OPERATOR INTERFACE PRODUCTS APPLICATION NOTE

Subject: Using Profibus on Design Studio 34XX-PE AN1095
Date: 3/22/2001
Name: Paul L. Comstock

Description: Design Studio 34XX-PE total Procedure for Profibus to Siemens S7 PLC

Profibus

- PLC Setup
- Hardware setup, jumper settings and SYCON configuration.

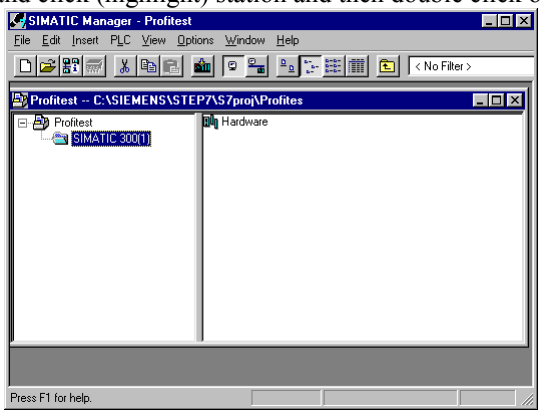
Design Studio driver configuration and I/O sheet setup.

PLC Setup

Needed: Siemens Simatic Software Step 7 v5.0
Siemens CPU model # 315-2AF03-0AB0

After loading software and license and re-booting.

1.) Start the Simatic Manager
2.) Create Project and Insert a Station (300, 400, etc.)
3.) Open up Project and click (highlight) station and then double click on the hardware.



4.) If the Hardware Catalog doesn't open automatically go to View\Catalog to open the Catalog.
5.) Build your PLC system by first selecting a Rack (double clicking will automatically place the components in your system) and then populating it with the power supply, CPU (will need an address, in object properties selectable by right clicking the CPU once placed in the rack) add a Profibus network (insert a DP master system) and any additional I/O modules.

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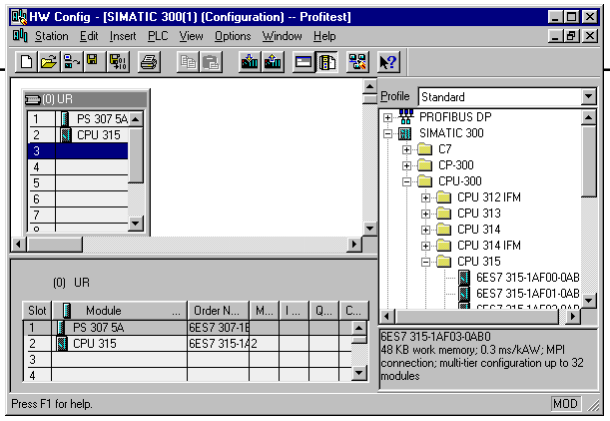
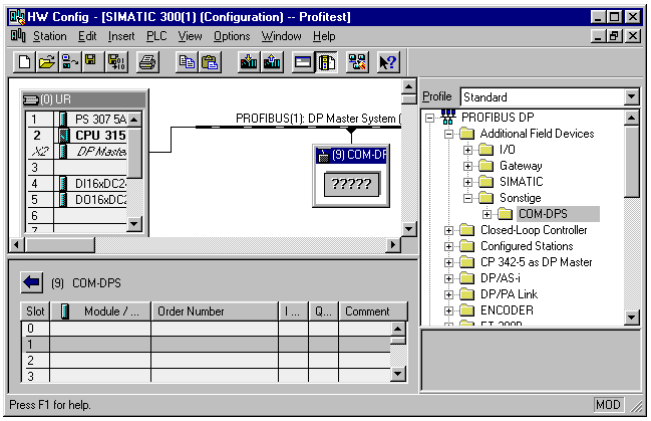


6.) Highlight the COM-DPS (located Profibus\Additional Field Devices\Sonstige\Com-DPS) and drag it onto the cable of the Profibus DP Master system and address it.



