

105U/905U-G-PR1 Profibus Slave

PURPOSE

The purpose of this document is to illustrate an application setup using a Siemens S7–300 PLC communicating via Profibus to an Elpro 105U/905U-G-PR1 module.

BACKGROUND

The 105U/905U-G-PR1 acts as a Profibus DP Slave - the network host a Siemens S7–300 PLC is a Profibus Master. If using is a 105U/905U-G with a PLC, the PLC will require an Anybus GSD file so it can recognize the Profibus interface in the 105U/905U-G. This file loads into the PLC. The file is available on the same CD as the configuration software or from the Elpro web page www.elprotech.com

Configuration of the Profibus data bus comprises of allocating a Profibus Slave address to the

905G and configuring links between the I/O registers and the Profibus bytes in the Anybus Interface module.

MATERIALS USED

PC with RS232 comms port

1 x Siemens CPU314C-2 DP

1 x Simatic S7 PC adapter

S7 Simatic Manager software

1 x 105U/905U-G-PR1

1 x 105U/905U-1

Profibus network connection cable

Power supplies for 105U/905U units

E-Series Configuration Utility (Build 148 or higher)

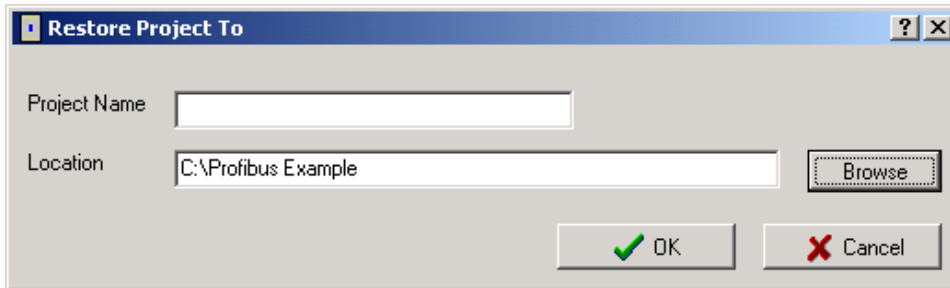
RS232 DB9 serial cable

Anybus GSD file *hms_1003.gsd*

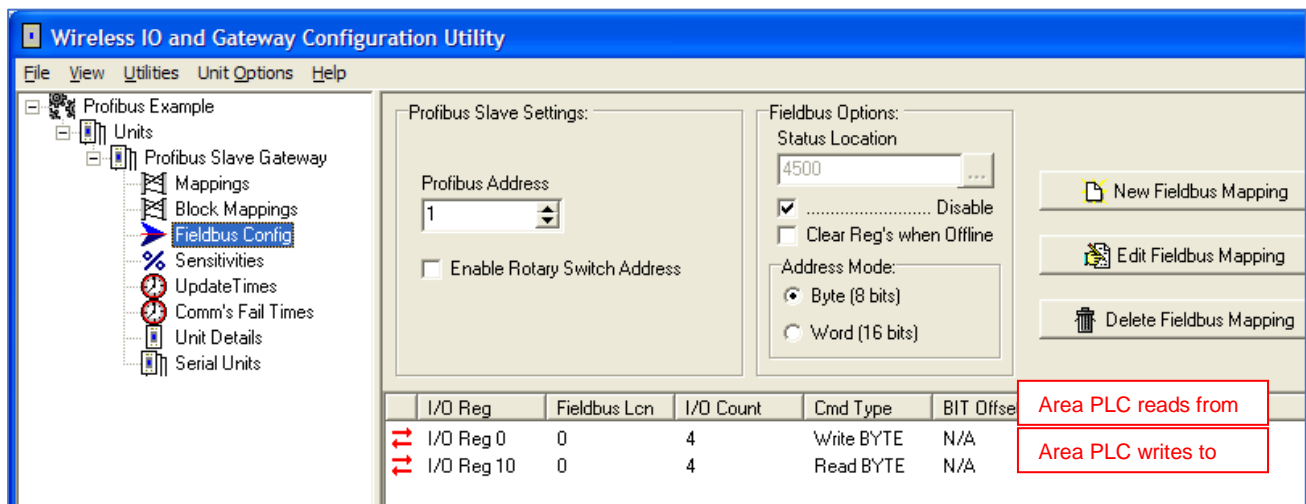
APPLICATION

This application should be read in conjunction with the 105U/905U/105S and the 105U/905U-G User Manuals, this provides extensive details on hardware setup and configuration of the 105U/905U Radio's. It is expected the reader have a firm understanding of both the S7 Simatic software tool and the E-Series Configuration Utility.

To view the Elpro configuration save the file ***Profibus e-series config example .zip*** to a folder on your PC. Open the E-series configuration utility build 148 or higher, select file/restore project and locate the zip file saved on PC, select ok leaving Project Name blank. This will extract the files into this folder and load the configuration into the utility program.



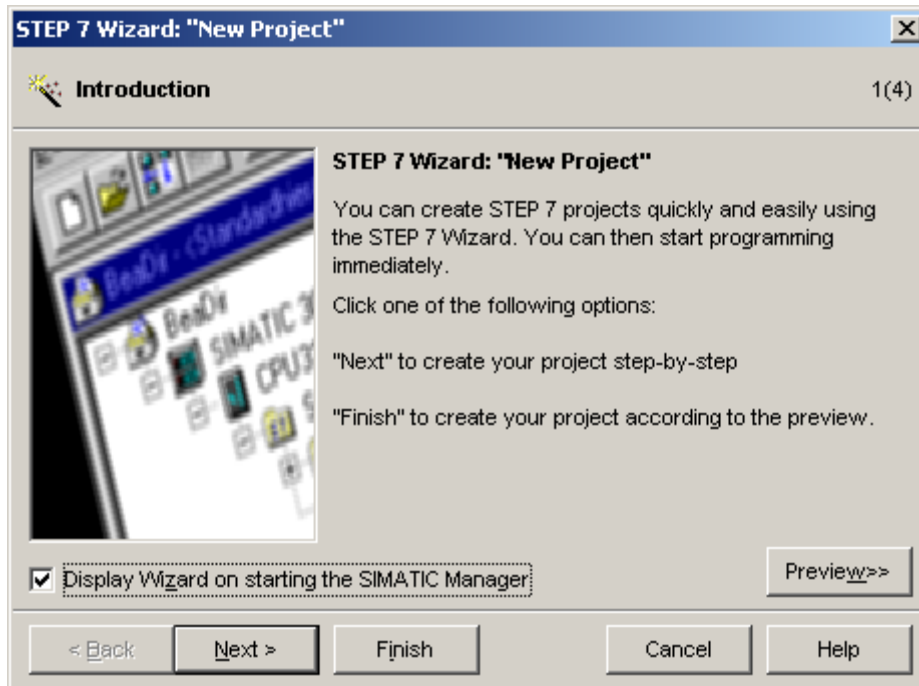
To review E-Series Fieldbus Configuration, highlight "*Fieldbus Config*" as below.



