

**2577**

**PROFIBUS SLAVE MODULE  
INSTALLATION AND OPERATION GUIDE  
Version 1.1**

CTI Part # 062-00316-011



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**REVISION HISTORY**

Version 1.0	9/19/00	Original Release
Version 1.1	12/2/00	Added note to ensure latest version of Step 7 or Comm Profibus is used to configure module. Added example to configure module with SIMATIC® 505 PLC as a master.



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## ***PREFACE***

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This ***Installation and Operation Guide*** provides installation and operation instructions for the CTI 2577. The information in this manual is directed to individuals who will be installing, maintaining, and troubleshooting the module.

This manual assumes that you are familiar with the installation and operation of SIMATIC® 505 programmable controllers. Please refer to the appropriate SIMATIC® user documentation for specific information on SIMATIC® 505 programmable controllers and I/O modules. It also assumes that you are familiar with installing and configuring Profibus DP networks.



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## **USAGE CONVENTIONS**

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**NOTE:**

*Notes alert the user to special features or procedures.*

**CAUTION:**

*Cautions alert the user to procedures that could damage equipment.*

**WARNING:**

**Warnings alert the user to procedures that could damage equipment and endanger the user.**





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## CHAPTER 1. OVERVIEW

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### 1.1. Product Summary



*Figure 1. 2577 Profibus Slave*

The CTI 2577 Profibus Slave Module enables a Siemens® S7 (or any controller that supports Profibus DP) to access SIMATIC® 505 PLC memory as standard analog I/O. Using the 2577 module, the SIMATIC® 505 PLC appears as a standard I/O drop on the Profibus network. Thus, installed 505 systems, including those using Special Function modules, can be easily integrated into a network with Siemens® S7 controllers.

The 2577 module enables the Profibus controller to read and write SIMATIC® 505 memory blocks of up to 110 words each. The block sizes, memory types, and memory addresses are configurable using standard software such as Step 7 or Com Profibus. The module supports reading and writing SIMATIC® 505 V and C memory. In addition, X and WX memory may be read via Profibus.

The Slave ID is set by a switch block on the module. No PLC logic is required to configure or start up the module; however, a small amount of logic may be required to copy data between selected I/O elements and the blocks used for Profibus access.

The module provides one Profibus port capable of supporting Profibus baud rates up to 12Mb. The baud rate is automatically detected and set by the module at startup. The module has one serial port, which is used for diagnostic activities and upgrading module software stored in flash memory.

The SIMATIC® 505 PLC update is asynchronous to the Profibus scan. The module will transfer data between the Profibus buffers and PLC memory using high-speed block transfer (pseudo-DMA) at an interval that is dependent on the 505 PLC scan time. This design allows the SIMATIC® 505 PLC scan time to vary without affecting update time of the Profibus network.



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## CHAPTER 2. INSTALLATION

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The installation of the module consists of the following steps:

1. Planning the installation,
2. Unpacking and configuring the module,
3. Setting the Profibus slave address,
4. Physical installation,
5. Configuring the SIMATIC® 505 PLC I/O,
6. Profibus Configuration.

### 2.1. Installation Planning

You should ensure that you have adequate space and power available for the module. The 2577 module is a single-wide module that draws 6 watts at 5 VDC from the backplane. Multiple 2577 modules may be installed in the same rack, subject to space and power supply limitations. The 2577 module should be installed in the local base for best performance. It may be installed in a remote base using 505 remote I/O communications. Installation in remote bases using Profibus DP is not supported, since this I/O link does not allow Special Function modules.

*Note:*

*Installation in remote bases will extend the PLC scan time. If you choose to use the module in a remote base, you should ensure that the scan time increase does not adversely affect the control system.*

As part of the installation procedure, you must set the Profibus Slave address of the module. The address must be unique among all nodes on the network. You will also need to include the module in the Profibus network configuration using Step 7 or Com Profibus software. A copy of the module GSD file is included with each module. It may also be downloaded from the CTI web site at <http://www.controltechnology.com>.

The module allows the Profibus master to read and write blocks of SIMATIC® 505 memory. You will need to specify the type of memory to be accessed, the size of the data blocks, and the starting location of each memory block using the Profibus software. The Profibus master may read V, WX, Discrete Input (X), and Control Relay (C) memory and write either V memory or Control Relay memory. The master may access up to 110 words of V or WX memory and up to 16 words (256 bits) of X or C memory.

**Warning:**

**Your control system design should ensure that outputs affected by the Profibus master are set to a fail-safe condition in the event that the connection to the master is interrupted. The 2577 module provides a status bit that indicates when the Profibus network is Offline. See Module Status Word described in Chapter 3.**

## 2.2. Unpacking the Module

Open the shipping carton and remove the special anti-static bag that contains the module. After discharging any static build-up, remove the module from the static bag. Do not discard the static bag. Always use this bag for protection against static damage when the module is not inserted into the I/O base.

### **CAUTION:**

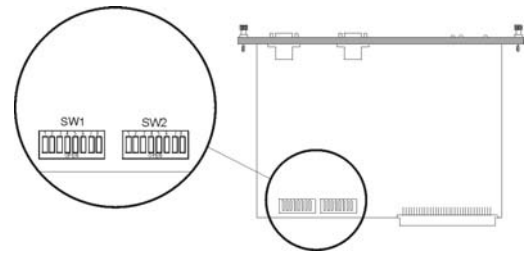
*The components on the 2577 module can be damaged by static electricity discharge. To prevent this damage, the module is shipped in a special anti-static bag. Static control precautions should be followed when removing the module from the bag and when handling the printed circuit card during configuration.*

## 2.3. Setting the Profibus Slave Address

Switchblock 1 (SW1) on the module is used to set the slave address. See figure 2 for the location of SW1. The switches on SW1 are weighted as follows:

Switch	1	2	3	4	5	6	7	8
Weight	NA	64	32	16	8	4	2	1

To set the address, set the appropriate switches on SW1 to the closed position so that the weighted total equals the address. For example, to set Profibus address 26, set switches 4, 5, and 7 to the closed position ( $16+8+2 = 26$ ). See the Profibus Address Table in Appendix B.



*Figure 2. Profibus Address Switchblock*

## 2.4. Physical Installation

### Inserting the Module into the I/O Base

Ensure that power to the base is off. Hold the top and bottom of the bezel and slide the module carefully into the slot, pushing it all the way into the base. If you have inserted the module correctly, you will feel a slight increase in resistance as the module mates with the base backplane connector. Once the module is fully seated in the slot, tighten the captive screws at the top and bottom to hold the module in place. To remove the module from the I/O base, remove power from the base, loosen the captive screws, and then remove the module. Take care not to damage the connector at the back of the module when inserting or removing the module.

### Connecting to the Profibus Network

Connect your Profibus network cable connector to the module Profibus connector and secure by tightening the retaining screws. Ensure that the termination switch in the network cable connector is set to the proper termination position.



## Apply Power

After you apply power to the base, the ACTIVE indicator will flash. The ACTIVE indicator will remain flashing until the module is online with the Profibus master. Once the module is online, the ACTIVE indicator will be on solid and the Profibus XMT and RCV should illuminate. See Chapter 3 for a description of the module LEDs.

## 2.5. Configuring the SIMATIC® 505 PLC I/O

The 2577 logs in as a Special Function module with 2 WX and 6 WY words. To view the PLC I/O configuration chart, refer to your SIMATIC® 505 programming software manual. For the particular slot that contains the module, ensure that the slot entry indicates 2 WX and 6 WY and that Special Function = Yes. Set the module address to match your specific 505 PLC requirements. If the module does not appear in the I/O configuration after you read the base, try re-seating the module and re-reading the base. If the problem persists, contact your distributor or CTI.

The following example shows the 2577 module is installed in slot 1 on I/O base 0 starting at address WX9.

```
I/O MODULE DEFINITION FOR CHANNEL . . . 1  BASE . . . . . 00
```

I/O SLOT	ADDRESS	NUMBER OF BIT		AND WORD I/O		SPECIAL FUNCTION
		X	Y	WX	WY	
01	00009	00	00	02	06	YES
02	00000	00	00	00	00	NO
..	.....	..	..	..	..	..
15	00000	00	00	00	00	NO
16	00000	00	00	00	00	NO

Figure 3. Sample I/O Configuration

## 2.6. Profibus Configuration

The module may be configured using standard Profibus configuration software such as COM Profibus or Step 7. See Chapter 4 for a detailed example using Step 7 software.

*Note:*

*Before attempting to configure the module using Step 7 or Comm Profibus, make sure that you have the latest version of the program. Step 7- Release 5- Service Pack 2 or earlier and Comm Profibus- Release 3.3 and earlier do not handle 32 bit parameter values correctly. Using these versions with the 2577 will create incorrect values for Input and Output addresses. Under most circumstances, the 2577 will reject the configuration and fail to go on-line.*

Using the Profibus configuration software, you will need to perform the following steps:

- Install the GSD file in the software. The 2577 GSD file is included with the product and is available for download from the CTI web site.
- Add the 2577 module to the Profibus network configuration.
- Configure the 2577 module I/O word size by picking a module configuration that suits your application. Configurations supported include 1 in/1 out, 2 in/2 out, 4 in /4 out, 8 in/8 out, 16 in/16 out, 32 in/32 out, 64 in/64 out, and 110 in/110 out.

- Select the Profibus Address that will be used by the module.
- Select the module parameters
  - **Input Data Type:** Select V, WX, X, or C. (X and C are available for sizes 1, 2, 4, 8, or 16 only).
  - **Input Address:** Enter the address of the 505 PLC memory block that will be **read** by the Profibus controller.
  - **Output Data Type:** Select V or C (C is available for sizes 1, 2, 4, 8, or 16 only).
  - **Output Address:** Select the address of the 505 PLC memory block that will be **written** by the Profibus controller.
- Download the configuration to the Profibus master.

*Note:*  
 Make sure that the address you select is actually available on the SIMATIC® 505 PLC. If an address within the block is out of range, the Profibus master will not read data from or write data to the SIMATIC® 505 PLC.

**Caution:**  
 The entire block of data words with the starting address and size you selected in I/O size will be written by the Profibus controller. Make sure that you are not inadvertently overwriting data used for other SIMATIC® 505 PLC functions.

## 2.7. Word Format – X Packed and C Packed

When you select access to the SIMATIC® PLC 505 X and C memory locations, the values are packed within a word rather than formatted as individual bits. The following indicates how the bits are positioned in each word. Assume that the starting X or C address is 1.

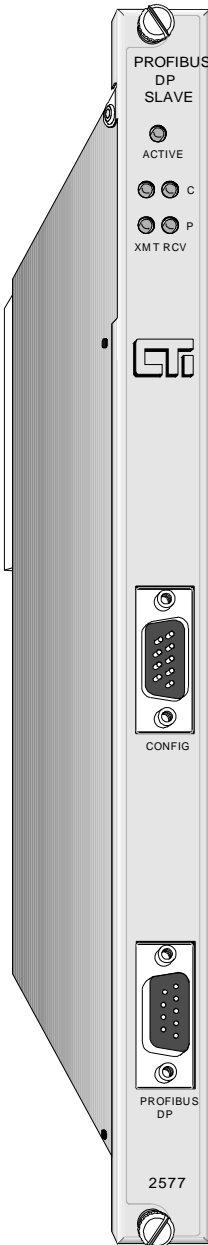
Bit Position	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
C Number X Number	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

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## CHAPTER 3. OPERATION

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### 3.1. Module Front Panel



#### Active Indicator

The Active LED is used to indicate general module status.

LED State	Description
Off	No Power / Not Started
Blinking (1Hz)	Not Operational. The Profibus Master is not updating PLC memory.
On Solid	Operational. The Profibus master is updating PLC memory.
Blinking (3 short pulses)	Program loader in control. This occurs while downloading a new program to flash.