7.) Click on the added COM-DPS the available modules are under the COM-DPS in the Hardware Catalog. Select the modules required (and matched, or to be matched to the application). Double clicking them will automatically add them to the COM-DPS (provided the corresponding slot is also highlighted).

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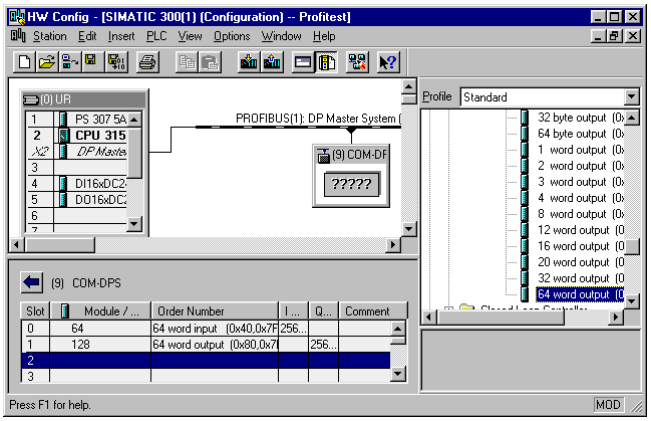
8.) The addressing in the COM-DPS sheet is where these modules will live in the PLC. The module in Slot 0 will directly correspond to the first module in the SYCON configuration and these module selections should match one for one (see next section).



9.) All that is left to do is to add some logic. A timer or two that can have the preset value written to and accumulator read from are adequate for initial testing.

Hardware Setup, Jumper Settings and SYCON configuration.

1.) The PC104 adapter card with the COM-DPS module has address jumpers A19 through A12 set the address (the lower address lines are not looked at and are assumed zero), where the jumpers are equal a low address line and where they are absent a high address line. They come from the factory addressed for D0000. (A19off-A18off-A17on-A16off-A15on-A14on-A13on-A12on, this equals 1101 0000).
2.) The jumpers labled FB0-FB3 are for configuring the adapter card to the module, primarily so the indicator lights indicate correctly. For the DPS module FB1 and FB2 require jumpers.
3.) The next block of three jumpers, J5,RST,2K require a jumper only on the middle RST.
4.) Do not put any interrupt jumpers on IRQ3 through 15.
5.) Once the card is properly jumpered install it into the 34XX unit with the appropiate hardware and power up the unit.

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6.) There are two steps to enabling the DPS card. The first is the SYCON I/O configuration. And down loading the SYCON files to the CE box (only necessary on early versions of the CE image, the files are pre-loaded on current images).
7.) The second of the two steps to enabling the DPS card is addressing in Windows CE so it will know that D0000 is the address to find the card at. This is done on the CE box, <ALT><TAB> will bring up the Task Manager. End any tasks by highlighting them and pressing <ALT><E>.
8.) Again press <ALT><TAB> to bring up the Task Manager and then <ALT><R> to Run and <ALT><B> to Browse. Type \disk\sycon and then tab to and highlight the file Drvsetup.exe. Press enter to select it and enter again to run it.
9.) Once the CIF Device Driver Setup comes up select Registry (press <ALT><R>) and select "Create ISA default entries". Then select "Create ISA entries".
10.) Next select "ISA bus" (<ALT><I>) and then "Board Select" for Board 0's Memory base address enter D0000 and 2 Kbyte for the Memory size. Press enter and enter again to exit the Driver setup. Note: once you have a configuration(export.dbm) file you will have to access the CIF Device Driver Setup again to download it.
11.) Next you must go into the Control Panel and save the Registry in order for these configurations to be saved, otherwise they will be lost on the next power cycle. Again press <ALT><TAB> to bring up the Task Manager and then <ALT><R> to Run and type Control and press enter.
12.) Once in the Control Panel choose Save Registry and Save the Registry. Your hardware is now configured to Windows CE, although the card itself has no I/O configured.
13.) To configure the I/O this must be done on your development system by running the Sycon System Configurator – SYCON. In File select New and select the fieldbus "Profibus".
14.) Next insert a Master, which master isn't critical I picked COM-DPM/PKV20-DPM.