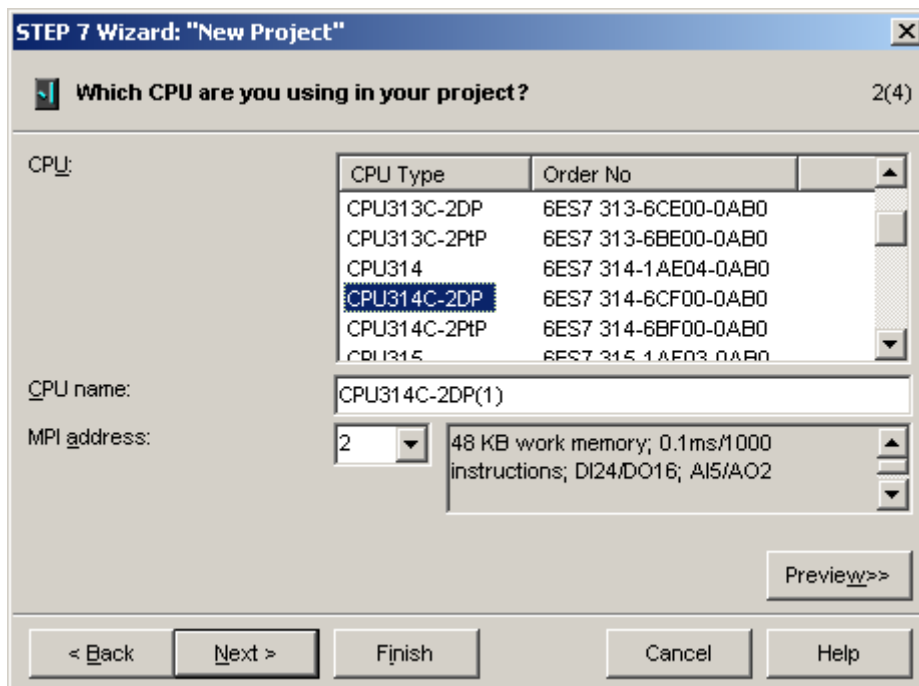
The first Fieldbus mapping is a write bytes command for an I/O count of 4 from I/O registers 0,1,2,3. The PLC will read from Fieldbus location 0 for a count of 4 bytes. I/O registers 0,1,2,3 will have values that remote modules will have had mapped to. i.e. A level from remote module will send to I/O register 0 which is then Fieldbus mapped to a location for the PLC to read from.

The second Fieldbus mapping is the area that the PLC will write to. There are separate IN and OUT Fieldbus areas in the Gateway as to why you can see the same Fieldbus location address.

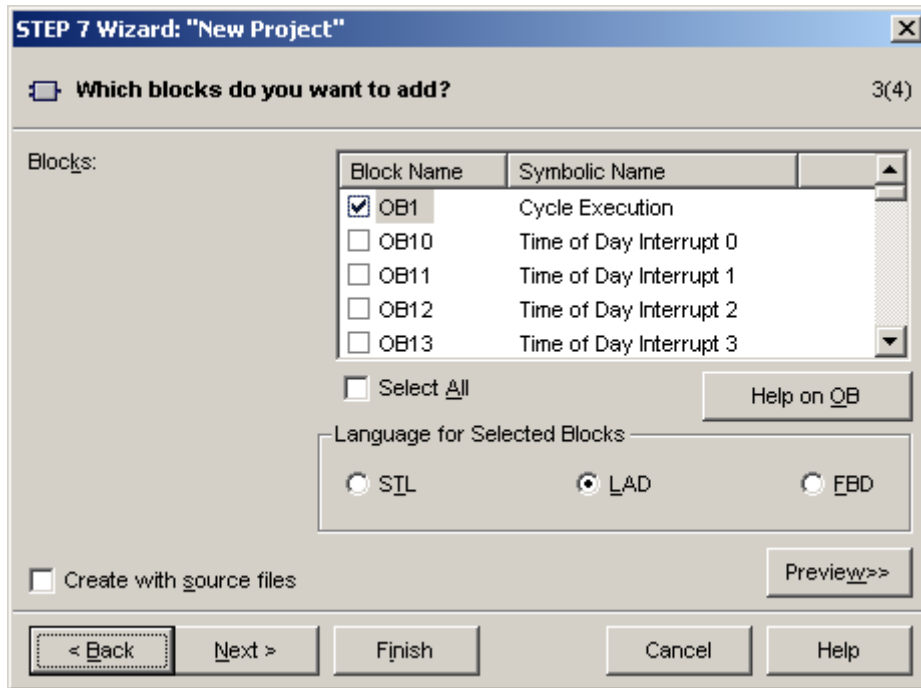
Open Simatic Manager software and follow through Step 7 Wizard: "New Project".