#### XMT and RCV Indicators

There are two pairs of XMT and RCV indicators, one pair for the configuration port and one pair for the Profibus port. These LEDs illuminate when a signal is present. The XMT LED will light when output is sent from the module; the RCV LED will illuminate when a signal is received.

#### Configuration Port

The CONFIG port is an RS-232 serial interface used for downloading new software to the module flash memory and for performing diagnostic functions. CTI supplies PC software for performing these functions. A standard SIMATIC® 505 PLC programming cable will work with this port. The port parameters are fixed: Baud Rate = 19200, Parity = None, Data Bits = 8, Stop Bits = 1.

#### Profibus Port

The Profibus port accommodates standard Profibus connectors. Termination, if required, must be provided by the Profibus connector. The port baud rate is automatically set to match the network. The DP Slave address is set via a switch on the module.

### 3.2. PLC Interface

The module will log-in as 2 WX and 6 WY. The first WX input is the Module Status Word. It contains bits that indicate module status. This information can be used by PLC logic or displayed for troubleshooting analysis. The remaining words are reserved for future use.

Bit	Description	Comments
1	Module Fail	Set on when module detects a fatal error. When this bit is set, bits 9-16 will contain an 8 bit error code.
2	Reserved	Not used.
3	Profibus Static Error *	Set by the module to indicate that it is not accepting updates from the Profibus master.
4	Profibus Offline *	Indicates the Profibus master has not established I/O communications with the module.
5	Profibus Parm Error	Set if Profibus Parameterization Error is detected.
6	PLC Transfer Err	Set if an error is encountered accessing the PLC memory. This error is typically caused by a Profibus configuration that causes the Profibus Master to attempt to access a memory address that is not in the SIMATIC® 505 PLC address range.
7 - 8	Reserved	Not used.
9-12	Fatal Error Code	High Nibble of fatal error code is contained here if bit 1 is set.
13–16	Module Counter or Fatal Error Code	The counter increments approximately once per second and wraps at 0xFF back to 0. Used as an indication that the 2577 software is running. It contains the low nibble of the fatal error code if bit 1 is set.

*\* SIMATIC® PLC logic should monitor these bits. If either bit is set, the PLC memory is not being written or read by the Profibus master.*

### 3.3. Normal Module Startup

After the module has successfully completed power-on self-test (POST), it will flash the module ACTIVE LED and wait for the Profibus master to establish I/O communications. Once the Profibus master begins I/O communications with the 2577 module, the Profibus RCV and XMT indicators will illuminate. If the module is able to access the PLC memory, the ACTIVE LED will go on solid, indicating that the module is operational.

### 3.4. Operational Errors

If the Profibus master is not able to establish I/O communications with the module or there is a problem updating PLC memory, the ACTIVE LED will flash. Refer to *Chapter 5 Troubleshooting* for help in resolving the problem.

*Note:*  
*When the Profibus interface is Offline and the module is able to access the PLC, the SIMATIC® 505 PLC memory locations written to by the Profibus master will be set to 0.*

## CHAPTER 4. APPLICATION EXAMPLE

This chapter illustrates how to properly configure and use the CTI 2577 Profibus DP Slave module. You may choose to use it as an installation guide, changing the parameters to match your application.

### 4.1. Example Assumptions

#### *Profibus Network*

This chapter includes two examples. In the first example, a Siemens® S7 is used as the Profibus master and Step 7 software is used to configure the Profibus network. In the second example, a Siemens® SIMATIC® 505 PLC is used as the Profibus master and COM PROFIBUS software is used to configure the Profibus network. In both cases, the 2577 module is installed in the local rack of the target 505 PLC.

#### *2577 Module Parameters*

The example assumes that the module will be assigned a Profibus Slave address of 2. The module will be configured to allow the S7 to read and write V memory blocks of 32 words. The V memory block to be read will start at V6000. The V memory block to be written will start at V6100.

### 4.2. Setting Up the 2577 Module in the Slave SIMATIC® 505 PLC

#### Setting the Profibus Address

For a Profibus address of 2, set the Profibus address switch as indicated below.

Number	1	2	3	4	5	6	7	8
Weight	N/A	64	32	16	8	4	2	1
Position	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

X = Closed      O = Open.

#### 4.2.1. Configuring the SIMATIC® PLC 505 I/O

Assume that the module is installed in slot 3 of the local base and that the module WX/WY will start at WX17. Using the SIMATIC® 505 PLC programming software read the base to ensure that the module is being read by the PLC as a Special Function module. Then set the I/O starting address to 17.

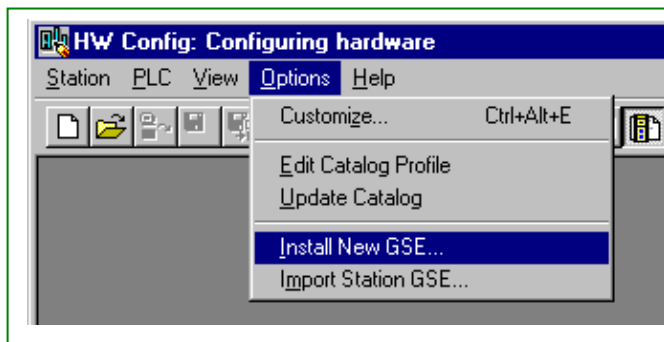
I/O MODULE DEFINITION FOR CHANNEL . . . 1    BASE . . . . . 00

I/O SLOT	ADDRESS	NUMBER OF BIT AND WORD I/O		WX	WY	SPECIAL FUNCTION
		X	Y			
01	00001	08	00	00	00	NO
02	00009	00	08	00	00	NO
03	00017	00	00	02	06	YES
..						
15	00000	00	00	00	00	NO
16	00000	00	00	00	00	NO

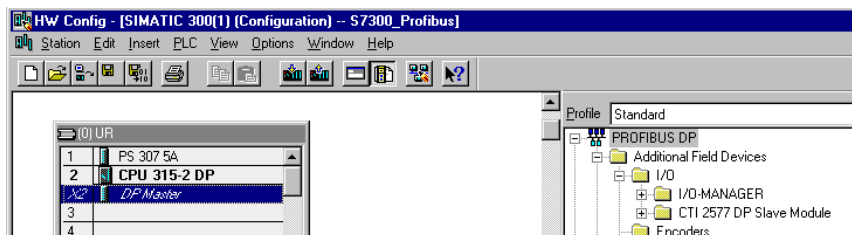
## 4.3. Configuring the Module using Step 7 (S7 Master)

### 4.3.1. Install 2577 GSD file

Locate the diskette containing the 2577 GSD file and insert it in the PC. From the PROJECT screen, select the HARDWARE option under the processor group. This will display the HW CONFIG screen. Select INSTALL NEW GSE under the OPTIONS menu to import the CTI 2577 GSD file. See the illustration below.



The installation process can be checked as follows. In the HW Config screen, enable CATALOG under the VIEW menu so that the entire library of installed Profibus devices can be displayed. If the GSD file for the CTI 2577 module is properly installed, the “CTI 2577 DP Slave Module” is displayed under PROFIBUS DP\ Additional Field Devices\ I/O group as shown below.



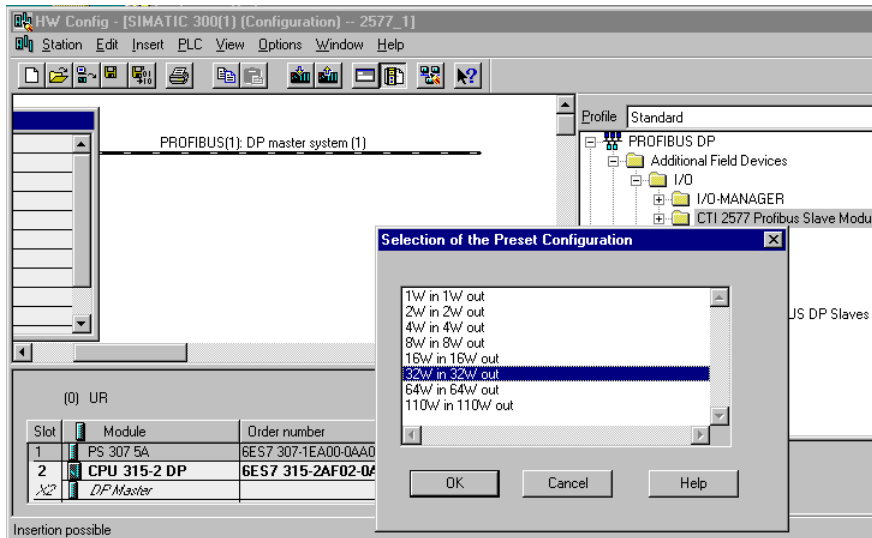
### 4.3.2. Create Profibus network

The Profibus network must be created if it does not already exist. To create the Profibus network, select DP MASTER SYSTEM under INSERT menu on the HW Config screen. The Profibus transmission rate is set via the “Properties” screen.

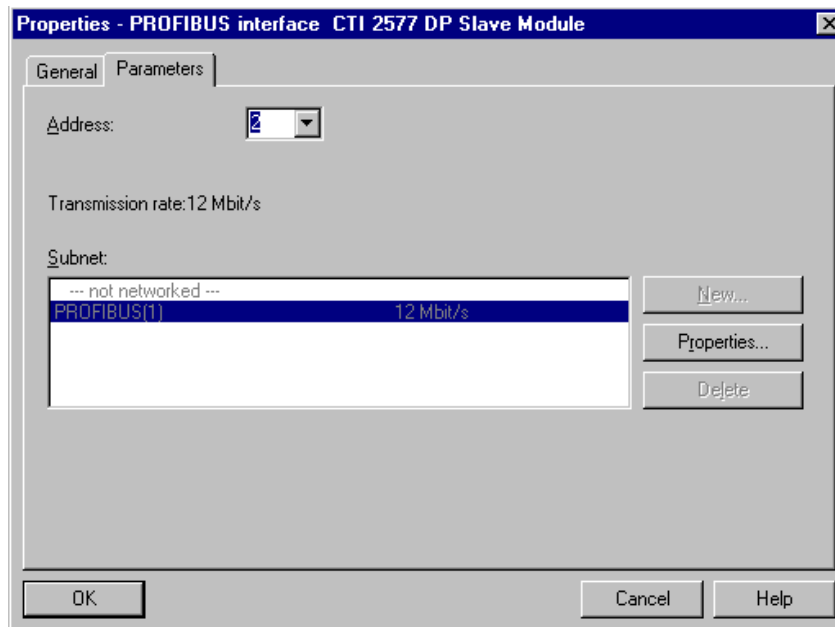


### 4.3.3. Specify module configuration data

Connect the 2577 to the Profibus network by selecting “CTI 2577 DP Slave Module” and dragging the mouse to the Profibus network icon. When the left mouse button is released, the module configuration screen is displayed. This screen allows selection of number of I/O words to access through the 2577. Select **32W In/32W Out** and press the “OK” button. See figure below.

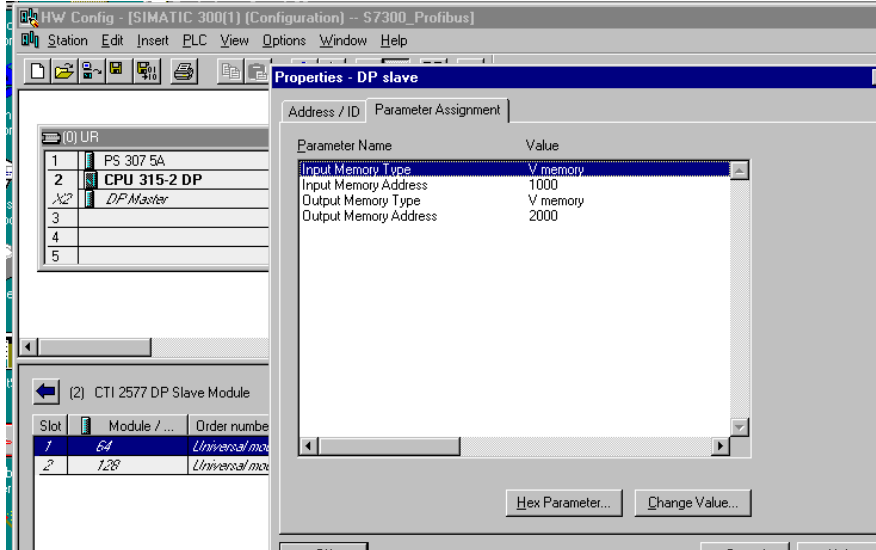


When I/O words are selected, the Profibus Interface screen is displayed. Select the PARAMETERS tab and enter the 2577 Profibus address as shown below.

