
Continuous PROFIBUS PA Instruments and Step 7

Configuring a Siemens Continuous Level PROFIBUS PA device in a S7-300 or S7-400 PLC

Objective:	<ul style="list-style-type: none">• Become familiar with the steps required to configure a Siemens Continuous Level PROFIBUS PA instrument in Step 7
Equipment:	<ul style="list-style-type: none">• Siemens Continuous Level PROFIBUS PA instrument• <i>.gsd</i> file• SIMATIC STEP 7 ver. 5.2 (SP. 1)• MPI/PROFIBUS Interface to PLC• Terminal screwdriver• 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 STEP 7 is the Siemens programming software used to set up a S7-300 or S7-400 PLC.

This Application Guide discusses the following

- Running Hardware Config. to set up a network
- When and how to import a *.gsd* file
- Setting the different Siemens instruments on the bus
- Viewing cyclic data via STEP 7

Please note that the SITRANS LR 400 is used for illustration purposes only. However, the process is similar for all applicable Siemens SMPI Continuous Level instruments.

Siemens Milltronics Process Instruments Inc.

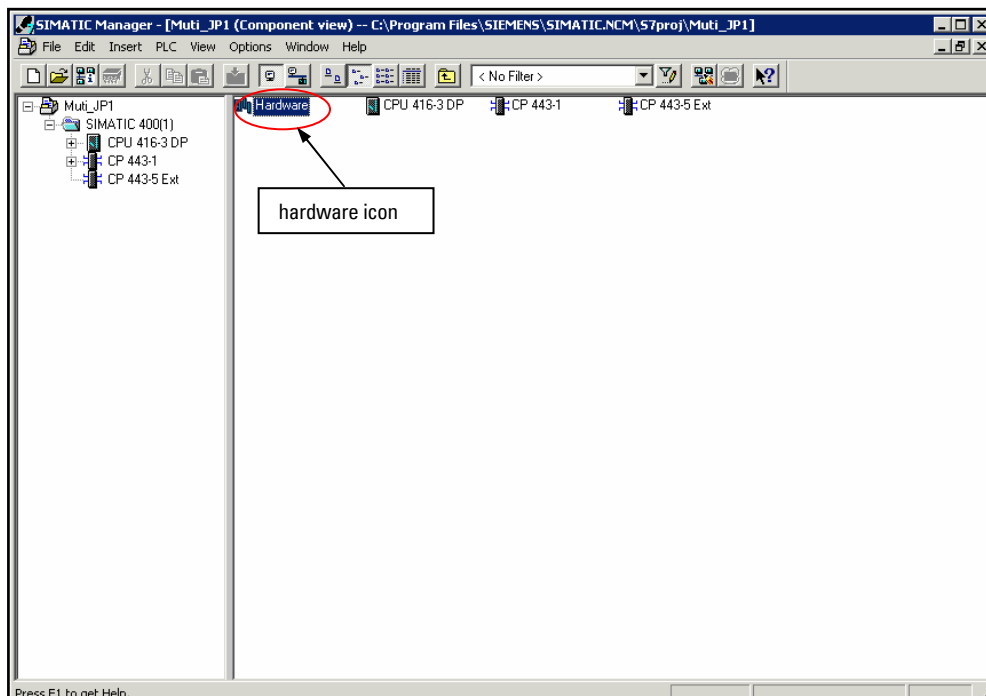
1954 Technology Drive, P.O. Box 4225 Tel.: (705) 745-2431
Peterborough, Ontario Fax: (705) 741-0466
K9J 7B1 / Canada www.siemens.com/processautomation

Required Steps

Step 1 – Run Hardware Config

Hardware Config is the segment of STEP 7 and PCS 7 used to configure the network. To operate it, run SIMATIC Manager first and open a project.