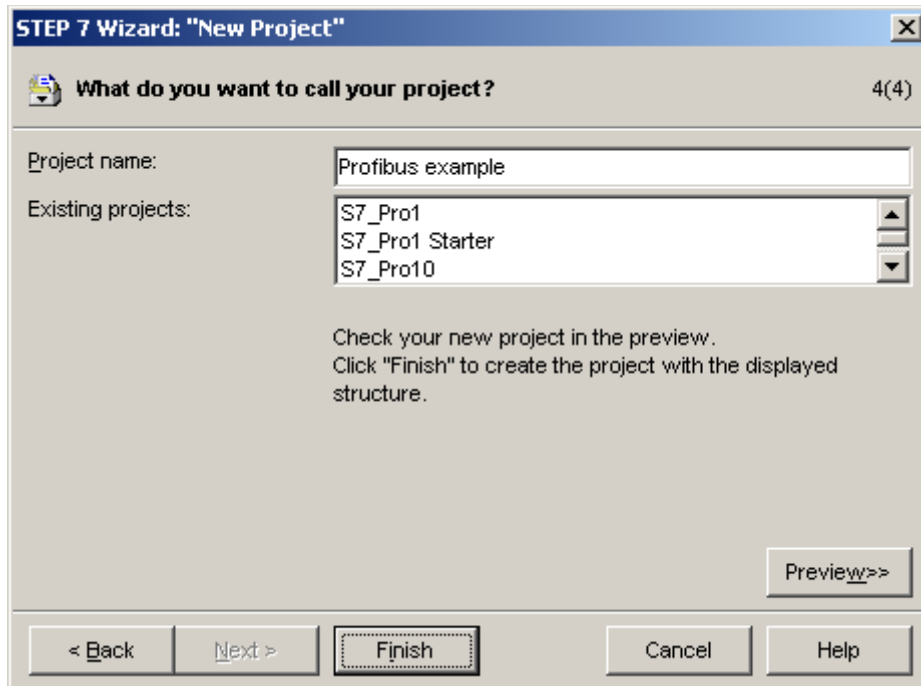
Select Valid PLC Hardware and MPI address, in this example CPU314C-2DP, MPI address 2, and select **Next >**



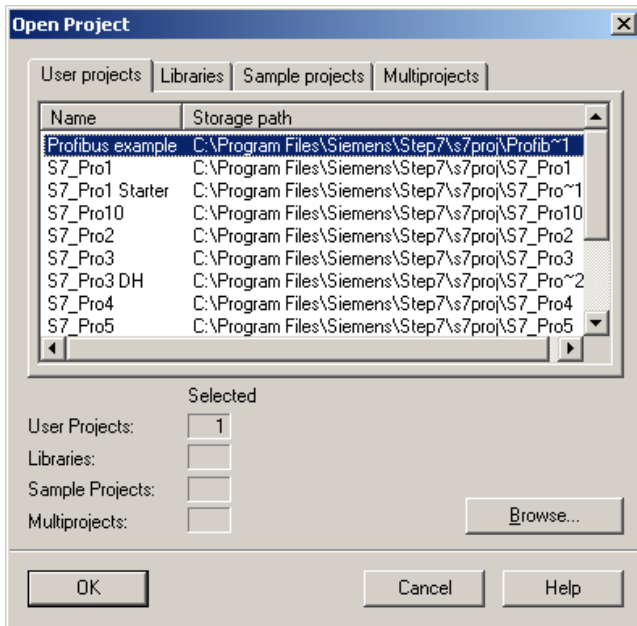
Add OB's and Language in accordance with your program structure, then select **Next >**



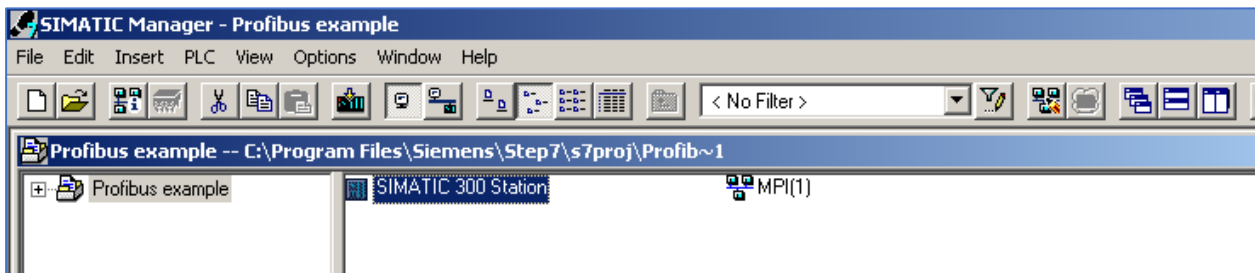
Define project name **Profibus example** and select Finish. Wait while project is created.



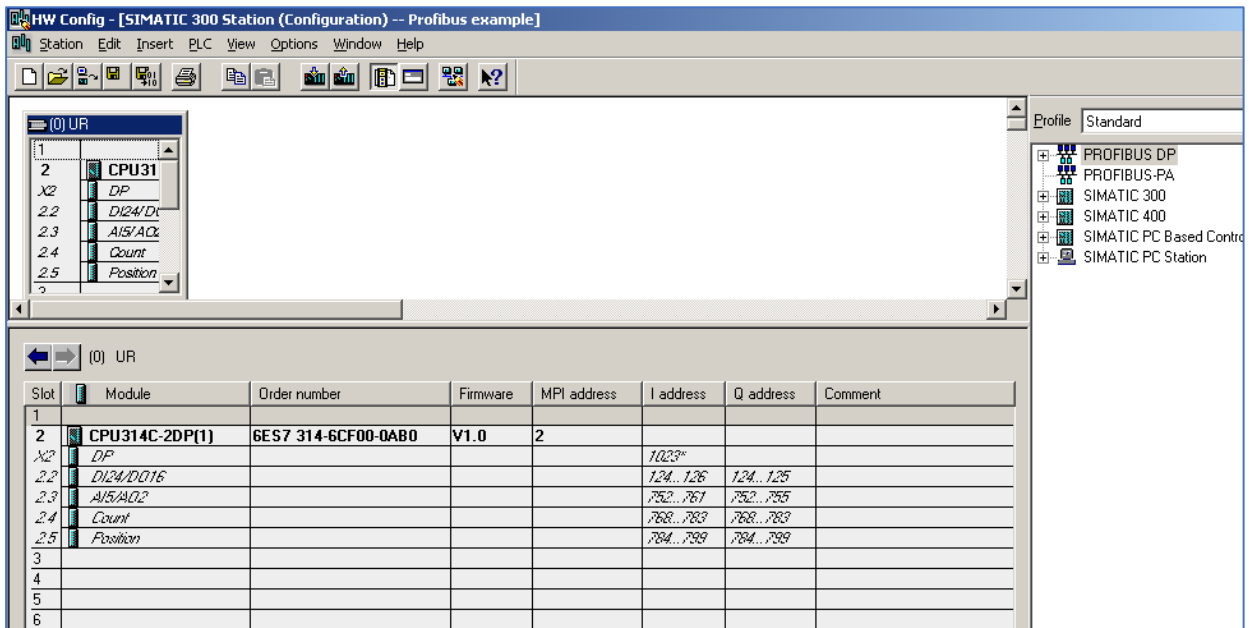
Open Project Menu, highlight project **Profibus example** created, click OK



