# PISO-DNS100 DeviceNet Multi-Slave PCI board Quick Start User Guide

1. Introduction

This Quick Start User Guide introduces users how to implement the PISO-DNS100 PCI board to your application quickly. Therefore, it is only provided with the basic instructions. For more detailed information, please refer to the PISO-DNS100 manual in the ICPDAS CD-ROM. Also, users can download the manual from the ICPDAS web site:

http://www.icpdas.com/products/Remote_IO/can_bus/piso-dns100.htm

This manual would help you quickly to familiarize yourself with the PISO-DNS100 PCI board and DeviceNet communication. For more the detail information, please refer to the user's manual of the PISO-DNS100. Here is the example of the DeviceNet network.
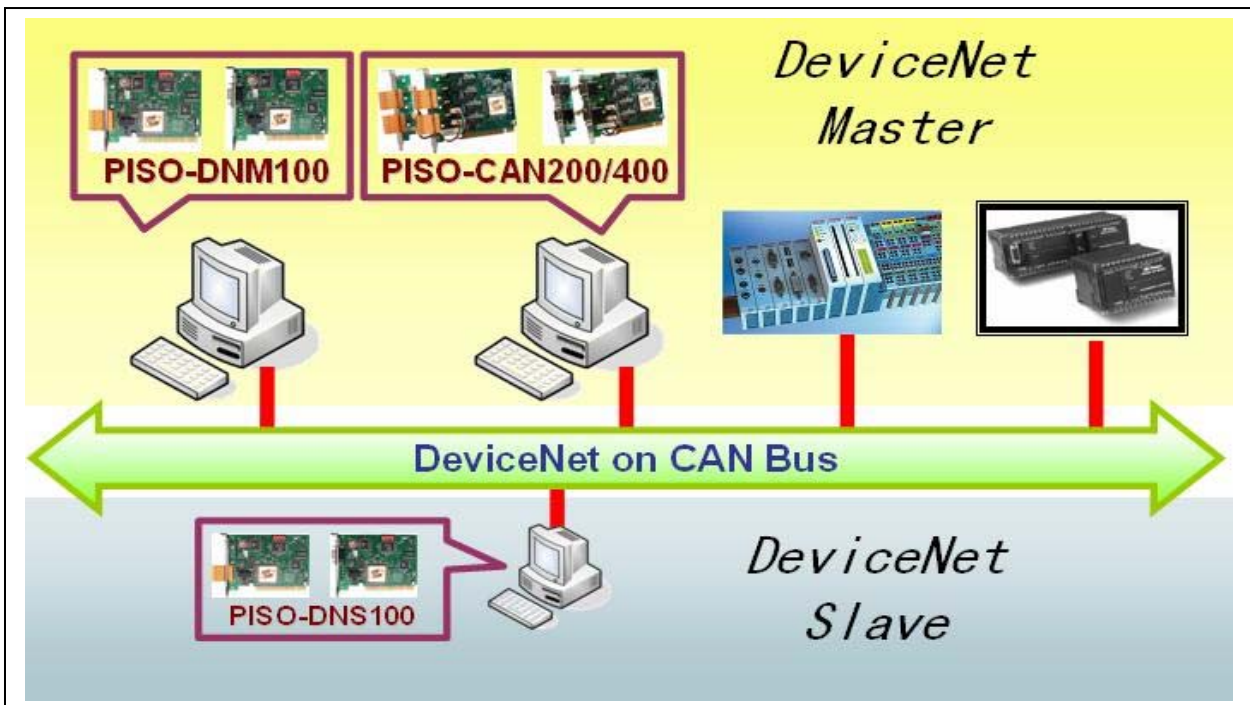

The users should prepare at least one DeviceNet master for demonstrating the I/O data exchanging. The users can use the PLC with DeviceNet master module to start this demo. There are some DeviceNet master products provided by ICPDAS, such as PISO-DNM100, PISO-CAN 200/400…etc. Please visit the following web site for more information.

