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!
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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	https://support.automation.siemens.com
49948856	SIMATIC PROFINET with STEP 7
45531107	SIMATIC Programming with STEP 7 V5.4
Following manuals may be downloaded from	https://www.yaskawa.com
SIEPYEACOM07	1000-Series Option SI-EP3 PROFINET Technical Manual
SIEPYEACOM06	V1000-Series Option SI-EP3/V PROFINET Technical Manual
SIEPC71061641	Yaskawa 1000 Series AC Drive Technical Manual
SIEPC71060618	Yaskawa V1000 AC Drive Technical Manual
PROFINET information may be downloaded from	https://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**

Select **File**
New

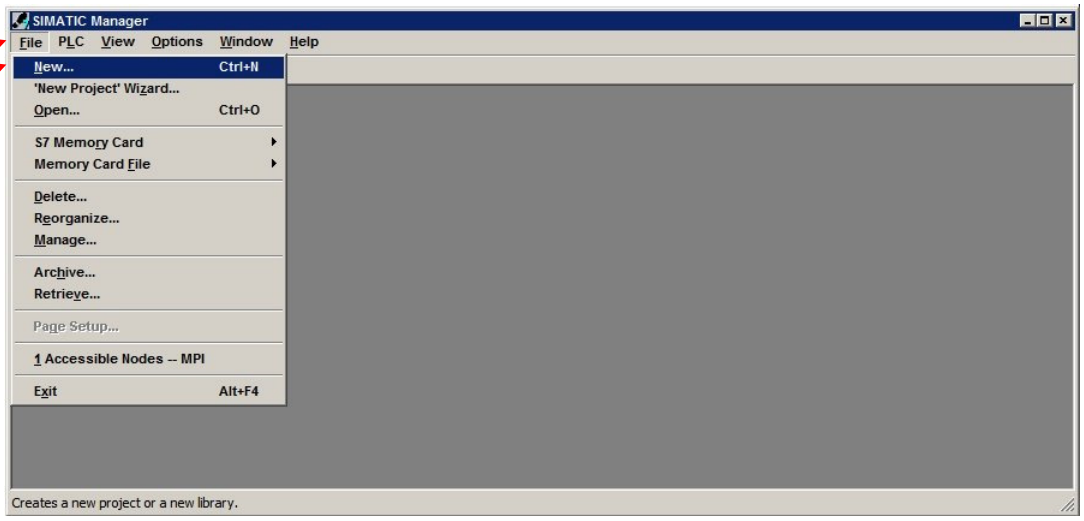

Figure 1 -- Create Project

Enter project **Name**

Select **OK**

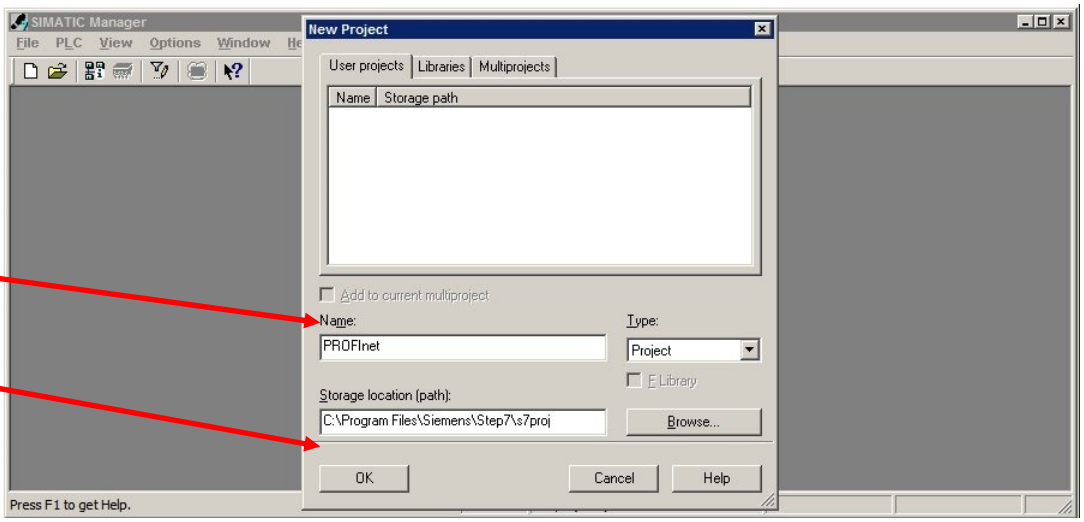

Figure 2 -- Project Name

Add Station

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

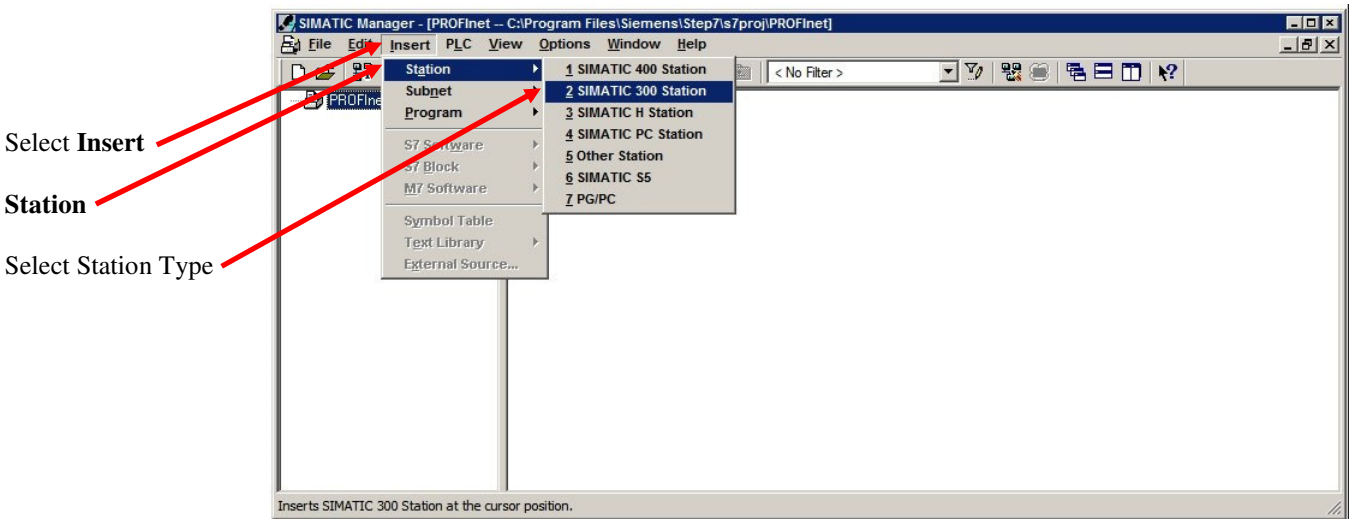

Figure 3 -- Select Station

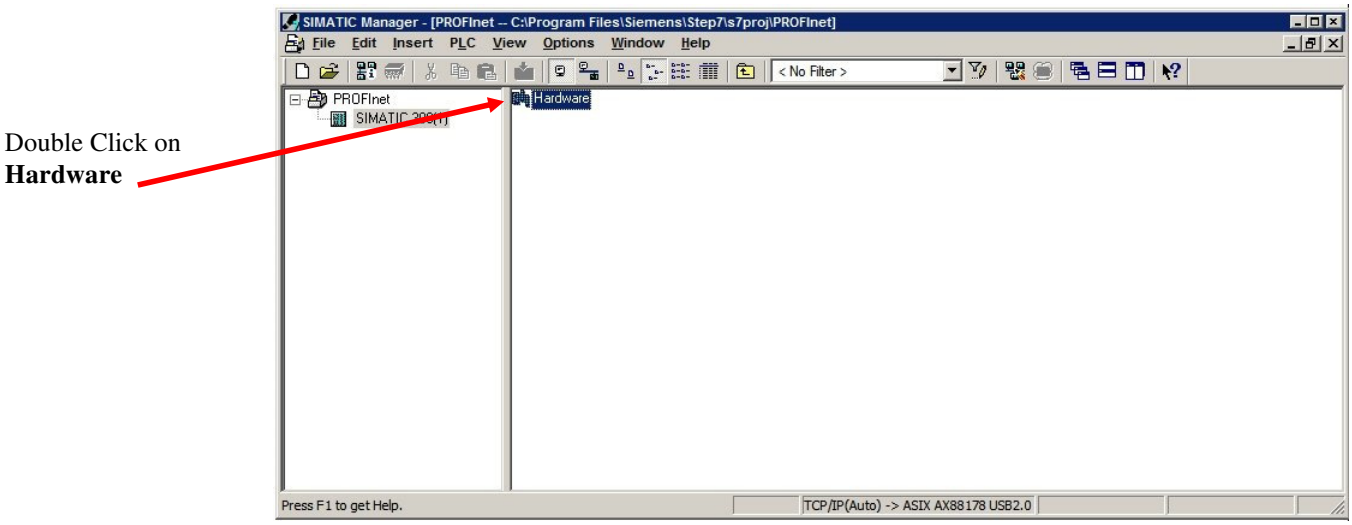

Figure 4 -- Open Hardware Configuration

Add GSD File

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

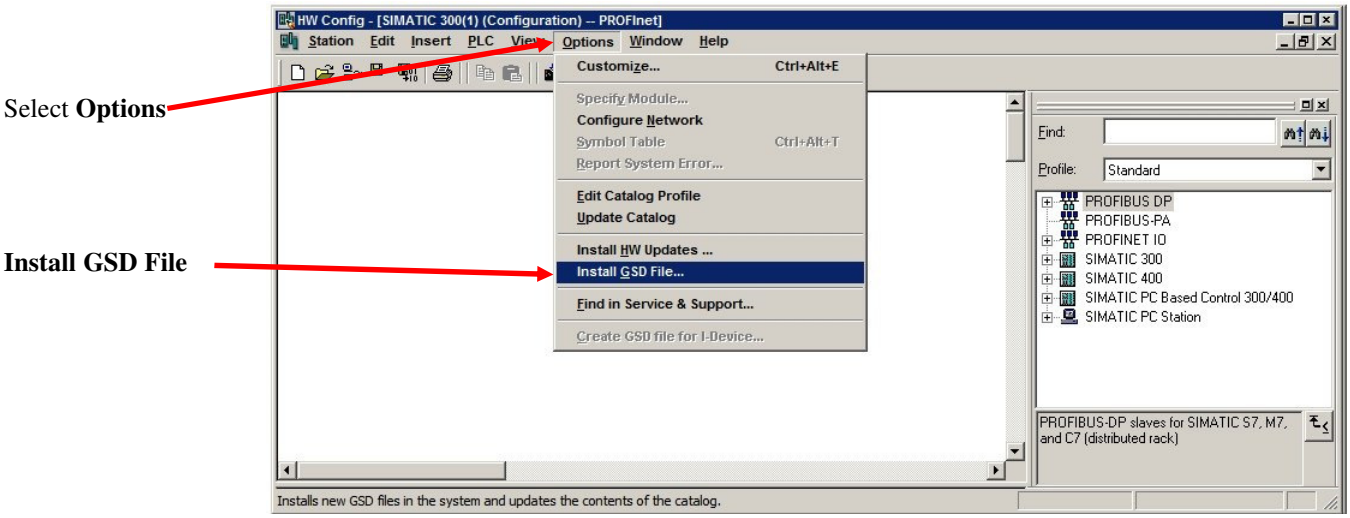

Figure 5 -- Install GSD File