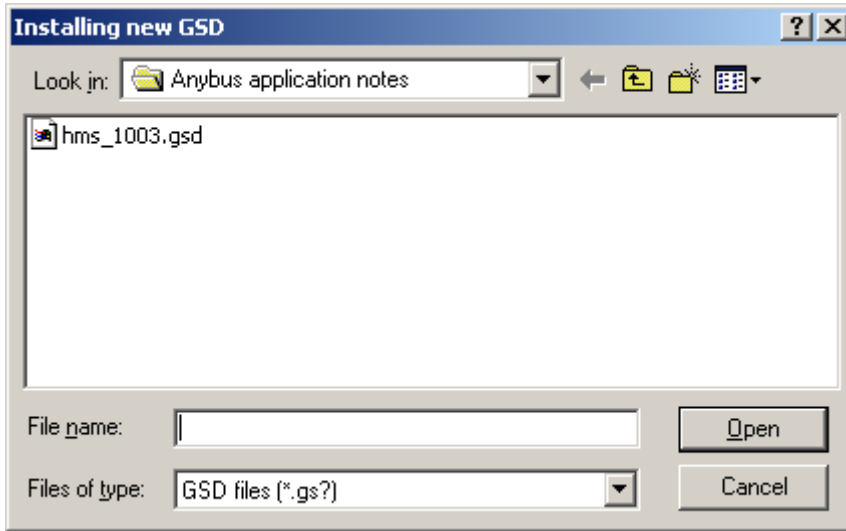
Select Hardware and right click mouse



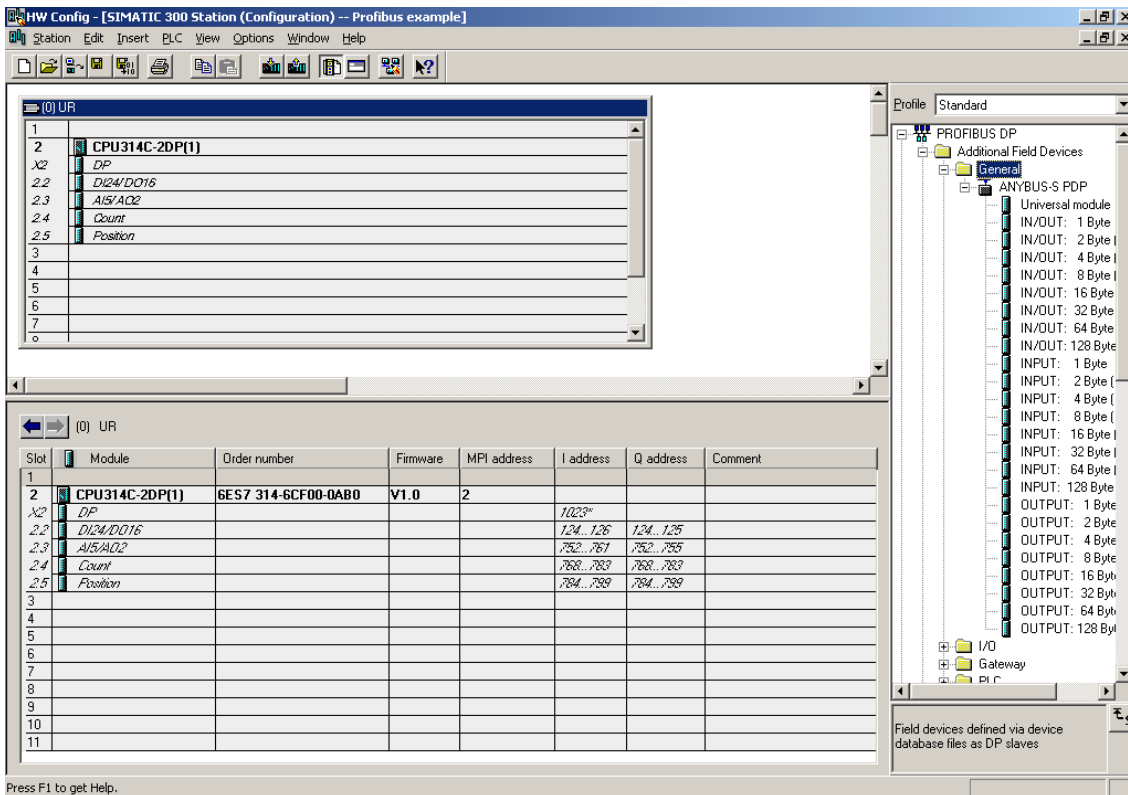
Click on “Open Object”, the HW configuration screen as below will appear