http://www.icpdas.com/products/Remote_IO/can_bus/can_intro.htm#5

2. The DeviceNet Communication and I/O Data Access

The DeviceNet Communication Protocol is based on the concept of connections method. Master should create connections to slave devices based on the commands of exchanging information and I/O data. To establish slave server mechanism, there are four main steps to be followed. The figure demonstrates the basic process for the DeviceNet communication between masters and slaves.
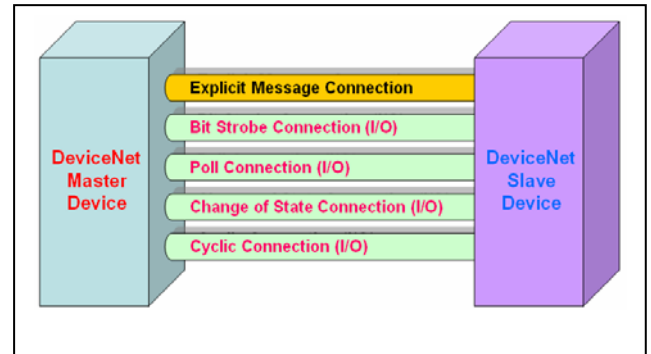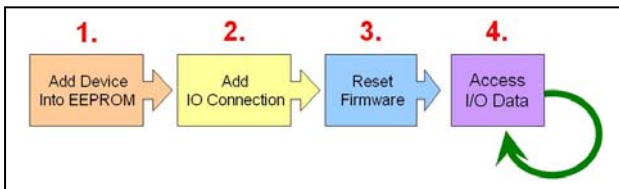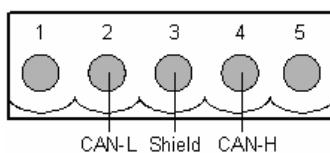

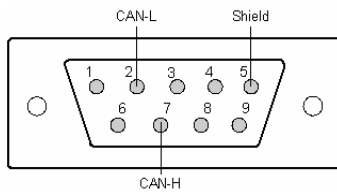## 3. Hardware Setting

● Terminal Resister Setting
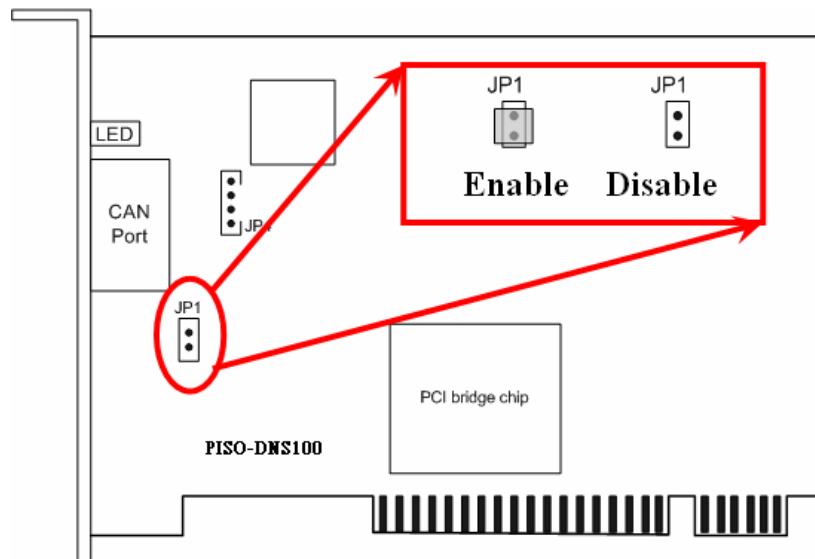
● Pin assignment
   (1) *5-pin screw terminal connector*

Pin No.	Signal	Description
1	N/A	Not available
2	CAN_L	CAN_L bus line(dominant low)
3	CAN_Shield	Optional CAN Shield
4	CAN_H	CAN_H bus line(dominant high)
5	N/A	Not available

