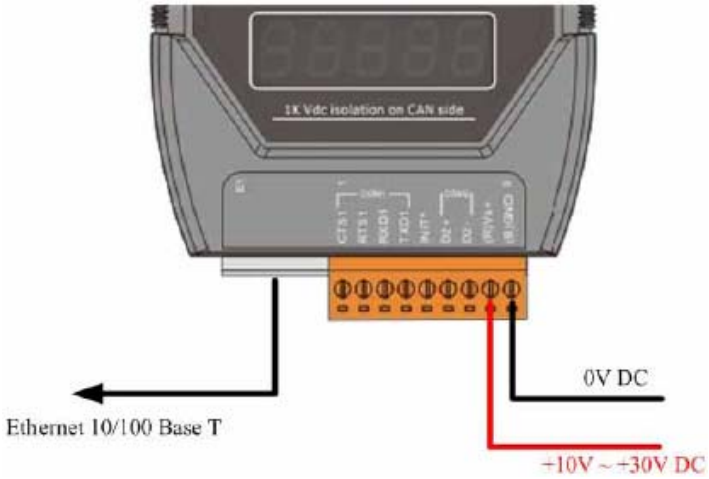
GW-7433D
MODBUS TCP Server & RTU Slave to CANopen Master

Quick Start User Guide

1. Hardware Installation

Step1: Connect the (R) Vs+ and (B) GND pins of the GW-7433D module to the DC power supply (10~30VDC).

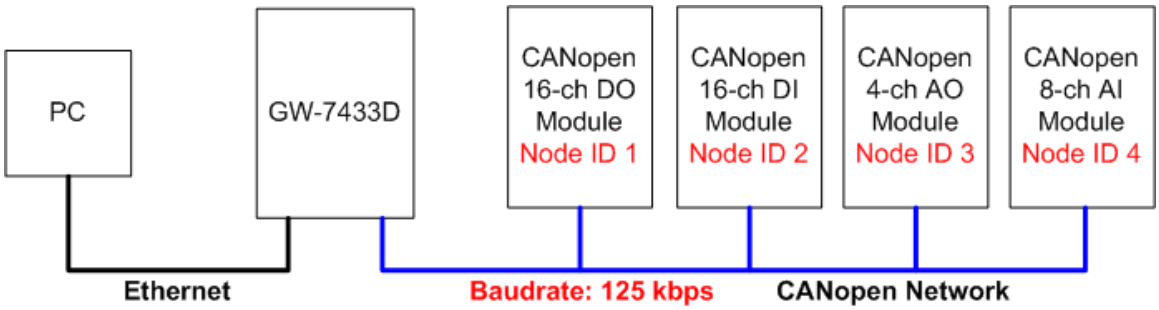


Step2: Connect the Ethernet ports of the GW-7433D and the PC to the hub with standard network cable respectively.

Step3: Connect the CAN ports of theGW-7433D with CANopen slave devices.

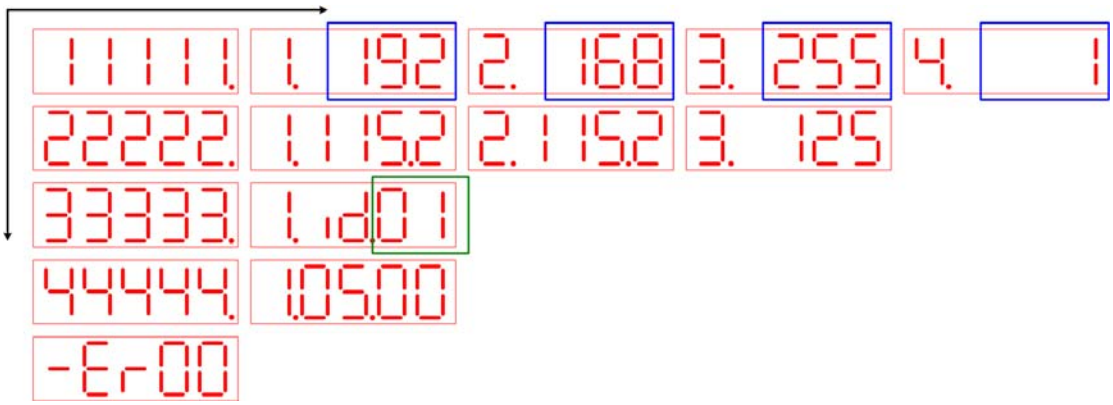
2. Connect CANopen Slave

Connect some I/O devices of CANopen slave to GW-7433D. About the setting parameters of these CANopen slaves are as following picture.