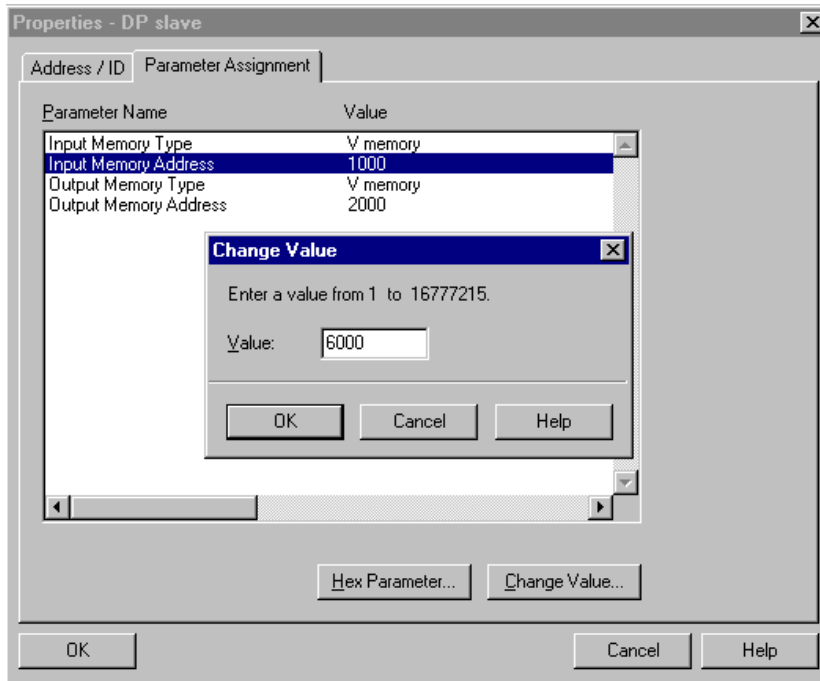


#### 4.3.4. Specify module parameters

Double-click on Slot 1 of CTI 2577 DP Slave Module details to display the module parameters screen. This screen allows user specification of 505 PLC I/O Data Type and memory address.



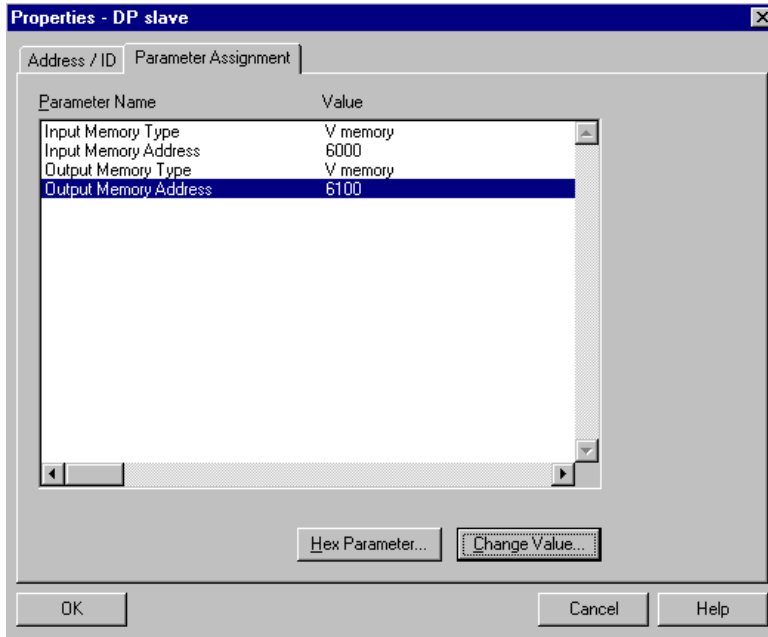
Select "Input Memory Address" and press CHANGE VALUE pushbutton to display the edit screen. Enter "6000" to specify Input data starting at V6000 and press the OK button.





In a similar manner, select OUTPUT MEMORY ADDRESS and select CHANGE VALUE pushbutton to display edit screen for modifying Output address. Enter “6100” to specify Output data starting at V6100 and press the OK button.

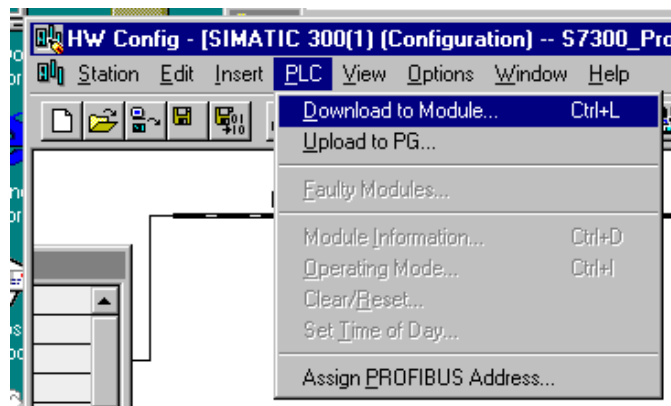
When you have completed the above steps, the module Parameter Assignment tab should display values as shown below.



**NOTE:**  
*If you omit the parameterization step, the 2577 Module will not go Online with the master.*

#### 4.3.5. Save and Download Profibus Configuration

Save new Profibus configuration by selecting “SAVE” under “STATION” menu in HW Config screen. Download the configuration to the S7 by selecting “DOWNLOAD TO MODULE” under the PLC menu item.

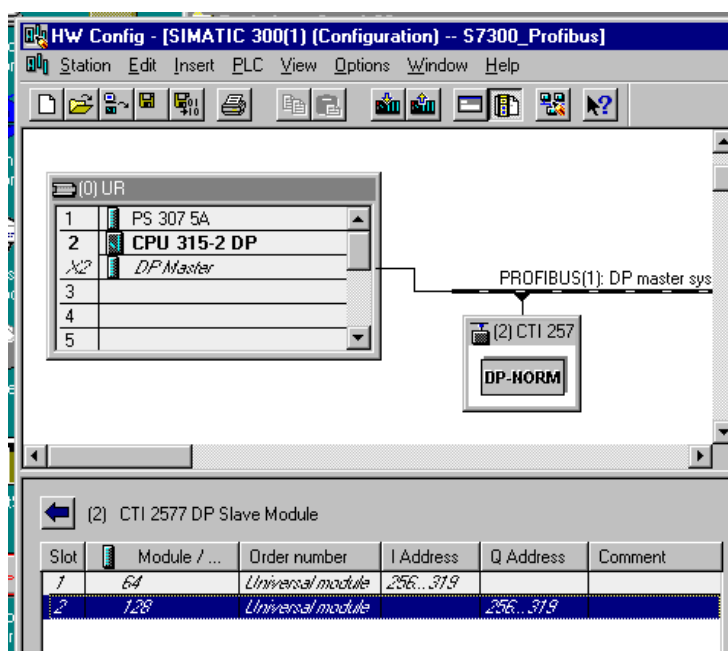


### 4.3.6. S7 I/O Data Access

Step 7 software automatically selects the S7 CPU input/output memory addresses for the 2577 module based on number of I/O words selected in the module configuration. In this example, the S7 2577 memory blocks are assigned the following addresses:

Inputs:	PIW 256-319
Outputs:	PQW 256-319

See figure below.



### 4.3.7. Operation

Once you have completed configuring and downloading the S7 configuration, ensure that you have connected the 2577 module to the Profibus network and applied power to the SIMATIC® 505 PLC rack. Once it has completed startup, the 2577 module ACTIVE LED should begin blinking. As soon as the S7 connects to the 2577 module, the ACTIVE LED will stop flashing and remain on solid.

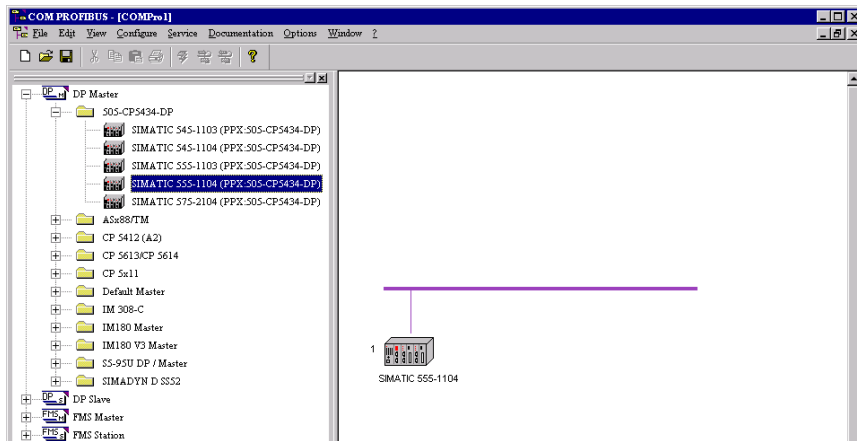
Changes to values in V6000-V6031 should be reflected in the S7 Input words. Changes to the S7 Output words should be reflected in V6100-6131.

## 4.4. Configuring the Module using COM PROFIBUS (505 Master)

The following example shows how to configure the CTI 2577 Profibus module with COM PROFIBUS V5.0. This example is done using a 555-1104 PLC. Before proceeding ensure that you have imported the 2577 GSD file into COM PROFIBUS.

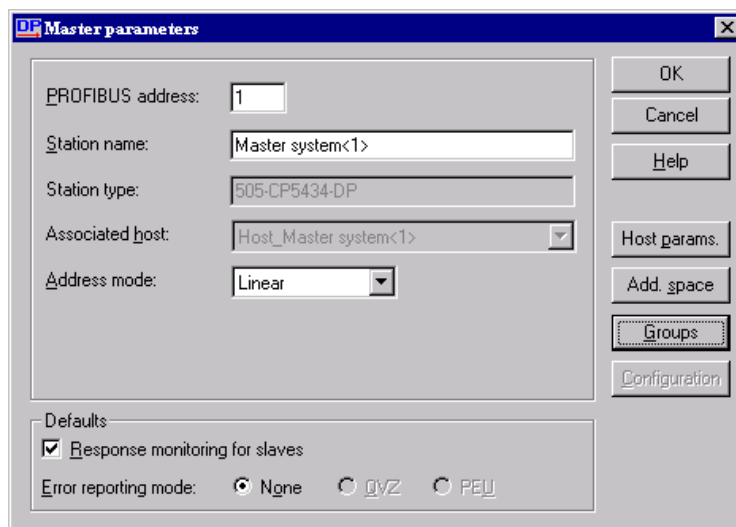
### Select the 505 DP Master

Start COM PROFIBUS. Select DP MASTER, 505-CP5434-DP, SIMATIC® 555-1104. Right click on the SIMATIC® 555-1104 icon and select MASTER PARAMETERS.