(2) 9-pin D-sub male connector

Pin No.	Signal	Description
1	N/A	No use
2	CAN_L	CAN_L bus line (dominant low)
3	N/A	No use
4	N/A	No use
5	CAN_SHLD	Optional CAN Shield
6	N/A	No use
7	CAN_H	CAN_H bus line (dominant high)
8	N/A	No use
9	N/A	No use

● Wire Connection of the CAN Bus

Here shows the users how to connect the master and slave devices by CAN bus. The slave devices should be connected to form the serial type which is shown as follows.
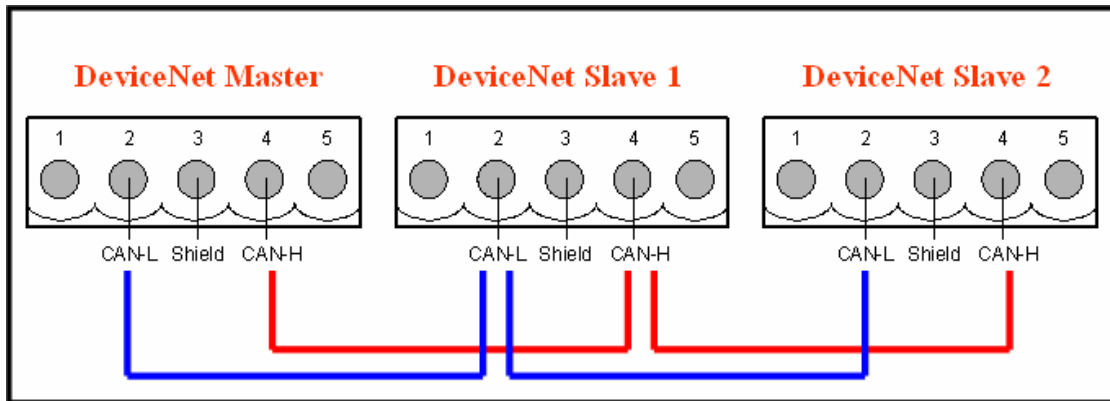

The following wire connection is **wrong** which is shown as follows.
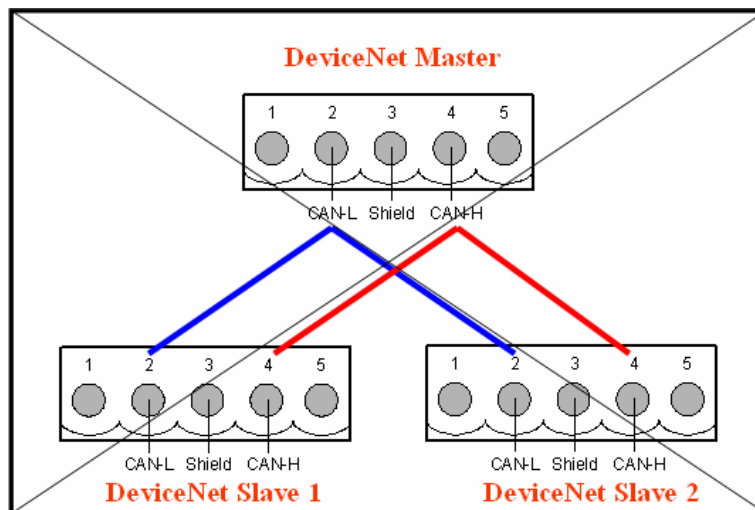
● Indicator LED

	Green LED	Red LED	Event or Status Description
1	OFF	ON	There are some problems with the hardware of the PISO-DNS100 board. Please contact your local field agent.
2	OFF	Twinkle	There are some slaves which can not be on-line. There exists at least one duplicate MAC ID in the DeviceNet network.
3	ON	OFF	This indicates that the firmware is working. All slave devices in the PISO-DNS100 are communicating with the master successfully.
4	ON	ON	This indicates that the firmware works fine. But there is no any slave device configuration inside the EEPROM of the PISO-DNS100.
5	Twinkle	OFF	1. There are slaves which have problems with the communication. 2. The slaves are on-line and waiting for the request message from the master.