1. Using the left side of the screen, navigate to a position similar to the screen shot below:



2. Double-click the **Hardware** icon on the right side of the screen.

Step 2a – Check the Hardware Catalog for the instrument

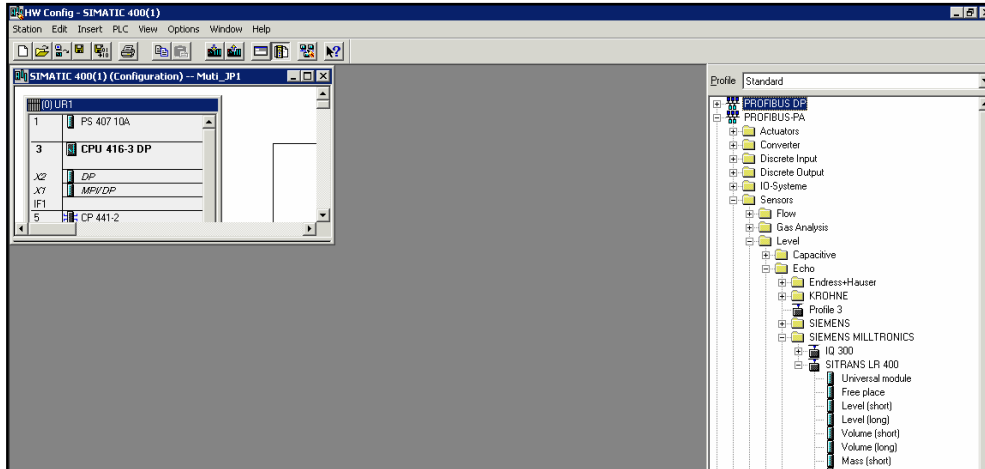
1. From within Hardware Config., click the **Hardware Catalog** icon and look for the Siemens instrument in use.

NOTES:

- If the instrument is a capacitance product, then it will be under **/PROFIBUS PA/Sensors/Level/ Capacitive/ SIEMENS MILLTRONICS**.
- If it is not a capacitance product, it will be under **/PROFIBUS-PA/Sensors/Level/Echo/SIEMENS MILLTRONICS**.

APPLICATION GUIDE

2. If the instrument is listed, go to **Step 3**, otherwise go to **Step 2b**.



Step 2b – Import the .gsd file into STEP 7

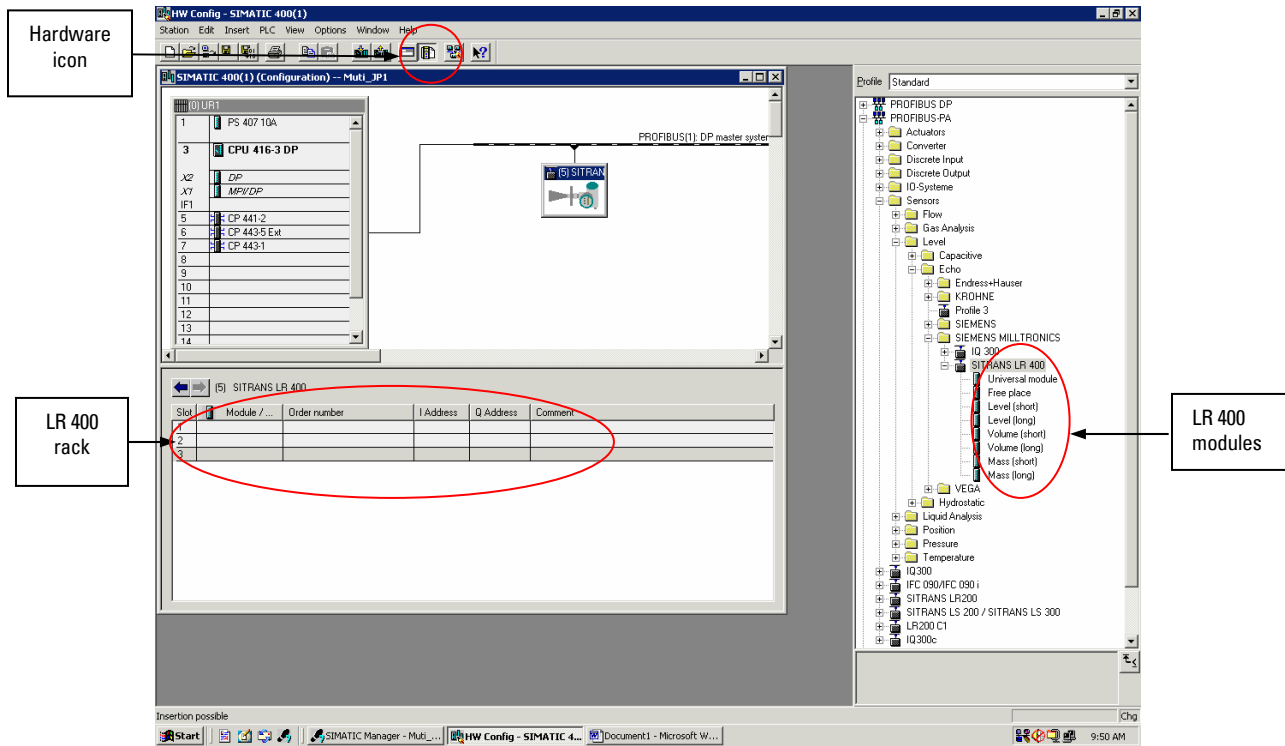
1. Download the **.gsd** file from the instrument's product page at www.siemens.com/processautomation.
2. Close down all Windows from within Hardware config. and then install the **.gsd** files using the **Options/Install New GSD...** from the HW Config of STEP 7.