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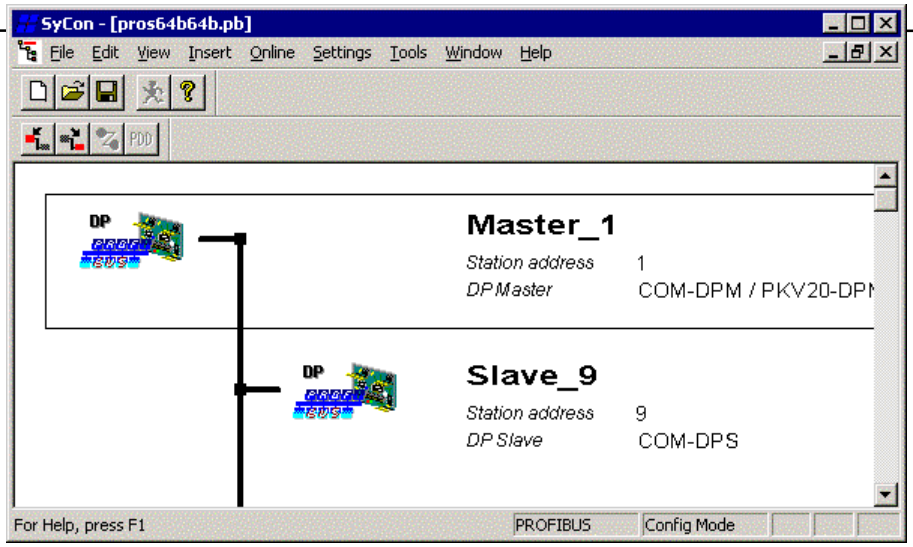

15.) Next click off the master to move the border box down to an open spot on the Profibus network. Then Insert a Slave, choose COM-DPS, add it and enter the address that you will use for it here and in addressing it in the PLC program.

16.) Right click on the slave (COM-DPS) and select "Slave Configuration". Here is where all the I/O is entered and matched to the HMI (Design Studio) program and to the PLC (S7) logic\program. These modules have to exactly match the modules in the PLC configuration, same ones, same order.

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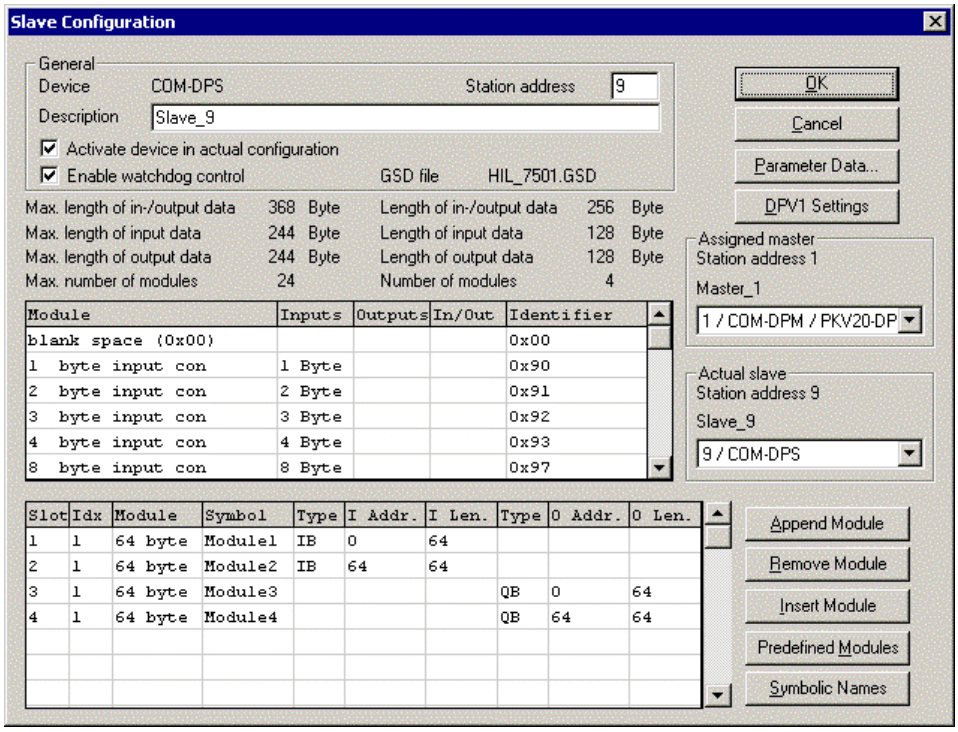