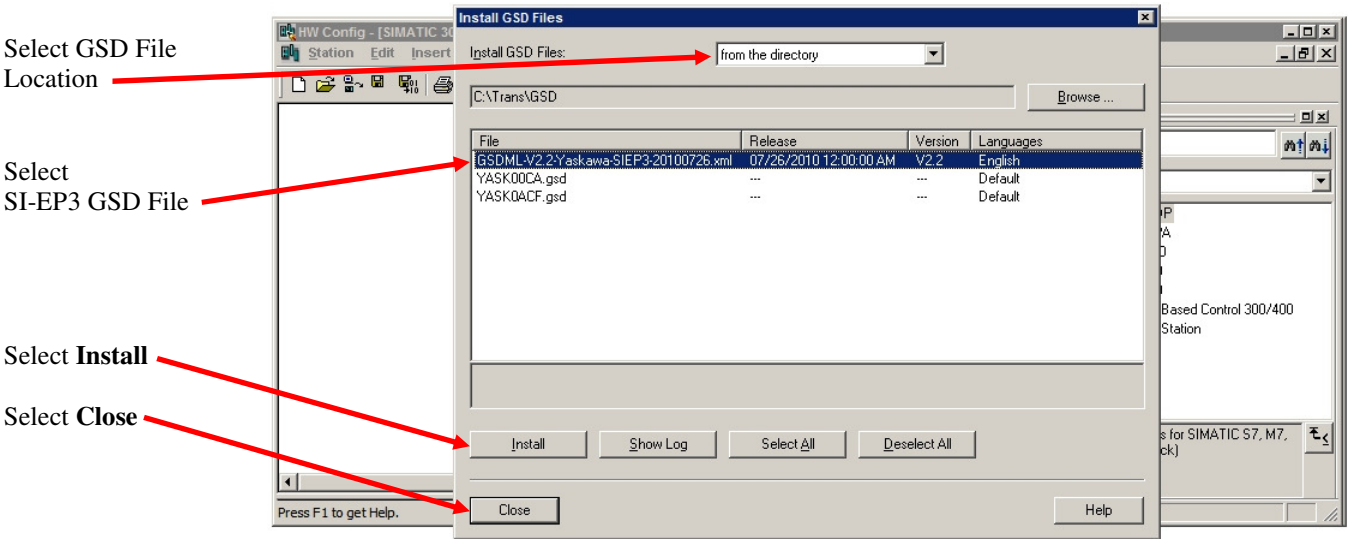

Figure 6 -- Select SI-EP3 GSD File

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

Select **Insert**
Insert Object

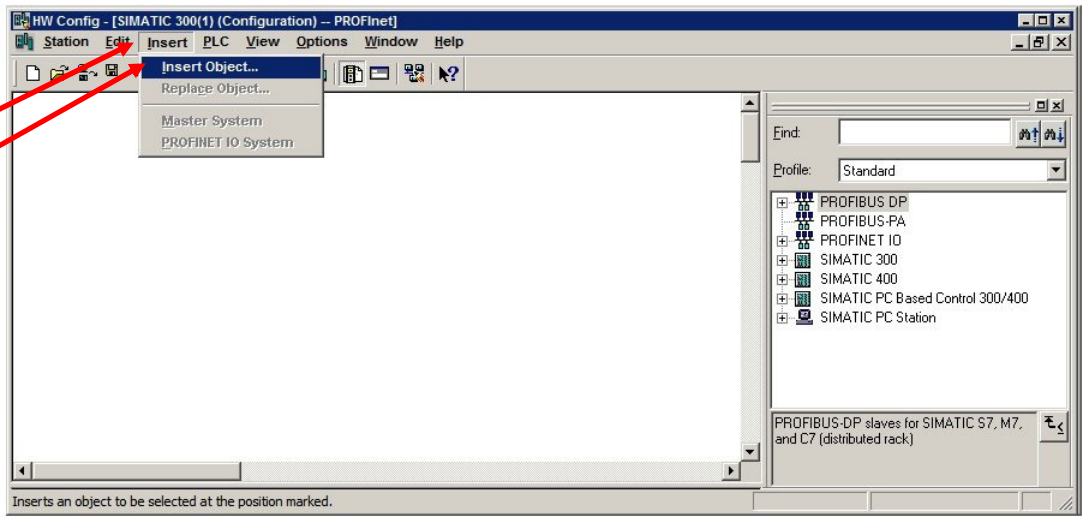

Figure 7 -- Insert CPU Object

Select **Station**

Select **Rack**

Select **Rail**

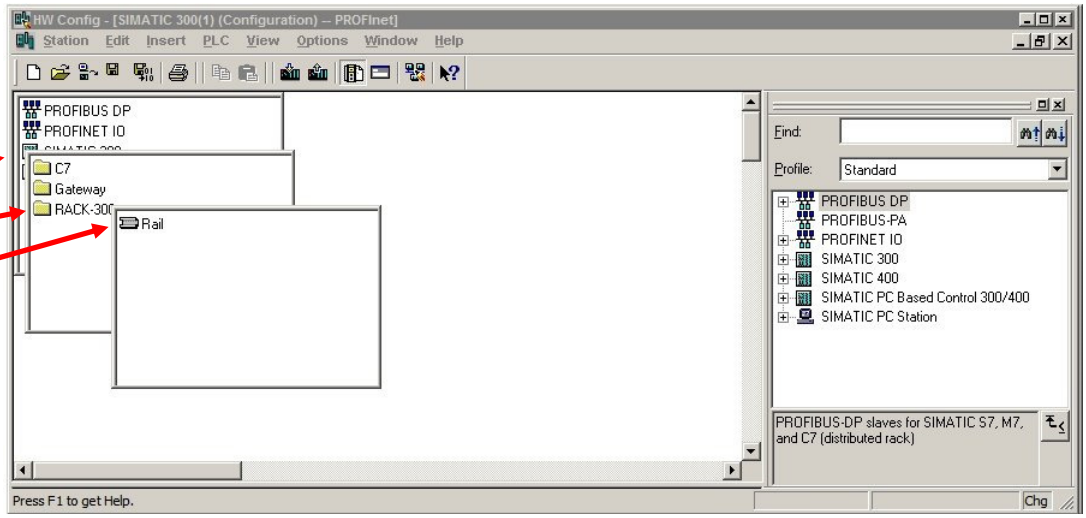

Figure 8 -- Define Inserted Object Type

Select CPU
From Catalog And
Drag it to designated
Slot in system rack

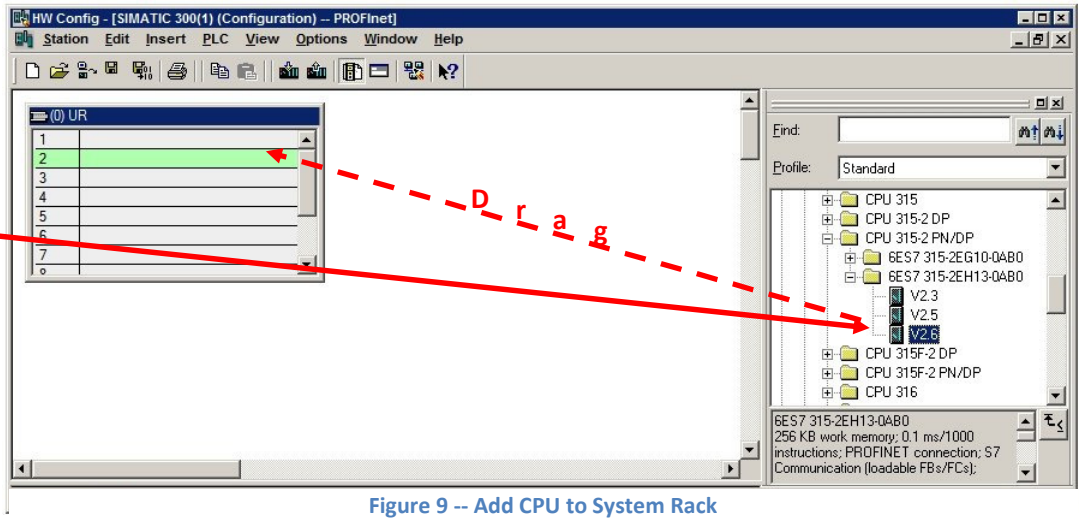

Figure 9 -- Add CPU to System Rack

Configure CPU

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

Enter **IP address 192.168.2.1**

