XC-PBOX-BD

Manual

Xinje Electric Co., Ltd

CATALOG

1. Installation

Please do the following operations if the master station of XC-PBOX-BD is Siemens products.

(1) Copy XC-PBOX.GSD 

to the route of \..\Step7\S7data\gsd\

(2) Copy Xinje_B.bmp 

to the route of \..\Step7\S7data\nsbmp\

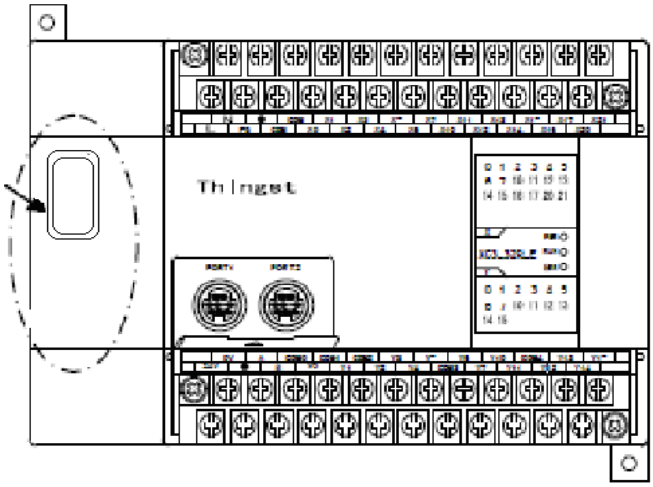
If the master station is not Siemens products, please copy XC-PBOX.gsd and Xinje_B.bmp to the folder of gsd and bmp.

2. Configuration

2.1 Install the XC-PBOX-BD

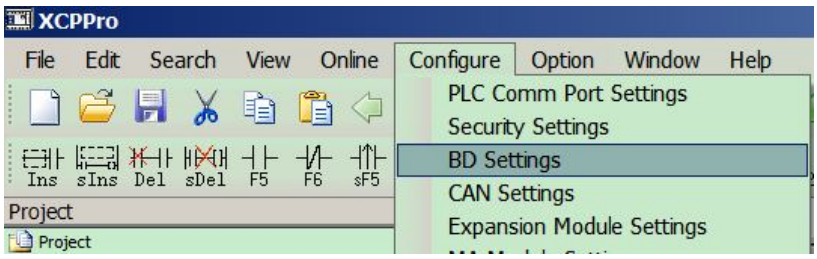
Open the cover on the left of the PLC, insert the BD into the pins, fix it with the screws and close the cover.

Install here

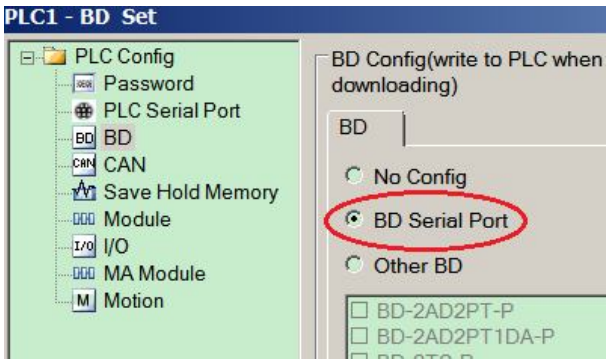


2.2 Configure the XC-PBOX-BD

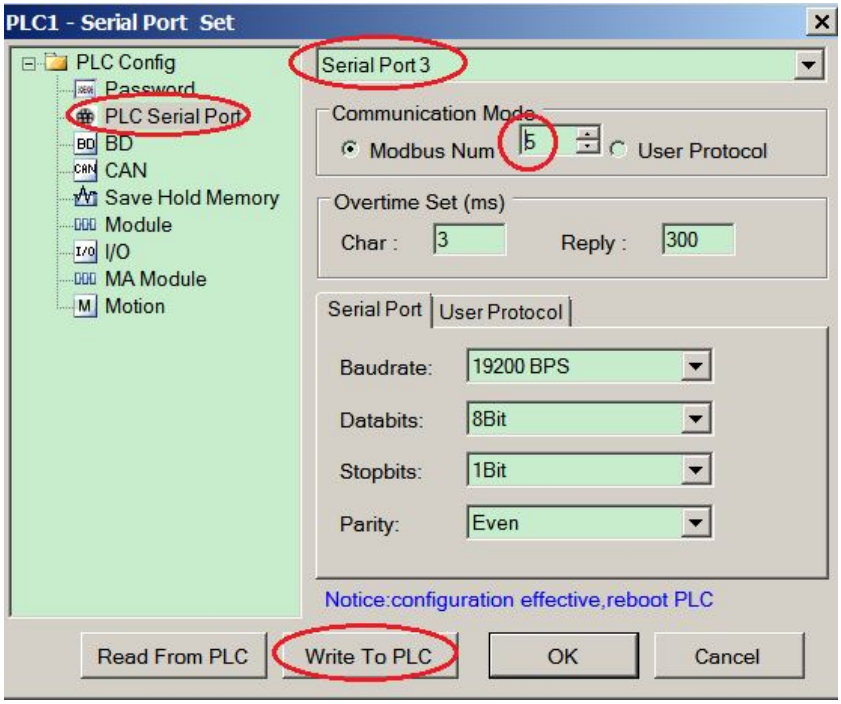
(1) Connect the PLC installed XC-PBOX-BD to the XCPpro software. In the software, click “configure/BD settings”:



(2) Choose “BD serial port”:

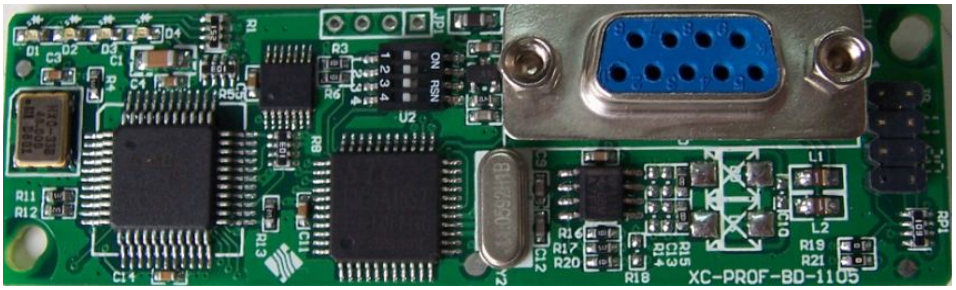


(3) Click “PLC serial port”, choose serial port 3 and modbus num. The modbus num should be the Profibus slave station number. Here it is set to 5 for example.



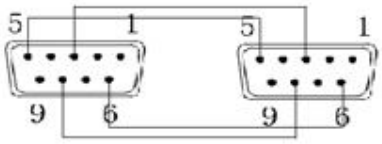
Click “write to PLC”. Then click download  in the software. Finally, please cut the power and power on again for the PLC and click run  .