17.) Once the configuration of the modules are setup correctly save your work, I like to name it something that identifies the I/O configured (i.e. 64QW64IW.pb). Then select File \ Export \ DBM and you should get a dialog box telling you where the *.DBM file went. Typically it goes into the Program Files\ Synergetic\ Sycon\ Project folder. This file needs to go to the CE box so remember where it is or copy it to your Design Studio project folder. Exit SYCON.

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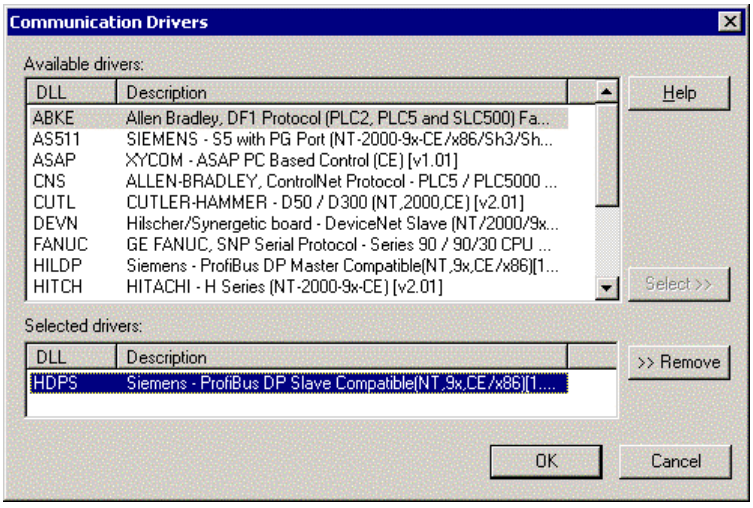
Design Studio driver configuration and I/O sheet setup.

1.) Open a new (empty) Design Studio application. In the Comm tab, right click the Driver folder and in Add/Remove drivers add the DLL HDPS (description Siemens Profibus DP Slave Compatible(NT,9X,CE/x86)[1.02]).



2.) The HDPS driver folder will have a Main Driver Sheet, open it by double clicking on it.

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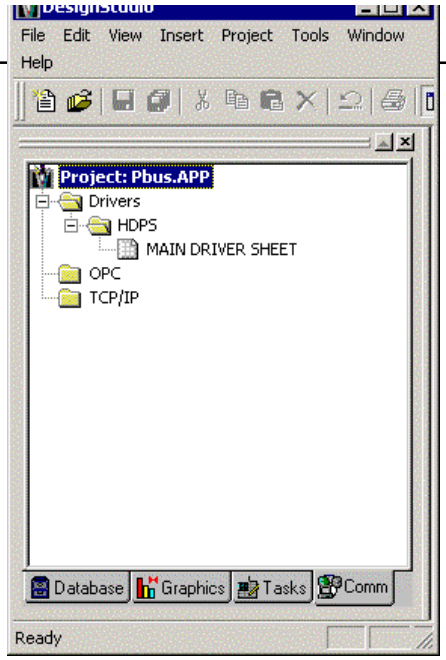

3.) Tag Name, Station, I/O Address, Action, and Scan are the only necessary fields. The Tag Name is obviously the Design Studio tag, The station will be 0 in most cases. The I/O Address is referenced from zero as the first word or byte configured in SYCON and then sequentially on up each module stacked directly after the previous one of the same Read or Write (Reading a word designates an input, writing designates an output). The Action will be Read for inputs and Write for outputs. The Scan is Screen or Always, Screen being tags that only need updates when viewed (on a screen that they are in), Always is for tags that are used in scripts that may not be on the displayed screen requiring the result of that tag value.