Enter **Subnet mask 255.255.255.0**

Select **New** To add network

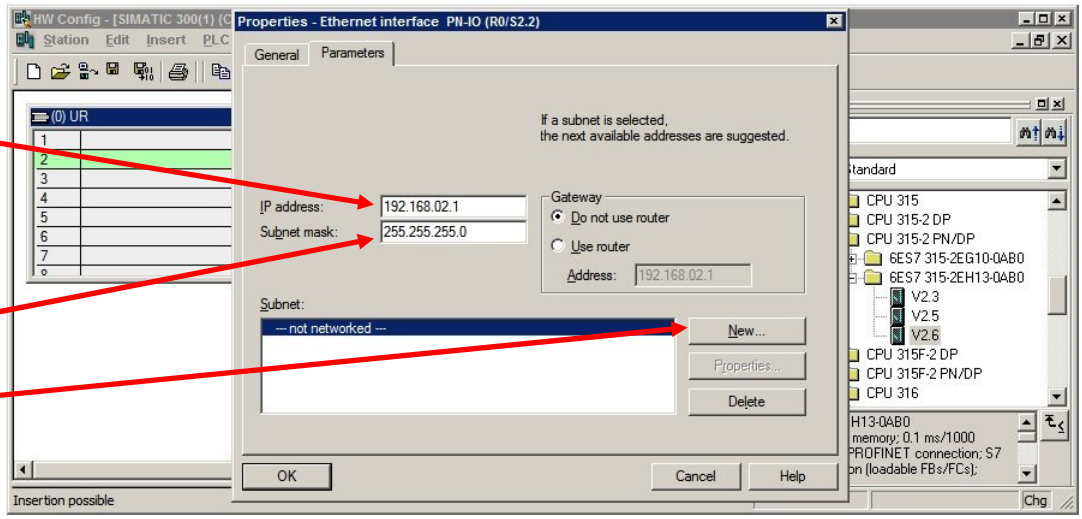

Figure 10 -- Add IP Address and PROFINET Network

Enter network **Name**

Select **OK**

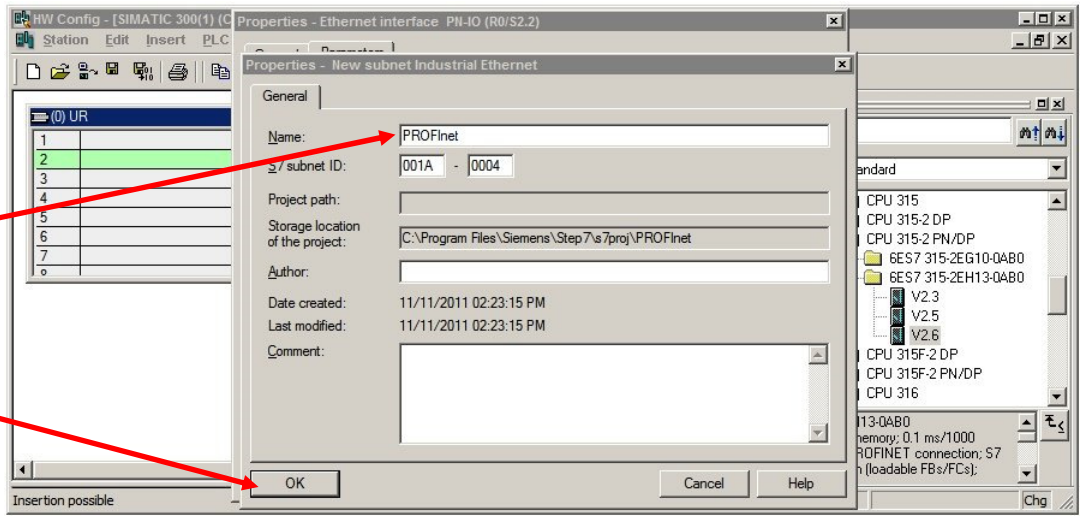

Figure 11 -- Configure PROFINET Network

Select OK

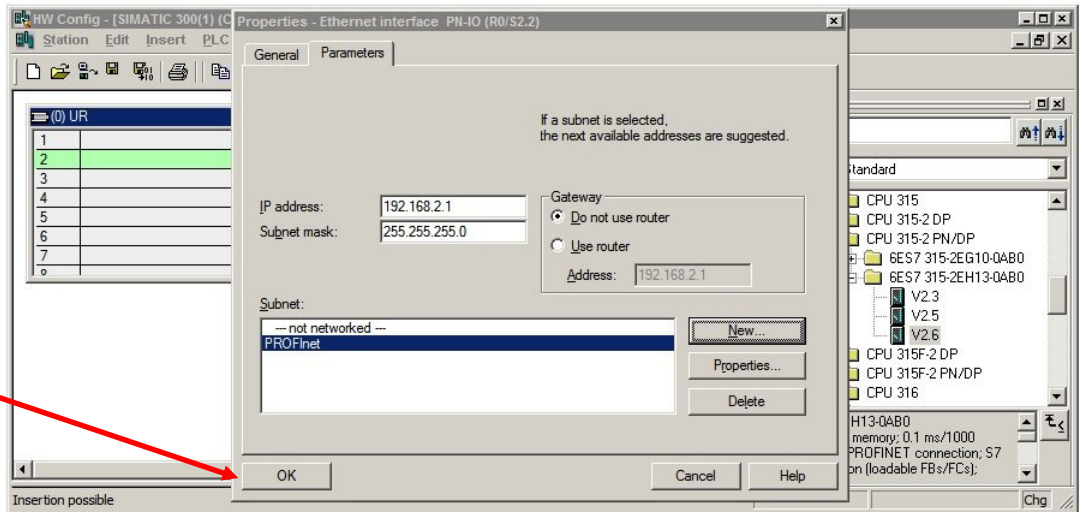

Figure 12 -- PROFINET Network Added

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

Select SI-EP3
From catalog and
Drag it to the network

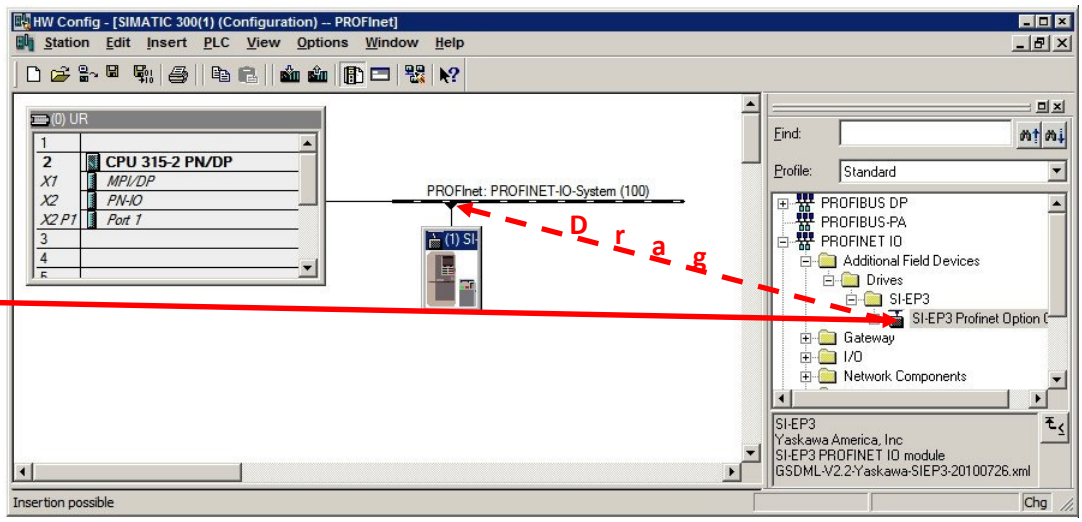

Figure 13 -- Add SI-EP3 Drive to Network

Select **Edit**

Object Properties

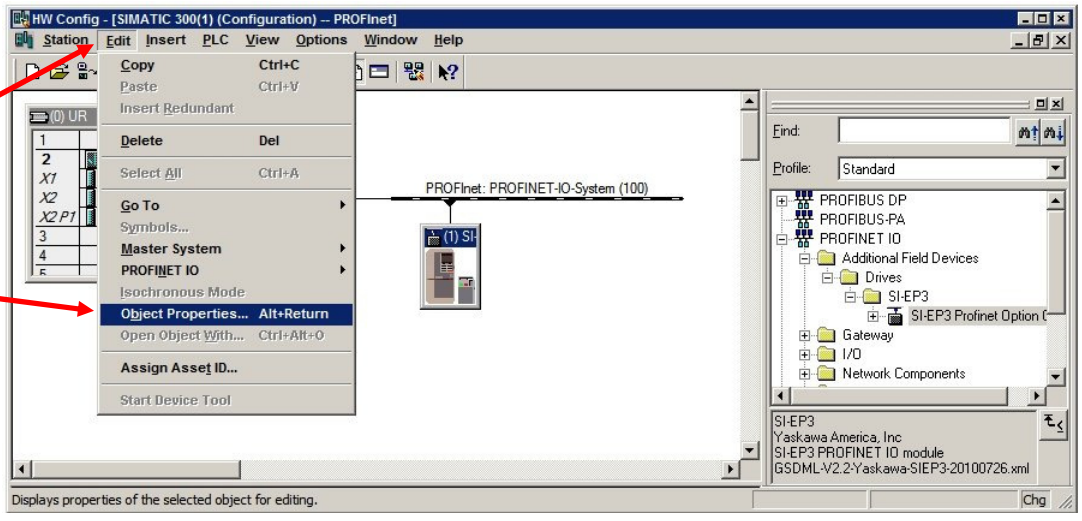