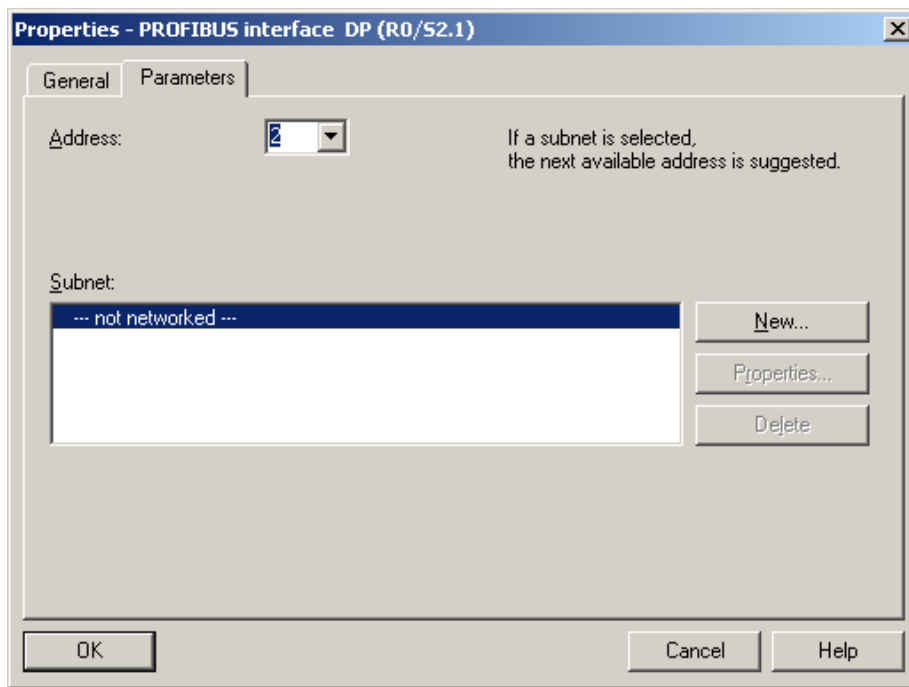
Select Options on Menu bar and New GSD, find and select hms_1003.gsd and Open



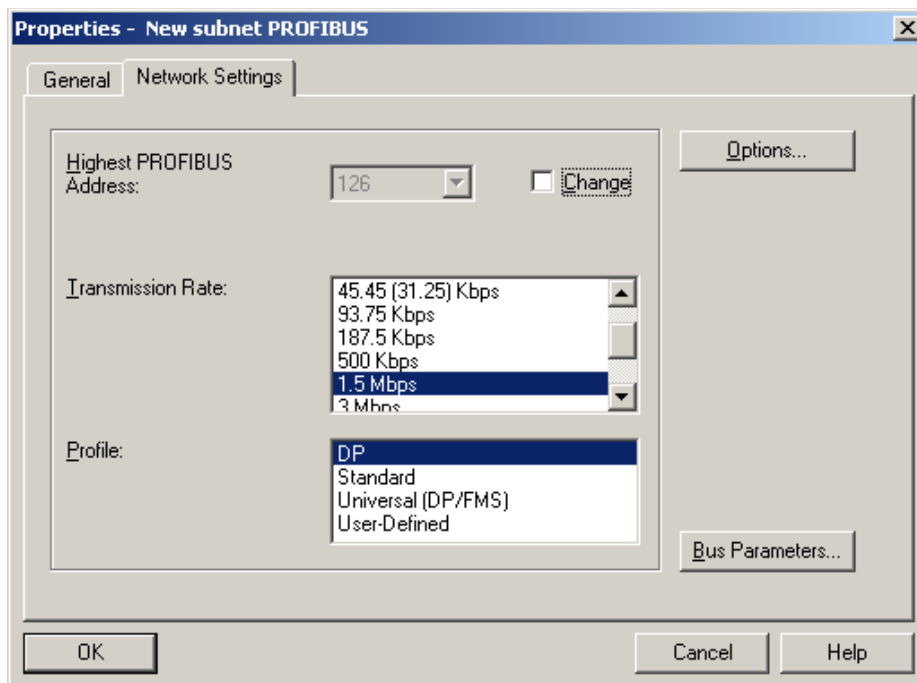
Under View on menu bar, ensure Catalog is ticked. This will allow route directory on right side of directory screen to be viewed as below. Click on the General folder, expand the ANYBUS_S PDP file for the below screen capture to appear.



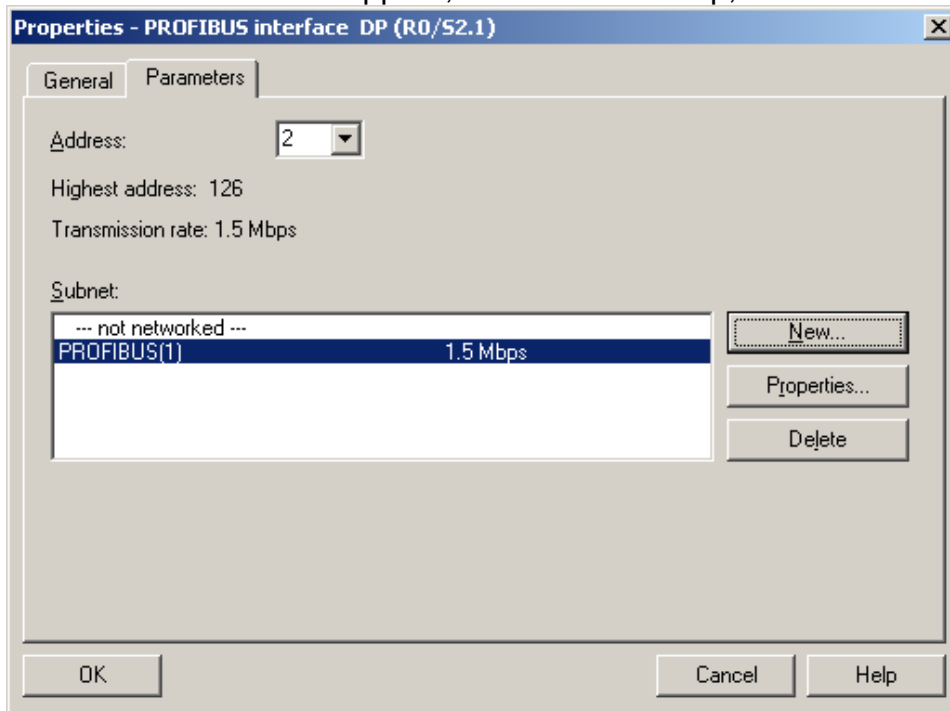
At the (0) UR screen, below CPU314C-DP, select and right click X2 DP, choose Add Master System. With the Parameters TAB selected below screen will appear, ensure Address is 2. Select New.