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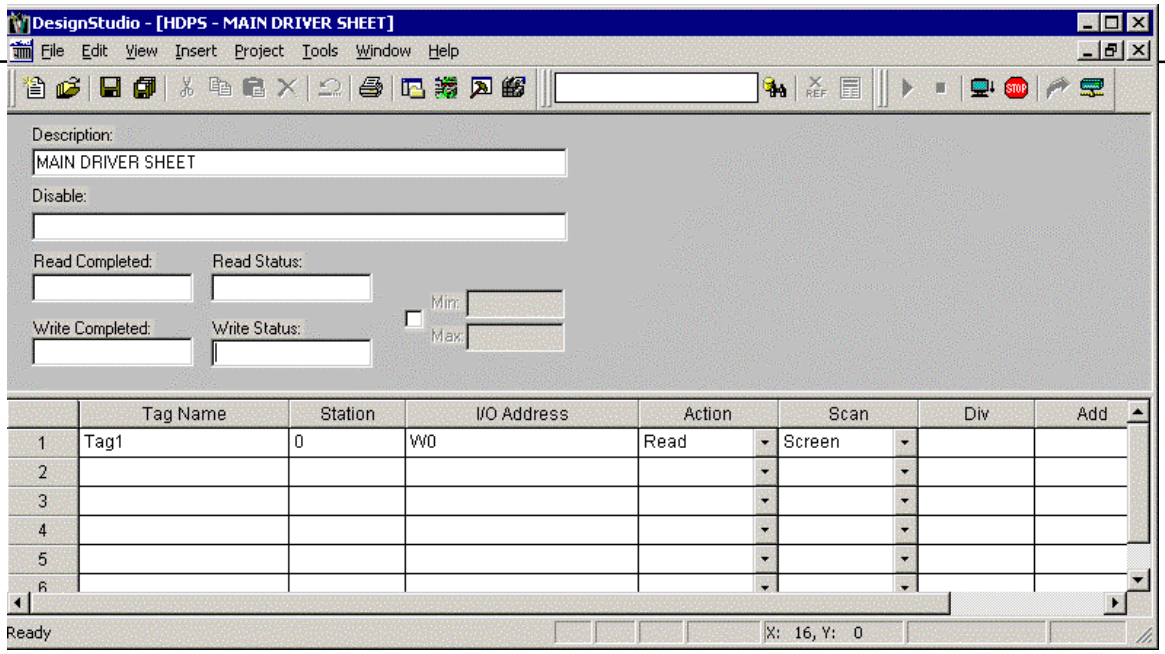

4.) When the Driver sheet is complete and the rest of the application is ready it can be downloaded as any other application, although the *.DBM file that was generated in the SYCON configurator has to be sent. In the Execution Environment on the Application tab select Send File… Then browse to where the saved *.dbm file is and when that is selected then direct the target to the Sycon folder on the CE box.
5.) Back on the CE box press <ALT><TAB> to bring up the Task Manager and then <ALT><R> to Run and <ALT><B> to Browse. Type \disk\sycon and then tab to and highlight the file Drvsetup.exe. Press enter to select it and enter again to run it.
6.) This time select Download (<ALT><D>) and Firmware/Configuration. Arrow over and up to the board selection for Board 0. Then tab back to Configuration Download and press enter.
7.) You will have to browse to or give the path and file name of the previously sent *.dbm file. Once a file to download is selected you will be asked to confirm the downloading of the file and to make sure that all programs accessing the Profibus board have been stopped. Press enter and a dialog box will appear with the status, hopefully informing “download successful!”
8.) The unit is now ready to test.