●Hardware Installation
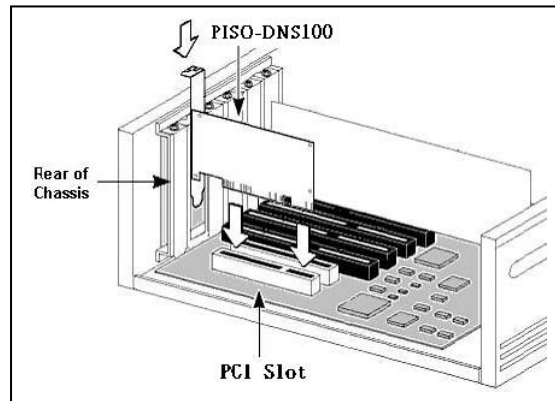
●Virtual DeviceNet Slaves
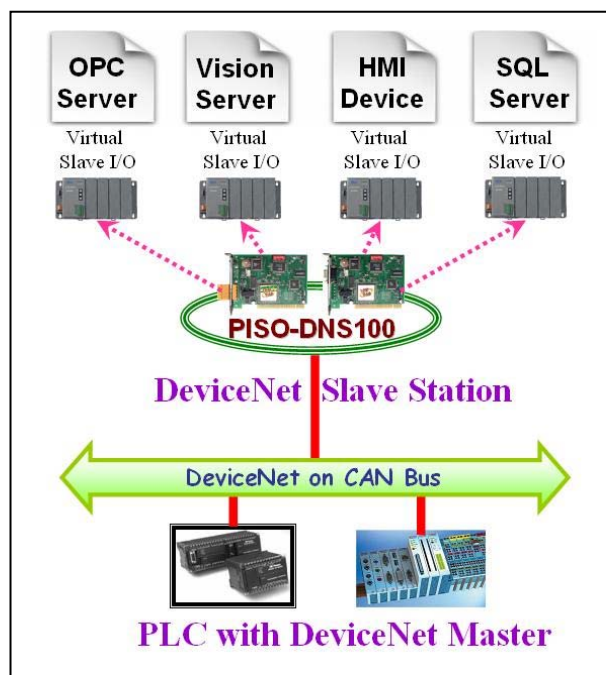
4. Driver installation

The driver of PISO-DNS00 can be used in 98/Me/NT/2000/XP Windows environments. Then the installation process would copy the related material to the indicated directory and register the driver on your computer. The driver target directory is below for the different systems.

Windows NT/2000 – **WINNT\SYSTEM32\DRIVERS**

Windows 98/Me/XP – **WINDOWS\SYSTEM32\DRIVERS**

The other data and resource is copied to the following directory:

C:\ICPDAS\PISO-DNS100

You can find the software in the path of /devicenet/slave/piso-dns100 in the Fieldbus_CD
or from ftp://ftp.icpdas.com.tw/pub/cd/fieldbus_cd/devicenet/slave/piso-dns100