3. Wiring



The port of XC-PBOX-BD is the standard Profibus terminal, please see the terminal definition:

3. B (RxD / TxD P)
5. D-GND
6. VP (+)
8. A (RxD / TxD N)



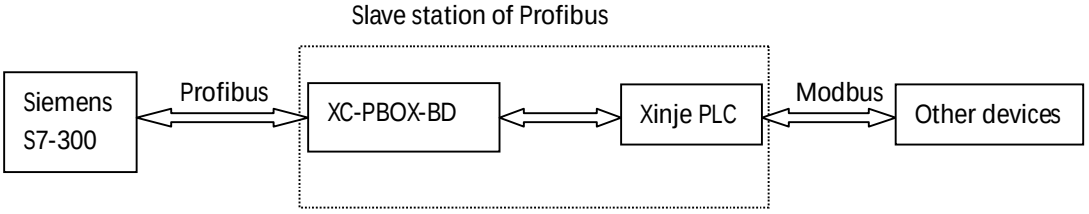
5—GND and 6—VCC provide power for terminal resistor. If there is no terminal resistor, they will be vacant.
Note: Only pin 5, 6, 8, 3 need to be connected.

Both ends of the Profibus cable should connect terminal resistor. The terminal resistor can clear the signal reflection in the cable which is caused by resistor discontinuity and mismatching.

4. Operation

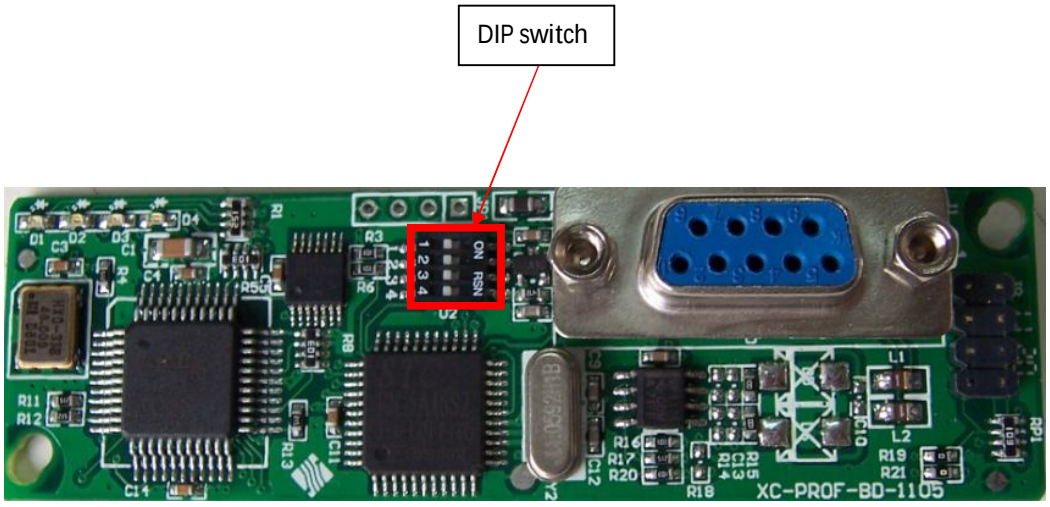
4.1 Introduction

XC-PBOX-BD can be the slave station of Profibus DP. It realizes the interconnection between XC series PLC and Profibus DP system.
The theoretical address range of Profibus: 0~127, 127 is broadcast address.
Up to 32 master stations can be used. The station amounts can up to 127.
The station No. of XC-PBOX-BD should be in the range of 1-255 and in accord with the slave station no. of Profibus.



4.2 DIP switch settings

Please set the baud rate of communicating between XC-PBOX-BD and Xinje PLC via DIP switch.



DIP switch 1	DIP switch 2	Baud rate (bps)
OFF	OFF	19200
OFF	ON	9600
ON	OFF	38400
ON	ON	115200

Note:

1. The default communication parameter is: data bit=8, stop bit=1, even parity.
2. Only DIP switch 1 and 2 are valid, 3 and 4 are invalid.

4.3 LED

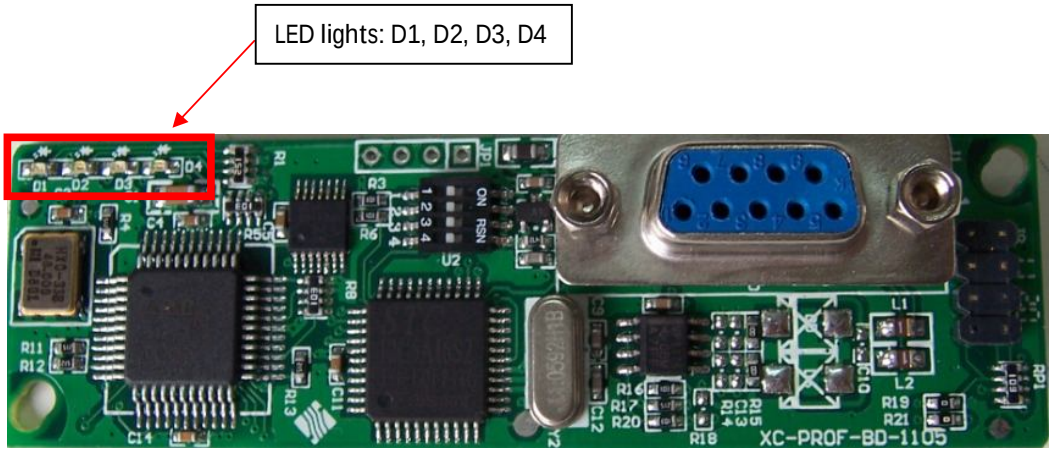
There are four LED lights on the XC-PBOX-BD.

D4: the light flashes when reading the station No. of PLC serial port3, it always lights when got the station No.

D3: the state of Profibus.

D2: it lights when data is being sent.

D1: it lights when data is being received.



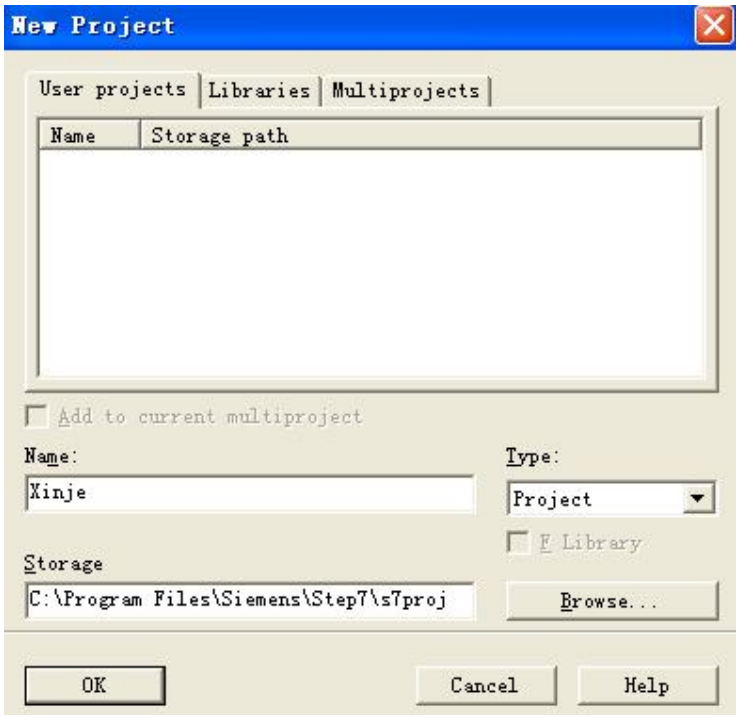
4.4 Debug

Now we take Siemens S7-300 series PLC (315-2AH14-0AB0) as an example to explain the debug process.