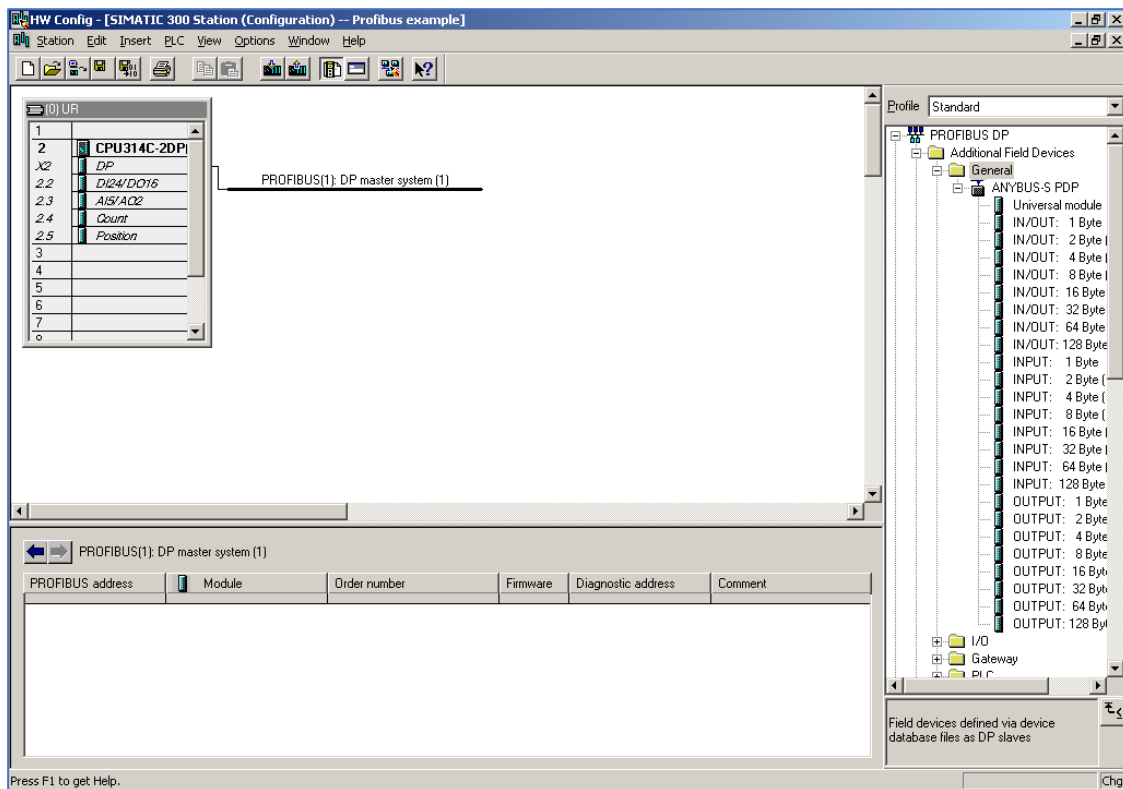
Select Network Settings TAB and ensure Transmission Rate = 1.5Mbps, Profile = DP, click OK



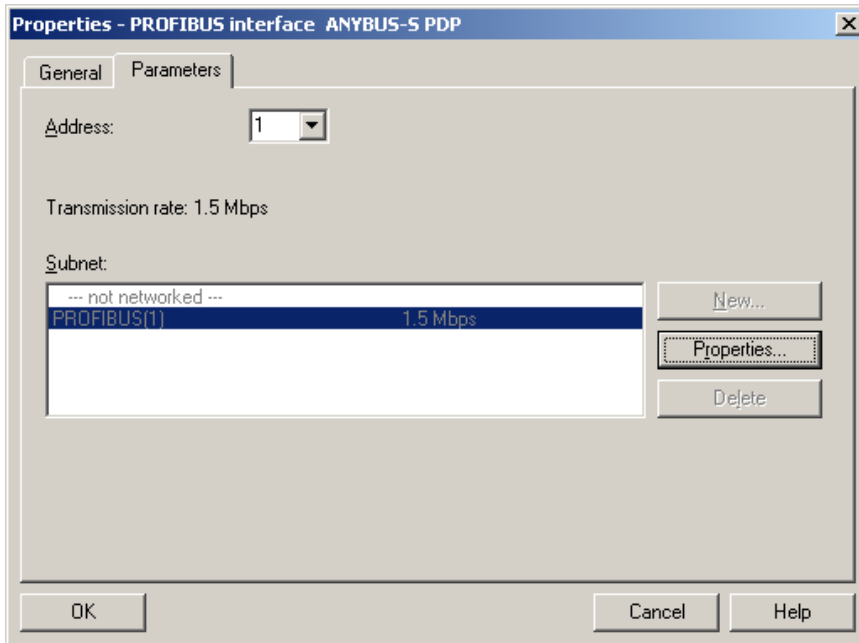
Subnet data screen will appear, with network setup, click OK



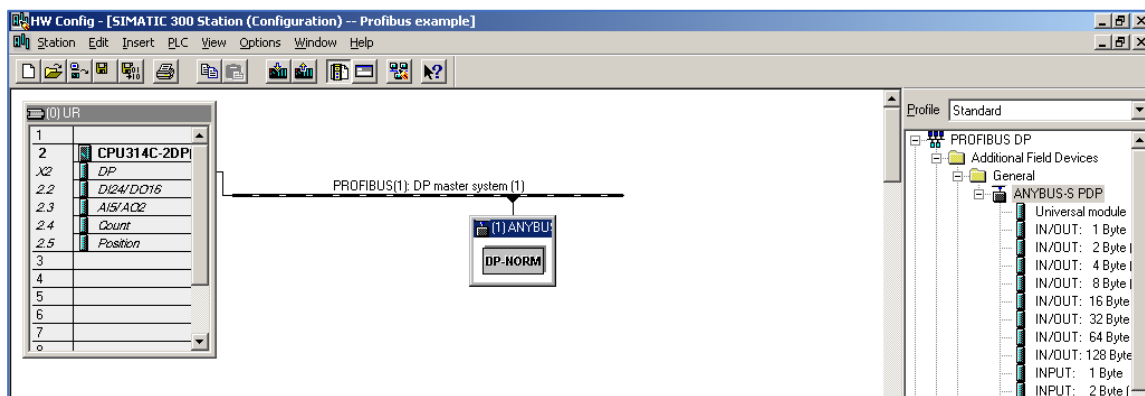
Next configuration screen will appear, with pictorial Profibus (1): DP master system (1) setup.