After installing the software, the related software, demos and manuals are also installed in your PC.
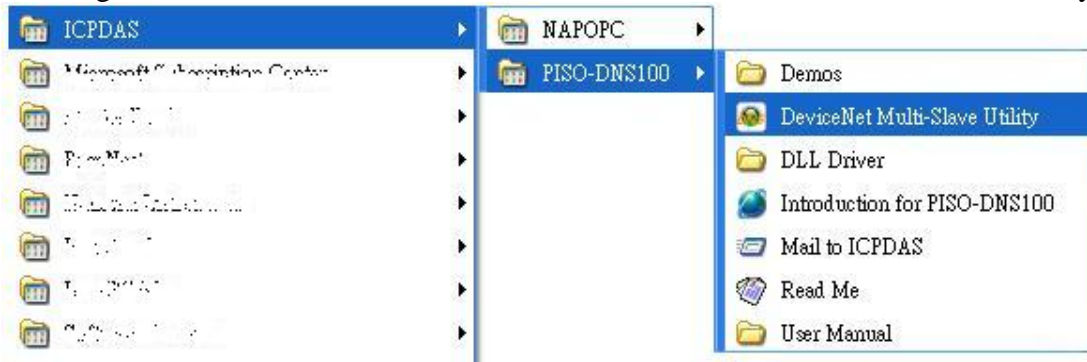
# 5. DeviceNet Multi-Slave Toolkit

After completing the software installation, the toolkit is installed in the system above.
Please refer to the manual of toolkit to know the detail. The utility features as follows.
- Supports to add and remove slave devices in the PISO-DNS100.
- Can import and export all configurations into or from the EEPROM easily.
- Can build EDS file dynamically.
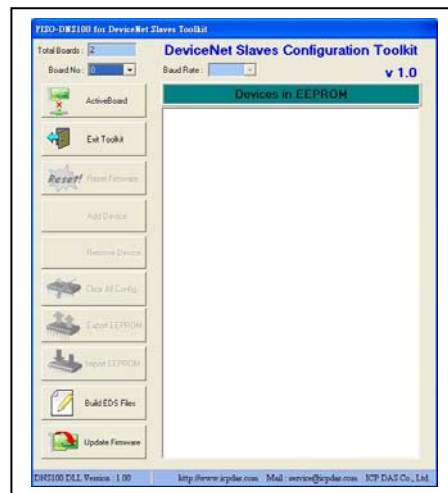
6.   Exchange I/O data with the master device

1. The DIP-Switch on the board means the ID of this board. The users should make sure that every board's ID in your PC is unique. The drop-down list would show the board's ID which the users have set. Please click the "ActiveBoard" button to active the specific board which you have selected in the "Board No" field.

2. After pushing the "ActiveBoard" button, it would show the baud rate and all the slave configurations which are stored in the EEPROM. The configurations of all slaves are shown in the "Device in EEPROM" field and illustrated as device icon. The users can read and manage the configurations of all slaves easily.
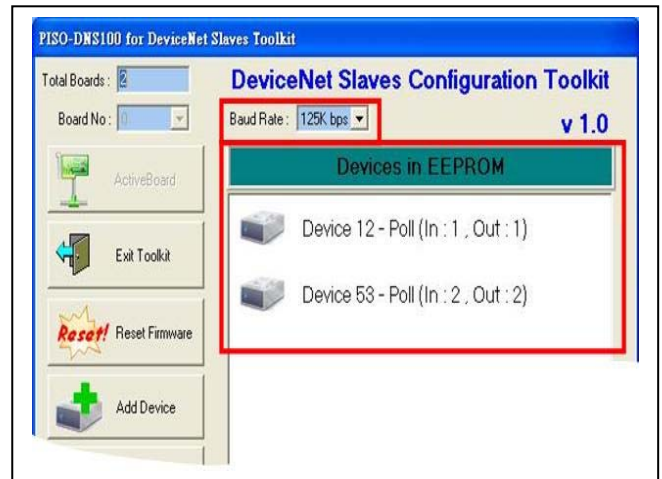
3. Pressing "Clear All Config" to clear unknown information. This button would also reset the baud rate to the default value (125K). It pops up a dialog to make sure that you want to clear them. After clearing successfully, the users should change the baud rate to the original setting.