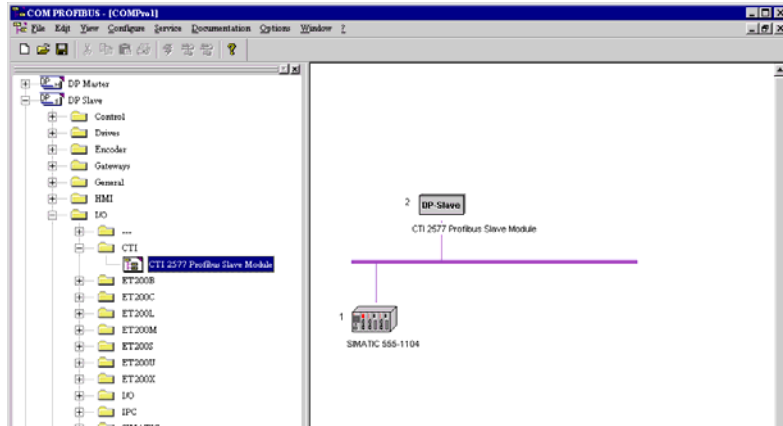
### Select the Profibus address of the SIMATIC® 505 Profibus master module

Assign a Profibus address and select OK



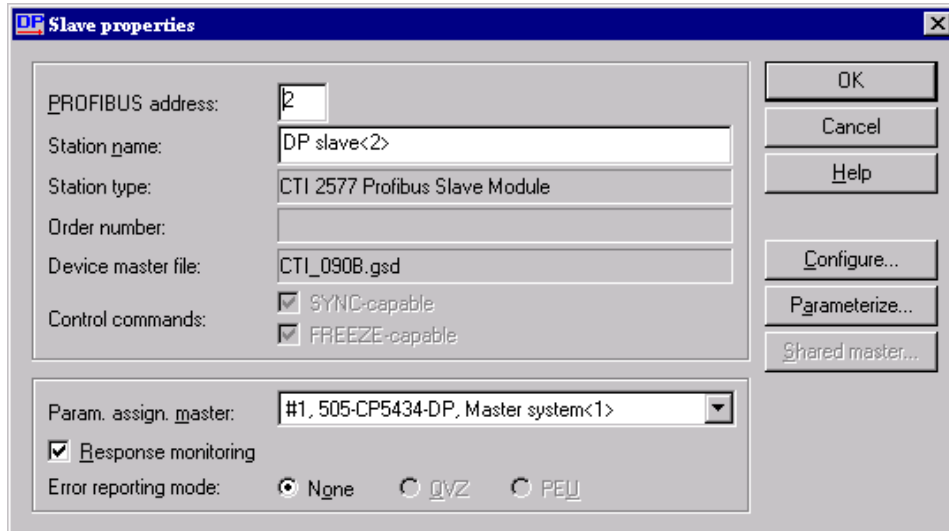
## Add the 2577 slave module to the Profibus Network

Select DP SLAVE, I/O, CTI, CTI 2577 PROFIBUS SLAVE MODULE. (For this selection, you must have already copied the 2577's GSD file into the COM PROFIBUS GSD directory.)



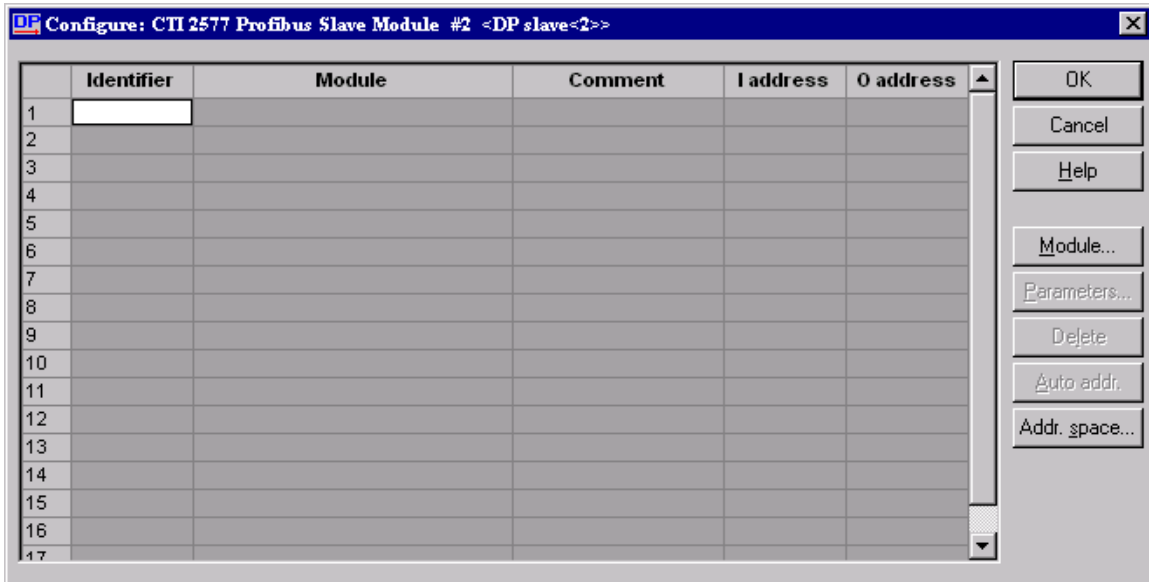
## Select the 2577 module Profibus DP Slave address

Right click on the CTI 2577 Profibus Slave Module icon and select PROPERTIES. Select a Profibus address and then click CONFIGURE.

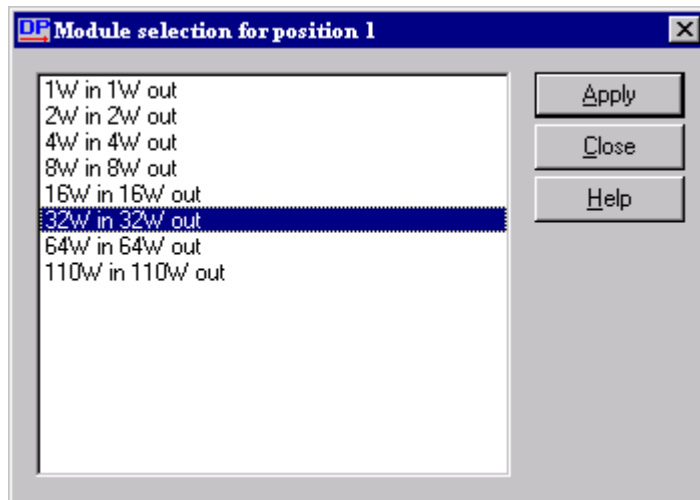


## Configure the 2577 Module Parameters

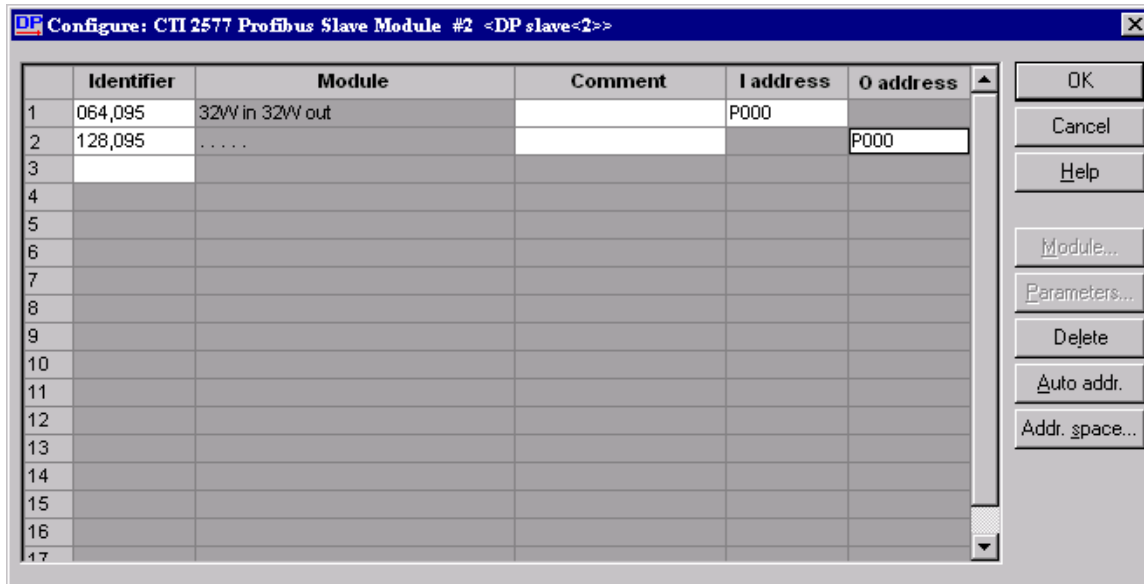
1. In the Configure Window select MODULE.



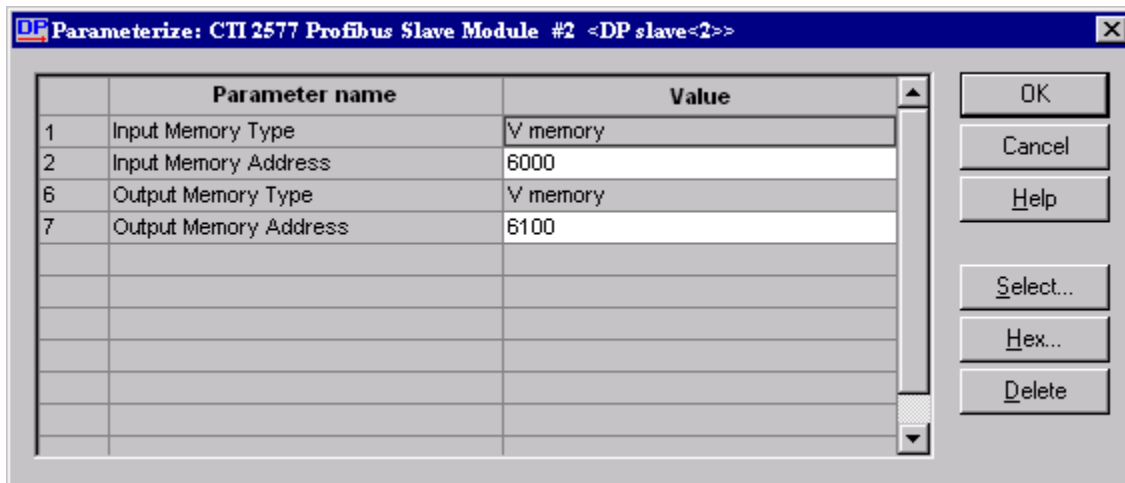
2. Select the number of words you want to input and output and select APPLY. (For this example we are using 32W in 32W out.)



