

Siemens Modbus Instruments and SIMATIC PDM

Connecting Siemens Modbus instruments to SIMATIC PDM

Objective:	<ul style="list-style-type: none">• Become familiar with the Siemens instrument wiring requirements• Become familiar with SIMATIC PDM configuration tool
Equipment:	<ul style="list-style-type: none">• Siemens Modbus instrument that supports PDM• Device instruction manual• SIMATIC PDM ver. 6.0 (SP. 1)• Serial Modbus Interface• PC or Laptop

While every effort was made to verify the following information, no warranty of accuracy or usability is expressed or implied.

Overview:

SIMATIC PDM is the Siemens configuration software used to set up Modbus instruments. All parameters are accessed through PDM, and configuration data is saved in projects. SIMATIC PDM also provides diagnostic information, permitting the user to view echo profiles and check set points.

Please note that not all Siemens Modbus instruments support PDM. At the time of publication, the following instruments support PDM:

- MultiRanger 100
- MultiRanger 200
- HydroRanger 200

In this Application Guide, the example of a MultiRanger 100 is used. However, the same procedures apply to any SMPI Modbus instrument that supports PDM.

This Application Guide discusses the following topics:

- setting up SIMATIC PDM
- setting up a Modbus network
- adding the Siemens Modbus device to a project
- viewing and editing parameters

With the release of version 6.0, a single point version was introduced. The single point version uses a different method to connect to the field instrument, connecting to one instrument instead of supporting the advanced networking like all other versions of PDM. With the single point version, there is no need to create a project. Please see the application guide *AG051130 Siemens Modbus Instruments and SIMATIC PDM Single Point Version* for more information.

NOTE: Level measurement product information is available for free download at www.siemens.com/processautomation. Under *Process Instrumentation*, select *Level Measurement* to access level product information.

Siemens Milltronics Process Instruments Inc.

1954 Technology Drive, P.O. Box 4225
Peterborough, Ontario
K9J 7B1 / Canada

Tel.: (705) 745-2431
Fax: (705) 741-0466
www.siemens.com/processautomation

Initial Setup

Installing SIMATIC PDM

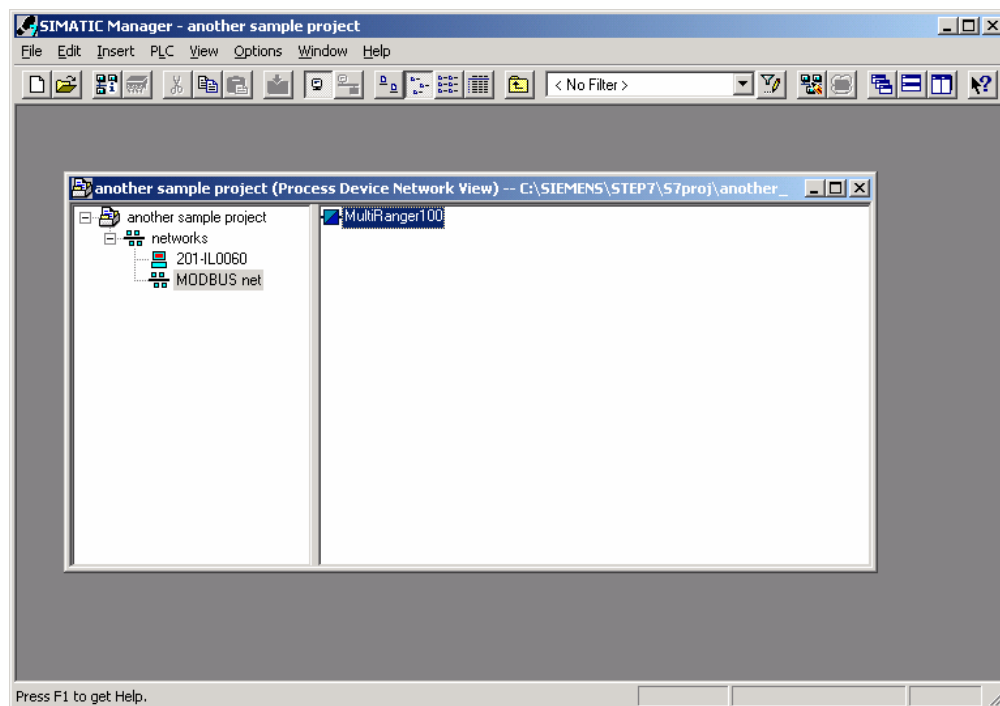
Using the defaults, install SIMATIC PDM as per the instructions on the purchased CD. Be sure to insert the Device Library CD at the section called *Manage Device Catalog*. All of the Siemens Device Descriptions (DDs) must be selected.