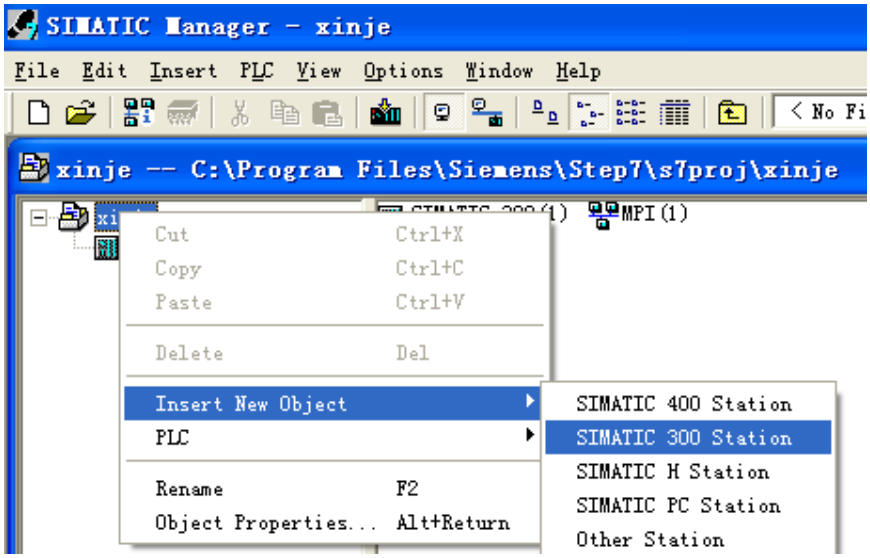
Suppose the S7-300 sets ON M0-M7 of Xinje PLC via XC-PBOX-BD. And set double word register (D0,D1) to 12345678, set (D3,D4) to 87654321. And read the value of M20-27 and (D100, D101)(D102, D103).

(1) Open the Siemens simatic manager software, build a new project.

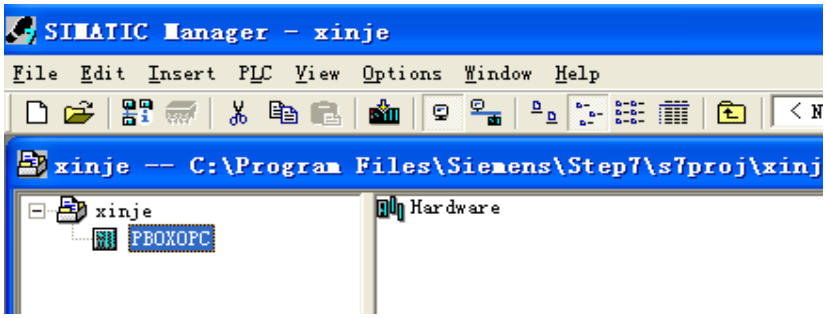
(2) Name the project:



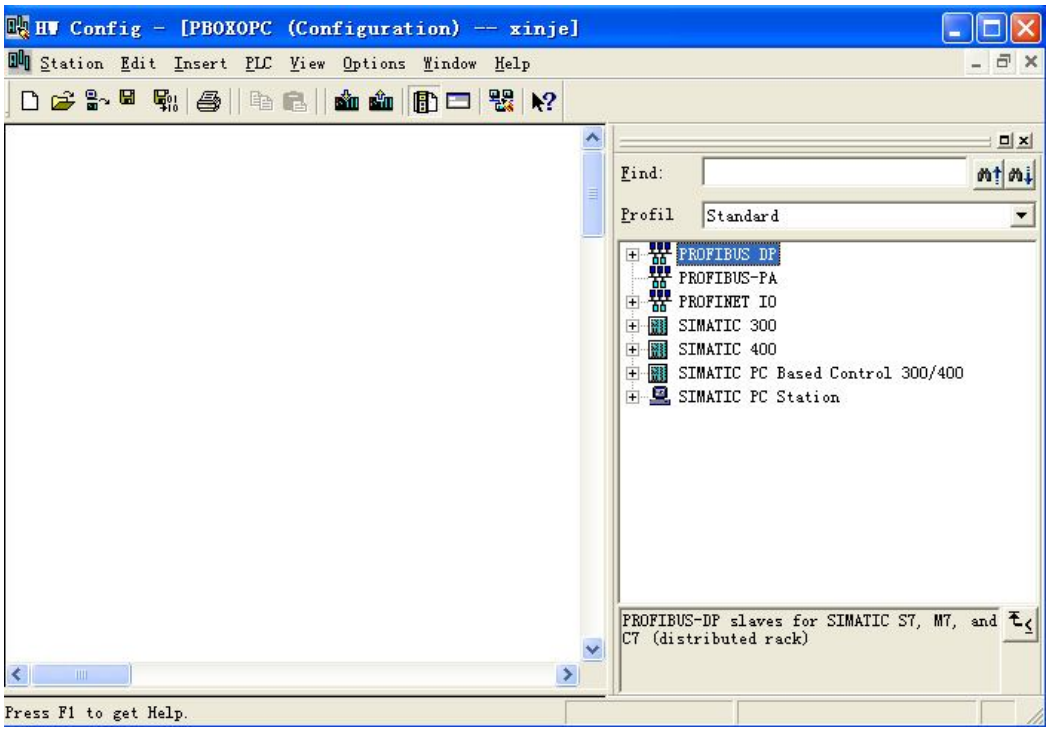
(3) Insert new object/Simatic 300 station, name it as PBOXOPC:



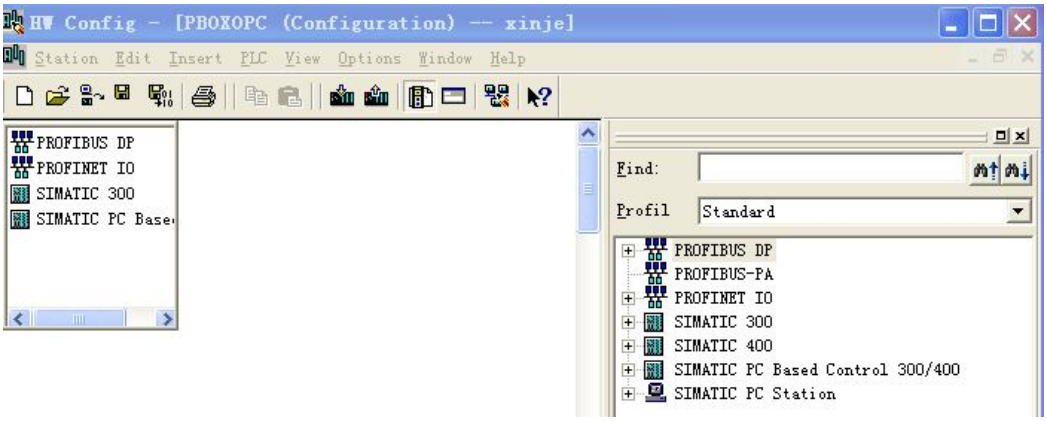
(4) Click PBOXOPC, it will show below window:



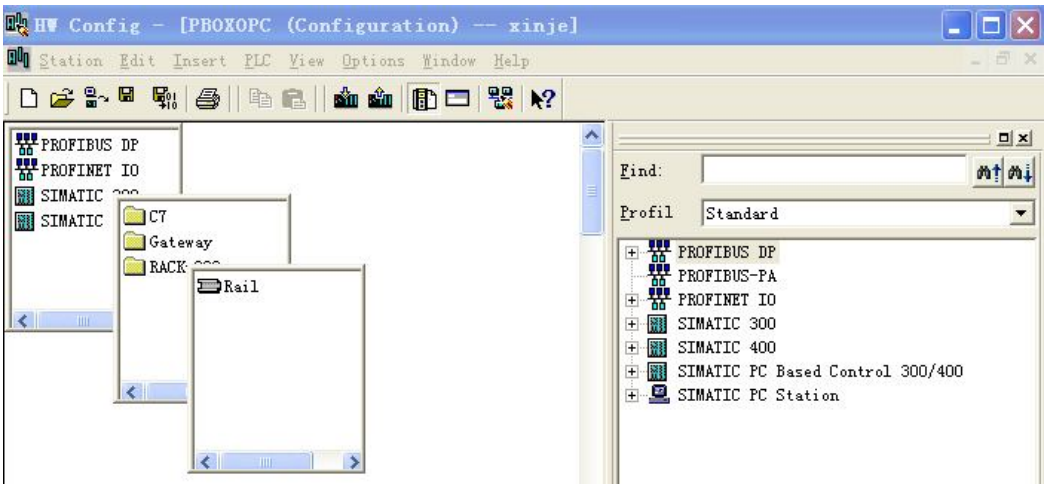
(5) Double click the hardware, you will see below window:



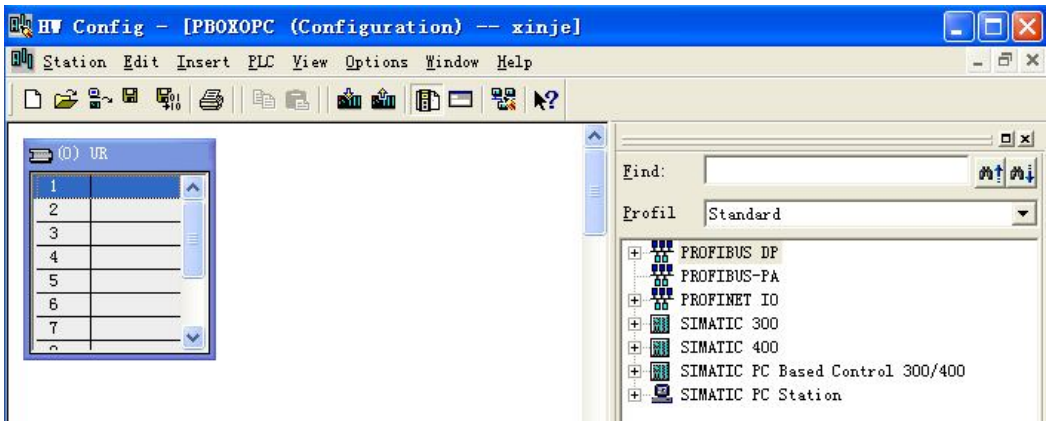
(6) Click Insert/insert object, it will show below window:



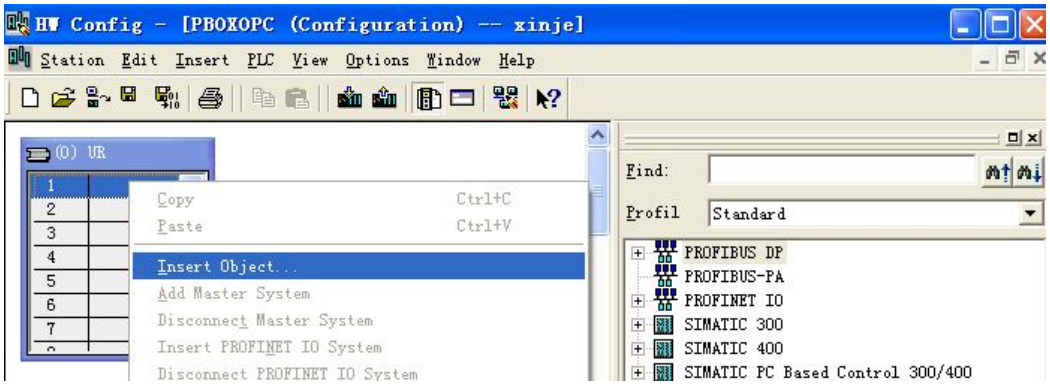
(7) Click “SIMATIC 300”, then click “RACK-300”, it will show below window:



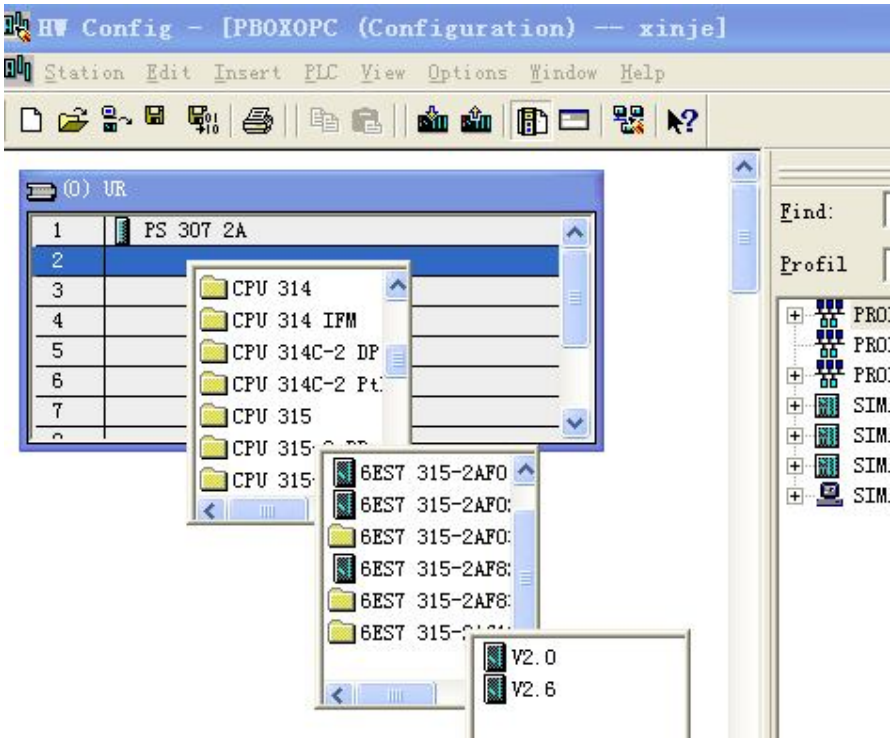
(8) Click Rail, it will show below window:



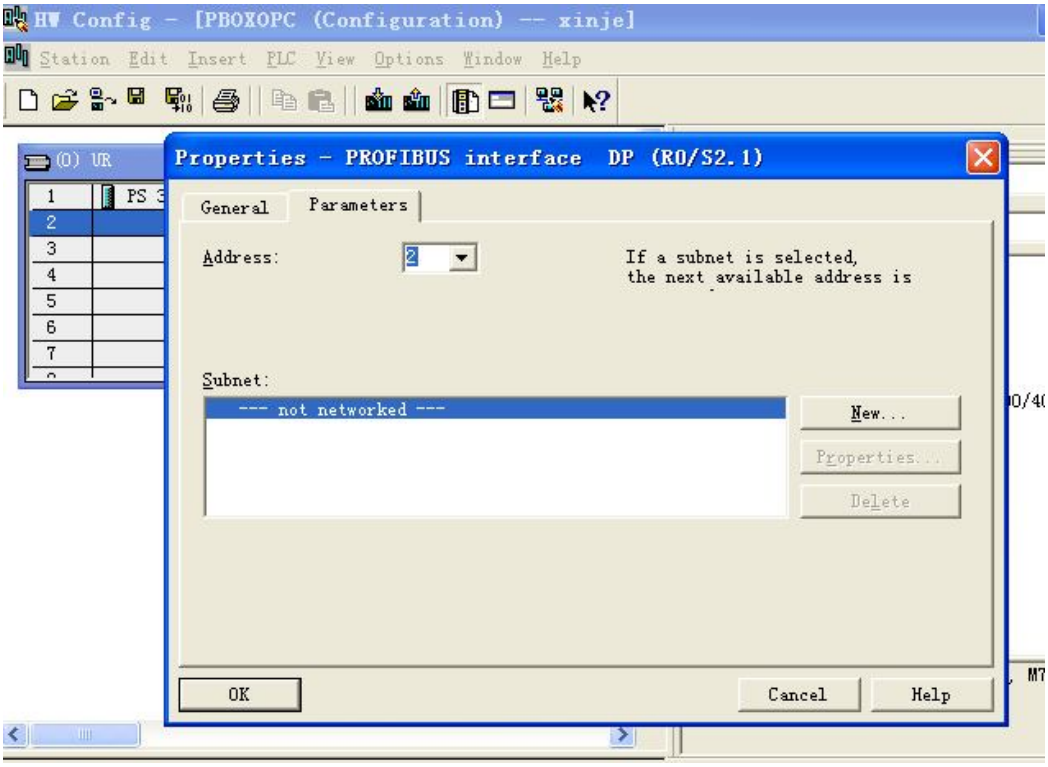
(9) Click Option/update catalog, then do the operations in below window:



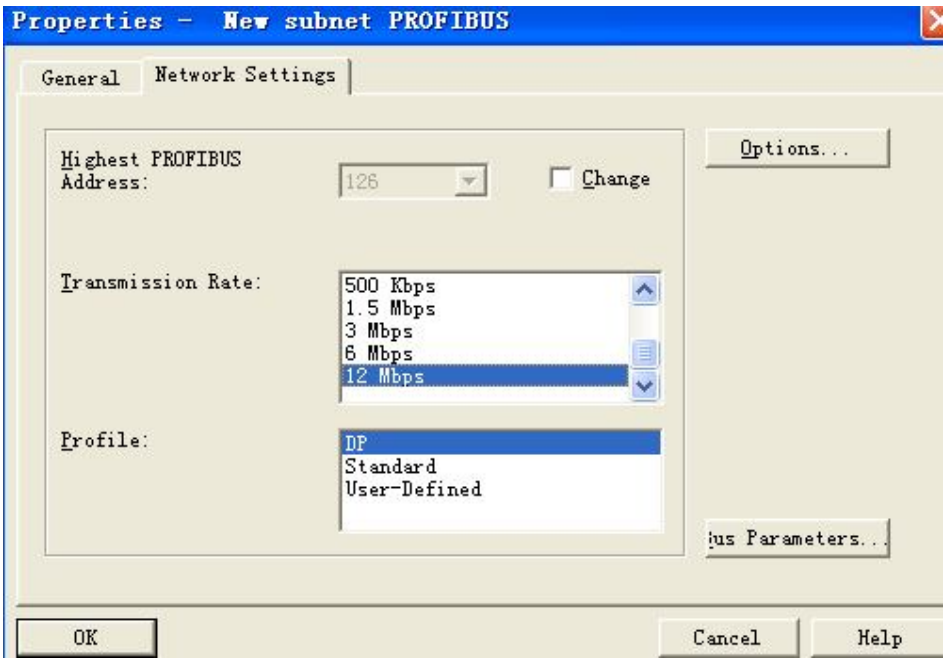
(10)Choose the matched power module for the PLC. Here we choose PS307 2A , CPU 315-2DP\6ES7 315-2AG10-0AB0\V2.6:



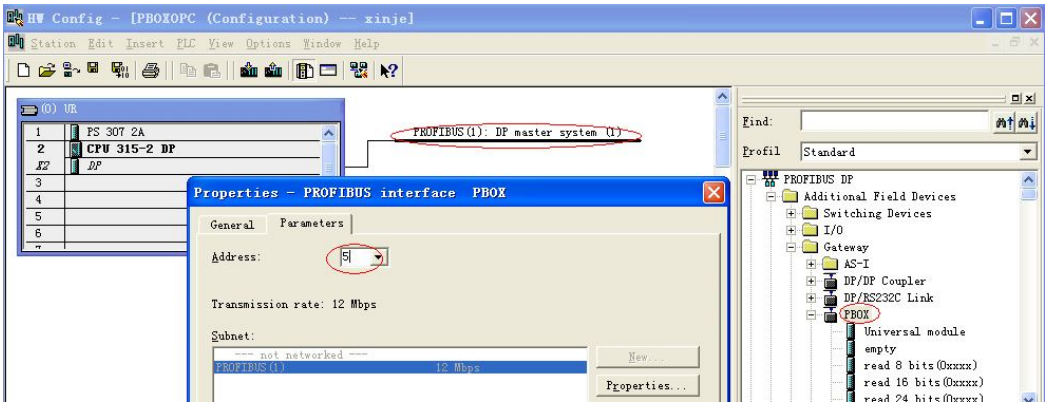
(11) Click v2.6, it will show below window, choose the master station (S7-300) No. of XC-PBOX-BD, here we choose 2. Then click "New…" button in the window:



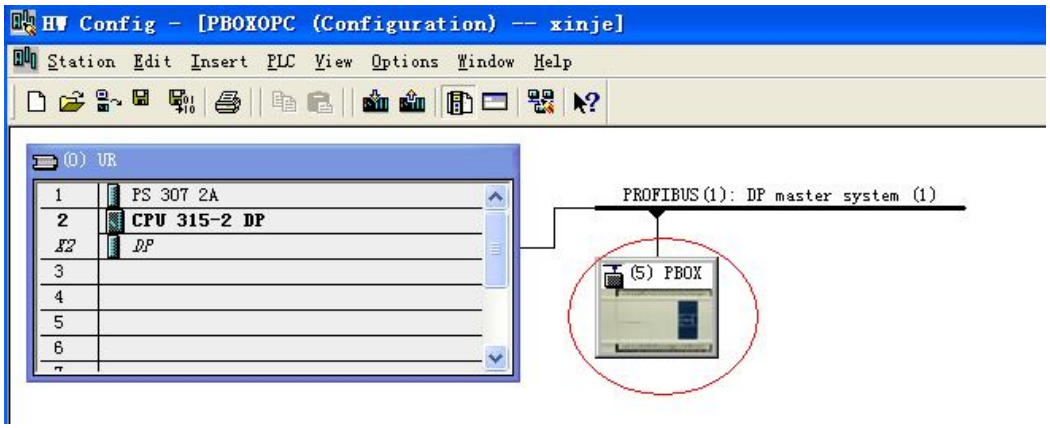
(12)Click “Network settings”, set the transmission rate to 12Mbps.



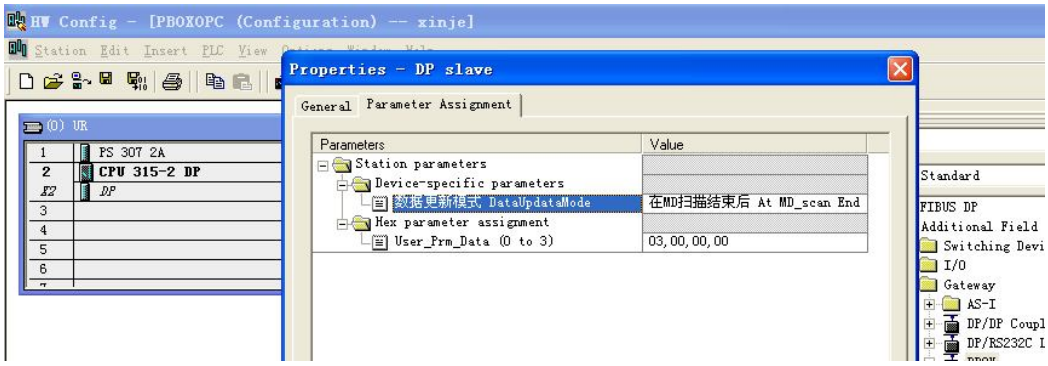
(13) Click PROFIBUS(1): DP master system (1), then choose “Profibus DP\ Additional Field Devices\ Gateway\ PBOX”, double click PBOX, then set the slave station No. of PBOX to 5.



(14) As the chapter 1 said, we copy the file XC-PBOX.GSD to \..\Step7\S7data\gsd\, and copy the file Xinje_B.bmp to \..\Step7\S7data\nsbmp\, now we can see the Xinje station picture in the below window:



(15) double click the Xinje station picture, it will show below window. Set the data update mode: At every MD end or At MD scan end.

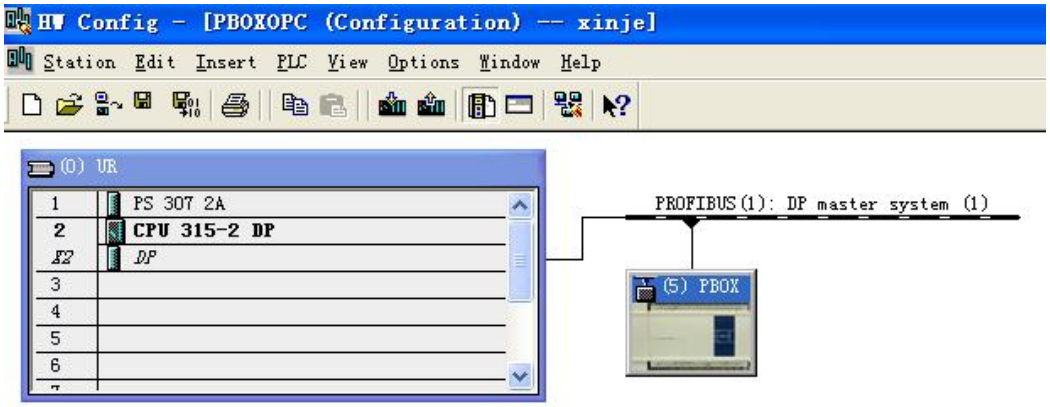


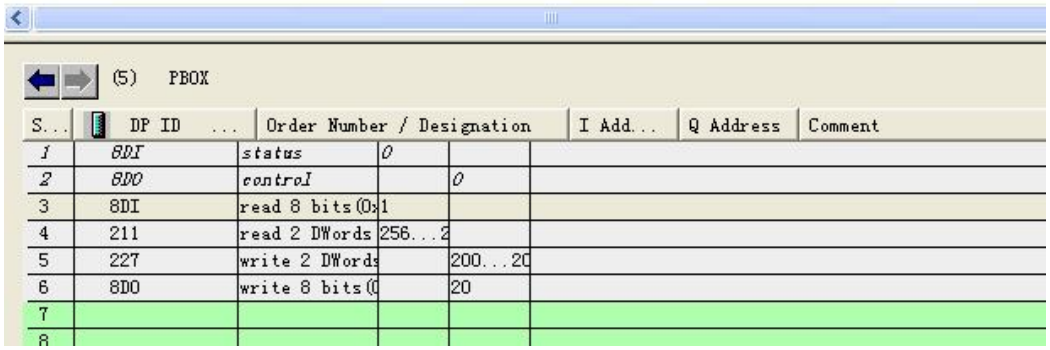
(16) Configure the read and write.

Read: read the value of Xinje PLC to Profibus.

Write: write the value of Profibus to Xinje PLC.

