



Subject: PROFIdrive	Product: SI-EP3	Doc: AN.AFD.31
Title: Using the Yaskawa ProfiNet Option SI-EP3 or SI-EP3/V with Siemens Step 7 Software		

Application Note

Using the Yaskawa ProfiNet Option SI-EP3 or SI-EP3/V with Siemens Step 7 Software

USE OF TECHNICAL INFORMATION!

Technical content and illustrations are provided as technical advice to augment the information in manual, not supercede it. The information described in this document is subject to change without notice. Yaskawa assumes no responsibility for errors or omissions or damages resulting from the use of the information contained in any technical document. All warnings, cautions and product instruction for product use must be followed. Qualified personnel should carry out installation, operation and maintenance.

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Introduction

This document describes how to add a Yaskawa AC Drive with an SI-EP3 Option to a PROFINET network using the Siemens Step 7 software version 5.4.

Intended Audience

This document is intended for those involved in designing, installing and/or commissioning a PROFINET system including Yaskawa AC Drives. It is assumed that the reader is familiar with Yaskawa AC Drives, PROFINET and Siemens Step 7 programming. Familiarity with the SI-EP3 Option and with the A1000 and V1000 installation guides and technical manuals is highly recommended.

References

Siemens documentation may be downloaded from
49948856
45531107

<http://support.automation.siemens.com>
SIMATIC PROFINET with STEP 7
SIMATIC Programming with STEP 7 V5.4

Following manuals may be downloaded from
SIEPYEACOM07
SIEPYEACOM06
SIEPC71061641
SIEPC71060618

www.yaskawa.com
1000-Series Option SI-EP3 PROFINET Technical Manual
V1000-Series Option SI-EP3/V PROFINET Technical Manual
Yaskawa 1000 Series AC Drive Technical Manual
Yaskawa V1000 AC Drive Technical Manual

PROFINET information may be downloaded from

<http://www.profibus.com/technology/profinet/>

Create Step 7 Project

Create Project

- Open the Step 7 software
- Select **New** from the **File** menu
- Enter the project **Name**
- Select **OK**

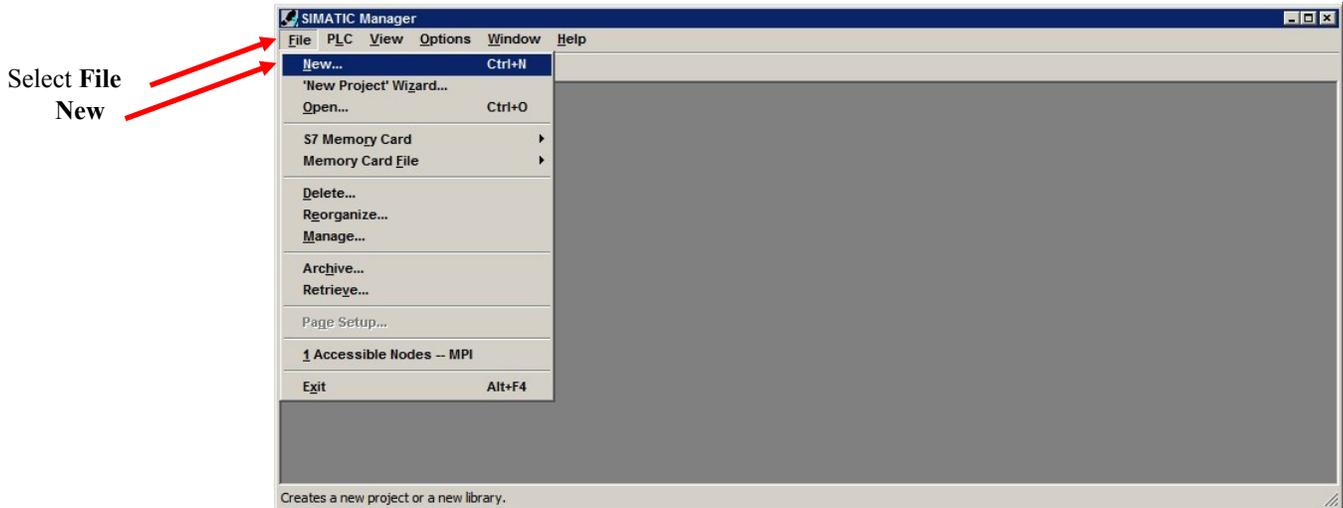


Figure 1 -- Create Project

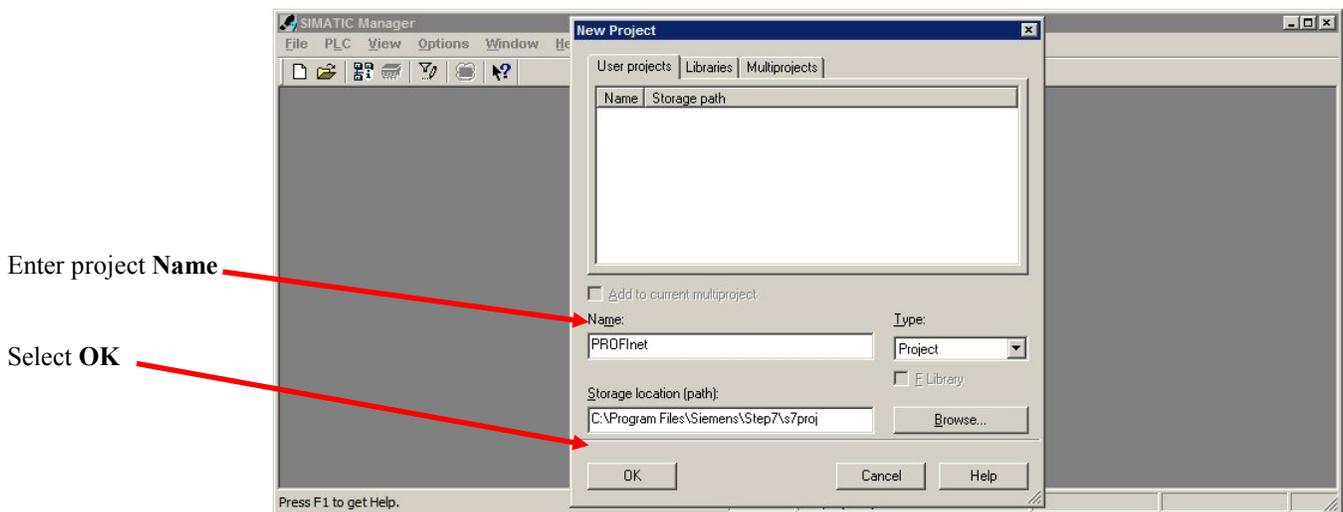


Figure 2 -- Project Name

Add Station

- Select Station from the Insert menu
- Select the Station Type (SIMANTEC 300 Station for this example)
- Double Click on **Hardware**