When to update the device description

SIMATIC PDM includes the Device Descriptions that were current when the PDM software was last released. Between releases of PDM, updates are done to the product and to the DDs. The DD being used *must* match the revision number of the product. As a general rule, Siemens recommends updating to the latest DD (see below for instructions).

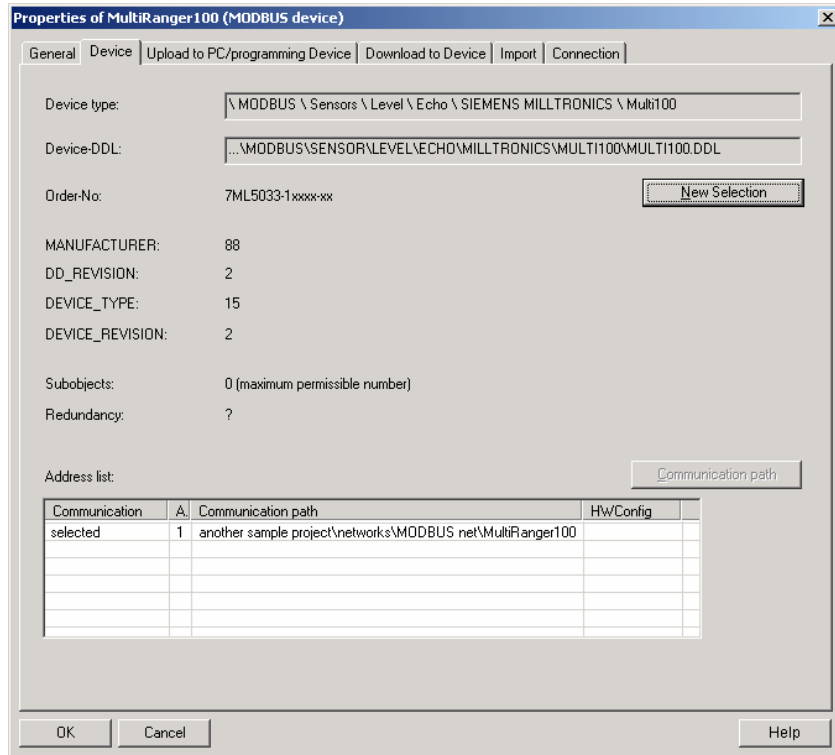
After a project has been created, the DD can be viewed:

- See the section entitled *Opening up a New Project* on page 7 for details on launching a project.
1. Right-click the object and select *Object properties*.



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2. Select the **Device** tab.
 - Under the Device tab, the DD_REVISION will be displayed. A different DD can be selected by clicking on **New Selection**.



Updating the device description

NOTE: Make sure that SIMATIC PDM software is not running while the Device Description is updated.

The latest Modbus device description for SIMATIC PDM is available for free download from the instrument's product page at www.siemens.com/processautomation.

1. On the product page, go to **Downloads** and select the appropriate DD.
 - For example, the connection is to a Multi 100, go to the Multi 100 product page and select **Modbus MultiRanger 100 version ... for SIMATIC PDM**.
2. Save the **ZIP** file to a directory on the terminal and then double-click to open it.