3. Enter the I and O addresses that you want or select AUTO ADDR button. Select PARAMETERS.

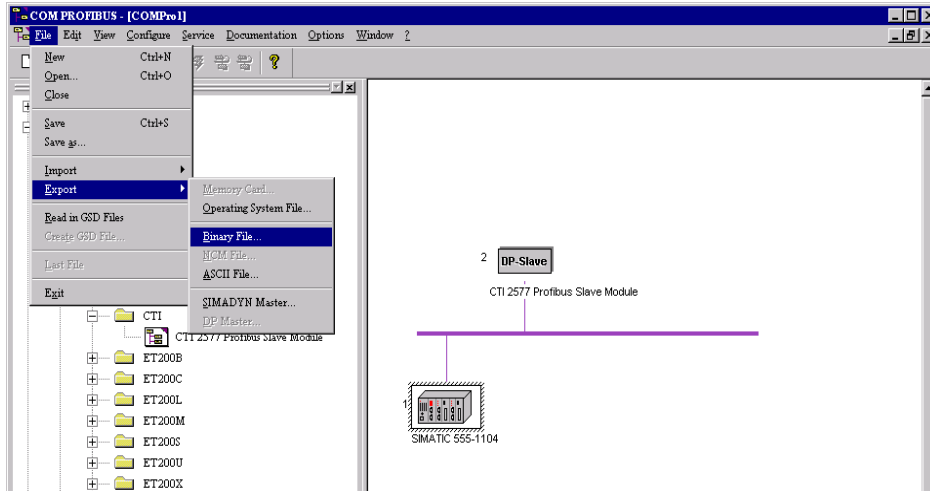


4. In the parameterize Window enter the type of memory and the addresses for your inputs and outputs and select OK.

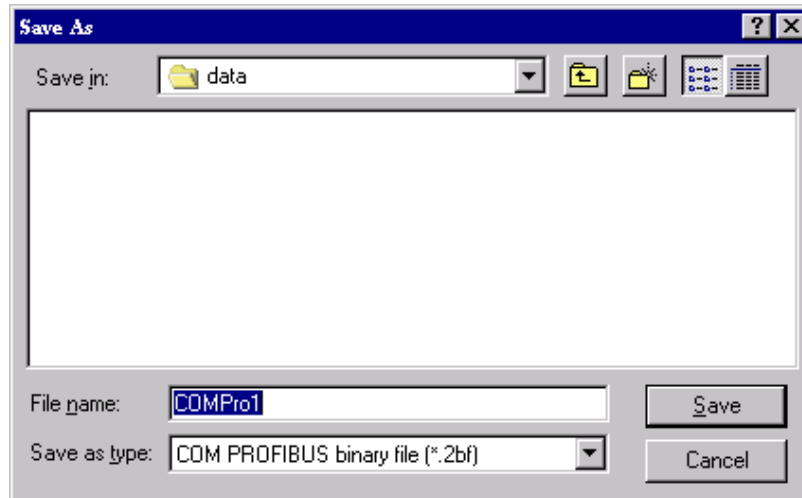


## Export the Configuration File

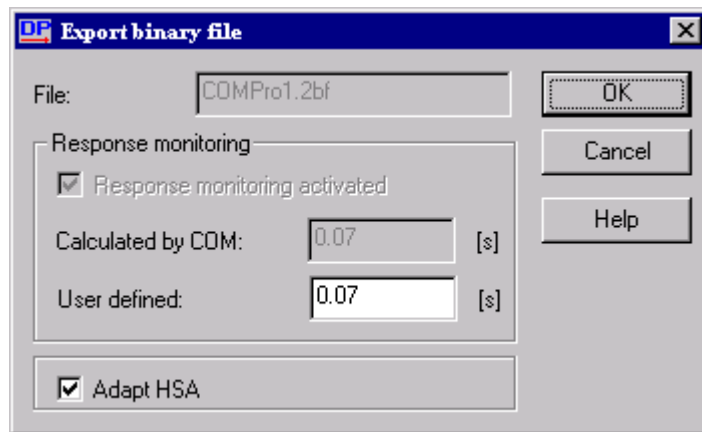
1. Select 'FILE', 'EXPORT', 'BINARY FILE'. (To export a binary you have to have clicked on the SIMATIC® 555-1104 icon.)



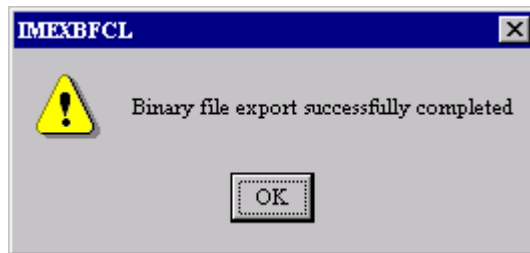
2. Enter a file name for the binary file.



3. Select OK at the export binary file window.



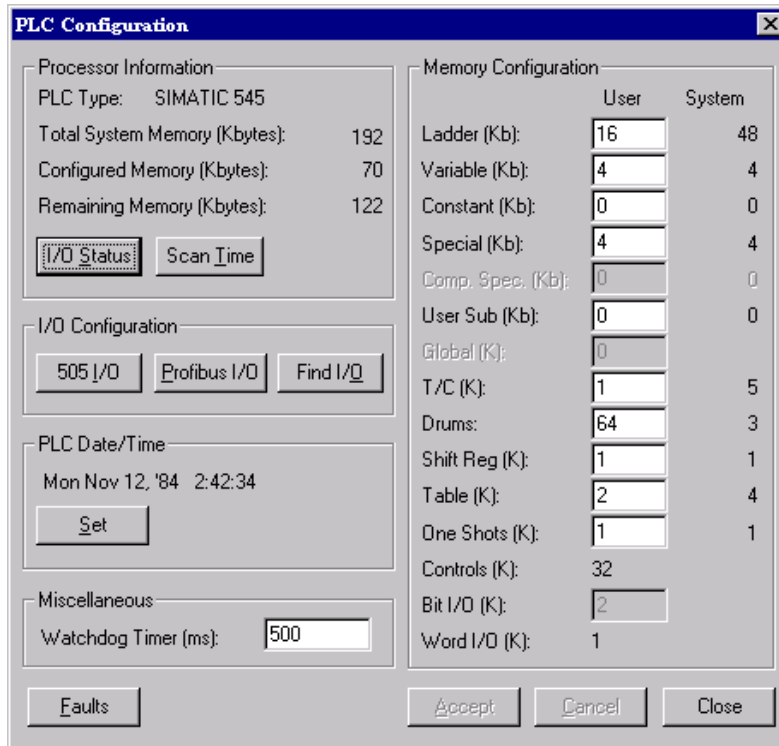
4. You should then see that the Binary file was exported successfully



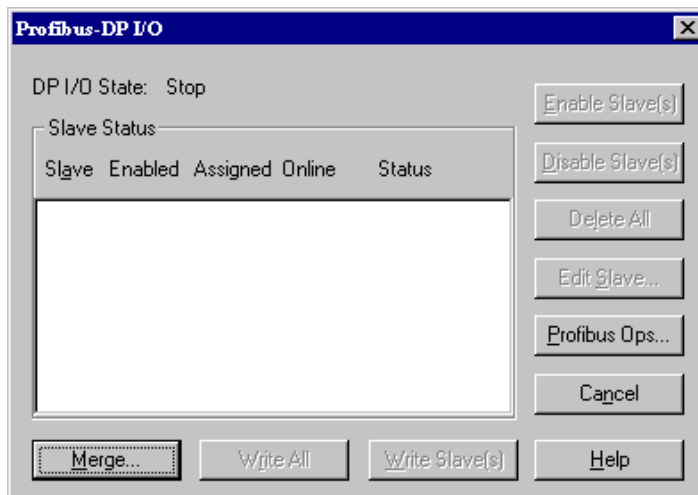


## Configure the SIMATIC® 505 DP Master (PLC WorkShop)

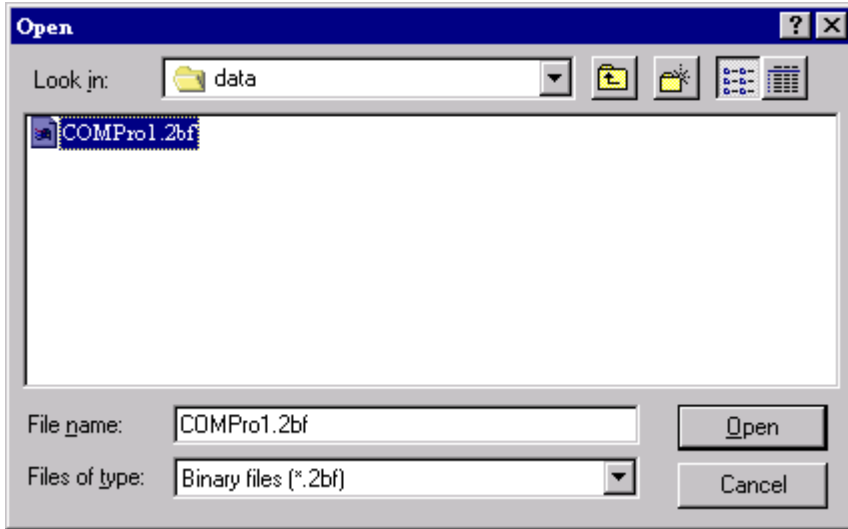
1. Start PLC WorkShop, go online and select PLC UTILITIES', PLC CONFIGURATION.
2. Select PROFIBUS I/O.



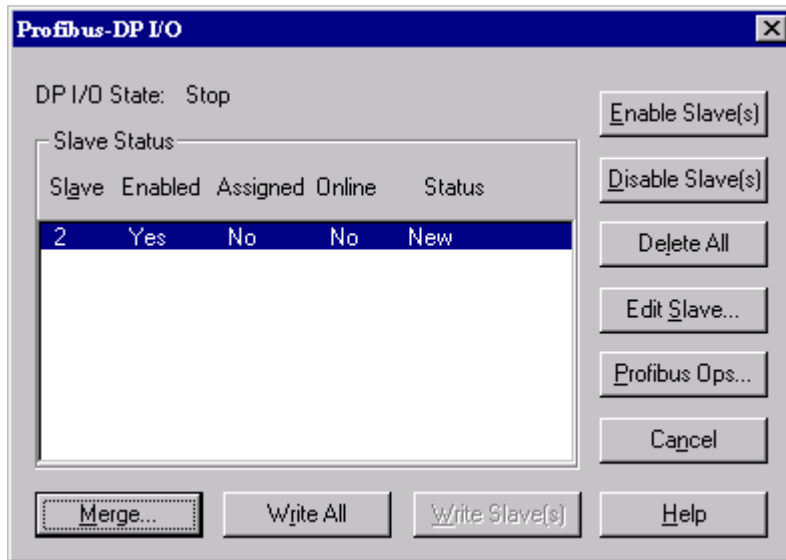
3. Select MERGE.



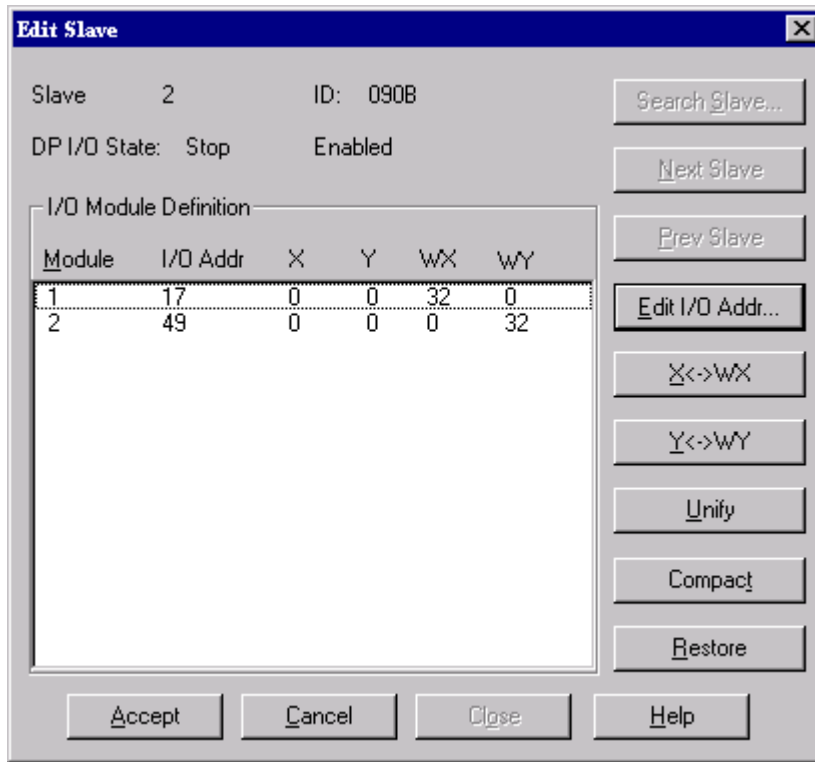
4. Select the Binary File you exported with COM PROFIBUS and select OPEN.