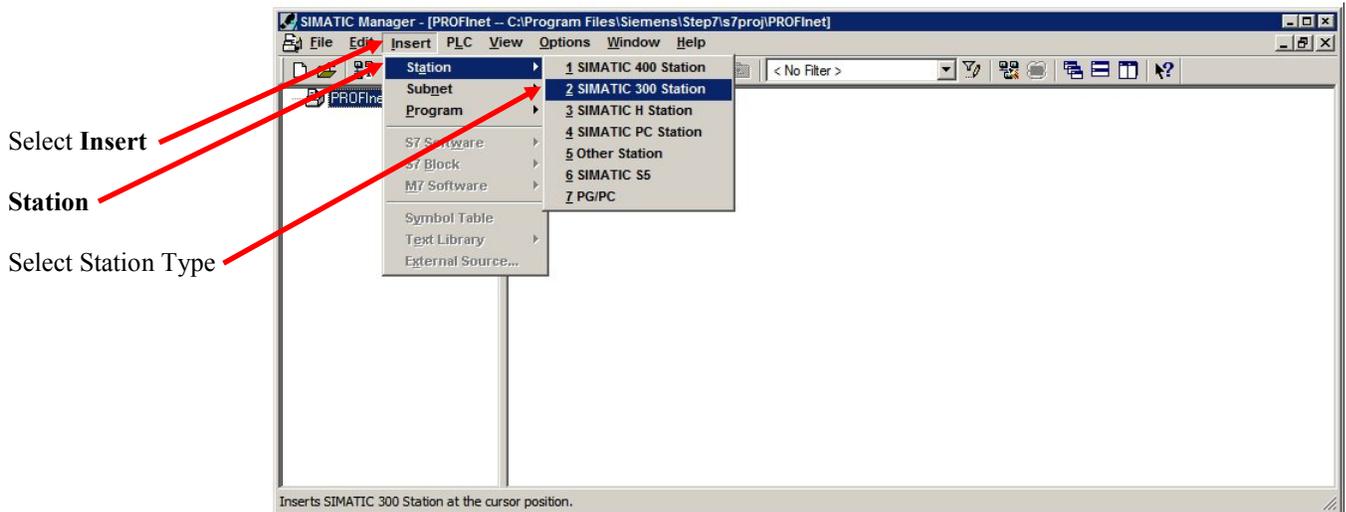


Figure 3 -- Select Station

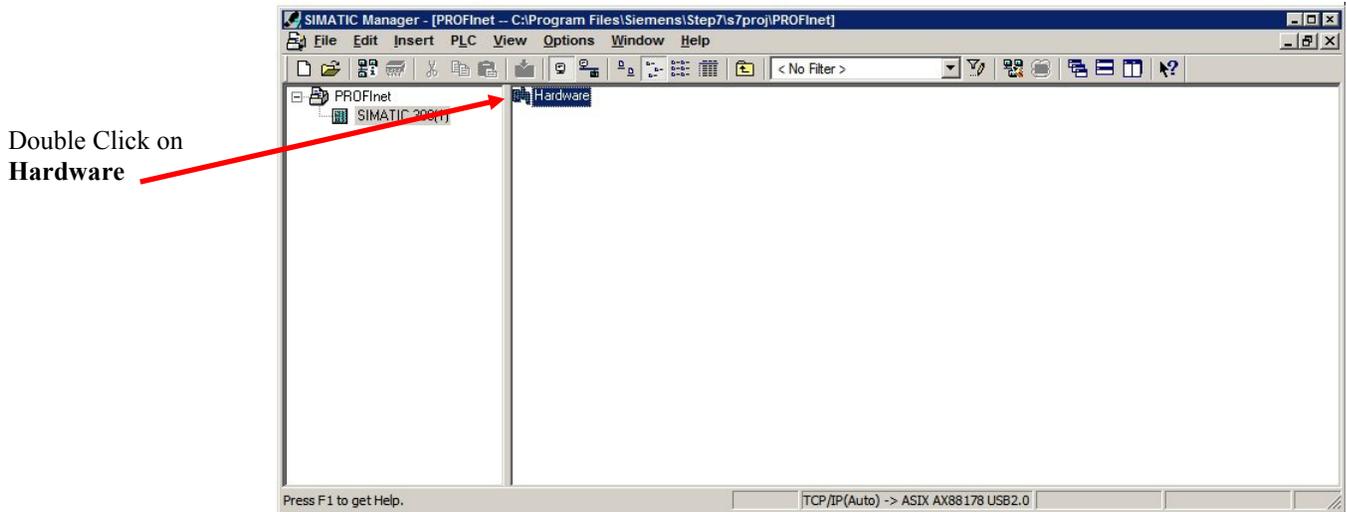


Figure 4 -- Open Hardware Configuration

Add GSD File

- Select Install GSD File from the Options menu
- Select the GSD file to install
- Select Install
- Select Close

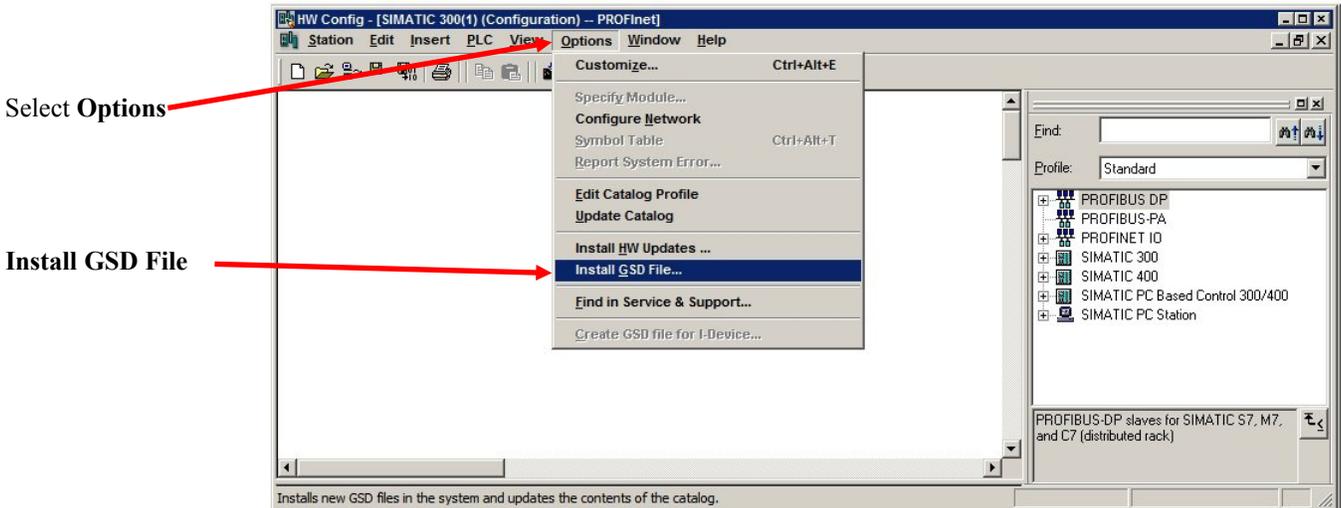


Figure 5 -- Install GSD File

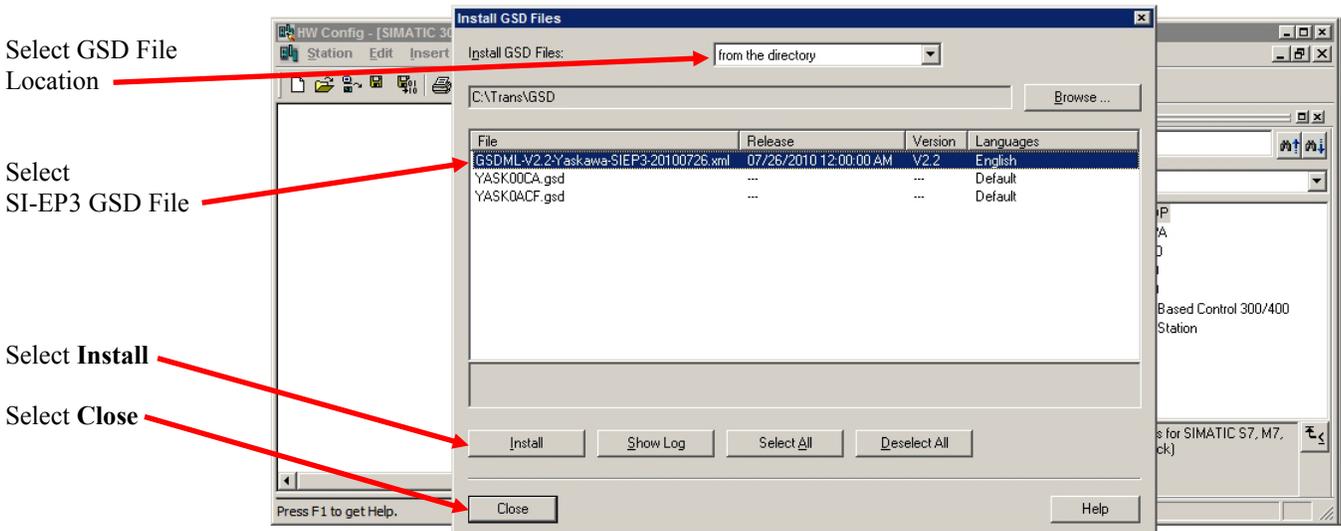


Figure 6 -- Select SI-EP3 GSD File

Add CPU

- Select Insert Object from the Object menu
- Select Station Type, Rack and Rail
- Select CPU from catalog
- Drag CPU to highlighted slot in the system rack