Figure 14 -- Configure SI-EP3 Option

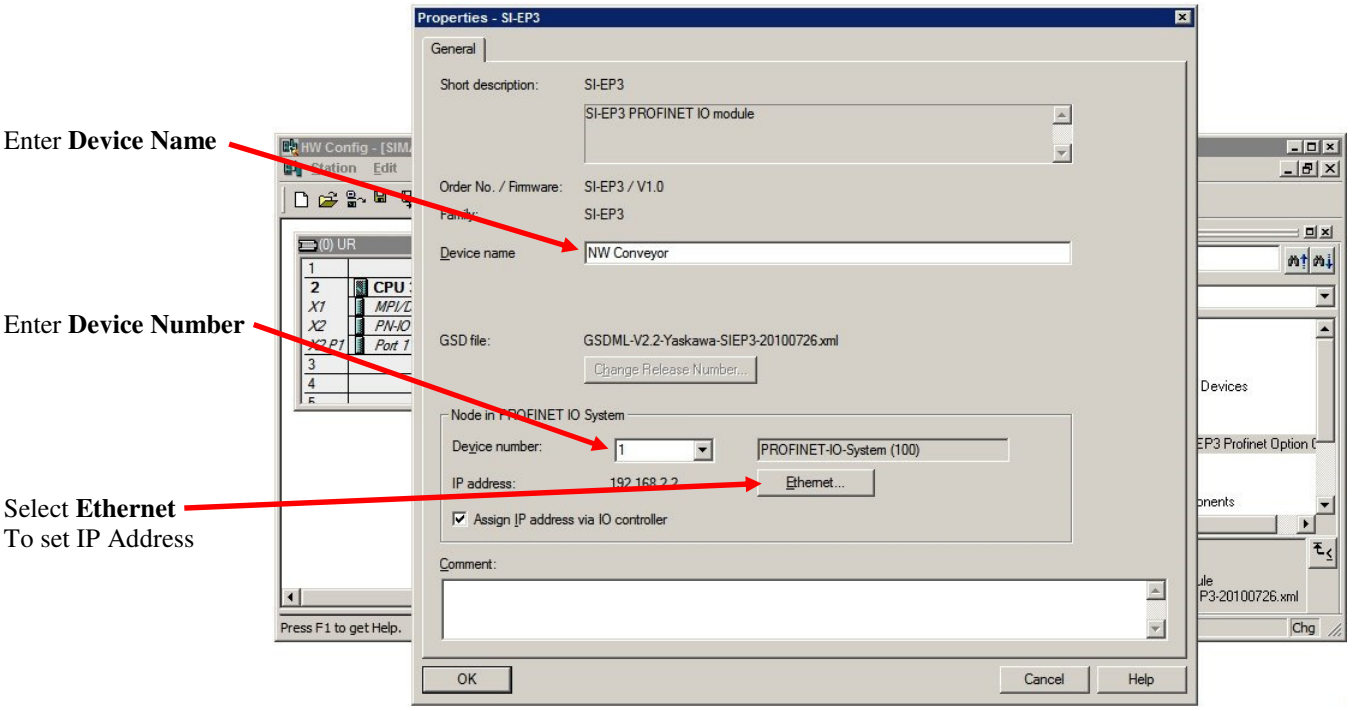

Figure 15 -- Add Name and Device Number

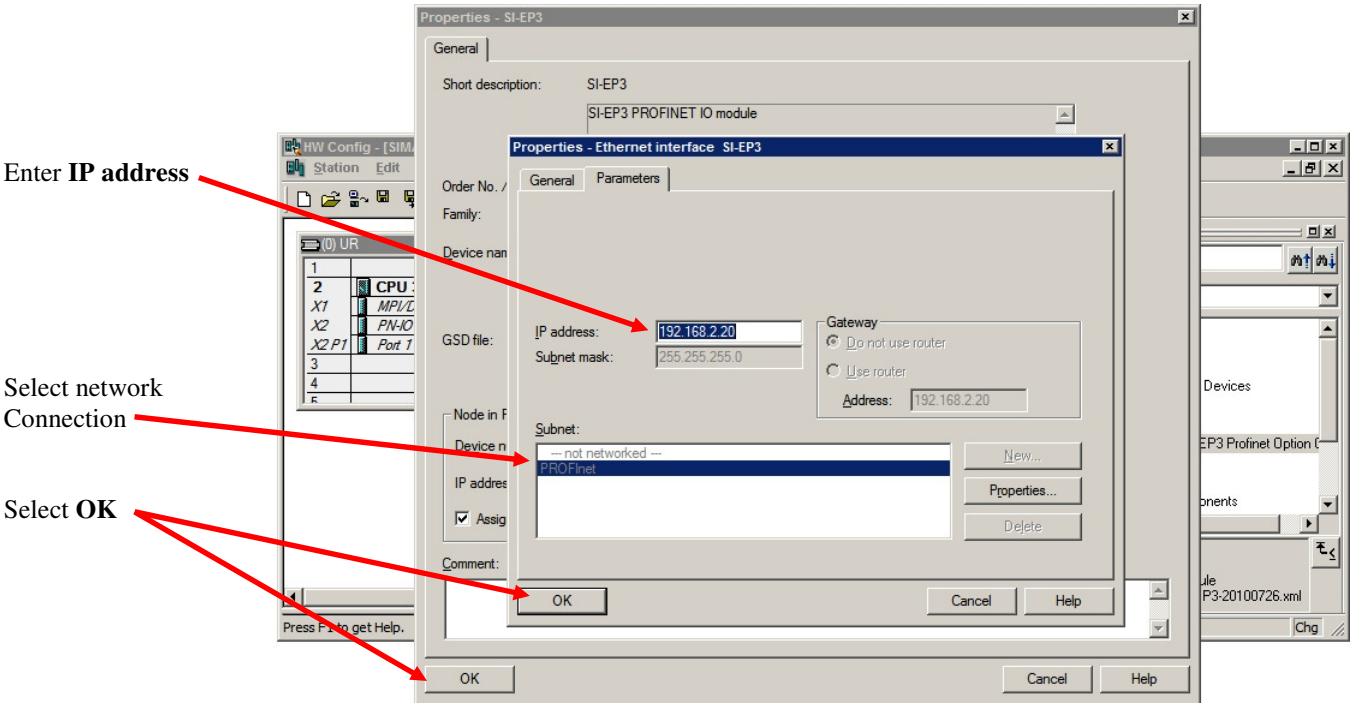

Figure 16 -- Add IP Address and Network Connection

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

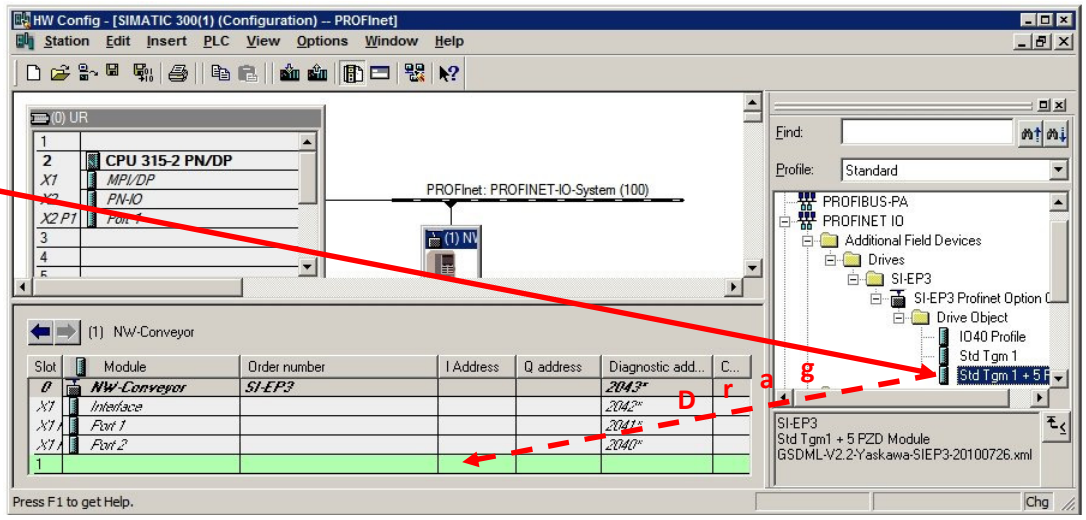

Figure 17 -- Add Cyclic I/O

Right click on I/O slot

Select
Object Properties

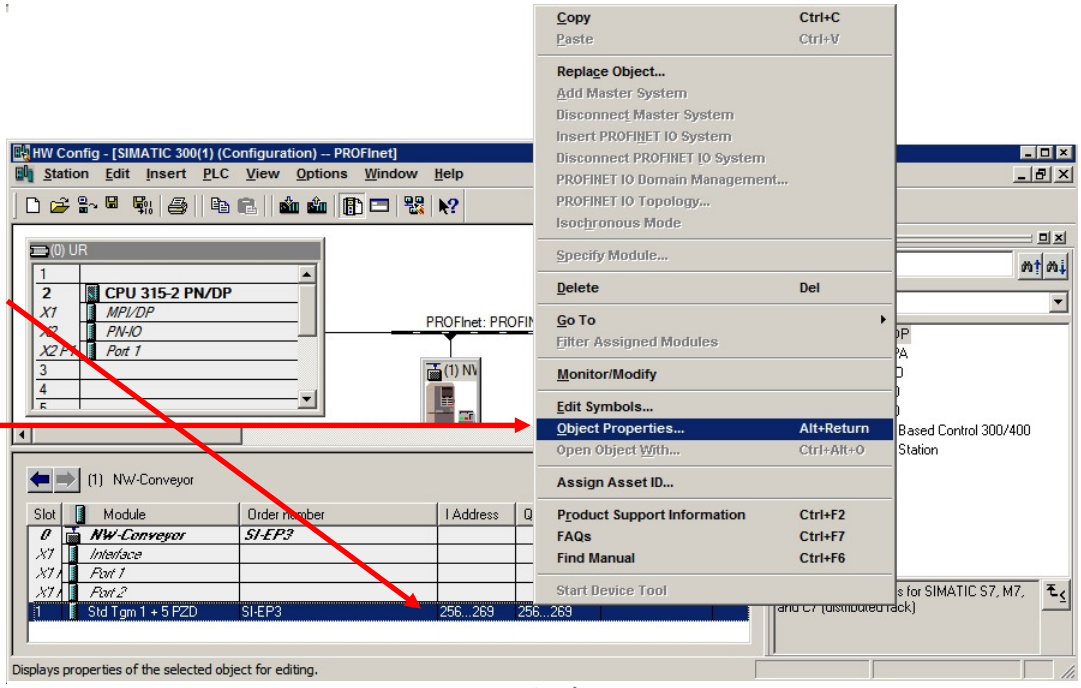

Figure 18 -- Cyclic I/O Properties

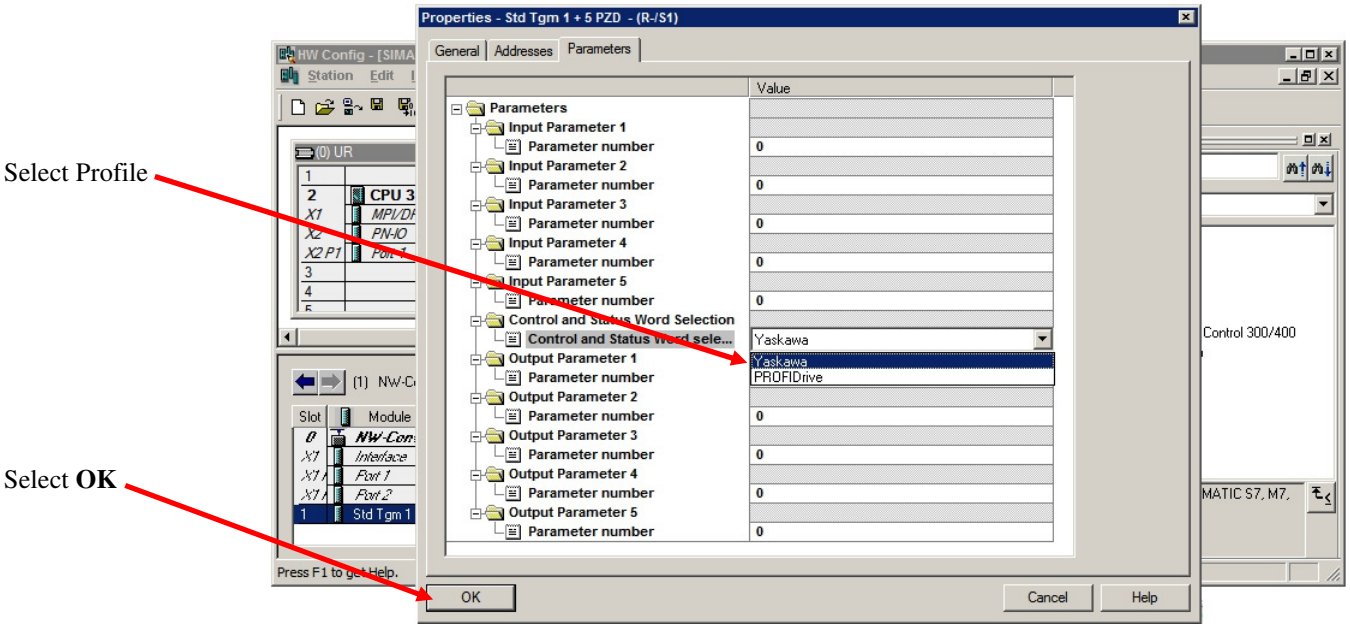

Figure 19 -- Control and Status Word Configuration

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.