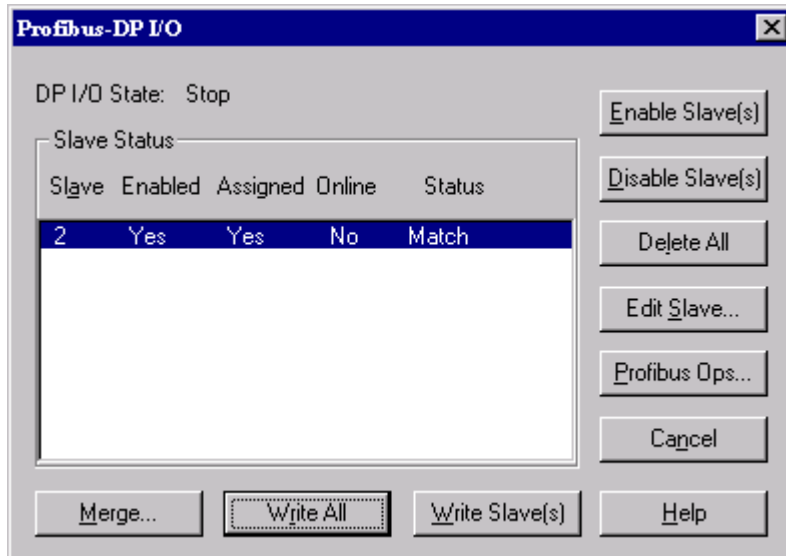
5. Select EDIT SLAVE.



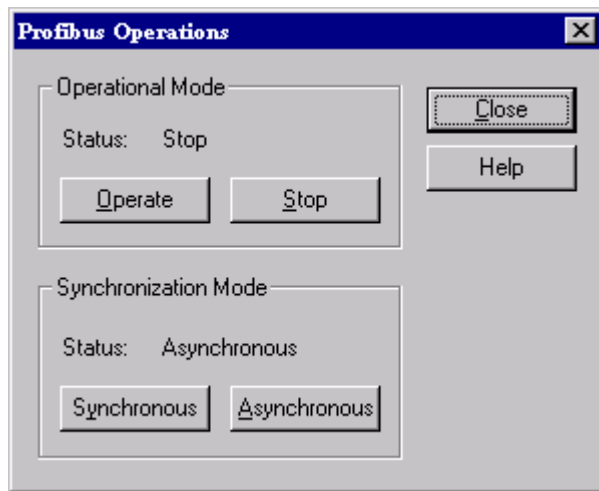
6. Select Edit I/O ADDR... and enter the starting I/O address' you want.
7. Select ACCEPT then CLOSE.



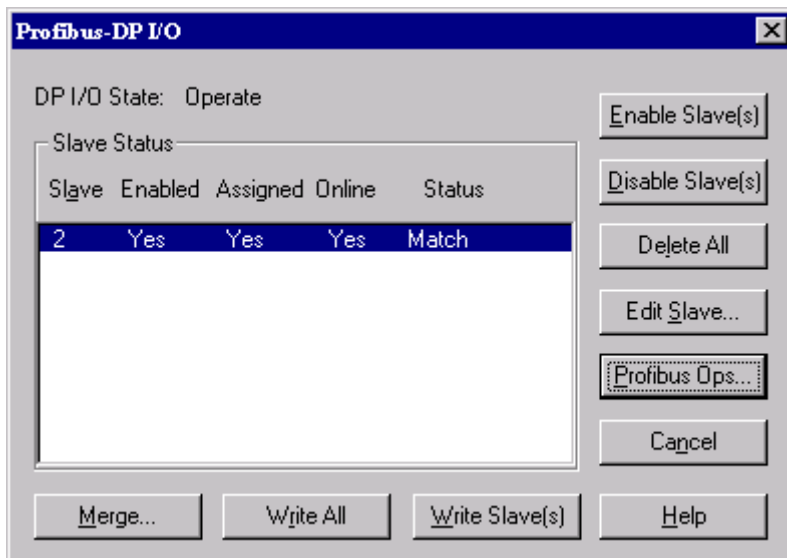
8. Select WRITE ALL. The status column should now say MATCH.
9. Select PROFIBUS OPS...



10. Select OPERATE then CLOSE.

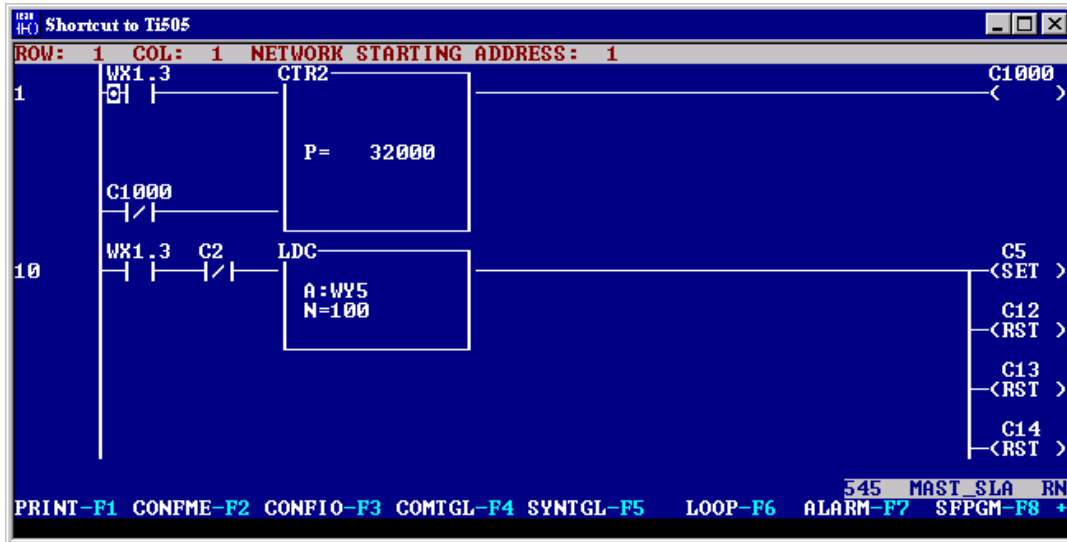


11. The Online Column should now say YES and the 2577 Active light will be on Solid if you have the Profibus cable connected.



## Configure the SIMATIC® 505 DP Master (TISOFT)

1. Start TISOFT and go online.
2. Press F3 (CONFIO).

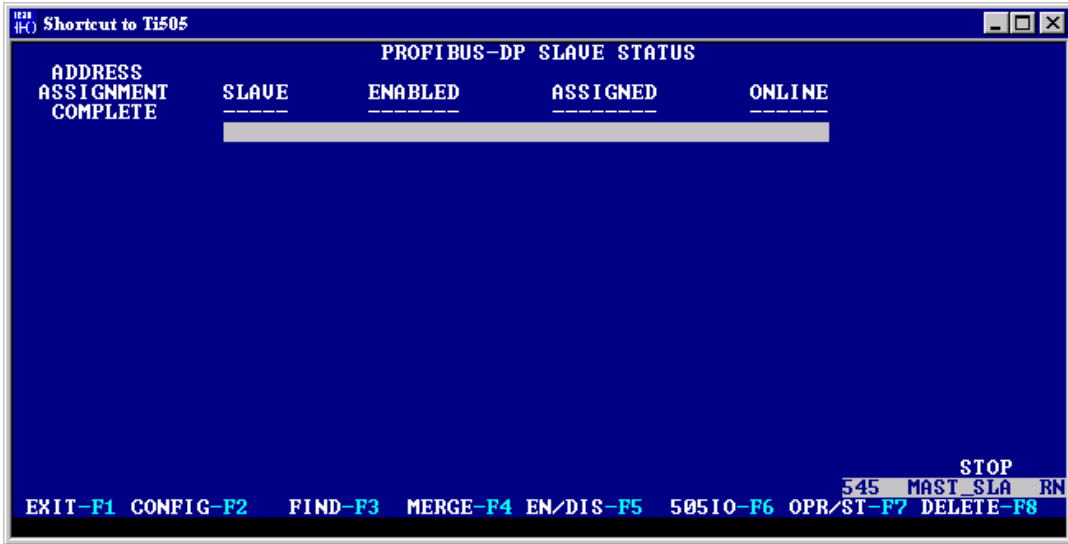


3. Press F6 (PRO-DP).

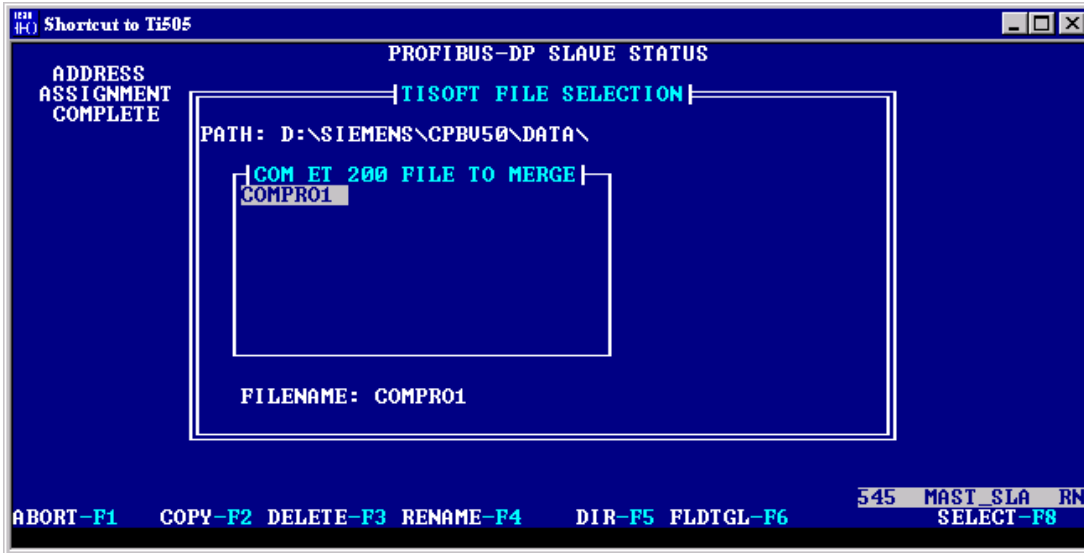
The screenshot shows the TISOFT software interface for configuring a SIMATIC 505 DP Master. The main window displays the '505 CHANNEL: 1 BASE STATUS' screen. The screen shows a table with columns for BASE, ENABLED, CONFIGURED, and ONLINE. The table shows the status of 16 channels (BASE 0 to 15). The interface also shows a menu bar with options like EXIT-F1, CONFIG-F2, FIND-F3, EN/DIS-F5, and PRO-DP-F6.

BASE	ENABLED	CONFIGURED	ONLINE
0	YES	YES	YES
1	YES	NO	NO
2	YES	NO	NO
3	YES	NO	NO
4	YES	NO	NO
5	YES	NO	NO
6	YES	NO	NO
7	YES	NO	NO
8	YES	NO	NO
9	YES	NO	NO
10	YES	NO	NO
11	YES	NO	NO
12	YES	NO	NO
13	YES	NO	NO
14	YES	NO	NO
15	YES	NO	NO

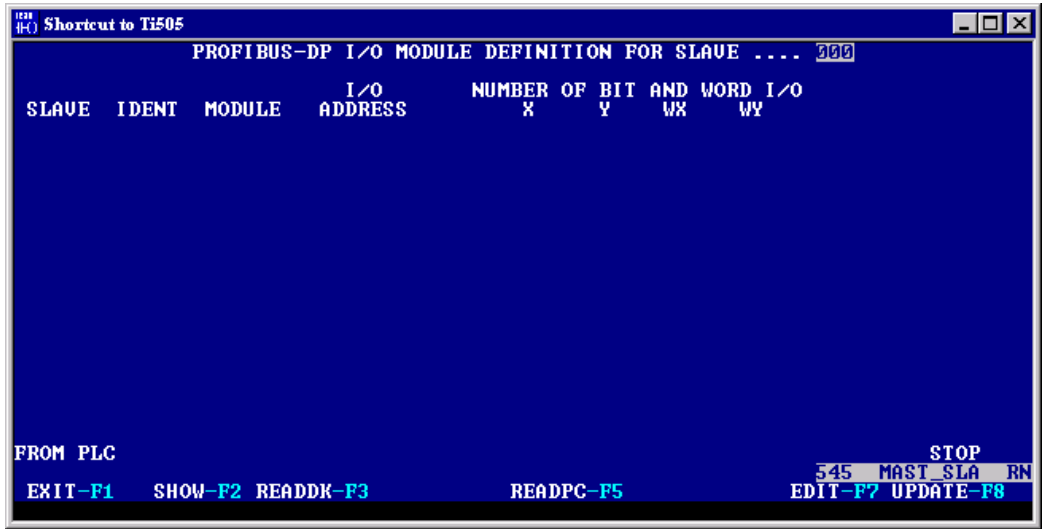
4. Press F4 (MERGE).