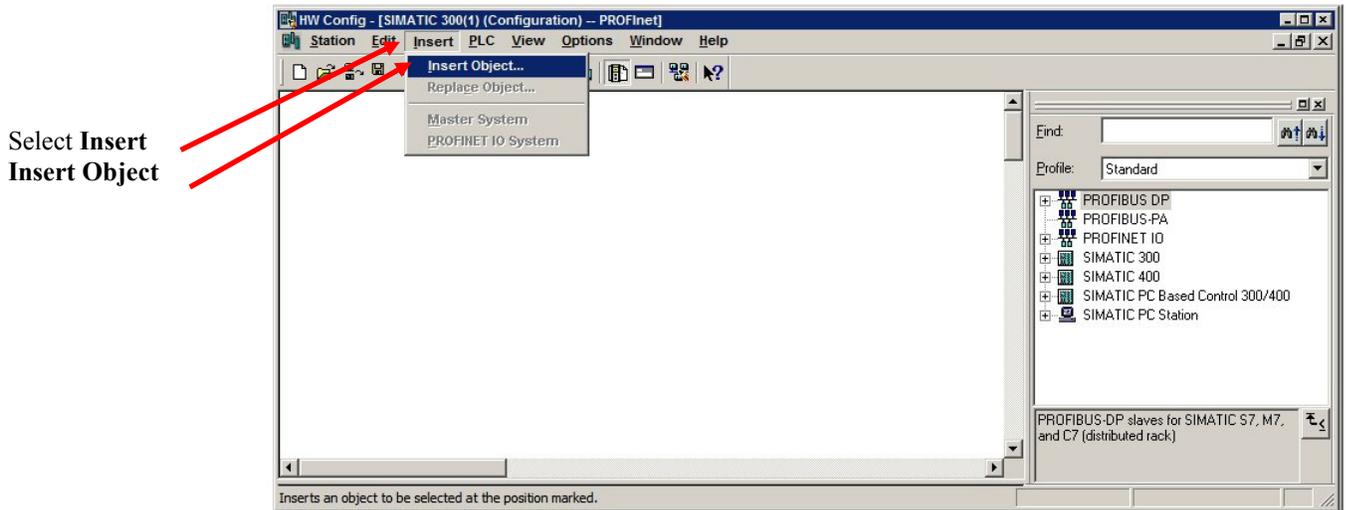


Figure 7 -- Insert CPU Object

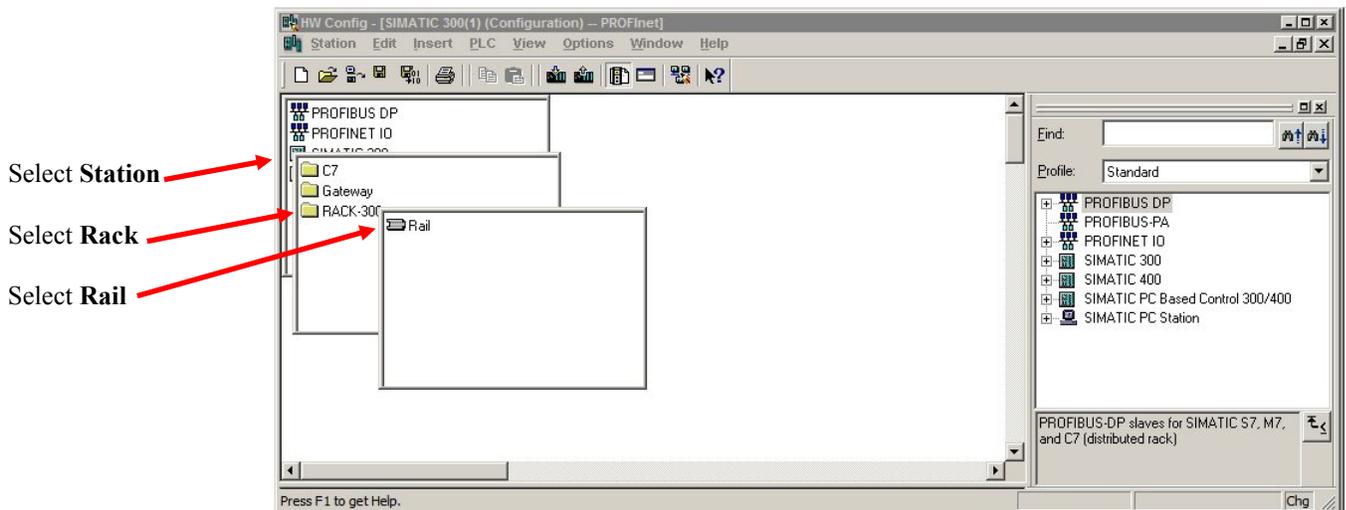


Figure 8 -- Define Inserted Object Type

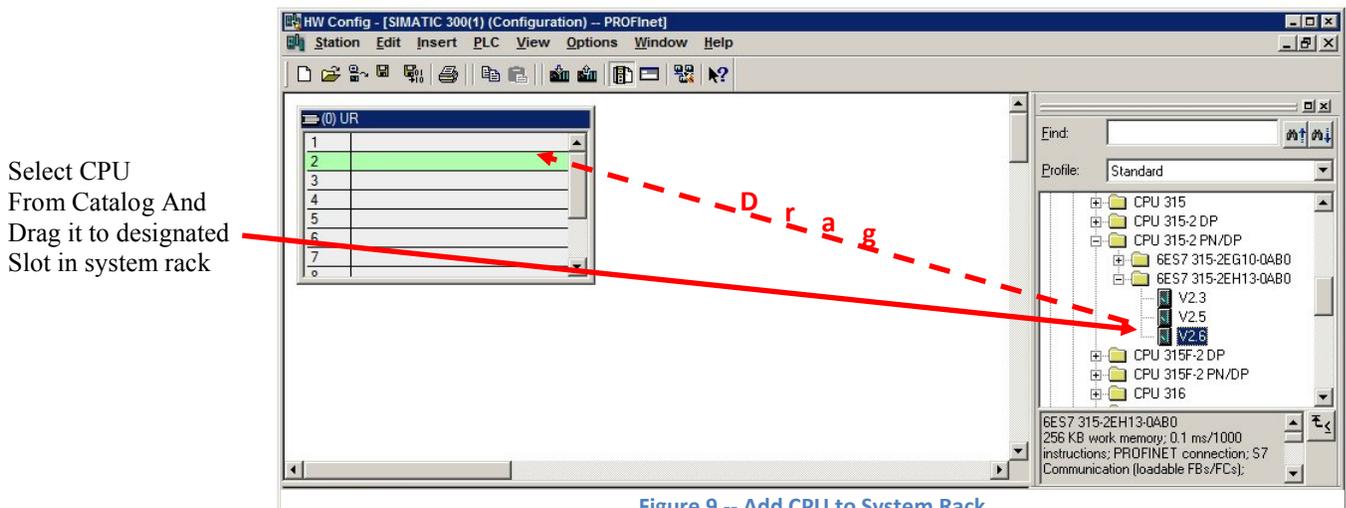


Figure 9 -- Add CPU to System Rack

Configure CPU

- Enter CPU IP Address and Subnet Mask
- Add network
- Enter network name
- Select OK

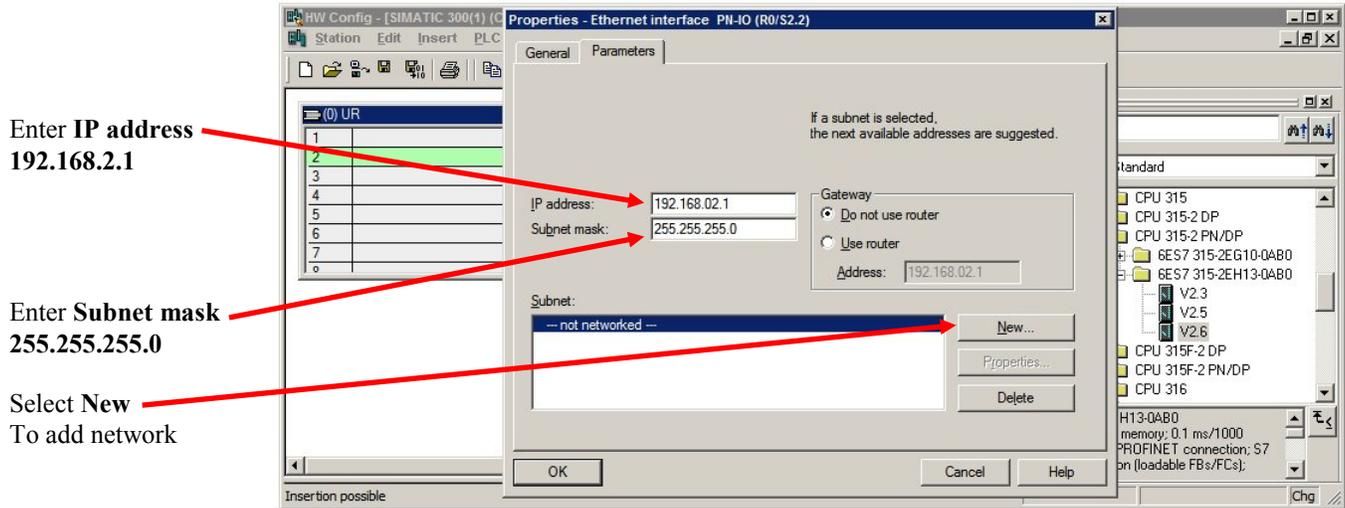


Figure 10 -- Add IP Address and PROFINET Network

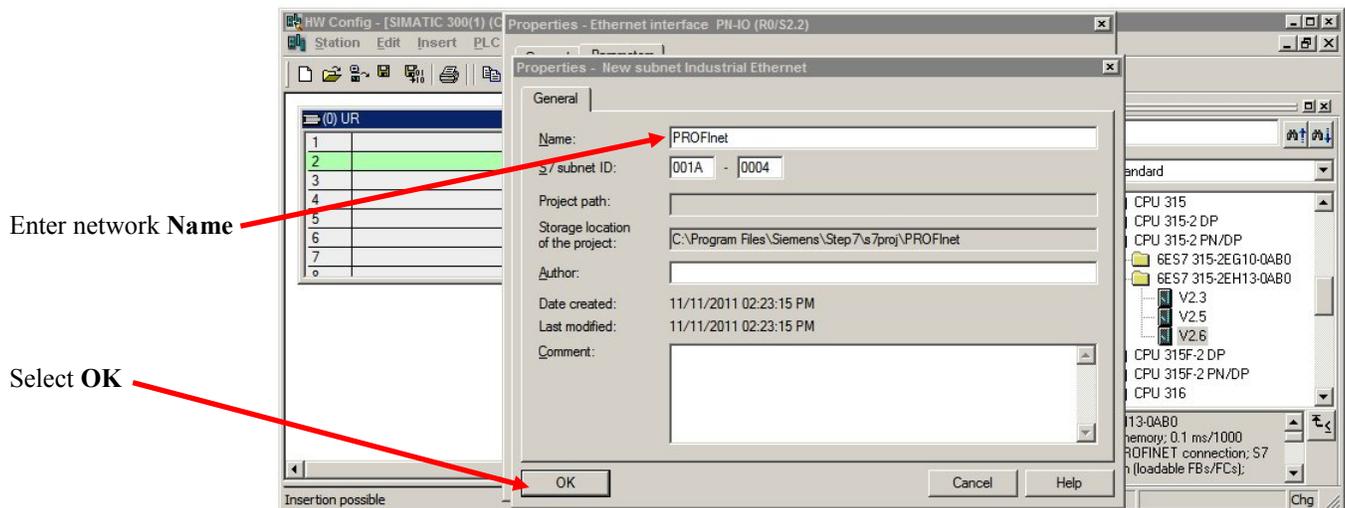


Figure 11 -- Configure PROFINET Network

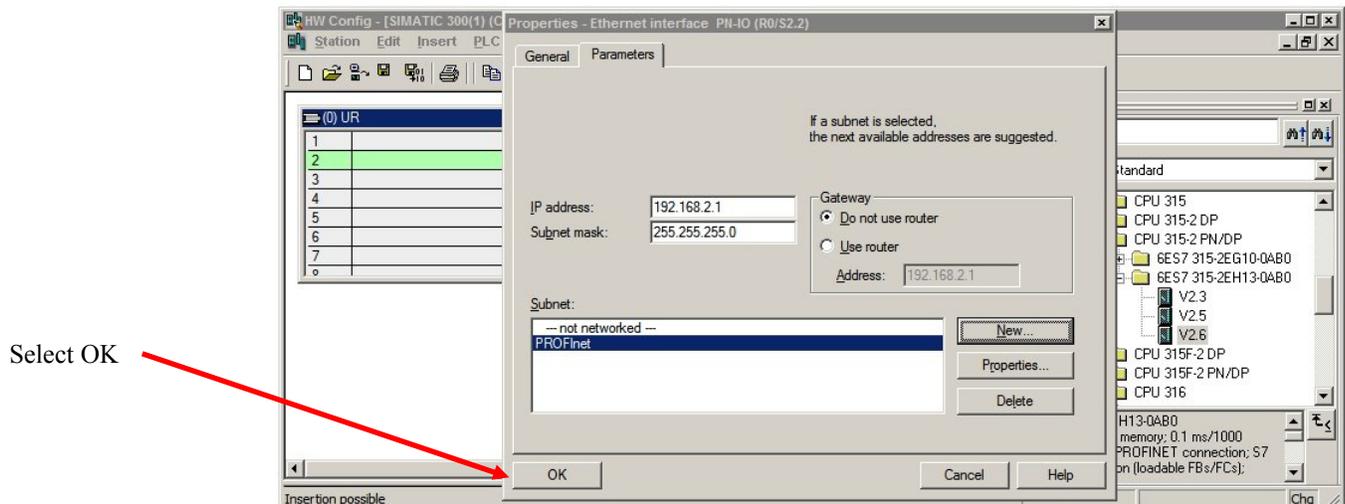


Figure 12 -- PROFINET Network Added

Add Drive w/ SI-EP3 Option to PROFINET Network

- Select SI-EP3 from catalog
- Drag SI-EP3 to network
- Select Object properties from the Edit menu
- Enter the SI-EP3 name and device number
- Enter SI-EP3 IP Address
- Select the network connection
- Select OK
- Select the cyclic I/O
- Drag the I/O to the designated slot
- Right click on memory and select Object Properties
- Select Parameter tab
- Select Control and Status Word Selection
- Select either PROFIdrive or Yaskawa
- Select OK