4. Pressing "Add Device" button to add the slave into the EEPROM. It pops up a "New Device Configuration" dialog. Please use the following setting to fit the quick start demo.
MAC ID = 12 , I/O Type = Poll
Input Length = 1 , Output Length = 1
Please press "OK" button to add it.
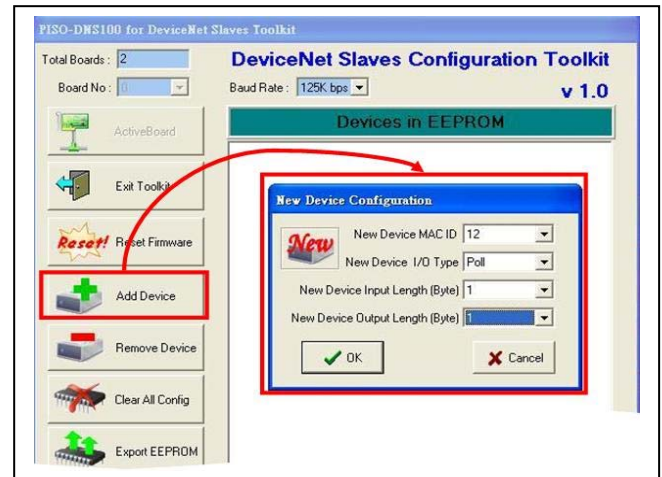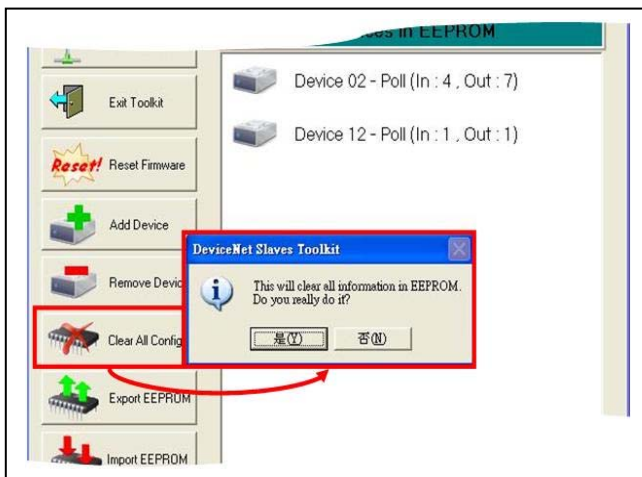
5. If the users have added the slave device (ID= 12) successfully, you would see two dialog with successful message. The users would find out that there was a new item in the "Devices in EEPROM" field.

6. Clicking the "Reset Firmware" button to reset the firmware. This would make your new setting enable. After clicking this button, the users should wait for 1 or 2 seconds to make the firmware boot up completely. When booting up successfully, the toolkit would upload all information from the EEPROM again.
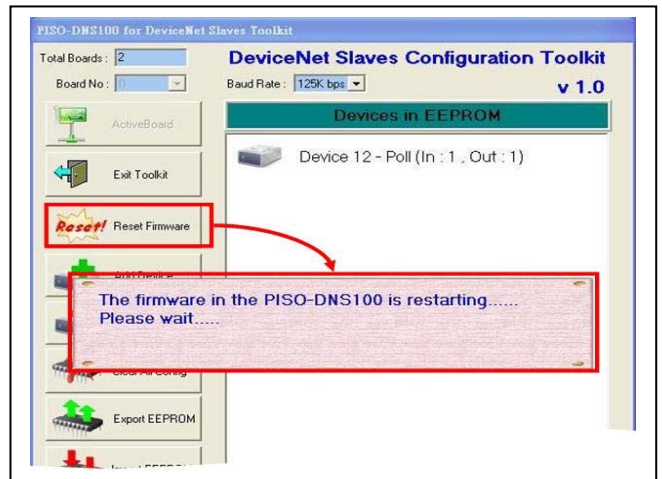
7. Please press "Exit Toolkit" to exist the software. And find the quick start demo at C:\ICPDAS\PISO-DNS100\Demo\QuickStart Demo\Project1.exe. After executing the demo, it would also search the PISO-DNS100 boards in your PC.
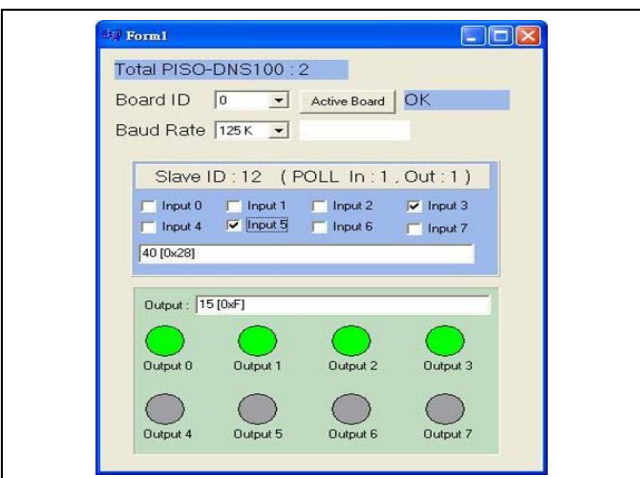
8. Please click "ActiveBoard" button to active the specific board which you have selected in the "Board ID" field. Note that the value of "Board ID" must the same with the previous selection of the toolkit.