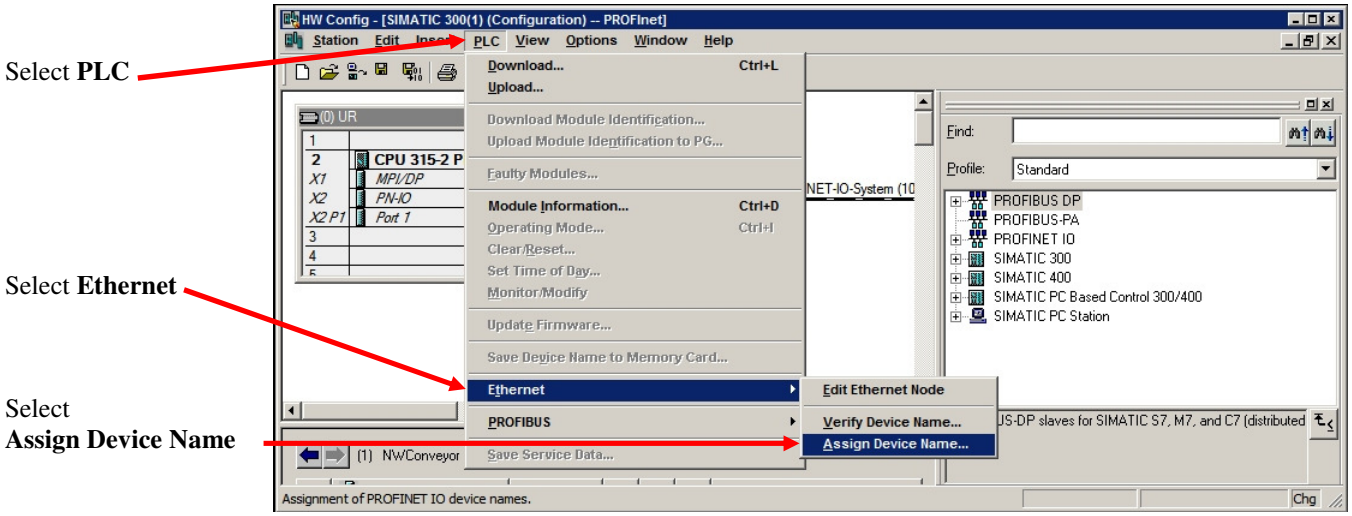

Figure 20 – Assign Device Name

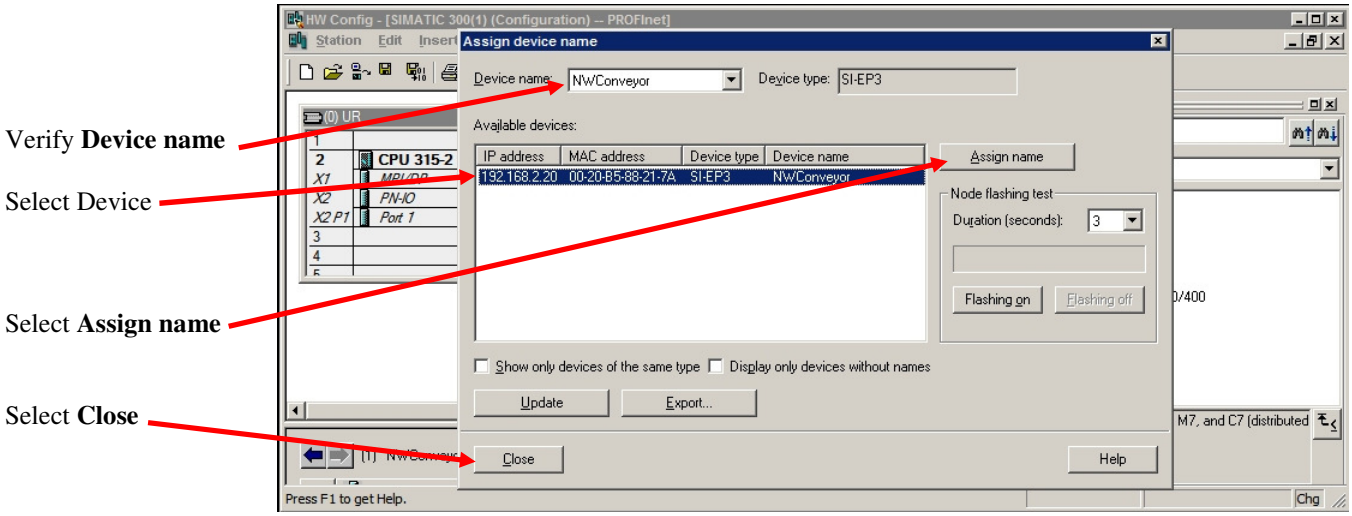

Figure 21 -- Assign Name Dialog

Save, Compile and Download

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

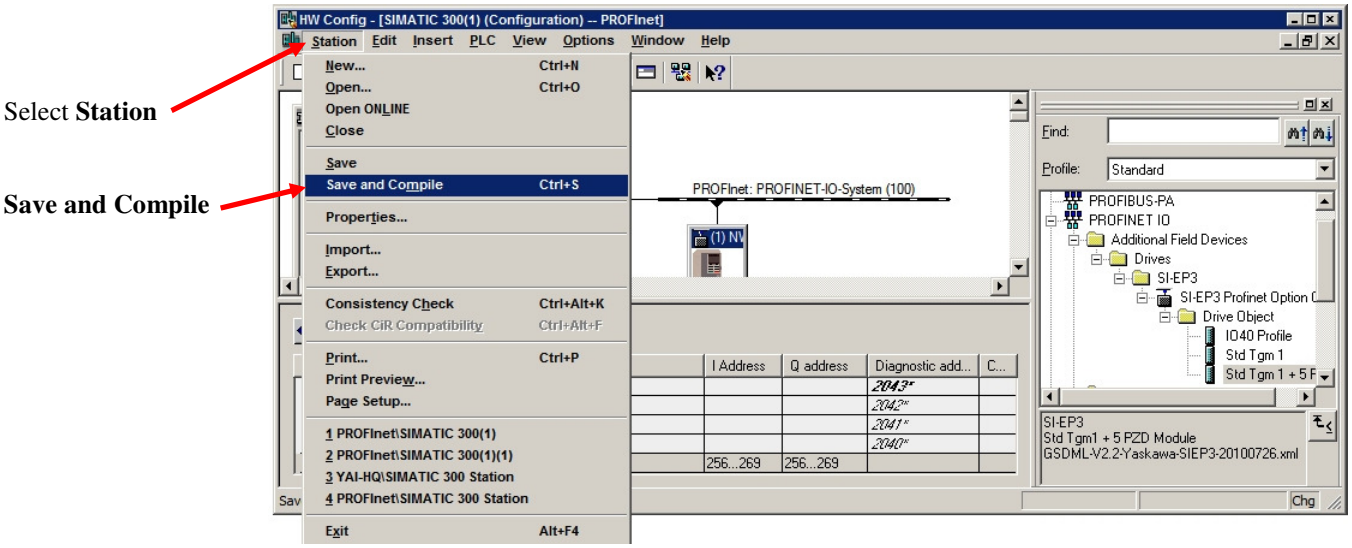

Figure 22 -- Save and Compile

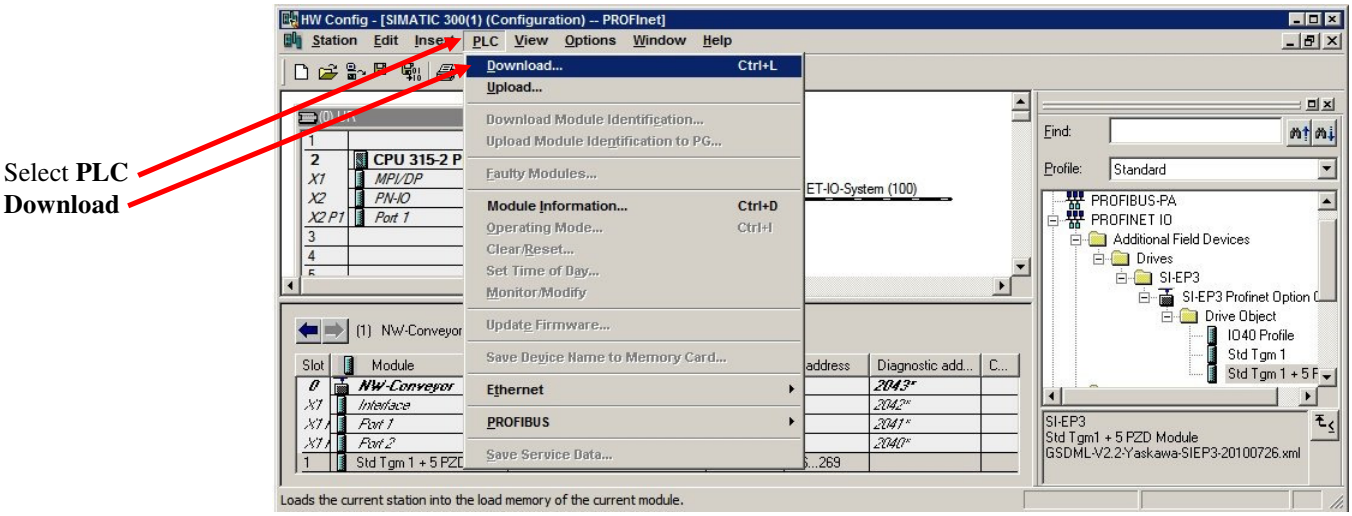

Figure 23 -- Download to PLC

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

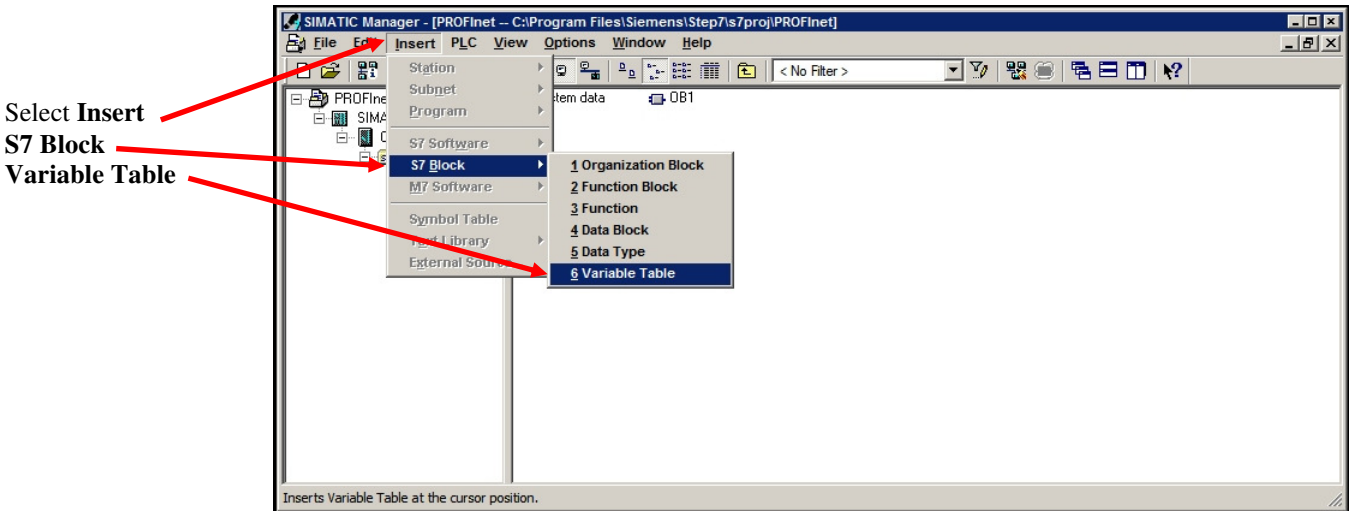

Figure 24 -- Create Variable Table