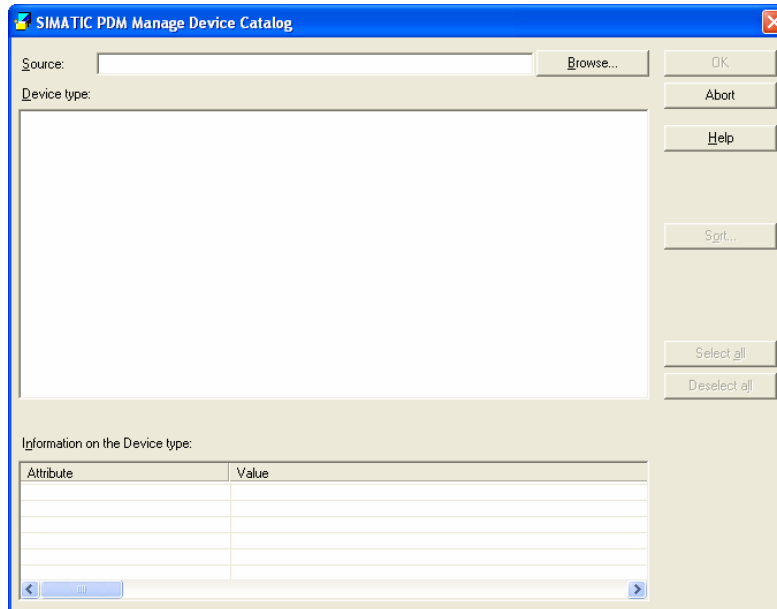
For versions prior to 6.0:

1. Extract the files to a directory and run the program **DeviceInstall.exe**.
 - **Do not** run this program from within the **ZIP** window because it will not install correctly.
2. Follow the directions in the installation wizard.
3. After installation, close and delete the **ZIP** file.
4. Open **SIMATIC PDM**.

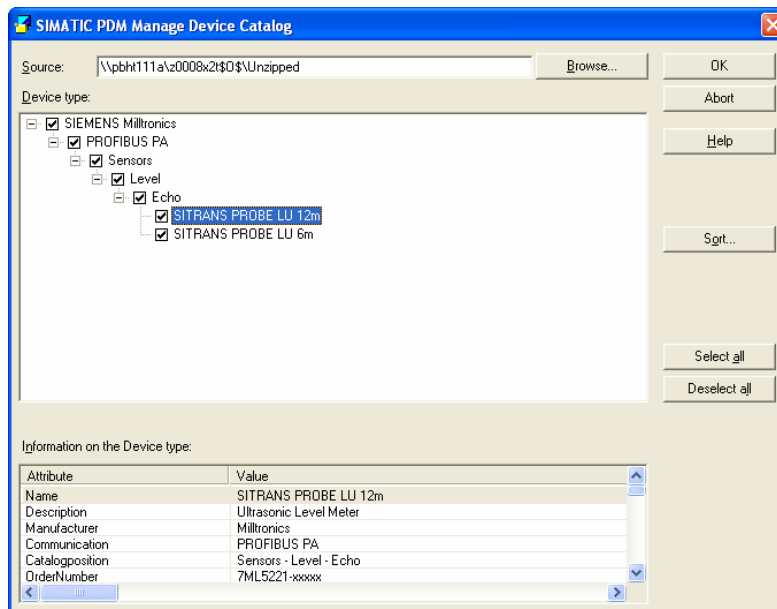
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For version 6.0 and newer:

1. Extract the files to a directory and then run the program called **Manage Device Catalog**.
 - This program can be found under **SIMATIC/SIMATIC PDM**.



2. Click **Browse** to locate the extracted files.



3. Click **OK**
4. Select the desired **DDs** and click **OK** to import.

NOTE: The firmware version of MultiRanger 100/200 or HydroRanger must be equal to or greater than 1.07 to use SIMATIC PDM.