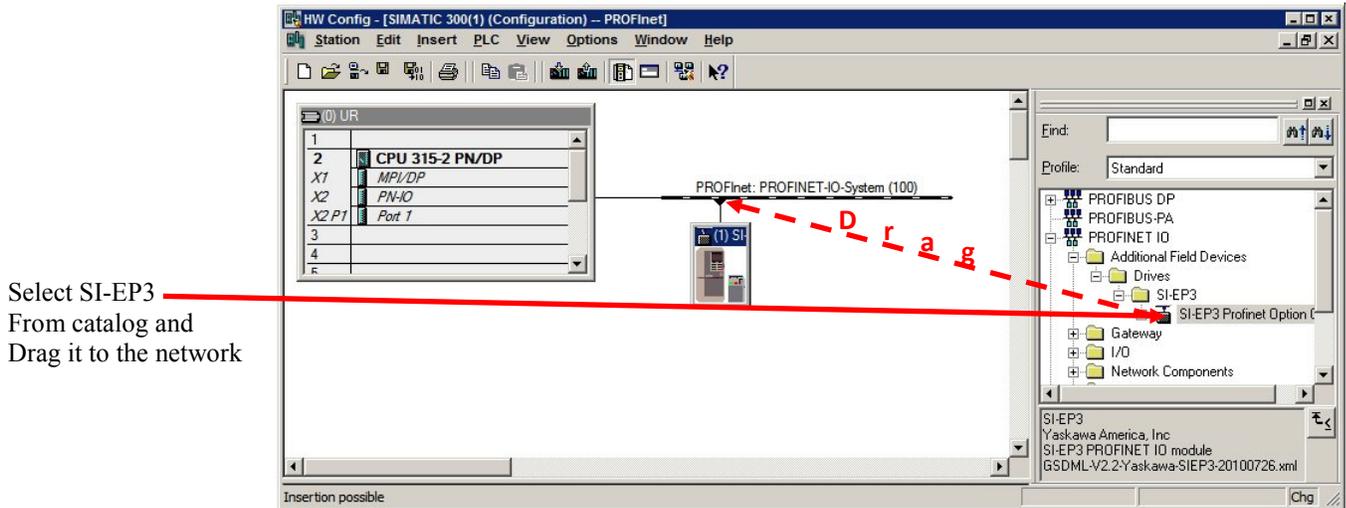


Figure 13 -- Add SI-EP3 Drive to Network

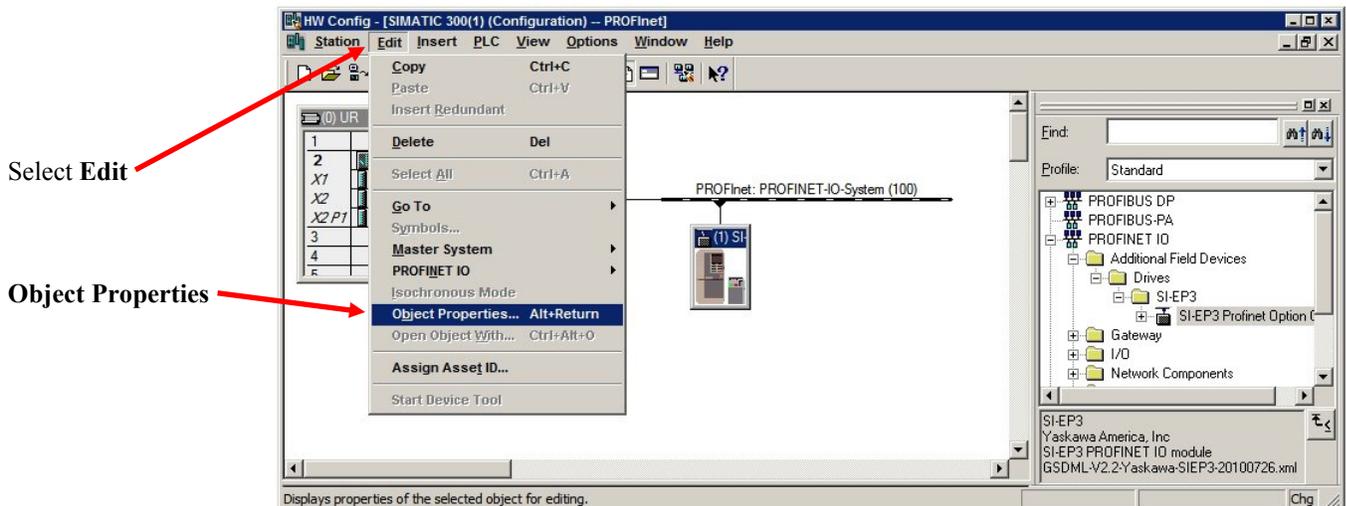


Figure 14 -- Configure SI-EP3 Option

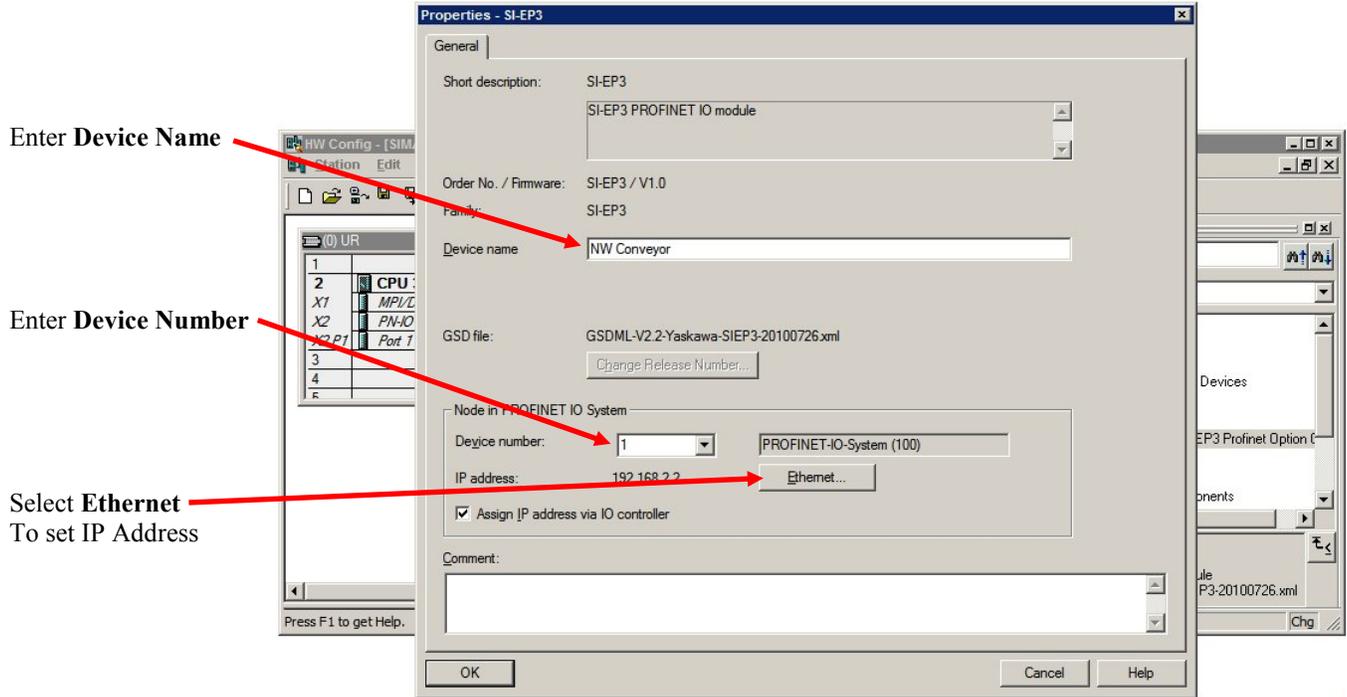


Figure 15 -- Add Name and Device Number

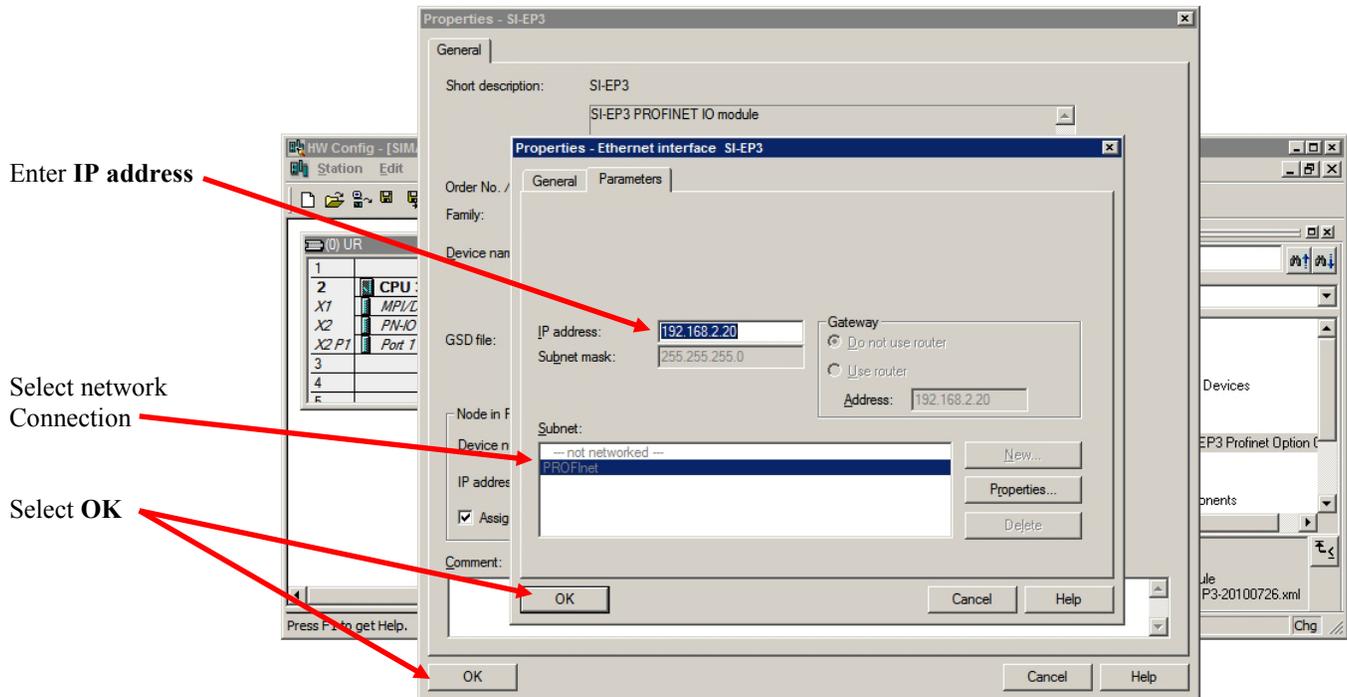


Figure 16 -- Add IP Address and Network Connection

Select cyclic I/O
 Drag it to the
 Designated IO slot

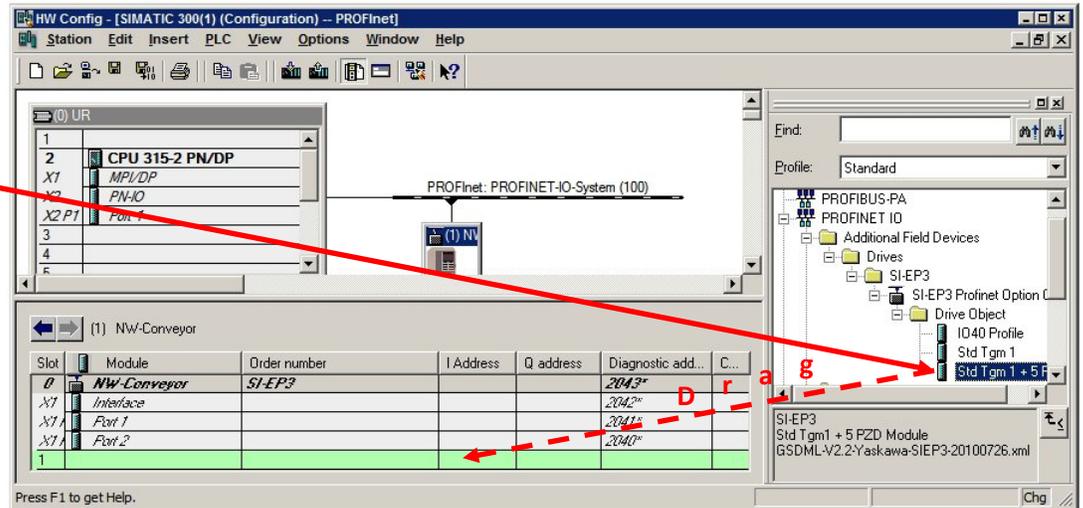


Figure 17 -- Add Cyclic I/O