Drag ANYBUS-S PDP folder in route directory and to Profibus (1): DP master system (1) line and enter address 1. **Note this Address 1 needs to be the same address entered in the E-series configuration under Fieldbus Config.**



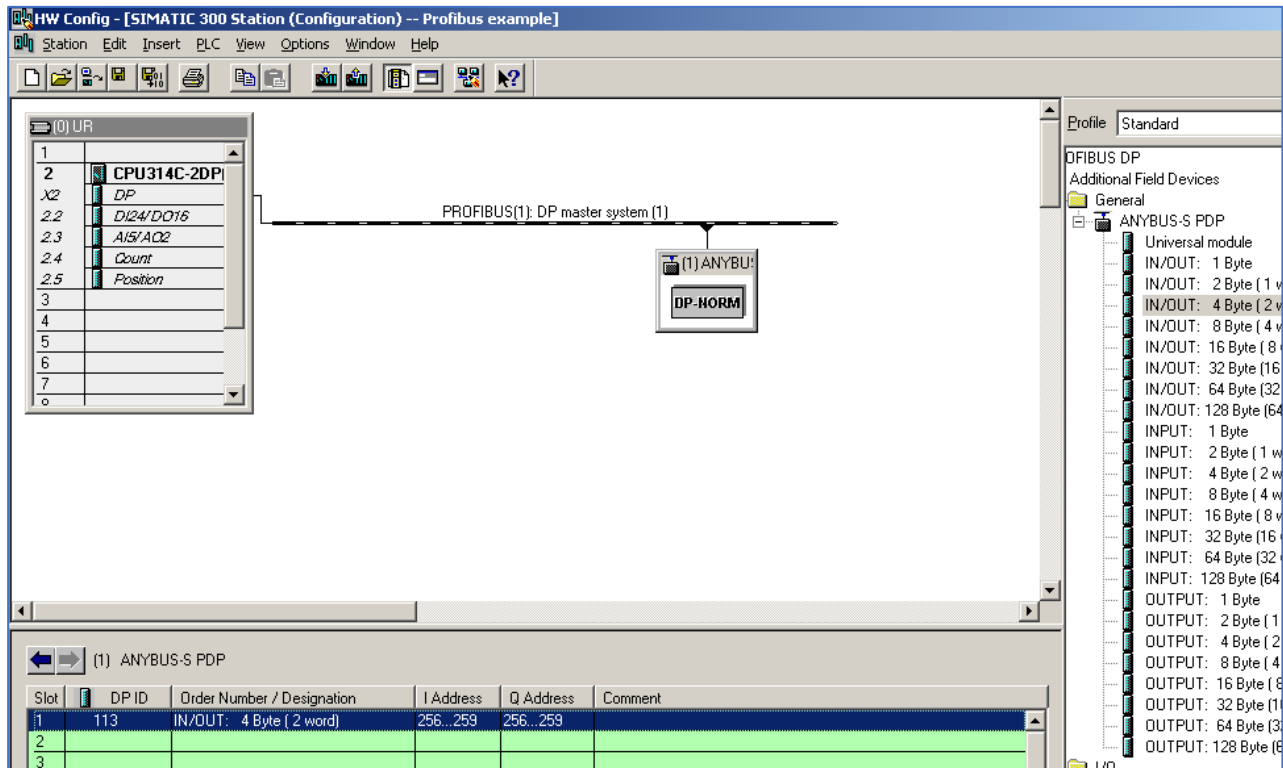
Screen will show (1) ANYBUS connected to Profibus (1): DP master system (1) line and ANYBUS-S PDP object addressing menu at the bottom.



Drag IN/OUT 4 byte into Slot 1,

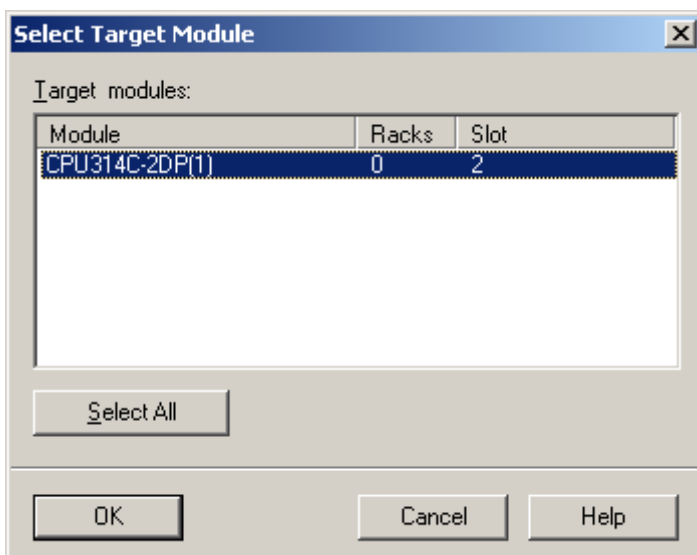
Input PLC addresses I: 256 to I: 259 are written to ANYBUS registers location 0, 1, 2, 3 - IN Area.

The Output PLC addresses Q: 256 to Q259 are read from ANYBUS register location 0, 1, 2, 3 – OUT Area.



Note: It is important when configuring objects that these objects are embedded efficiently as there is a total of 24 slots available only.

Select Save and Compile under Station on Menu Bar. With Siemens hardware readied, that is, Simatic S7 PC adapter connected to serial cable and PC comm's port and PLC power cycled on, select the Download icon and proceed with downloading project to the PLC. Select Target Module as below and click OK.



Select Node address when prompted and click OK

Over which station address is the programming device connected to the module CPU314C-2DP(1)?

Back: 0
Slot: 2

Target Station:
 Local
 Can be reached by means of gateway

Enter connection to target station:

MPI address	Module type	Station name	CPU name	Plant designation
2	CPU 314C...			