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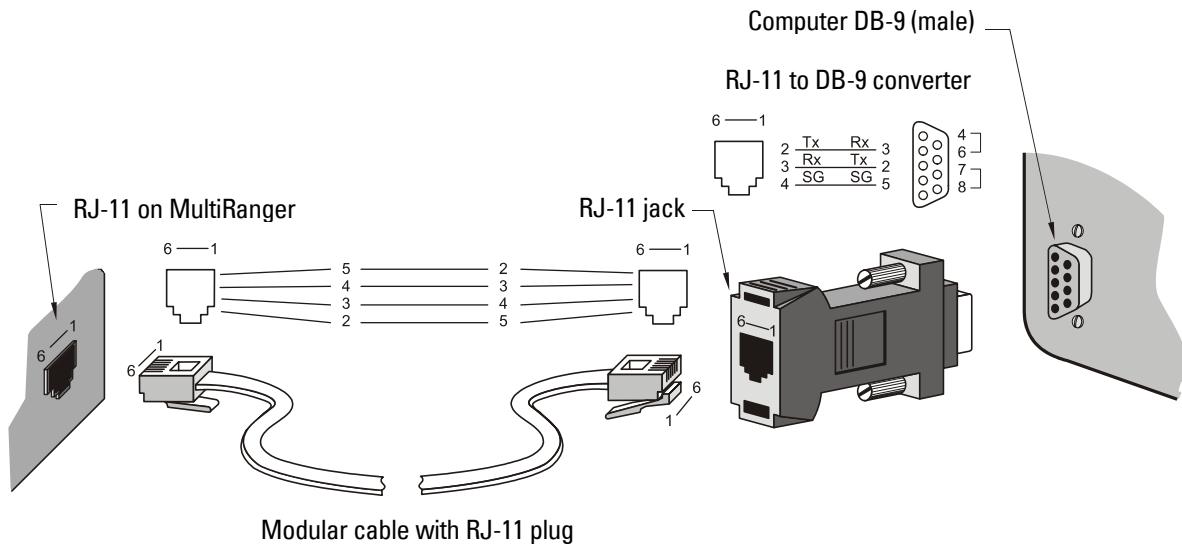
Wiring up the MultiRanger 100/200, HydroRanger 200

The MultiRanger 100/200 and HydroRanger 200 each have two ports:

- Port 1 is an RS-232 port for point-to-point connections
- Port 2 is an RS-485 port for multi-point connections or long distance connections

PDM can be connected to either port. For this application guide only the Port 1 connection will be shown.

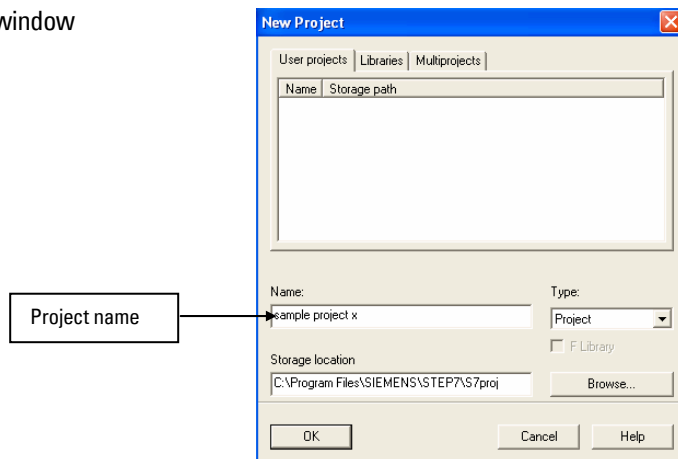
1. Terminate the wires inside the device housing to the appropriate terminals.
 - Use the instruction manual as a guide.
2. Connect the MultiRanger to the serial port of the computer using the Siemens Milltronics DB-9 to RJ-11 converter.



NOTE: Jumper pins 4-6 and 7-8 at the DB-9.

Opening up a new project

1. Double click the **SIMATIC Manager** icon.
2. Select **FILE/NEW** to open the **New Project** window
3. Enter the project name and click **OK**.



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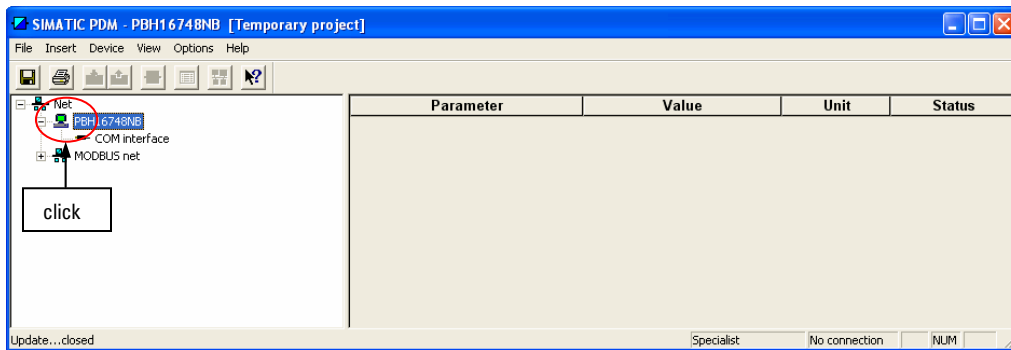
4. Right-click **Net** and select **Insert New Object/MODBUS net**.