9. After clicking "active board" successfully, the slave would wait for the master request message. If it shows the error message at the output filed, it means that master device doesn't communicate with the slave device. Please check the master's setting or the baud rate of the network

10. If the master is communicating with this slave device, it shows the output value which was sent by the master device at the output filed. It means that the master can exchange the I/O data with the slave device.
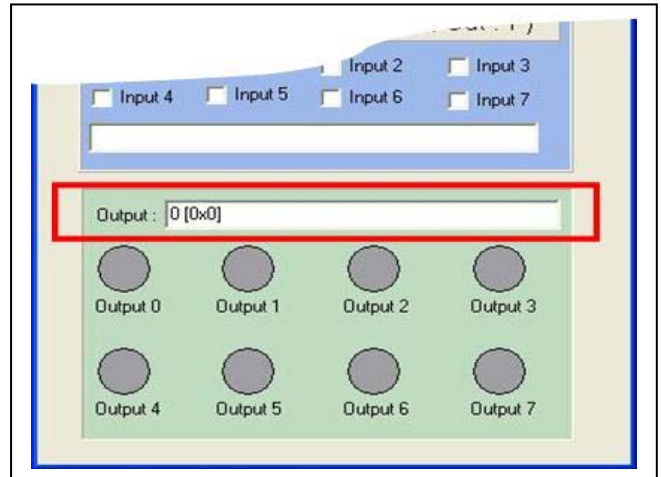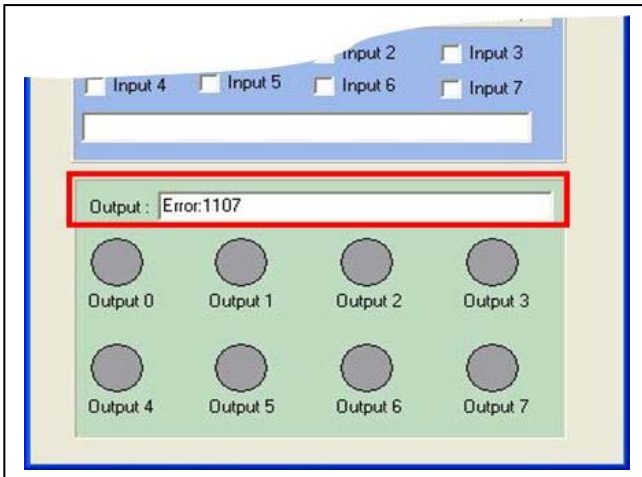
11. After communicating with the master device, the user can press the check-box to change the input data of the slave device. The users can find out that the input value in the master site is changing synchronous.

12. When the master is communicating with this slave device, the user can change the output value in the master site. The user would find out that the output value in the output filed is changing synchronously in the output filed of the slave.