Right click on I/O slot
 Select
 Object Properties

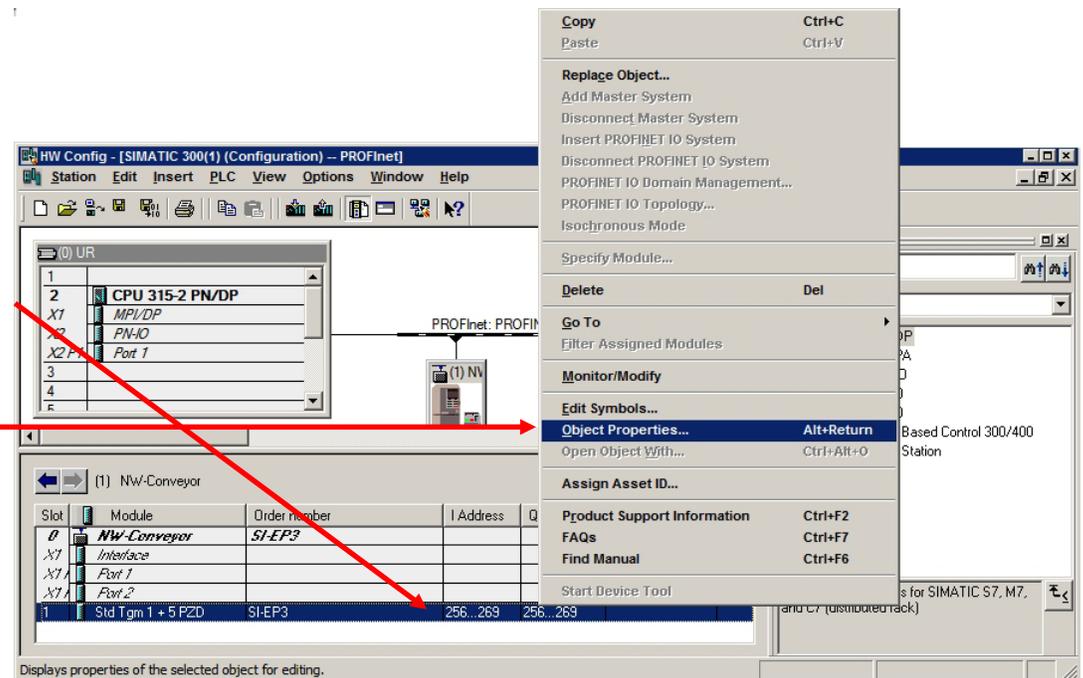


Figure 18 -- Cyclic I/O Properties

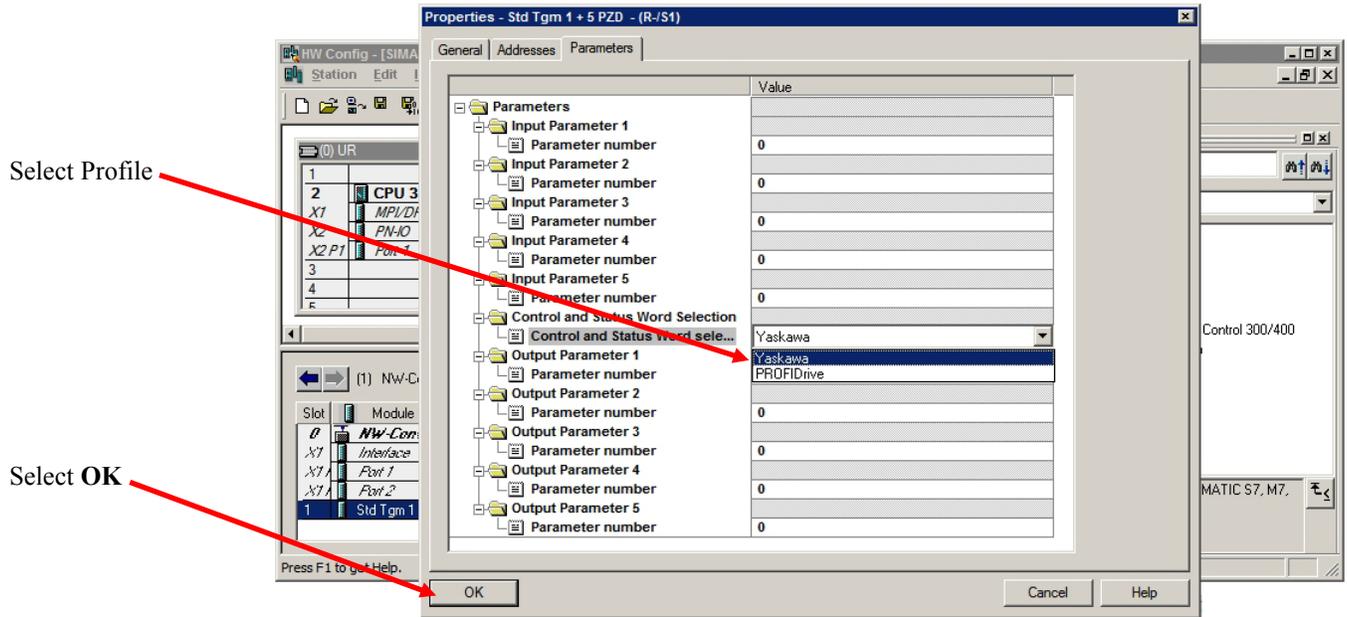


Figure 19 -- Control and Status Word Configuration

Assign Device Name

All PROFINET devices must have an assigned name. Assigning a name to a device requires that the device be connected to and can be seen by the network. Although it is not necessary to assign device names at this point, the process is shown here.