Verifying COM Port

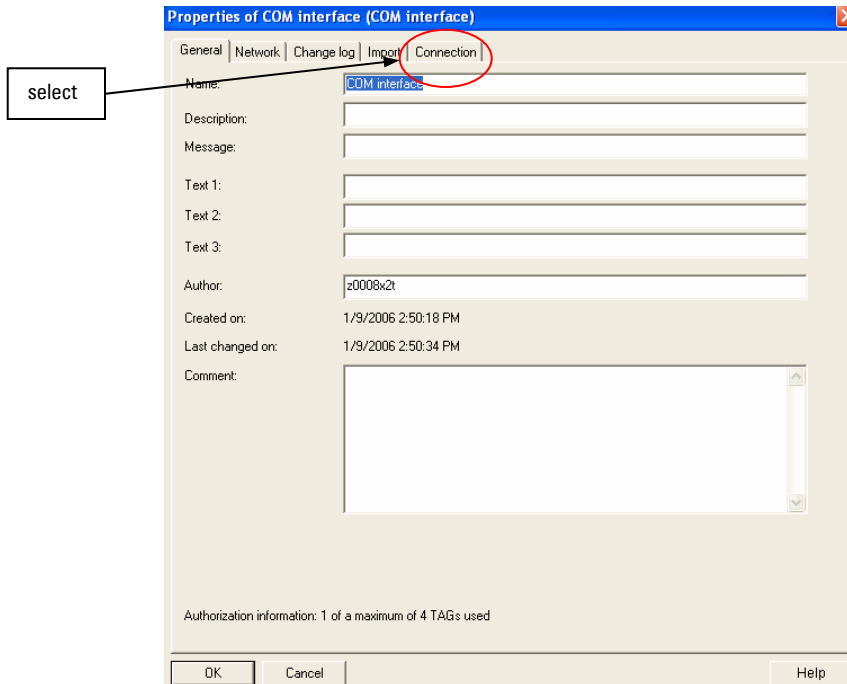
If this is an initial setup, please verify that PDM is using the correct COM Port.

- 1) Open the Network tree in the left window pane by clicking the **+** sign.
- 2) Click the computer icon to access **Com interface** in the right pane.

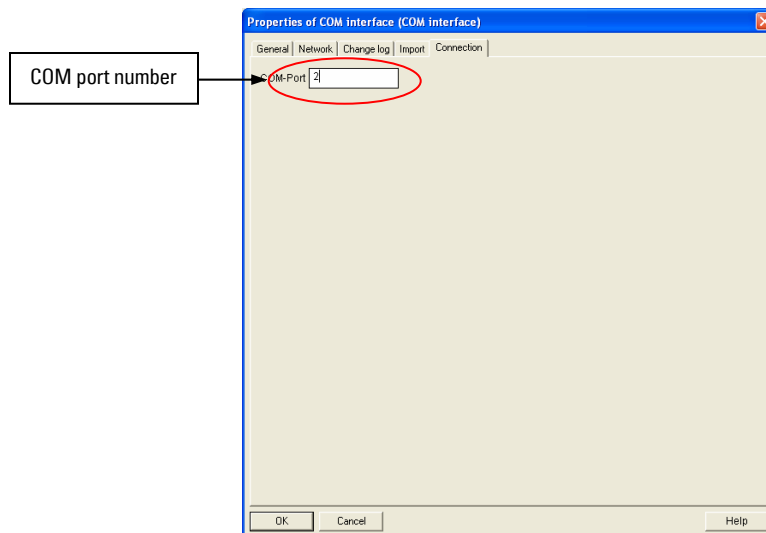


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- 3) Right-click **Com interface** and select **Object Properties** to open the **COM interface** window.