Accessible Nodes

View

OK Cancel Help

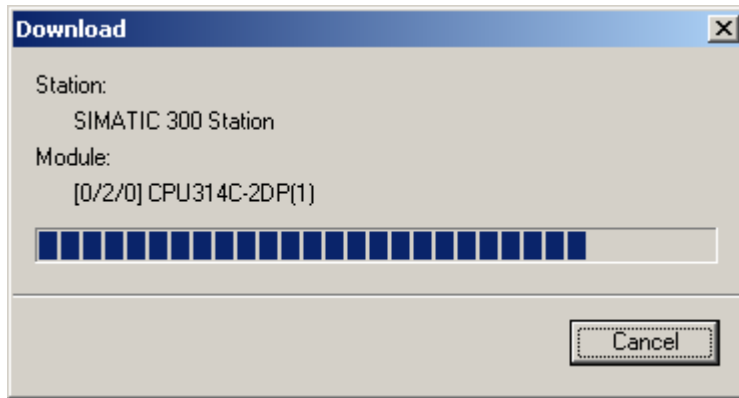
OK if applicable.

The following modules will be stopped for loading of the system data.

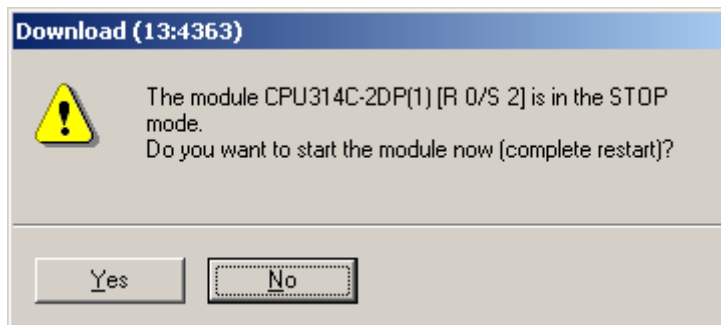
Module	Racks	Slot
CPU314C-2DP(1)	0	2

OK Cancel Help

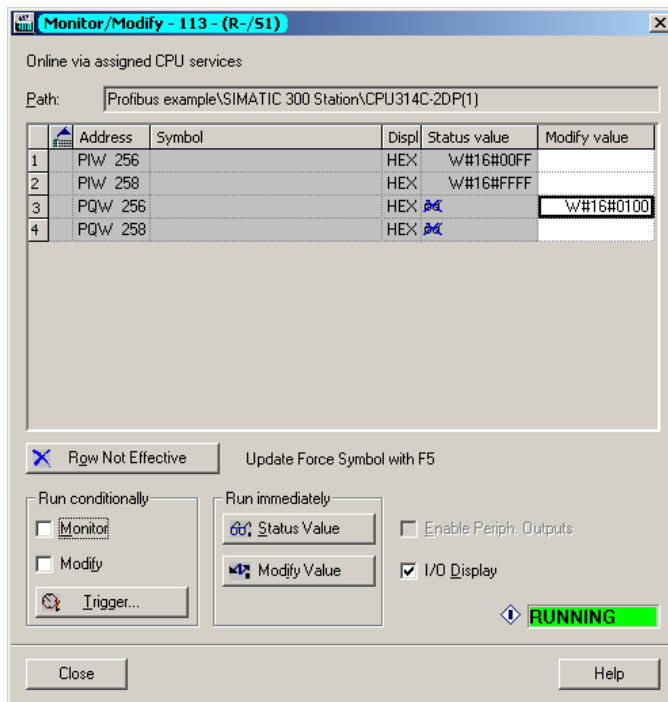
Download continue screen



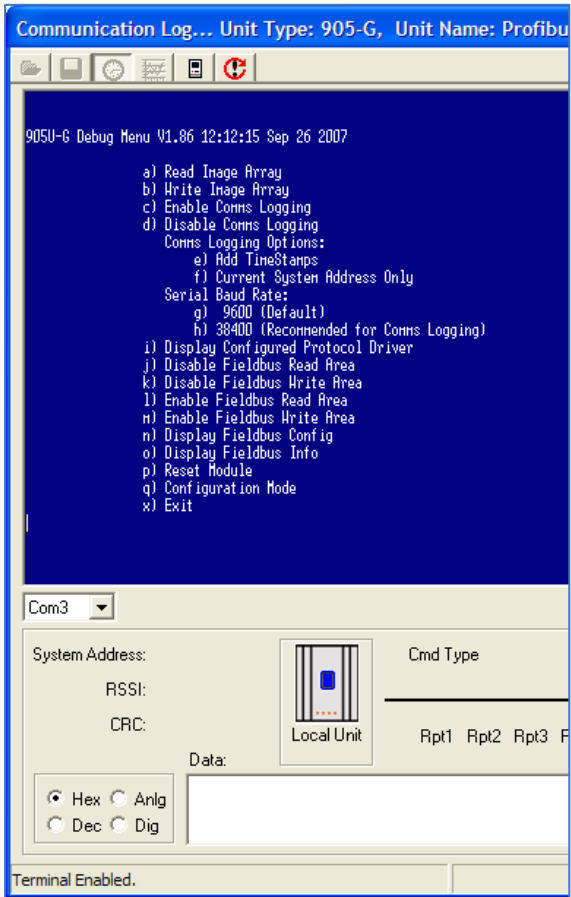
Click Yes



Profibus Configuration is download to the PLC is complete.



Using the Monitor/ Modify Screen you can verify Profibus operations in combination with the diagnostics screen for the Profibus Slave gateway.



The Diagnostics screen of the Profibus gateway allows you to Read Image Array (Values from PLC to I/O registers 0 – 3).

Also Write Image Array to allow you to enter in a value for a specific I/O register (I/O registers 10 – 13) which will then be made available for the PLC to read.

Amendment Register:

Issue No.	Date	Details of Amendment
1.0	05/01/04	Draft Issue
1.1	10/04/06	Combined 105U & 905U into one document
1.2	11/11/08	Added Diagnostics screenshot
1.3	11/02/19	Elpro Branding/Formatting