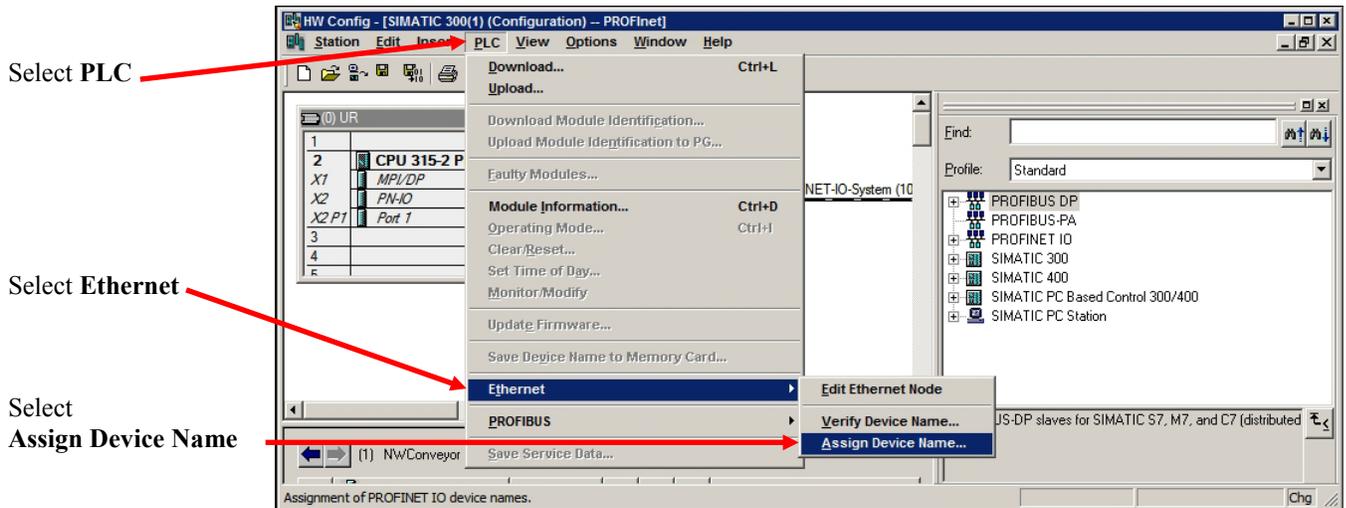


Figure 20 – Assign Device Name

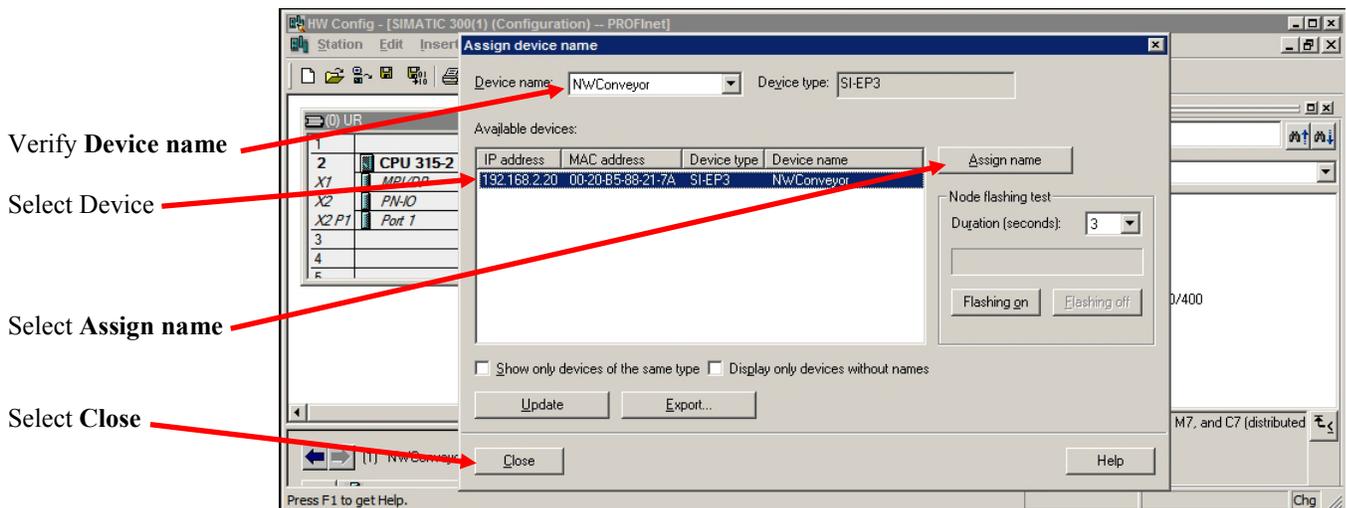


Figure 21 -- Assign Name Dialog

Save, Compile and Download

- Save and compile the configuration
- Download the configuration to the PLC

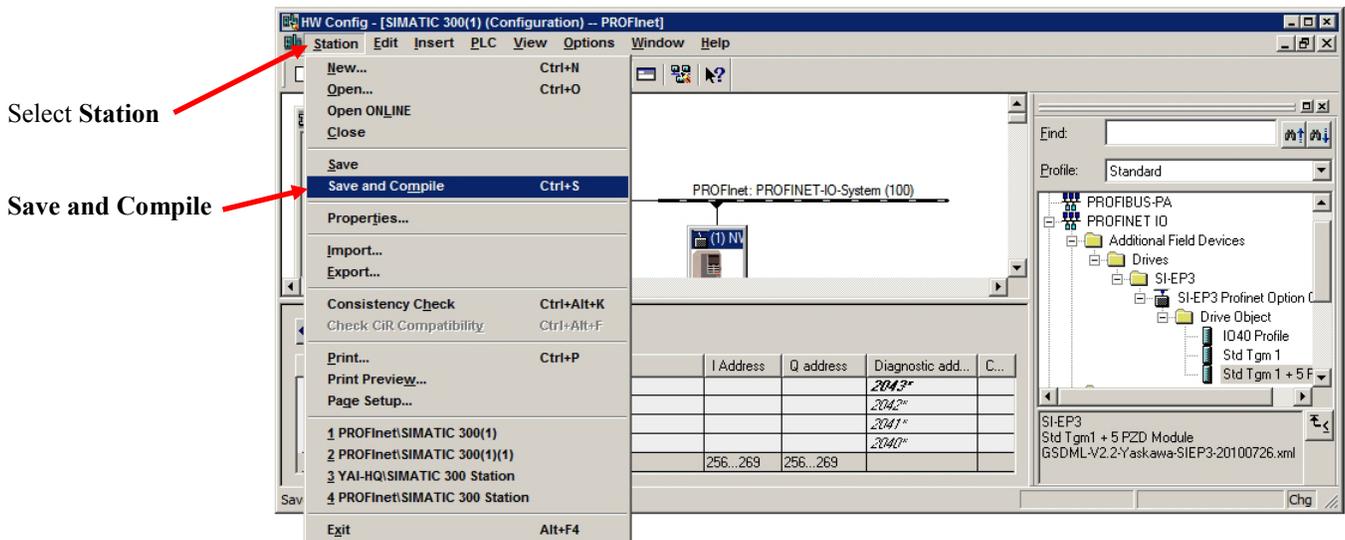


Figure 22 -- Save and Compile

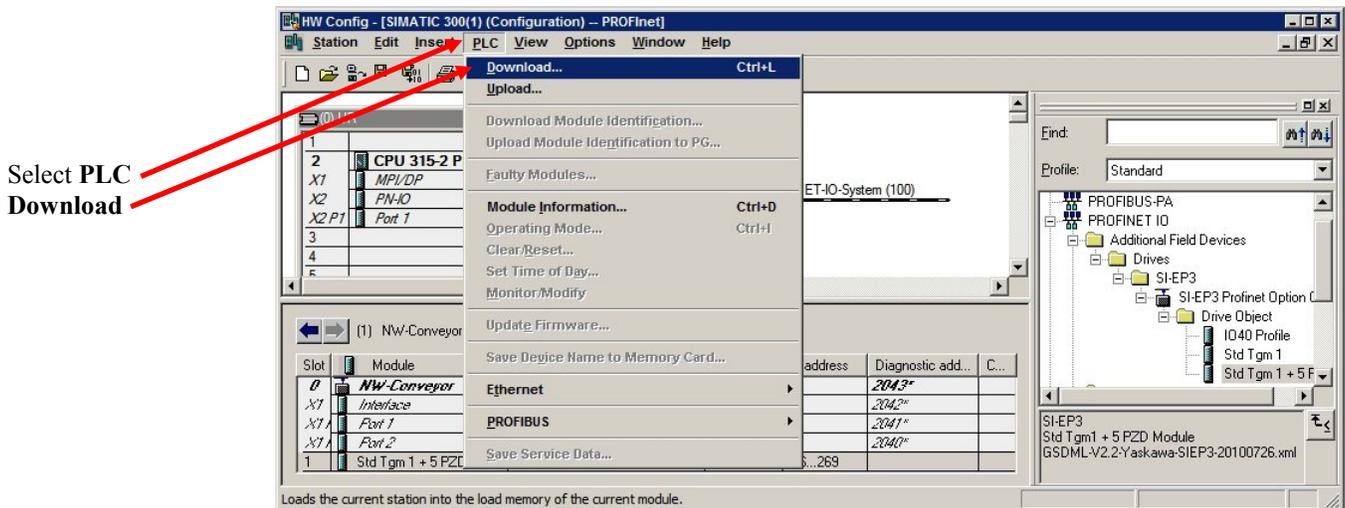


Figure 23 -- Download to PLC

Drive Control Programming

Variable table

- Create Variable Table
- Name the Variable Table
- Populate the Variable table with Drive I/O
- Set Mode to Online
- Enter Drive Variables
- Press F9 to Send Modified Values