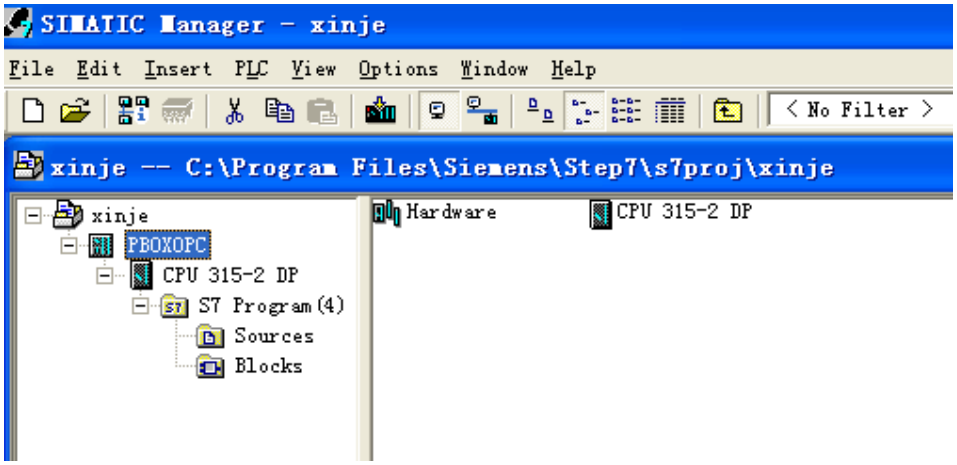
Force single bit and Set single word: write the value of Profibus to Xinje PLC.





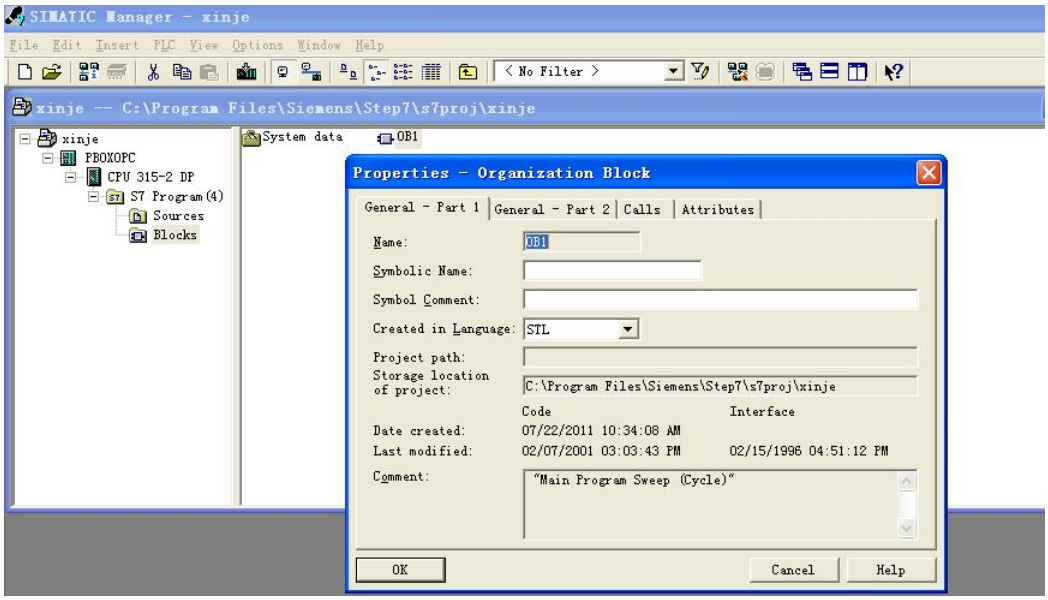
(17) After making the program, click save and compile  , then click download to module  .

Return to below window:

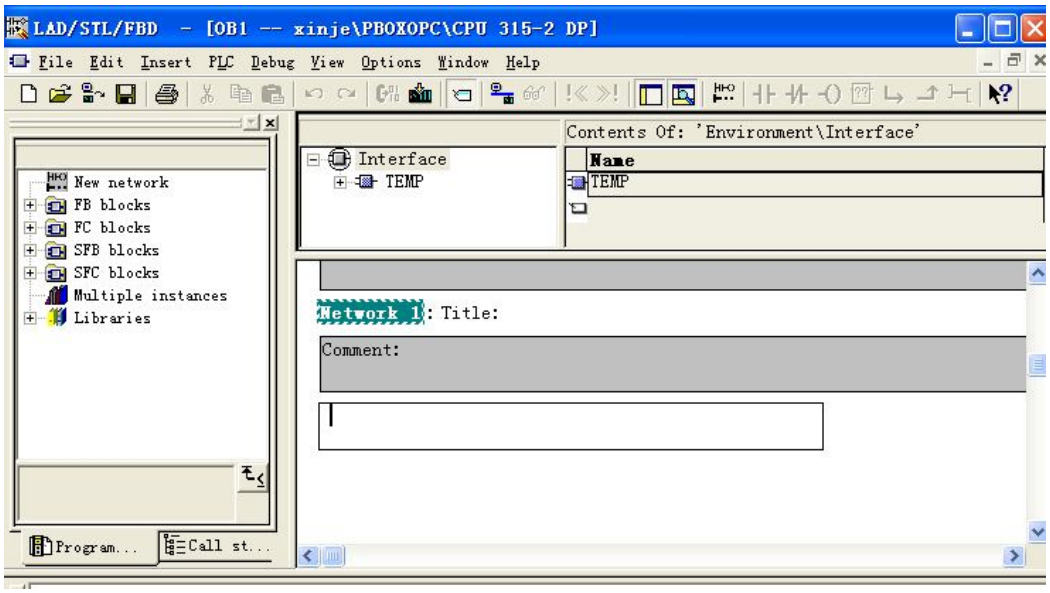


(18) click “Blocks”, it will show 

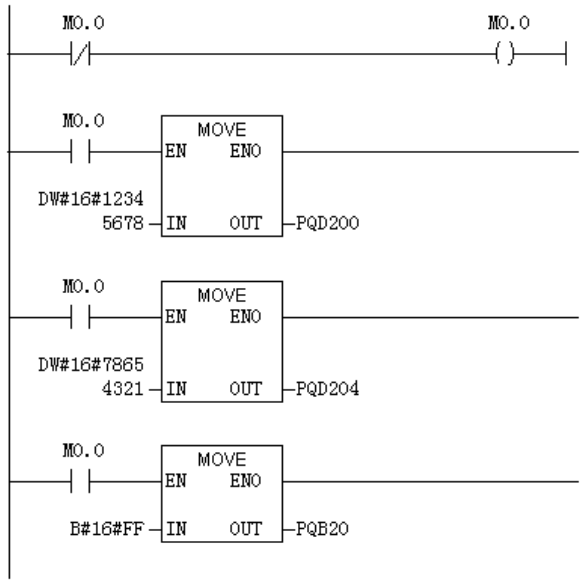
, double click OB1, it will show below window, then click ok to enter programming window. Then make the program in it.



Programming window:



Program:



(19) After making the program, save and download to the module. Turn On the RUN switch of S7-300. The SF BF LED is OFF on the S7-300, it means the communication is successful. Then turn off the RUN switch.

Now please open the XCPpro software, connect it to the Xine PLC with XC-PBOX-BD (please configure the XC-PBOX-BD at first in the software). Click free monitor  , add the data in the monitor list (see figA). Then turn on RUN switch of S7-300, the monitor data is shown in figB. (M20-M27,D100 D102 are the data write from S7-300 to XC series PLC.