- 4) Select **Connection** tab and verify that the selected COM-Port matches the one used by the terminal.
 - If not, change the COM Port number.

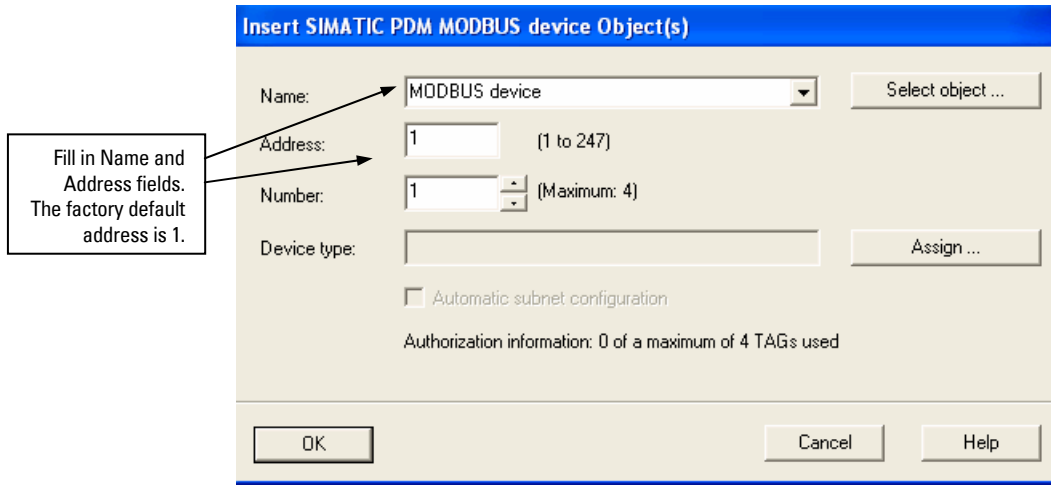


- 5) Click **OK** to shut the window and continue.

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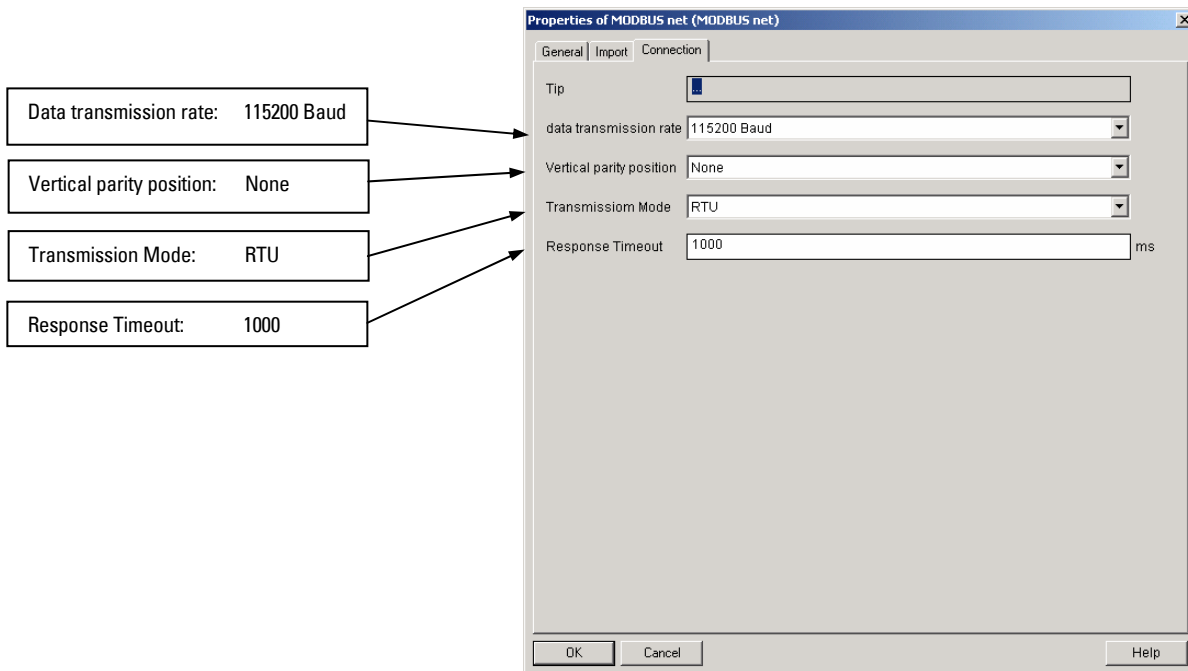
Opening up new project (cont'd)

- 1) Right-click on **Modbus Net** in Process Device Network View.