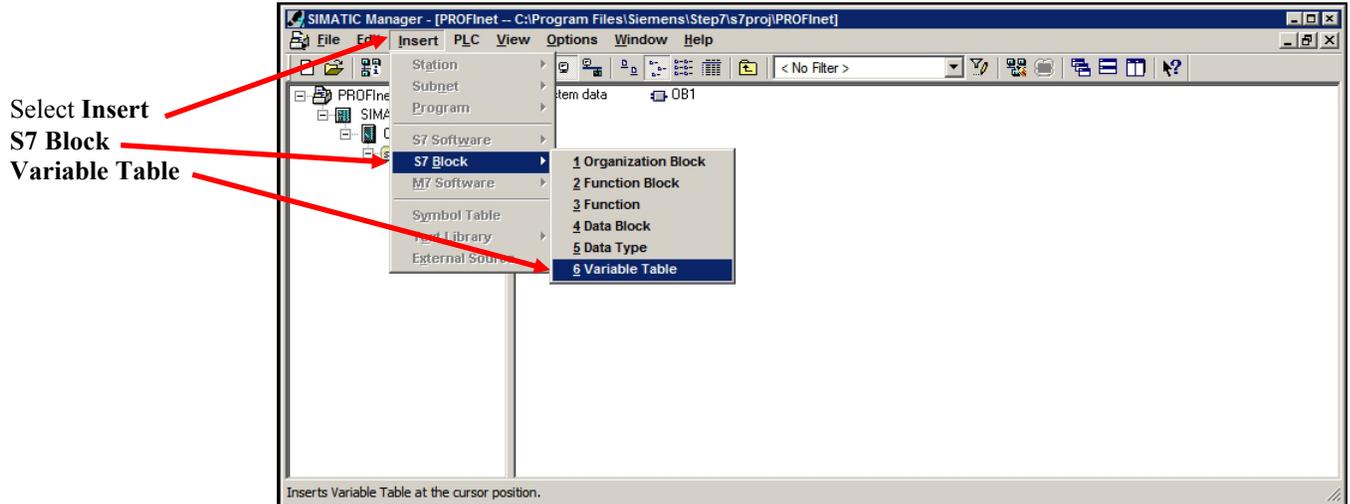


Figure 24 -- Create Variable Table

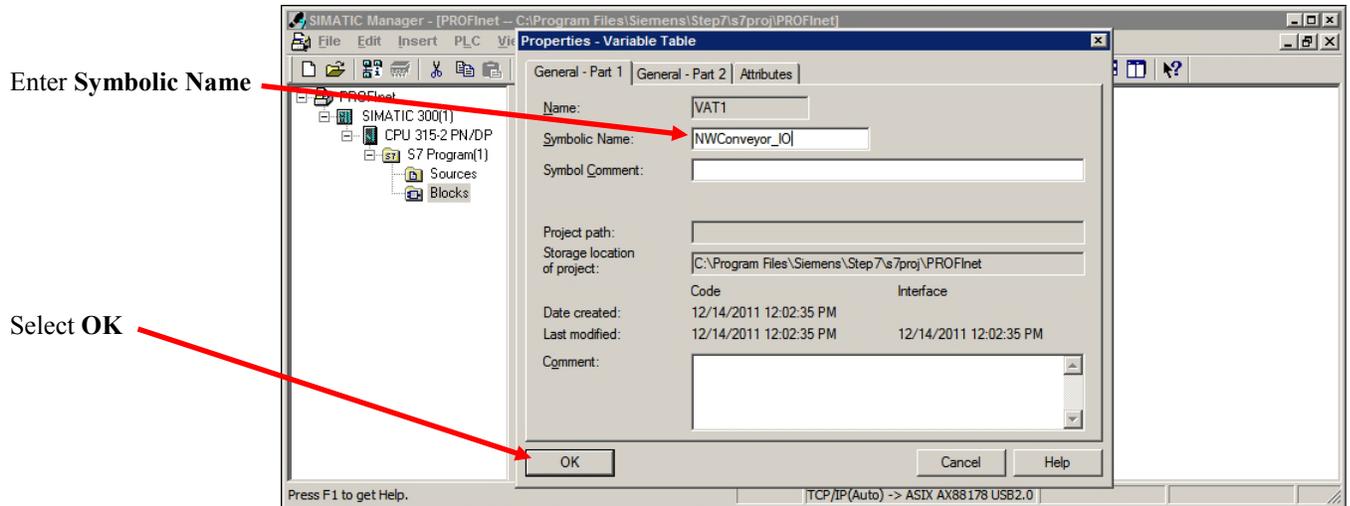


Figure 25 -- Name the Variable Table

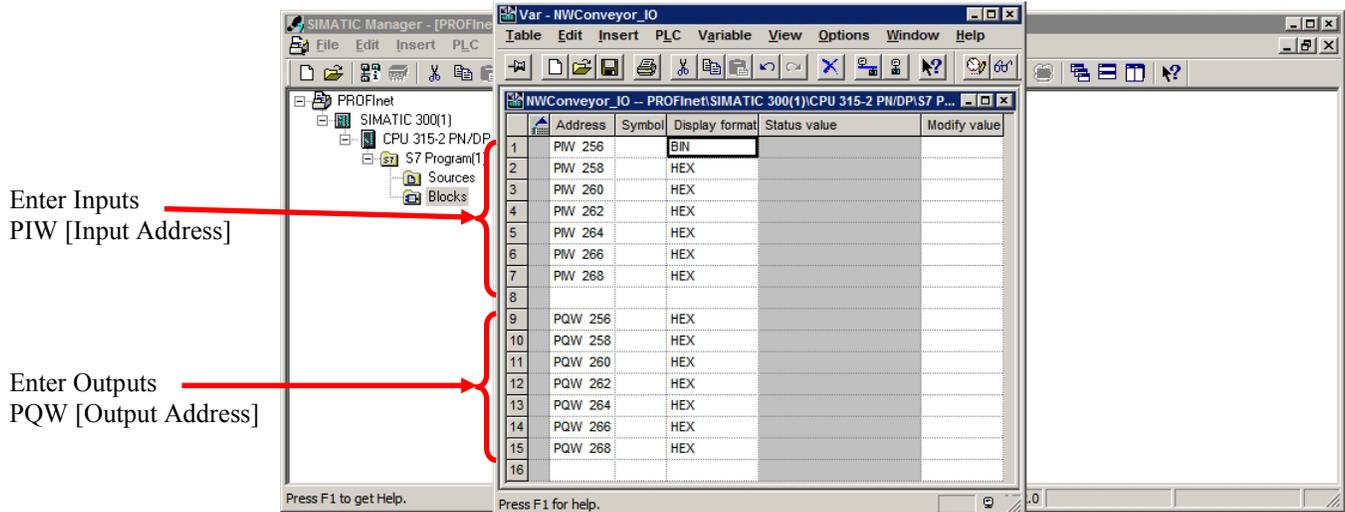


Figure 26 -- Populate Variable Table

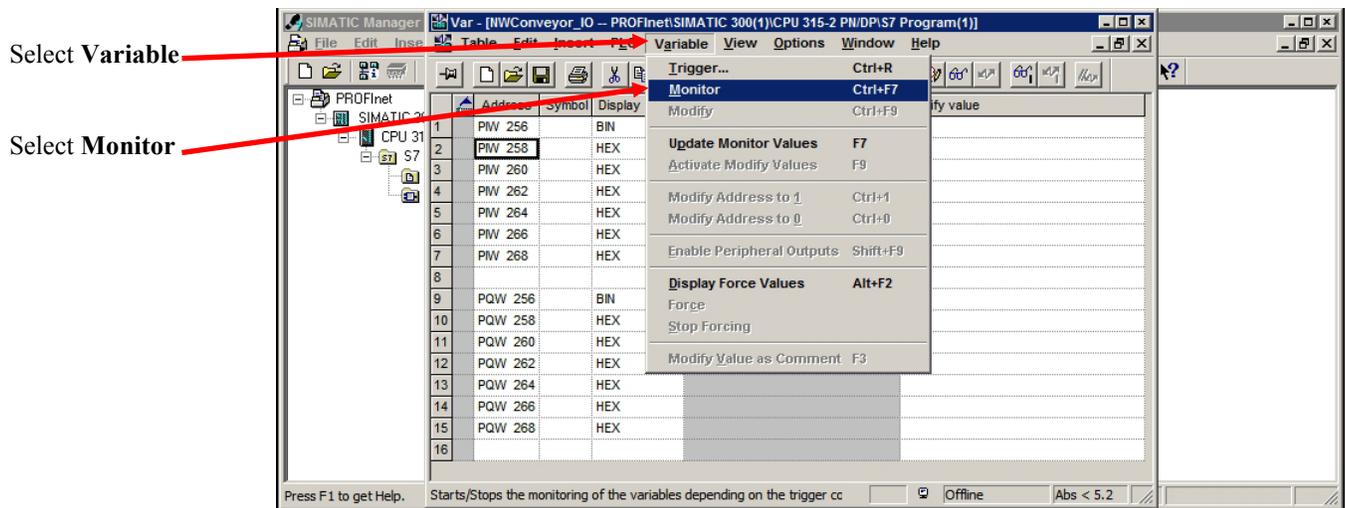


Figure 27 -- Set Table to Online

PROFIdrive

Read

Status Word¹
Reference Frequency

Write

Control Word¹
Frequency Reference

Press F9 to Write
Modified Values
To the Drive

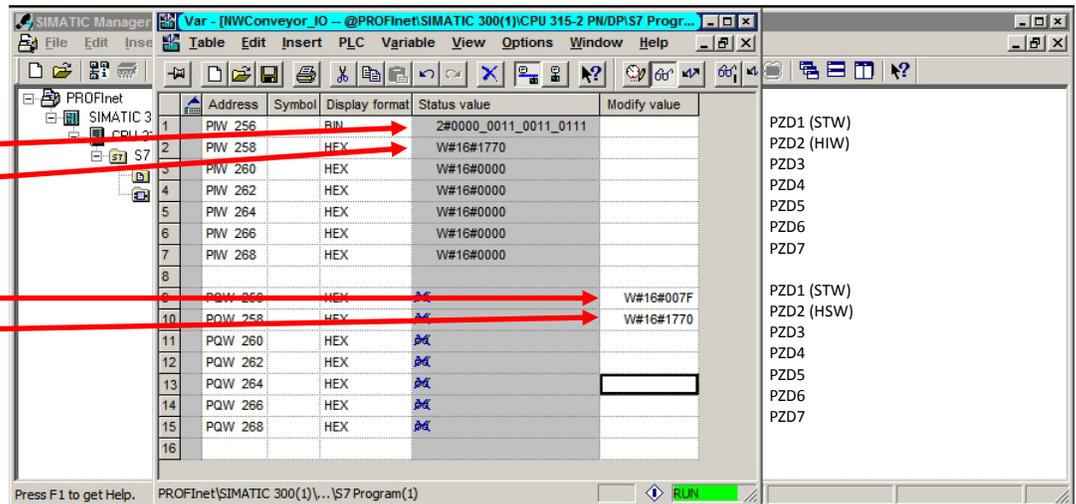


Figure 28 -- Enter PROFIdrive Control Values

¹ Control and Status words for the PROFIdrive profile selected in the Cyclic I/O Configuration. Note that the Control and Status words for PROFIdrive profile are not the same as for the Yaskawa profile.
PROFIdrive: Control RUN 007Fh