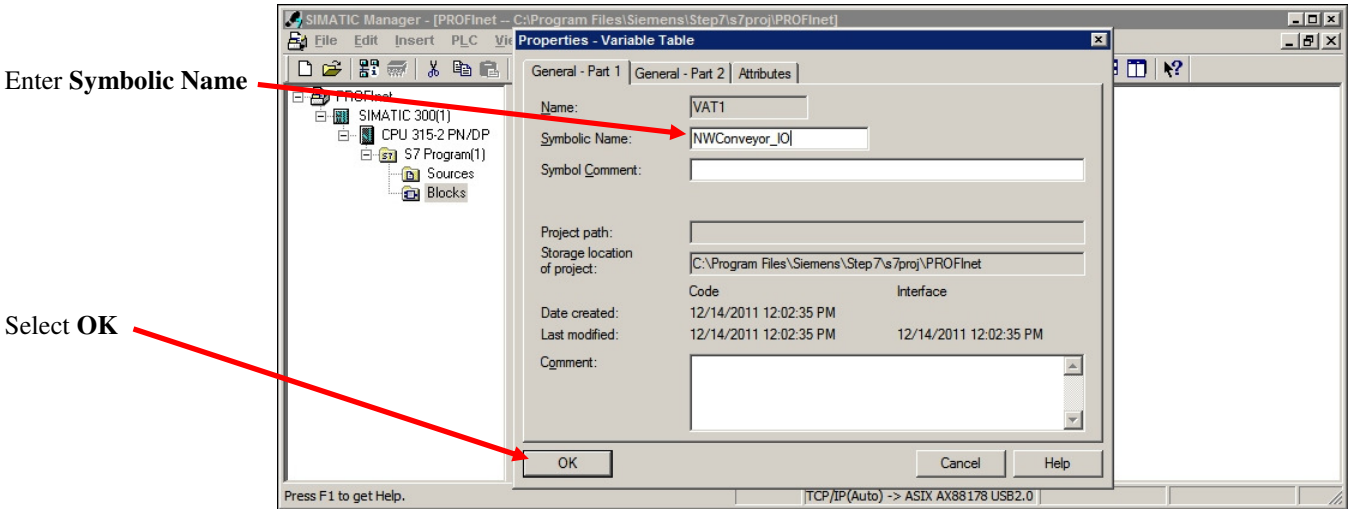

Figure 25 -- Name the Variable Table

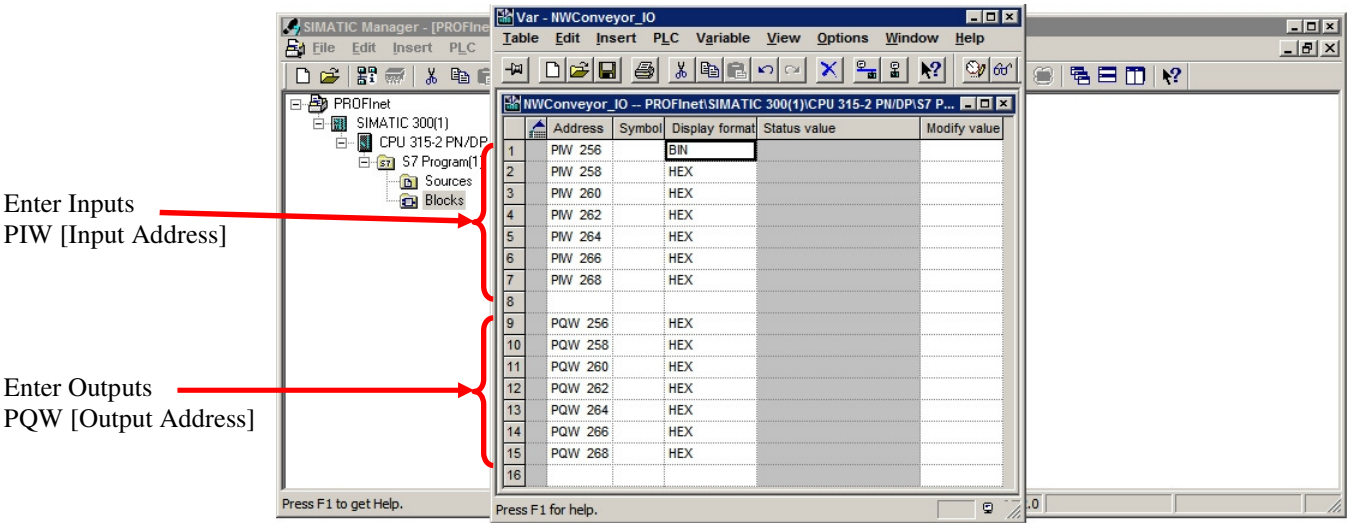

Figure 26 -- Populate Variable Table

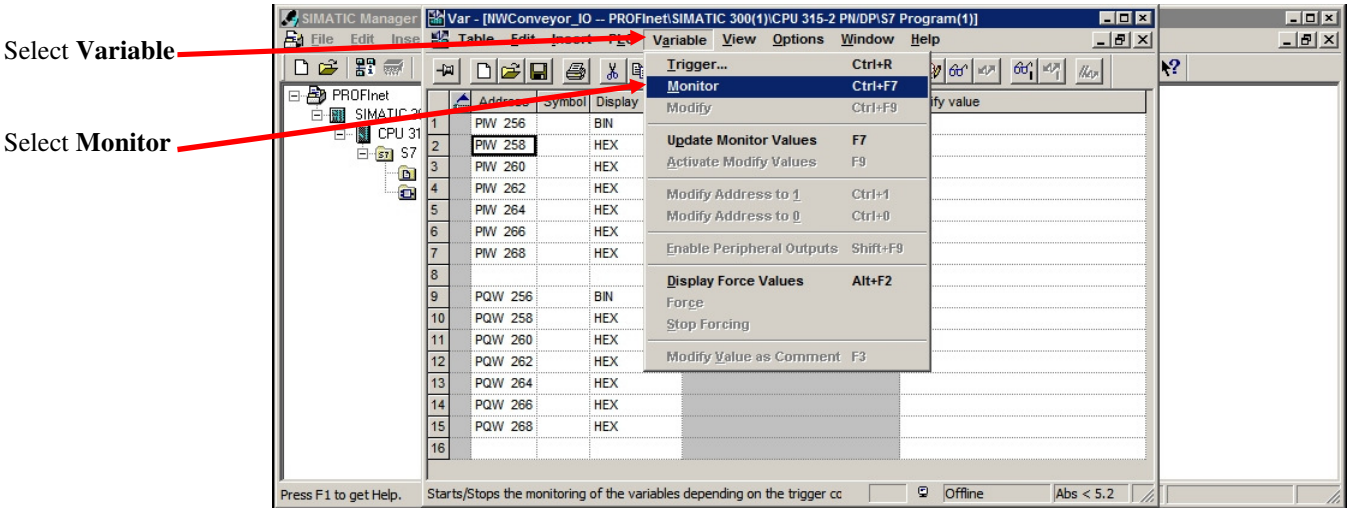

Figure 27 -- Set Table to Online

PROFIdrive

Read
Status Word[1]
Reference Frequency

Write
Control Word[1]
Frequency Reference

Press F9 to Write
Modified Values
To the Drive

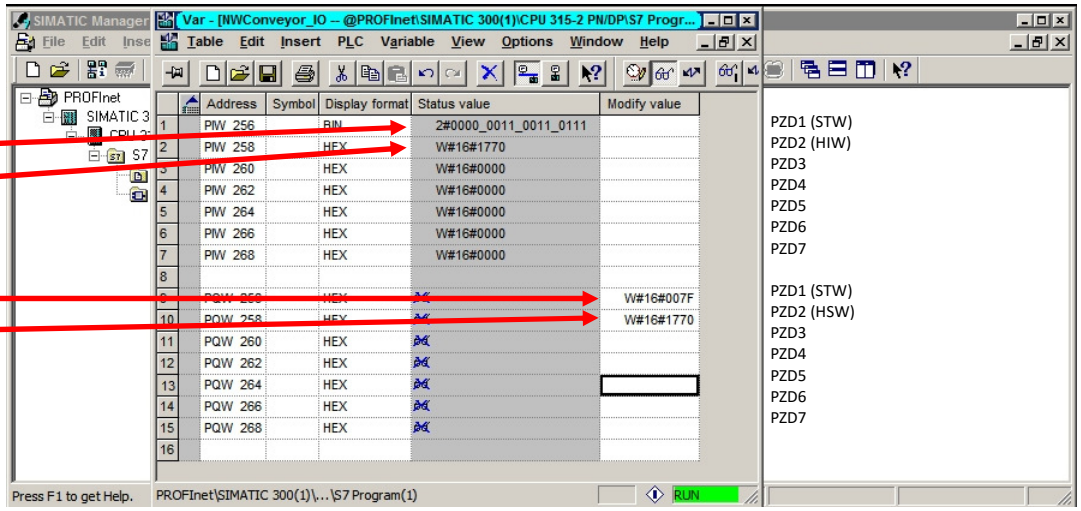

Figure 28 -- Enter PROFIdrive Control Values

[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 Word[2]
Reference Frequency