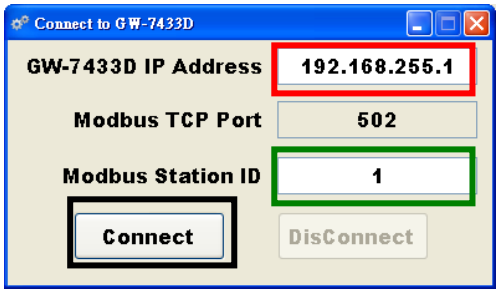


3. Configure GW-7433D

Step1: Check the Ethernet IP and Modbus station ID of the GW-7433D by the 5 digital 7-segment LED on the GW-7433D. The LED shows Ethernet, Com, CAN, and Modbus information of the GW-7433D by truns as following figure. The **4 Blue frames** are the GW-7433D IP address, and the **Green frame** is the GW-7433D Modbus station ID.



Step2: Executes the GW-7433D utility, key in the GW-7433D IP address and Modbus station ID, and then click “Connect” button to connect to the GW-7433D module as follow.



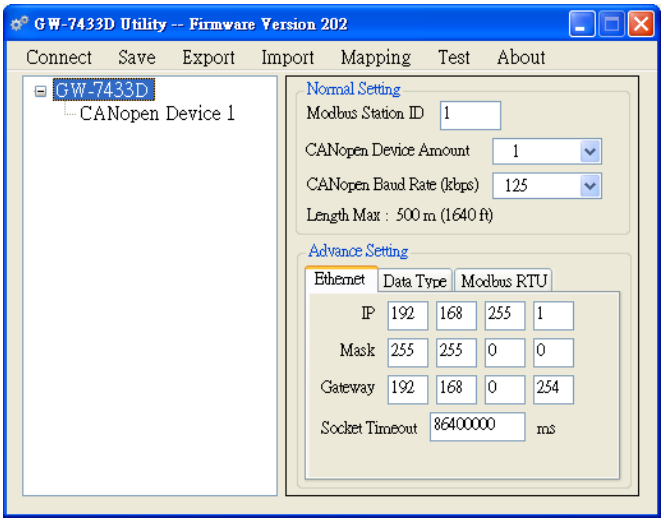
**** GW-7433D utility path:**

CD path: CD://Fieldbus_cd/canopen/gateway/gw-7433d/utility/

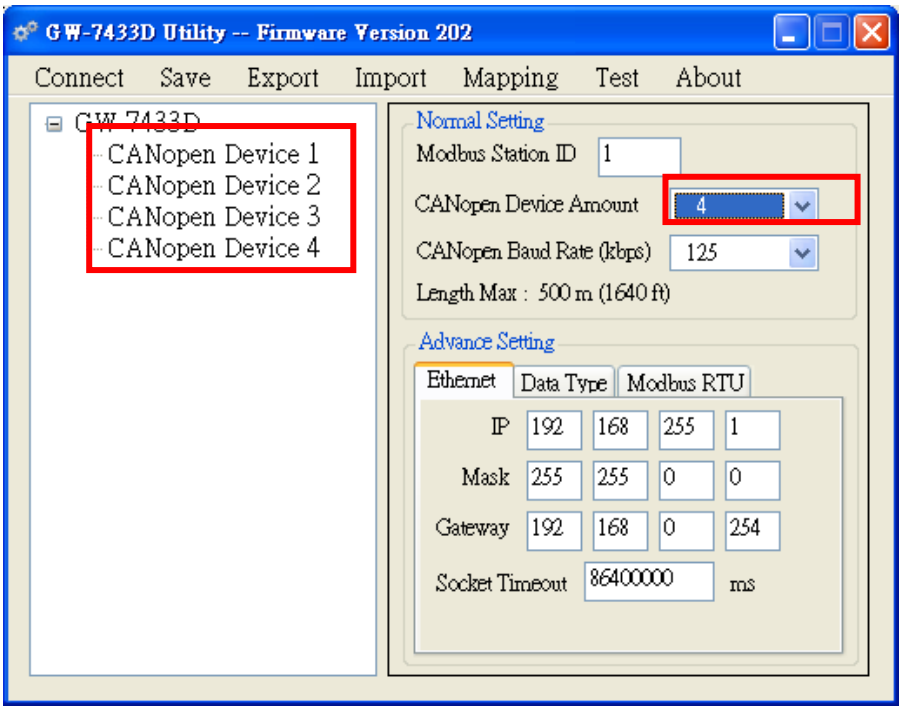
Web path:

http://ftp.icpdas.com/pub/cd/fieldbus_cd/canopen/gateway/gw-7433d/utility/

Step3: After finishing the connection of the GW-7433D module, the utility will get the original configuration of the GW-7433D and show as follow.