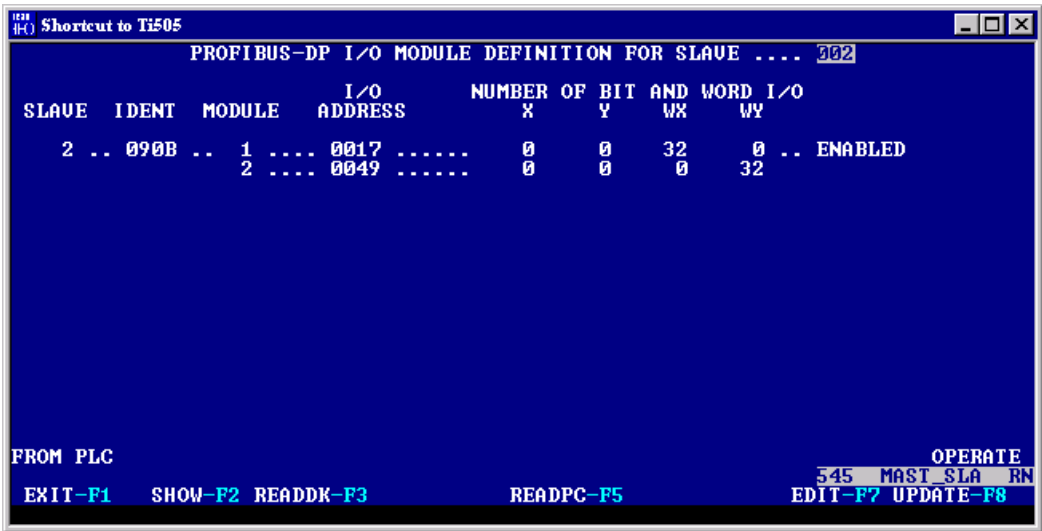
5. Select the Binary File you Exported with COM PROFIBUS and press F8 (SELECT).



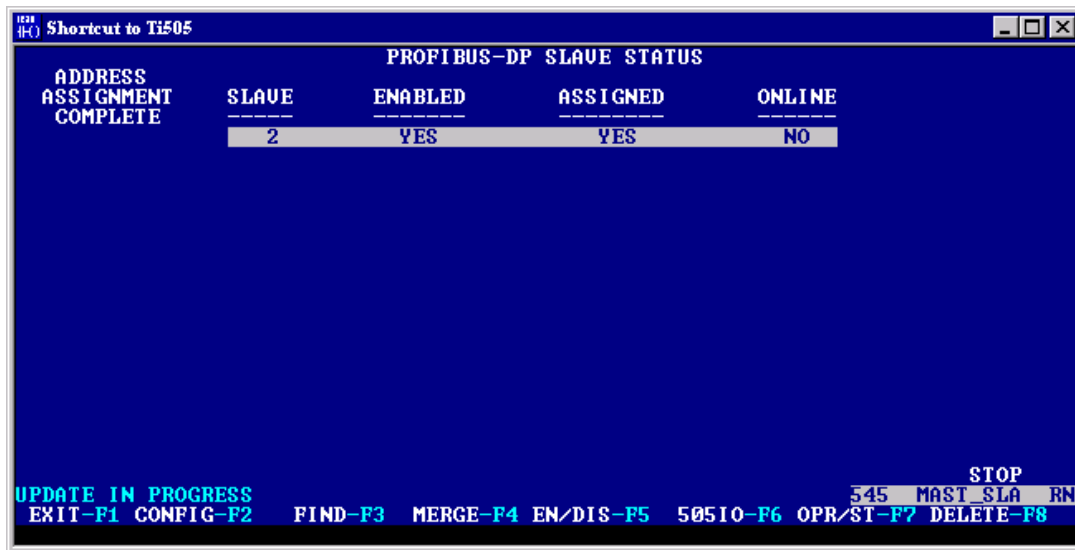
6. Press F2 (CONFIG).
7. Press F8 ( UPDATE).



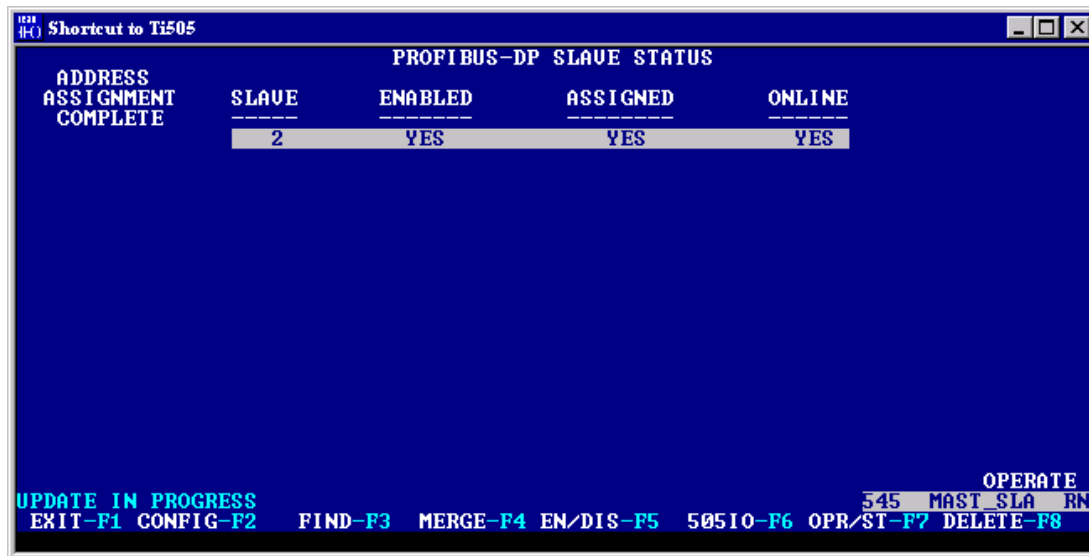
8. Enter the starting I/O Addresses and press F6 (CONT).
9. Press F1 to exit the display.



10. Press F7 (OPR/ST) and toggle from STOP to OPERATE.



11. The online column should now say YES and the active LED on the 2577 should be on solid if the Profibus cable is connected.





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## CHAPTER 5. TROUBLESHOOTING

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This chapter describes some of the problems that may occur during your installation and offers possible solutions.

### 5.1. Troubleshooting Aids

#### Module LEDs

The module LEDs can be used to diagnose problems. The Active LED indicates general module status. The Profibus XMT and RCV LEDs verify that traffic is present on the network. The Config port XMT and RCV LEDs indicate when a signal is present on the configuration port.

#### Module Status Word

The first word input of the module contains bits that reflect module status. See *Section 3.2. PLC Interface* on page 8.

#### Diagnostic Information

You can use the CTI Diag program to retrieve various diagnostic data from the module. Important diagnostic information includes:

- **Event Log:** The Event Log maintains a list of the last 200 events in RAM. This log is cleared each time power to the module is removed.
- **Fatal Error Log:** The fatal error log maintains a list of critical events in flash memory. This log will not be cleared when power is cycled.
- **Module Diagnostic Statistics:** This includes vital statistics about the module. See the section on diagnostic statistics in this section.

CTI Diag is an application program that runs under Windows. It is available for download from the CTI Web site <http://www.controltechnology.com>.

### 5.2. General Problem Analysis

SYMPTOMS	POSSIBLE CAUSE	CORRECTIVE ACTION
Module is inoperable. Active Indicator not lit.	Power has not been applied to the module.	Ensure that power is supplied to the rack and that the module is securely inserted.

SYMPTOMS	POSSIBLE CAUSE	CORRECTIVE ACTION
<p>Profibus master is not communicating with the module.</p> <p>The Active Indicator flashes continuously (approximately once per second), indicating that the module is not operational.</p> <p>The Profibus XMT/Rcv LEDs are not illuminated, indicating that there is no Profibus traffic.</p>	<p>The Profibus cabling is not attached or is improperly attached.</p>	<p>Observe the Profibus LEDs for activity. If no activity is present, check the cable installation and repair, replace, or re-connect if required.</p>
	<p>The Master Controller is not communicating on Profibus.</p>	<p>Check the controller configuration and operational status and correct if required.</p>
<p>Profibus master is not communicating with the module.</p> <p>The Active Indicator flashes continuously (approximately once per second), indicating that the module is not operational.</p> <p>The Profibus Rcv LED is illuminated, indicating that there is traffic on the Profibus network.</p> <p>The Profibus XMT LED is not illuminated, indicating that the module is not transmitting.</p>	<p>The module Profibus address has been set incorrectly.</p>	<p>Ensure that the module address matches the Profibus configuration. You can use CTIDiag to read the module address.</p>
	<p>The Profibus master configuration does not include the module or the configuration specifies an incorrect address for the module.</p>	<p>Verify that the module has been included in the Profibus configuration and that the configuration has been properly downloaded to the Profibus controller.</p>
<p>Profibus master is communicating with the module but the Profibus Static Error bit is set.</p> <p>The Active Indicator flashes continuously (approximately once per second), indicating that the module is not online.</p> <p>The Profibus Rcv LED is illuminated, indicating that there is traffic on the Profibus network.</p> <p>The Profibus Xmt LED is illuminated, indicating that the module is responding.</p>	<p>You have incorrectly configured the access to the 505 PLC memory by specifying a memory address that exceeds the 505 PLC memory range.</p> <p>You have incorrectly configured the I/O size, causing the maximum address to exceed the range of the 505 PLC memory.</p>	<p>Examine Bit 6 of the Module Status Word. Bit 6 will be set if there is a problem accessing a PLC memory location.</p> <p>Review your Profibus configuration to ensure that the starting address is within the PLC range. Also, verify that the I/O size does not cause the memory reference to exceed the PLC range.</p> <p><i>The maximum V memory address is user-configurable. V memory size can be read using programming software. The maximum number of WX, C, and X is model dependent. Refer to your SIMATIC® 505 documentation.</i></p>
<p>Module will not communicate.</p>	<p>There is no valid application program in flash. Program</p>	<p>Download a new program to the module using the CTI Diag</p>

<b>SYMPTOMS</b>	<b>POSSIBLE CAUSE</b>	<b>CORRECTIVE ACTION</b>
Active Indicator flashes three short flashes, followed by a short pause.	loader is in control.	program. <i>Note: It is normal for the Active LED to flash this pattern while you are downloading new module firmware.</i>
Module will not communicate. Active Indicator flashes and the module periodically resets.	A fatal error has occurred in the module.	Cycle the power. If the ACTIVE light does not remain on, replace the module.
CTIDiag program reports a Communications Timeout. Neither module XMT nor RCV LEDs illuminate.	Defective Serial Cable between the PC and the module Config port.	Verify integrity of the cable. Note: If the cable can be used to access the PLC via the programming port, it should be OK.
CTIDiag program reports a Communications Timeout. Module XMT LED flashes but RCV LED does not illuminate.	Invalid communications parameter setting in CTI Diag program.	Set the communications parameters to: Baud = 19200, Parity = None. Data Bits = 8, Stop Bits = 1.

### 5.3. Diagnostic Statistics

The module maintains a comprehensive set of diagnostic statistics, which may be accessed using the CTI Diag program. To access this data:

- Start the CTI Diag program,
- Select 2577 under the MODULE menu,
- Open a connection to the module by opening a Commport (under the COMM menu item). Ensure that the serial port parameters are as follows:
  - Baud Rate = 19,200
  - Parity = None
  - Data Bits = 8
  - Stop Bits = 1

The following groups of data are available. See the CTIDiag Help for additional details.