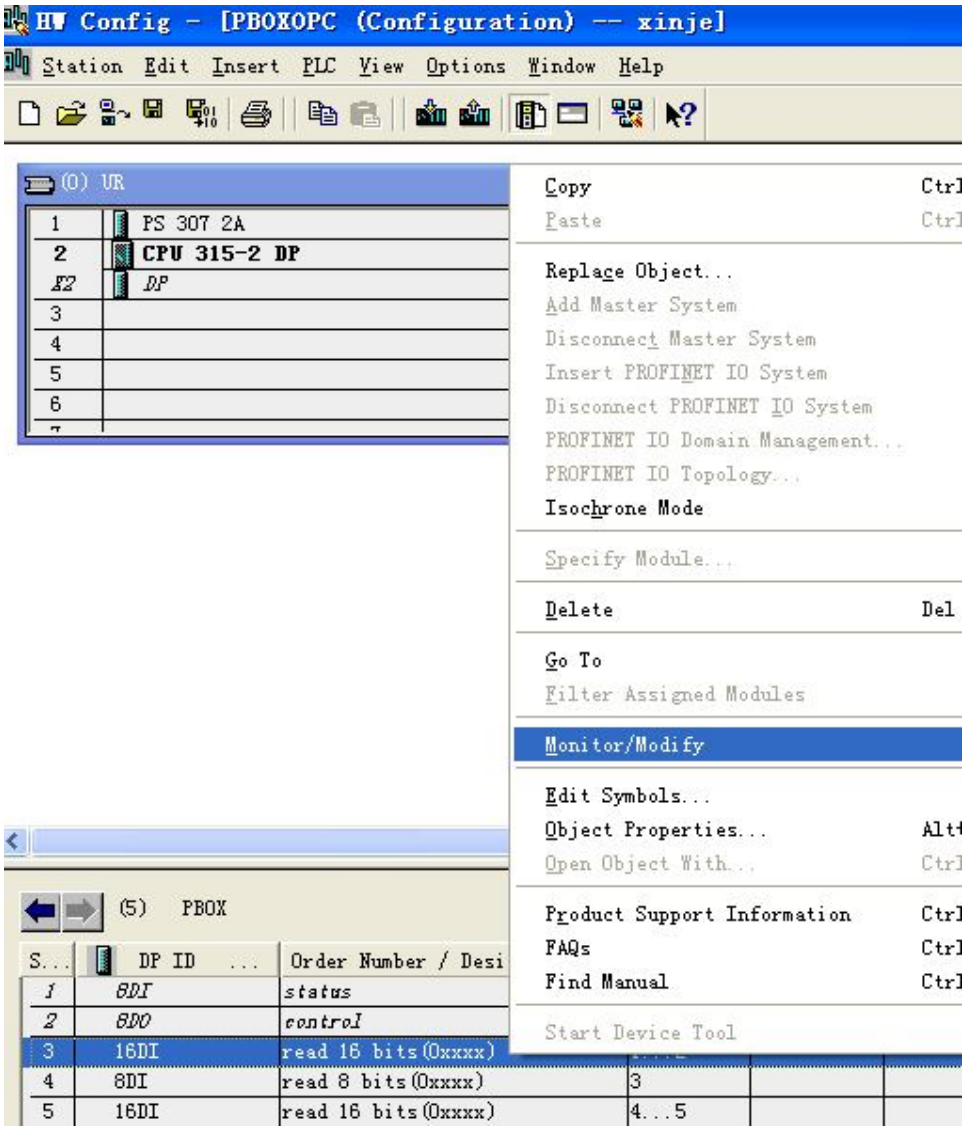
M0	ON
M1	OFF
M2	ON
M3	OFF
M4	ON
M5	OFF
M6	ON
M7	OFF
M20	OFF
M21	OFF
M22	OFF
M23	OFF
M24	OFF
M25	OFF
M26	OFF
M27	OFF
D0	12345678
D2	87654321
D100	00000000
D102	00000000

FigA

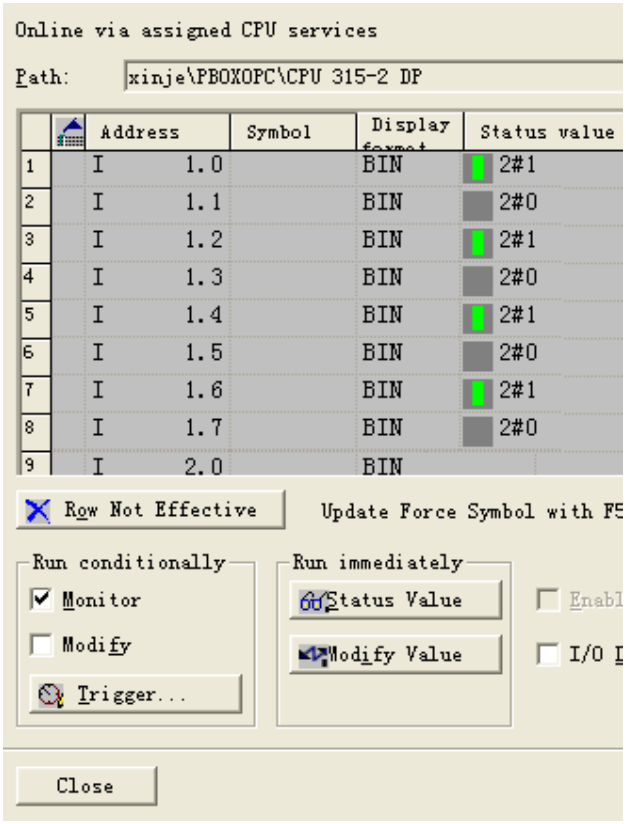
M0	ON
M1	OFF
M2	ON
M3	OFF
M4	ON
M5	OFF
M6	ON
M7	OFF
M20	ON
M21	ON
M22	ON
M23	ON
M24	ON
M25	ON
M26	ON
M27	ON
D0	12345678
D2	87654321
D100	12345678
D102	78654321

FigB

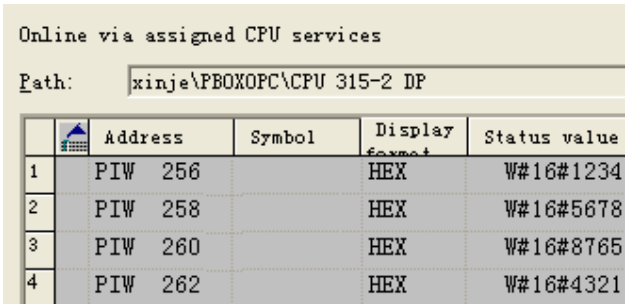
(20) Monitor the data of S7-300. Right click the data needs to monitor:



(21) Choose “monitor” to see the data. The data are the same to the setting data in XC series PLC.



(22)Monitor the Read 2 Dwords with the same way:



5. Notices

1. The Xinje PLC only can be slave station with XC-PBOX-BD. XC-PBOX-BD only can be used with Xinje PLC. Please choose the Xinje PLC which can expand BD module.
2. After configuration of the XC-PBOX-BD, please re-power on it.
3. The station No. in the PLC should be accord to the Profibus slave station No., especially for SCADA application.

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