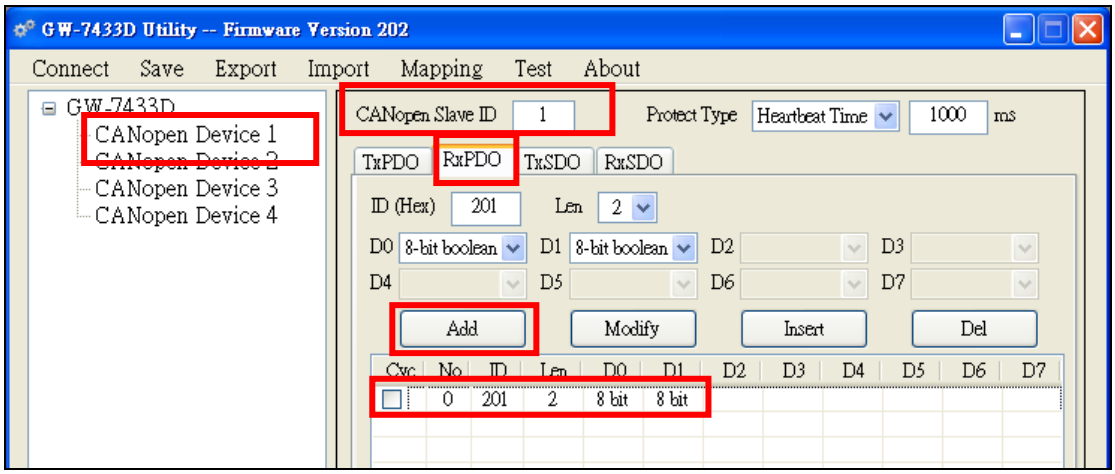


Step4: Because there are 4 CANopen slaves in this demo, select the "CANopen Device Amount" combo box to 4. And the device list in the left hand side will show 4 CANopen device items. If users want to change Modbus station ID and IP address, just input them in the suitable text box.

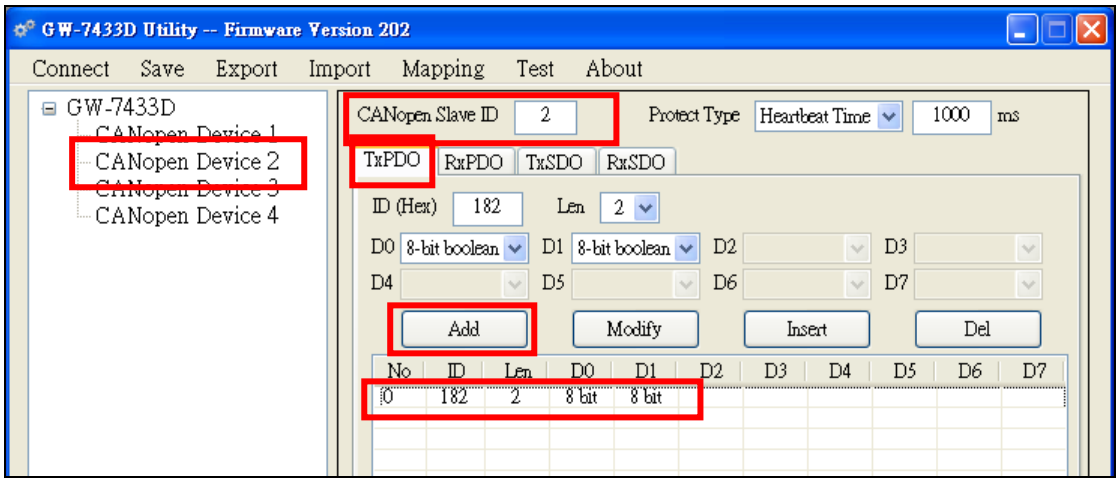


Step5: Click the "CANopen Device 1" item to configure the slave CANopen messages as following figure (assume that the device 1 is a 16-ch DO module with node ID 1). For example, add an RxPDO message with Cob ID 0x201 and 2-bytes Boolean data into the configuration of the GW-7433D.