NOTE: The **.gsd** file will not be placed in the correct directory in the Hardware catalog. Instead, it is placed in **/PROFIBUS-PA**, and not in **PROFIBUS-PA/Sensors/Level/.../Siemens Milltronics/**.

Step 3 – Add the instrument to the network

1. Open the **Hardware** catalog by clicking the third icon from the right (use the mouse-over to verify).
2. The **.gsd** file for the instrument is located either:
 - **/PROFIBUS-PA/Sensors/Level/Echo/SIEMENS MILLTRONICS**
 - or in **/PROFIBUS PA/Sensors/Level/Capacitive/SIEMENS MILLTRONICS** (if it is a capacitance instrument)
3. Highlight the PROFIBUS network that contains the instrument.
4. Highlight instrument and drag it to the PROFIBUS network.

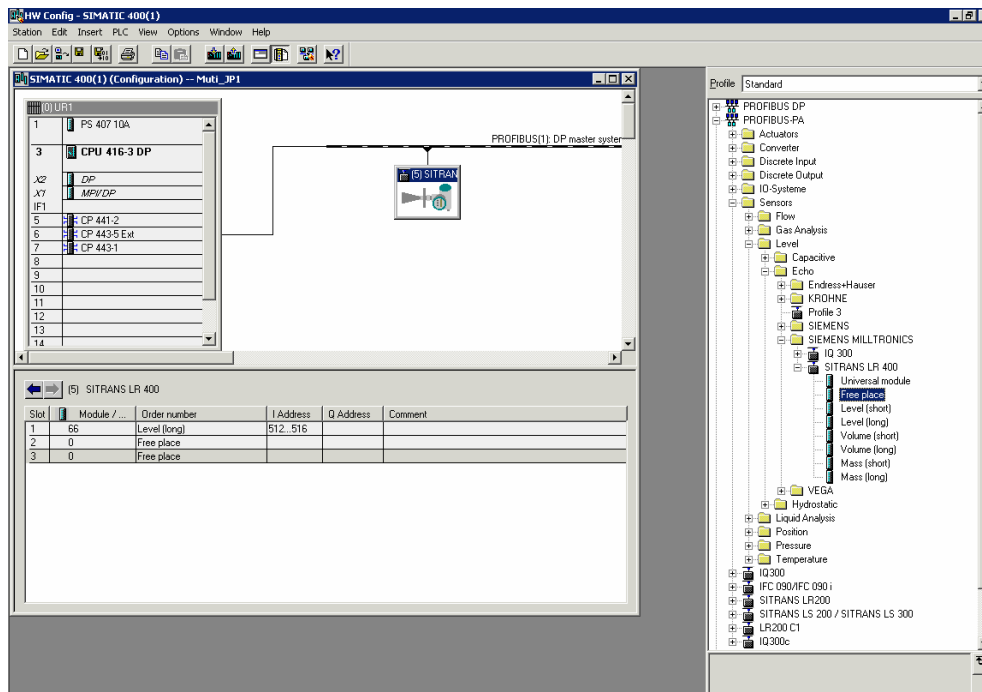
- At this point, record the address of the instrument on the PROFIBUS DP network. For illustrative purposes, the SITRANS LR 400 is placed at address **5**.



Step 4 – Configure the instrument on the network

- Some instruments require setup for their modules. Other instruments automatically place the Function block(s) in the rack.
- To add a module to the rack, click the icon for the model in the Hardware catalog and drag it to the required slot. Every slot in the rack must have something in it, so place a Free Place in every empty slot. For the LR 400, you will have modules for Level (short) and Level (long). The difference is how the function block is identified in PROFIBUS. It is best to use the Long version. For this example, we have placed the input value at input 512.

