apply** (or **Apply & Close**).

Defining Data Items

Right-click on the device that you have just created and select **New → Data Item**.

Give the data item a name and set its properties such as Modbus Datatype and Device Address then click on **Apply**. Your Modbus data item is now ready to be used in OPC client applications like GraphWorX64.

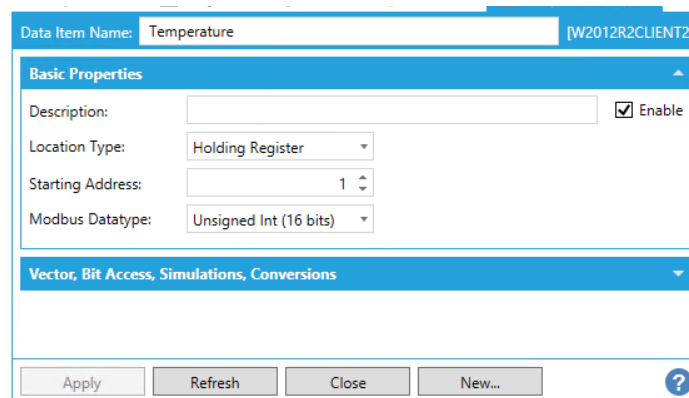


Figure 5 - Data Item

Adding Additional Device Types

Most commonly available Modbus devices are already configured in the Modbus Point Manager's Device Type list. However, if your device is not present in the list it can be added.

Right-click on Device Types and select **Add Device Type**.

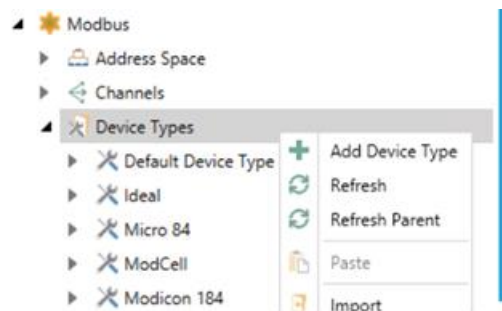


Figure 6 - Adding a Device Type

In the **Device Type Name** field, specify a name for the new device type and select additional properties.



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Device Type Properties:

Unit Id - The Unit Identifier field may be used to communicate via devices such as bridges.

Base Scan Rate - This sets the rate, in milliseconds, at which the data will be polled from the device. Fast scan rates may have impact on a device's responsiveness.

Simulate - Click on this checkbox if this device should be considered as simulated only.

Block Parameters - Each number is the maximum amount of data that can be transferred in one/read write message. Specifying 0 (zero) instructs the server to use single read/writes only.

- **Coils (read)**
- **Inputs (read)**
- **Input registers (read)**
- **Holding registers (read)**
- **Coils (write)**
- **Holding registers (write)**

Block Unused Data Optimizations - Each number indicates how much unused data can be transferred in one message to merge together addresses that are close but not adjacent.

- Unused bits (coils, inputs)
- Unused words (registers)

Swap Options:

- Swap bits inside words
- Swap bytes inside words
- Swap Words inside dwords
- Swap dwords inside 64-bit registers

Channels

The Channels node within the Modbus Point Manager allows you to set a new channel where you can set the Channel Type of Modbus TCP/IP Ethernet. The selected Channel Type will automatically change the list of properties to complete. Set Channels can then be selected from within **Device** properties.

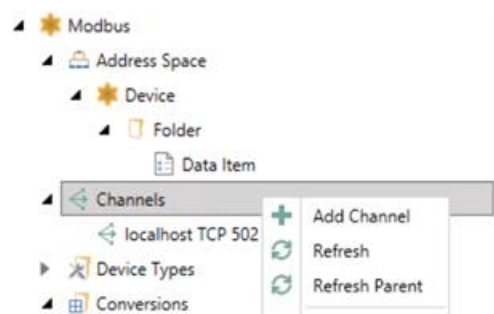


Figure 8- Modbus – New Channel

Typical TCP/IP Channel Settings

- **IP address or hostname** - Enter the IP address or hostname in the text entry field.
- **TCP port** - Enter the TCP port number in the text entry field.
- **TCP sockets** - Enter the TCP sockets in the text entry field.
- **Re-open socket(s)** - Click this checkbox to close and reopen the TCP socket(s) when a timeout is detected.

Communication Timeouts

- **Send socket timeout** - Enter the duration of the timeout in the text entry field.
- **Recv socket timeout** - Enter the duration of the timeout in the text entry field.
- **Send/Recv delay** - Enter the send/receive delay in the text entry field.
- **Frame retry count** - Enter the retry count in the text entry field.

Suspended Mode Settings

- **Timeouts to suspend** - Enter the number of timeouts to suspend in the text entry field.
- **Suspended period** - Enter the amount of time in the text entry field (in milliseconds) for the suspended period.