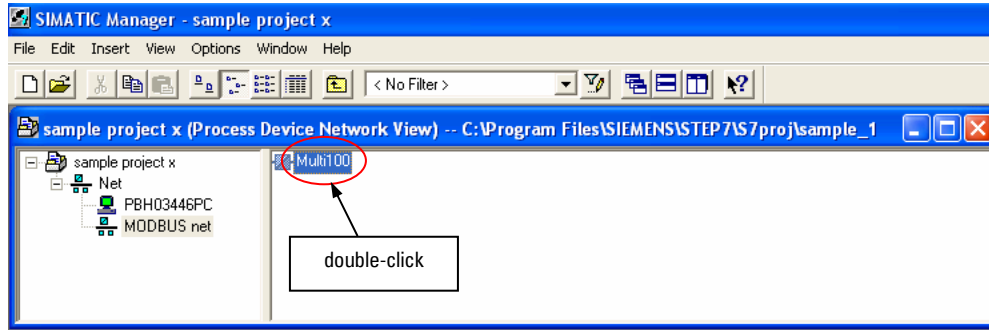
NOTE: The address here must match the address in the device. See the *Instruction Manual* for details.

- 2) Select Object Properties.
- 3) Click the **Connection** tab, and verify the following settings:



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- 4) Click **OK** to re-open **Process Device Network View** window.



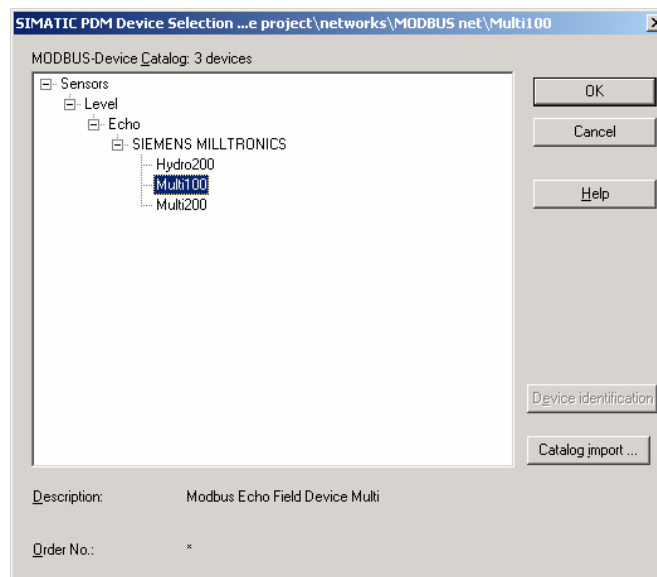
- 5) Double-click the **device** icon (Multi100 in this example) to open the User ID window.
 6) Select **Specialist** and click **OK**.



- 7) For capacitance products:
- Go to **Sensors/Level/Capacitive/SIEMENS MILLTRONICS**.
 - Double-click the appropriate instrument to open the device window.

For all other Siemens instruments:

- Go to **Sensors/Level/Echo/SIEMENS MILLTRONICS**.
- Double-click the appropriate device to open the device window.



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- 8) Click **Display Process / Measured Value** button to connect to the device and display real time information.

Display Process / Measured Value button

The screenshot shows the SIMATIC PDM interface with a configuration table for a Level Meter. The table is organized into sections: Identification, Operation Unit, Device, Input, and Quick Setup. Each section contains various parameters with their corresponding values and units.