APPLICATION GUIDE



Step 5 – Download the new configuration

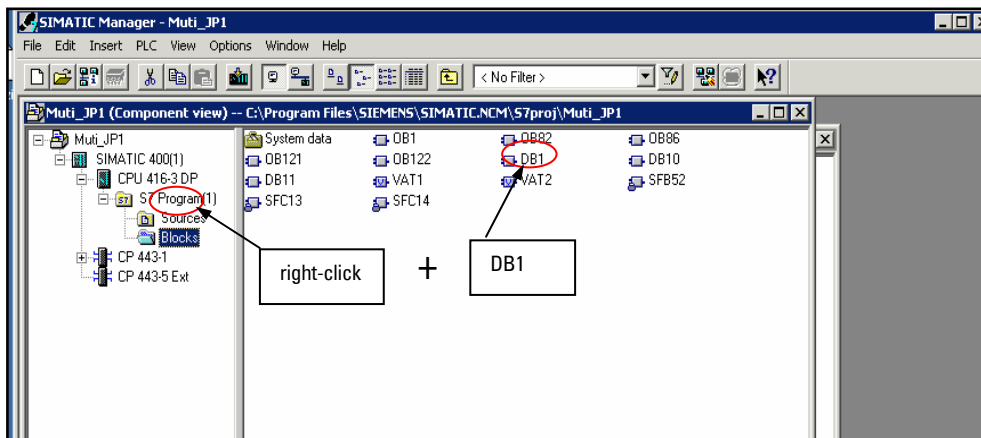
1. Click the **Save and Compile** icon.
2. Click the **Download** icon to save the new configuration to the PLC. Be sure to place the PLC in **STOP** mode.

NOTE: After the download is complete, do not place the PLC in **RUN** mode before completing Step 3.

3. First connect the instrument to the network and power it up, and verify that the network address is set correctly.
4. Place the PLC in **RUN** mode.

Step 6 – Option A: Program the PLC to read the data consistently using SFC14 and view the data

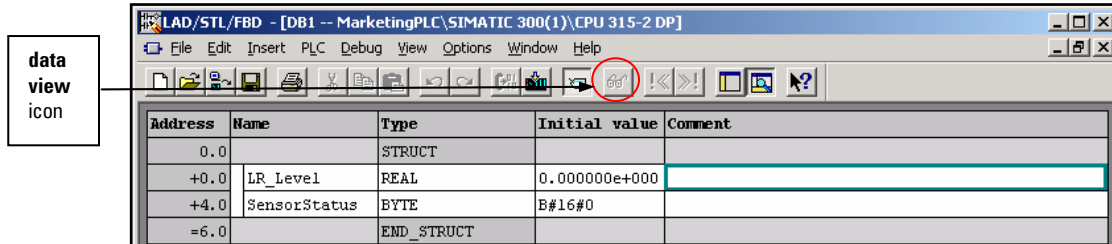
1. From SIMATIC Manager, navigate to the program section of the CPU.



APPLICATION GUIDE

- Right-click **Blocks** and add DB1, and then define it as follows:

Address +0.0	LR_Level	Real
Address +4.0	SensorStatus	Byte



- Double click on **OB1** and add **SFC14** to read the data. The program will resemble the following:

CALL "DPRD_DAT"

```
LADDR:=W#16#200      This is the address of the LR in hex (input 512=200hex)
RET_VAL:= MW200     This is status location for the function block
RECORD:=P#DB1.DBX0.0 BYTE 5
```

NOP 0

- Save and compile the code, and then save it to the PLC.
- From SIMATIC Manager, navigate to the program section of the CPU.
- Right click on **Blocks** and select **/Insert new object/ VAT table**.
- View the level at address **DB1.DBD 0** as a Floating-point number.
- View the status at address **DB1.DBB 4** as a HEX number.
- Click the **Glasses icon** to view the data coming in.

Step 6 – Option B: View the data directly from the VAT table

- From SIMATIC Manager, navigate to the program section of the CPU.
- Right click on **Blocks** and select **/Insert new object/ VAT table**.
- View the level at address PID 512 as a Floating-point number.
- View the status at address PIB 516 as a HEX number.
- Click the **Glasses icon** to view the data coming in.