- **Module General Data**

Information includes module Serial number, manufacturing data, and hardware/firmware revision dates.

- **Module Configuration Data**

Information includes installed/available RAM, flash, and switch settings.

- **Serial Port Statistics**

Provides information about the configuration port including communications setting and port errors.

- **PLC Status**

Provides information about the PLC including memory configuration, operating mode, and module backplane interface.

- **PLC Transfer Diagnostic Statistics**

<b>Statistic</b>	<b>Description</b>
PLC Memory Address for data from Master to Slave	Starting address of the SIMATIC® 505 PLC memory block that will be written by the Profibus master output.
Block Size for data from Master to Slave	Size in words. Note that C and X are packed 16 bits to a word.
PLC Memory Type for data from Master to Slave	01= V memory. 08 = C Packed.
PLC Memory Address for data from Slave to Master	Starting address of the SIMATIC® 505 PLC memory block that will be read by the Profibus master input.
Block Size for Data from Slave to Master	Size in words. Note that Control Relay is packed 16 bits to a word.
PLC Memory Type for Data from Slave to Master	01= V memory, 06 = X Packed, 08 = C Packed, 09 = WX memory.
Count of successful writes to 505 PLC Memory	Number of times Profibus data has been written to the PLC.
Count of failed writes to 505 PLC Memory	Number of times an attempt to write to the PLC failed.
Count of successful reads from 505 PLC Memory	Number of times Profibus data has been read from the PLC.
Count of failed reads from 505 PLC Memory	Number of times an attempt to read from the PLC failed.
Count of Profibus Offline Requests	Number of times that the module forced the Profibus interface to an offline state because a PLC transfer error was detected.

- **Profibus Slave Diagnostic Statistics**

Provides information about the Profibus interface, including the following:

<b>Statistic</b>	<b>Description</b>
Connection Status	0 = Offline waiting for parameterization. 1 = Offline waiting for configuration. 2 = Online .
Current Slave Address	The current address of the module (obtained from the switch settings).
Current Baud Rate	0 = 12 Mb, 1 = 6 Mb, 2 = 3Mb, 3 = 1.5Mb, 4 = 500Kb, 5 = 187.5 Kb, 6 = 93.75 Kb, 7 = 45.45 Kb, 8 = 19.2 Kb, 9 = 9.6 Kb.
Count Transitions Online between Offline	Increments once each direction.
Count of Profibus connection timeouts	Number of times Profibus has disconnected due to a timeout.
Count Global Control Commands received	For developer use.
Count Number of Times Module has been Parameterized	Number of times that the Profibus master has sent parameter data to the module.
Count Number of Times Module has been Configured	Number of times that the Profibus master has sent configuration data to the module.
Count of Baud Rate Detection Events	Number of times that the module has detected a new baud rate.
Count of Writes to Profibus buffer	Total number of times the module has written data to the Profibus buffer (Input to Profibus).
Count of Reads from Profibus buffer	Total number of times the module has read data from the Profibus buffer (Output from Profibus).



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## APPENDIX A. CONNECTORS AND CABLING

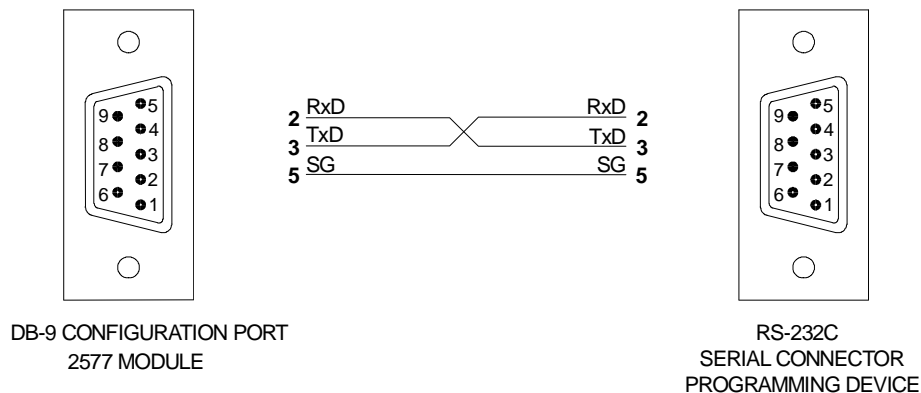
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### Configuration Port Cabling

The configuration port on the 2577 uses a DB9 male connector to provide an RS-232C interface. The following pins are used:

Pin #	RS-232 Signal
2	RxD: Received Data (input)
3	TxD: Transmitted Data (output)
5	SG: Signal Ground

Figure 4 illustrates how to construct an RS-232C cable typically used for connecting the configuration port of a 2577 module to the DB9 serial port connector on a PC. A cable used to connect to the PLC programming port may be used.



*Figure 4. 2577 Configuration Port Cable*





## APPENDIX B. PROFIBUS ADDRESS TABLE

Address	Switch Number							
	1	2	3	4	5	6	7	8
1								X
2							X	
3							X	X
4						X		
5						X		X
6						X	X	
7						X	X	X
8					X			
9					X			X
10					X		X	
11					X		X	X
12					X	X		
13					X	X		X
14					X	X	X	
15					X	X	X	X
16				X				
17				X				X
18				X			X	
19				X			X	X
20				X		X		
21				X		X		X
22				X		X	X	
23				X		X	X	X
24				X	X			
25				X	X			X
26				X	X		X	
27				X	X		X	X
28				X	X	X		
29				X	X	X		X
30				X	X	X	X	
31				X	X	X	X	X
32			X					
33			X					X
34			X				X	
35			X				X	X
36			X			X		
37			X			X		X
38			X			X	X	
39			X			X	X	X
40			X		X			
41			X		X			X
42			X		X		X	
43			X		X		X	X
44			X		X	X		
45			X		X	X		X
46			X		X	X	X	
47			X		X	X	X	X
48			X	X				
49			X	X				X
50			X	X			X	
51			X	X			X	X
52			X	X		X		
53			X	X		X		X
54			X	X		X	X	
55			X	X		X	X	X
56			X	X	X			
57			X	X	X			X
58			X	X	X		X	
59			X	X	X		X	X
60			X	X	X	X		
61			X	X	X	X		X
62			X	X	X	X	X	
63			X	X	X	X	X	X

x = Closed Switch Position

Address	Switch Number							
	1	2	3	4	5	6	7	8
64		X						
65		X						X
66		X					X	
67		X					X	X
68		X				X		
69		X				X		X
70		X				X	X	
71		X				X	X	X
72		X			X			
73		X			X			X
74		X			X		X	
75		X			X		X	X
76		X			X	X		
77		X			X	X		X
78		X			X	X	X	
79		X			X	X	X	X
80		X		X				
81		X		X				X
82		X		X			X	
83		X		X			X	X
84		X		X		X		
85		X		X		X		X
86		X		X		X	X	
87		X		X		X	X	X
88		X		X	X			
89		X		X	X			X
90		X		X	X		X	
91		X		X	X		X	X
92		X		X	X	X		
93		X		X	X	X		X
94		X		X	X	X	X	
95		X		X	X	X	X	X
96		X	X					
97		X	X					X
98		X	X				X	
99		X	X				X	X
100		X	X			X		
101		X	X			X		X
102		X	X			X	X	
103		X	X			X	X	X
104		X	X		X			
105		X	X		X			X
106		X	X		X		X	
107		X	X		X		X	X
108		X	X		X	X		
109		X	X		X	X		X
110		X	X		X	X	X	
111		X	X		X	X	X	X
112		X	X	X				
113		X	X	X				X
114		X	X	X			X	
115		X	X	X			X	X
116		X	X	X		X		
117		X	X	X		X		X
118		X	X	X		X	X	
119		X	X	X		X	X	X
120		X	X	X	X			
121		X	X	X	X			X
122		X	X	X	X		X	
123		X	X	X	X		X	X
124		X	X	X	X	X		
125		X	X	X	X	X		X
126		X	X	X	X	X	X	
127		X	X	X	X	X	X	X



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## **HARDWARE SPECIFICATIONS**

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### **Configuration Port:**

**Connector:** Male DB9

**Electrical Interface:** RS –232 subset (TxD, RxD, and SG)

### **Profibus Port:**

**Connector:** Female DB9

**Pinout:** Profibus Standard

**Baud Rate:** Up to 12Mb (autobaud)

### **Indicators:**

**Active:** Red

**Config Port Xmt and Rcv:** Green

**Profibus Port Xmt and Rcv:** Green

### **Module Size:**

Single-wide Siemens® SIMATIC® 505 I/O

### **Power Consumption:**

6.0 watts @ 5VDC

### **Environmental:**

**Operating Temperature:** 0 to 60 C (32 to 140 F)

**Storage Temperature:** -40 to 85 C (-40 to 185 F)

**Relative Humidity:** 5% to 95% (non-condensing)

**Shipping Weight:** 3lbs (approximate)

### **Agency Approvals:**

UL, UL Canada

FM (Class 1, Div 2)



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## **LIMITED PRODUCT WARRANTY**

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CTI warrants that this CTI Industrial Product shall be free from defects in material and workmanship for a period of one (1) year after purchase from CTI or from an authorized CTI Industrial Distributor. This CTI Industrial Product will be newly manufactured from new and/or serviceable used parts which are equal to new in the Product.

Should this CTI Industrial Product fail to be free from defects in material and workmanship at any time during this (1) year warranty period, CTI will repair or replace (at its option) parts or Products found to be defective and shipped prepaid by the customer to a designated CTI service location along with proof of purchase date and associated serial number. Repair parts and replacement Product furnished under this warranty will be on an exchange basis and will be either reconditioned or new. All exchanged parts or Products become the property of CTI. Should any Product or part returned to CTI hereunder be found by CTI to be without defect, CTI will return such Product or part to the customer.

This warranty does not include repair of damage to a part or Product resulting from: failure to provide a suitable environment as specified in applicable Product specifications, or damage caused by an accident, disaster, acts of God, neglect, abuse, misuse, transportation, alterations, attachments, accessories, supplies, non-CTI parts, non-CTI repairs or activities, or to any damage whose proximate cause was utilities or utility like services, or faulty installation or maintenance done by someone other than CTI.

Control Technology Inc. reserves the right to make changes to the Product in order to improve reliability, function, or design in the pursuit of providing the best possible Product. CTI assumes no responsibility for indirect or consequential damages resulting from the use or application of this equipment.

THE WARRANTY SET FORTH ABOVE IN THIS ARTICLE IS THE ONLY WARRANTY CTI GRANTS AND IT IS IN LIEU OF ANY OTHER IMPLIED OR EXPRESSED GUARANTY OR WARRANTY ON CTI PRODUCTS, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE AND IS IN LIEU OF ALL OBLIGATIONS OR LIABILITY OF CTI FOR DAMAGES IN CONNECTION WITH LOSS, DELIVERY, USE OR PERFORMANCE OF CTI PRODUCTS OR INTERRUPTION OF BUSINESS, LOSS OF USE, REVENUE OR PROFIT. IN NO EVENT WILL CTI BE LIABLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR CONSUMER PRODUCTS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.

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## ***REPAIR POLICY***

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In the event that the Product should fail during or after the warranty period, a Return Material Authorization (RMA) number can be requested orally or in writing from CTI main offices. Whether this equipment is in or out of warranty, a Purchase Order number provided to CTI when requesting the RMA number will aid in expediting the repair process. The RMA number that is issued and your Purchase Order number should be referenced on the returning equipment's shipping documentation. Additionally, if the product is under warranty, proof of purchase date and serial number must accompany the returned equipment. The current repair and/or exchange rates can be obtained by contacting CTI's main office at 1-800-537-8398.

When returning any module to CTI, follow proper static control precautions. Keep the module away from polyethylene products, polystyrene products and all other static producing materials. Packing the module in its original conductive bag is the preferred way to control static problems during shipment. Failure to observe static control precautions may void the warranty. For additional information on static control precautions, contact CTI's office at 1-800-537-8398.