Parameter	Value	Unit
Level Meter		
» Identification		
» » Operation Unit		
Tag	Multi100	Cha
Message	Multi at front of plant	Cha
Descriptor		Cha
Date Last Configured	Aug. 5, 2004	Initi
» » Device		
Manufacturer	Siemens Milltronics	Initi
DD Revision	1	Initi
Device Type	MULTIRANGER 100	Initi
Date of Manufacture		Initi
Serial Number - Date		Initi
P346 Serial Number		Initi
P900 Software Revision Number		Initi
» Input		
» » Quick Setup		
P005 Units	m	Initi
» » » Point 1		
P001 Operation	Distance	Initi
P002 Material	Liquid or horizontal solid surface	Initi
P003 Maximum Process Speed	Medium(1m/min)	Initi
P004 Transducer	No transducer attached	Initi
P006 Empty	5.000	m Initi
P007 Span	5.000	m Initi
» » » Point 2		
P001 Operation	Distance	Initi
P002 Material	Liquid or horizontal solid surface	Initi
P003 Maximum Process Speed	Medium(1m/min)	Initi
P004 Transducer	No transducer attached	Initi
P006 Empty	5.000	m Initi

real time information

The screenshot shows the 'Display - Multi100 (Online)' window. It displays three vertical bar graphs representing measured values for Level, Space, and Distance. Each graph has a scale from 0.000 m to 5.000 m. The current values are 4.400 m for Level, 0.650 for Space, and 0.650 m for Distance. The window also includes 'Close', 'Messages', and 'Help' buttons.

Measured Value Point	Value
Measured Value Point 1 (Level)	4.400 m
Measured Value Point 2 (Space)	0.650
Measured Value Point 2 (Distance)	0.650 m

Viewing and editing parameters and application review

SIMATIC PDM provides full access to the device parameters and to PDM's features. The parameters used to operate the device are accessed through the folder tree in the left pane of the Project Manager window. The PDM application review features are accessed through the Project Manager Window menu bar.

Parameter viewing and editing

- Active fields are white; static fields are gray.
- Basic, detailed, and quick setup information is available.
- Review features give parameter setting overview.
- Whenever possible, use drop down arrows to select values.
- Use upload and download buttons to change device settings and to store accumulated application data.

Application review features

Use Menu bar features, including the following, to access application data and adjust the instrument's performance:

- Auto TVT
- Master Reset
- Display Value
- Echo Profiles

The screenshot shows the SIMATIC PDM software interface. The title bar reads "SIMATIC PDM - Multi100 [Project: another sample project -- C:\SIEMENS\STEP7\57proj\another...]". The menu bar includes "File", "Device", "View", "Options", and "Help". The left pane shows a folder tree for "Multi100" with sub-folders: "Level Meter", "Identification", "Input", "Output", "Network Communications", "Serial Communications", and "Human Interface". The main pane displays a table of parameters for the "Level Meter".

Parameter	Value	Unit	
Level Meter			
» Identification			
» » Operation Unit			
Tag	Multi100		Cha
Message	Multi at front of plant		Cha
Descriptor			Cha
Date Last Configured	Aug 5, 2004		Cha
» » Device			
Manufacturer	Siemens Milltronics		Initi
DD Revision	1		Initi
Device Type	MULTRANGER 100		Initi
Date of Manufacture			Initi
Serial Number - Date			Initi
P346 Serial Number			Initi
P900 Software Revision Number			Initi
» Input			
» » Quick Setup			
P005 Units	m		Initi
» » » Point 1			
P001 Operation	Distance		Initi
P002 Material	Liquid or horizontal solid surface		Initi
P003 Maximum Process Speed	Medium(1m/min)		Initi
P004 Transducer	No transducer attached		Initi
P006 Empty	5.000	m	Initi
P007 Span	5.000	m	Initi
» » » Point 2			
P001 Operation	Distance		Initi
P002 Material	Liquid or horizontal solid surface		Initi
P003 Maximum Process Speed	Medium(1m/min)		Initi
P004 Transducer	No transducer attached		Initi
P006 Empty	5.000	m	Initi
P007 Span	5.000	m	Initi

Two callout boxes are present: "menu bar" points to the top menu bar, and "parameter viewing and editing" points to the main parameter table.