Write
Control Word[2]
Frequency reference

Press F9 to Write
Modified Values
To the Drive

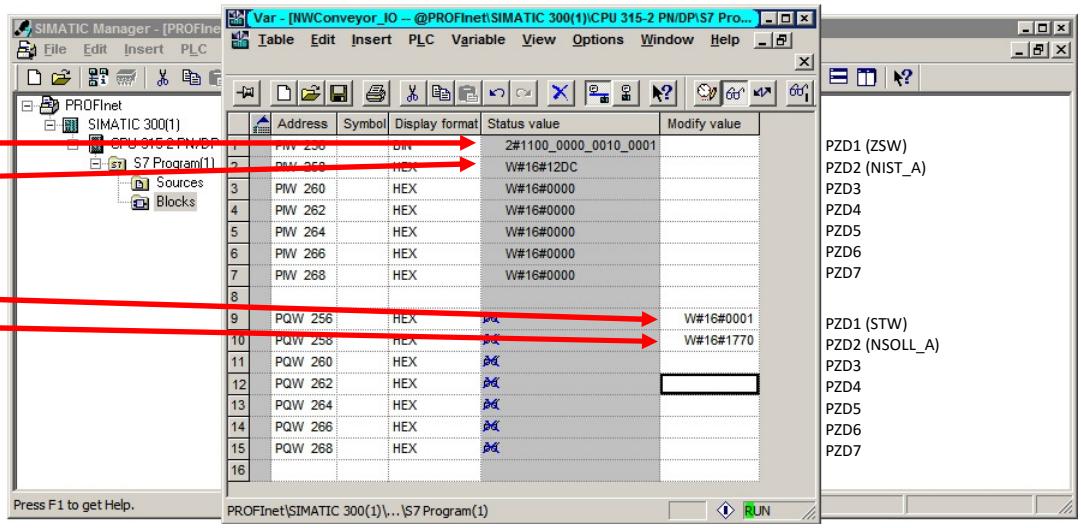

Figure 29 -- Enter Yaskawa Control Values

[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)

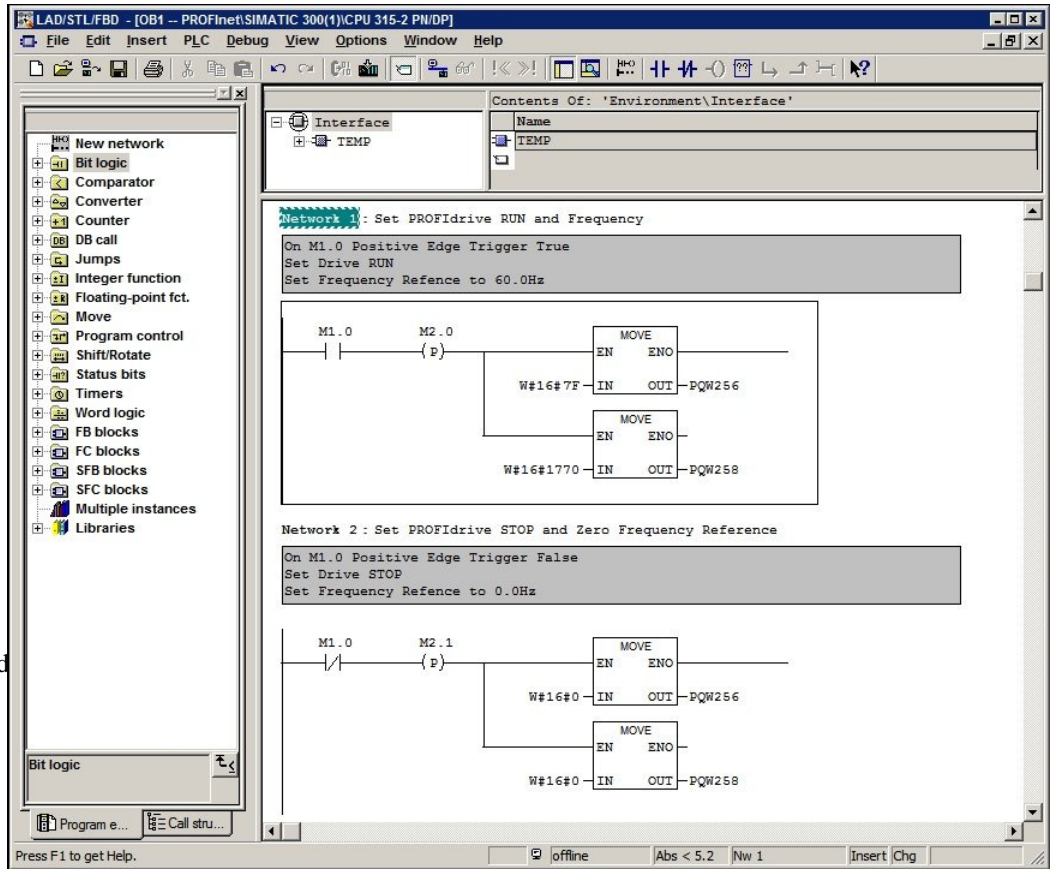

Figure 30 – Basic Drive Control Program

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

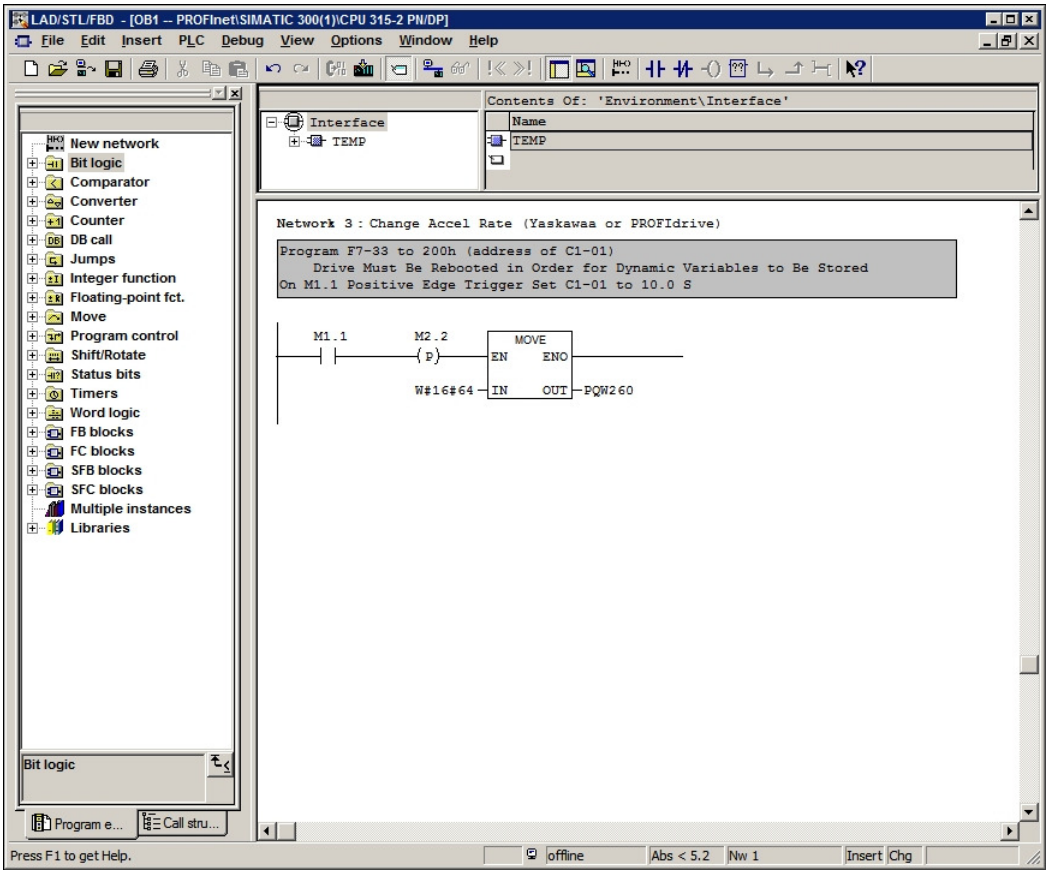

Figure 31 – Control Acc Rate

Notes