Yaskawa

Read

Status Word²
Reference Frequency

Write

Control Word²
Frequency reference

Press F9 to Write
Modified Values
To the Drive

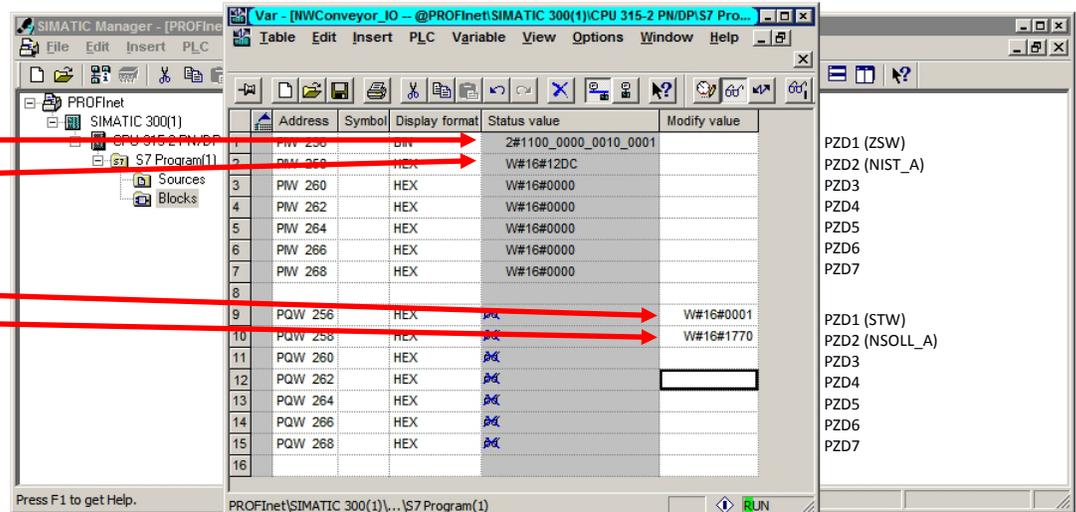


Figure 29 -- Enter Yaskawa Control Values

² Control and Status words for the Yaskawa profile selected in the Cyclic I/O Configuration
Yaskawa: Control RUN 0001h

Ladder Logic (LAD)

Control the Drive From the PLC Program with PROFIdrive Profile Selected

One Shot the command to Move the RUN command To STW (PZD1) and the Frequency Reference to HSW(PZD2)

One Shot the command to Remove the RUN command To STW (PZD1) and the Frequency Reference to HSW(PZD2)

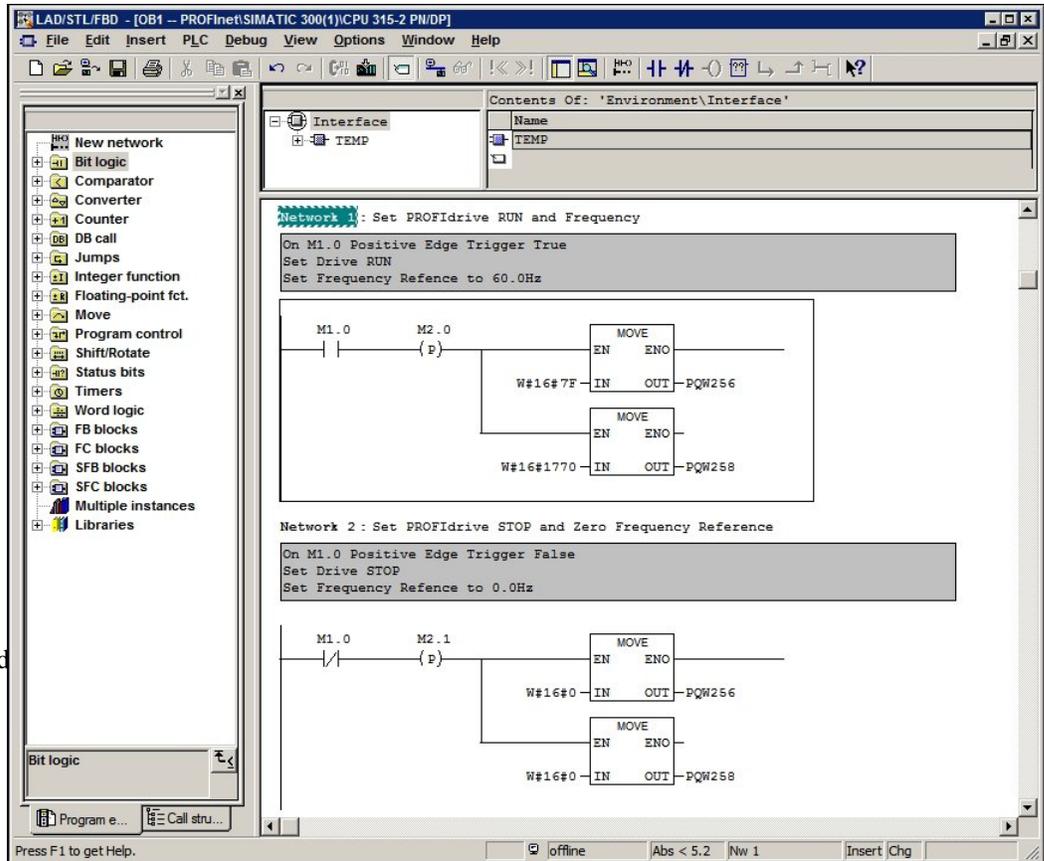


Figure 30 – Basic Drive Control Program

Change the Acceleration Rate When the PROFIdrive Profile is Selected

- Enter the acceleration parameter address in F7-33 with the value desired.
 - Parameter C1-01 (0200h)
- Power cycle the drive to store and make the parameter value active.

One Shot the change in Value to PZD3

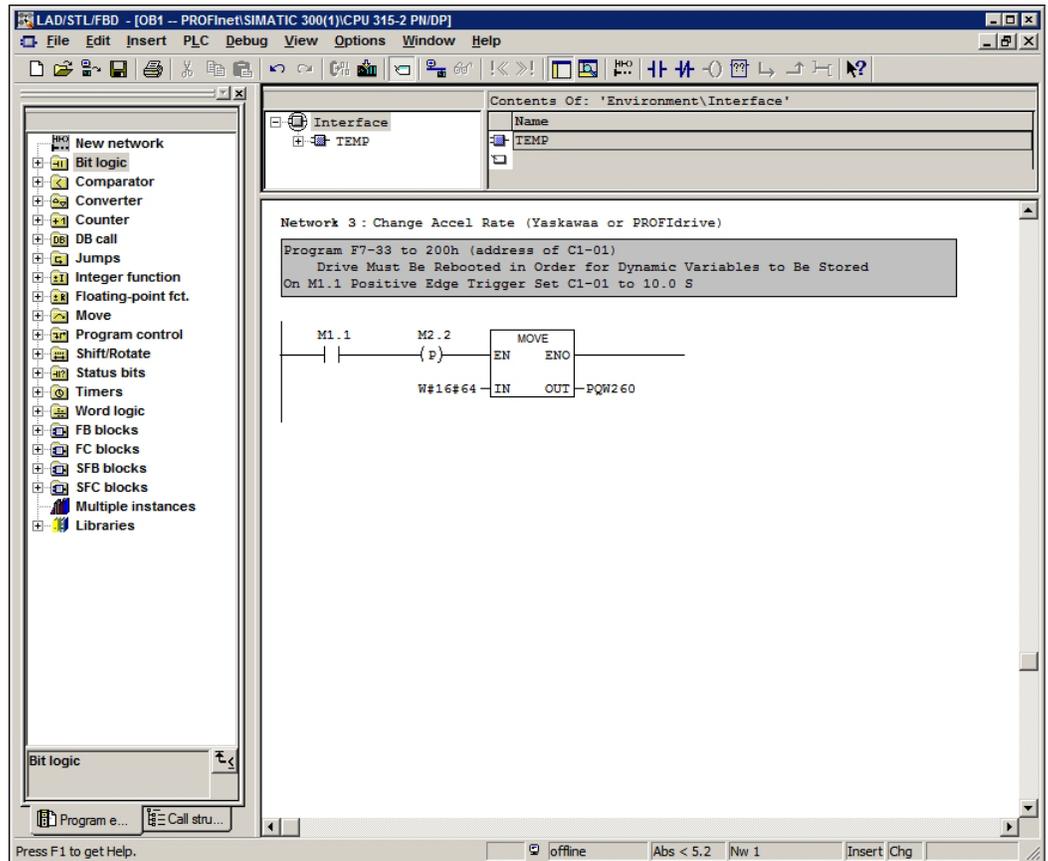


Figure 31 – Control Acc Rate