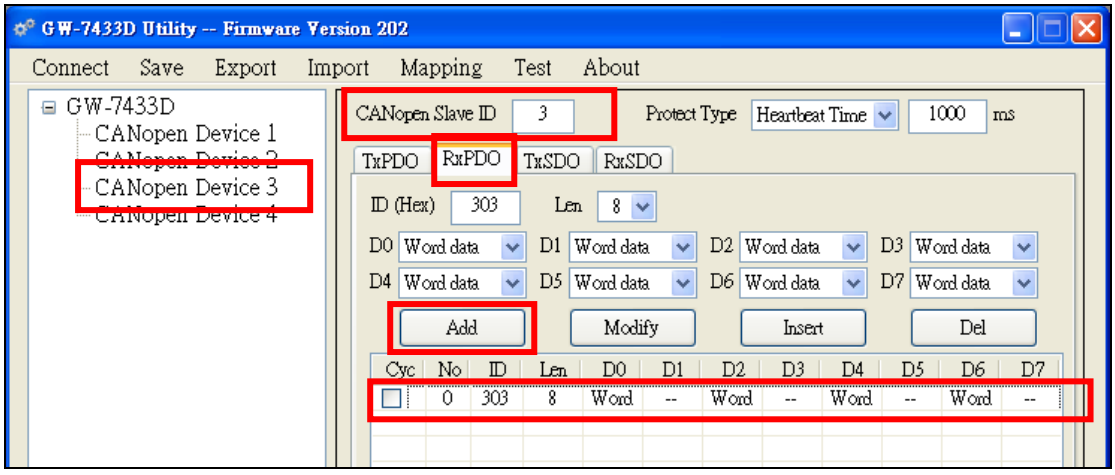
About how many CAN messages the users need to arrange, please refer to the CANopen slave user manual.



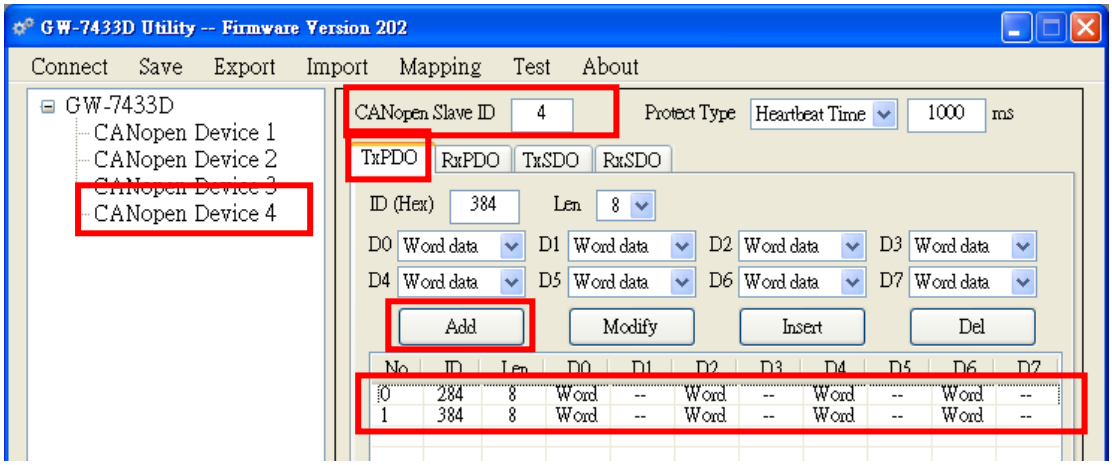
Step6: Click the "CANopen Device 2" item to configure the CANopen message as the following figure (the device 2 is a 16-ch DI module with node ID 2). This configuration is similar with the step 5. For example, add a TxPDO message with Cob ID 0x182 and 2-bytes Boolean data into the configuration of the GW-7433D.



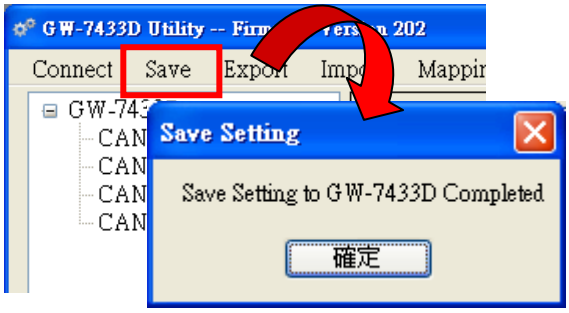
Step7: Click the "CANopen Device 3" item to configure the CANopen message (the device 3 is a 4-ch AO module with node ID 3). For example, add an RxPDO with Cob ID 0x203 and 4-word data into the message list.



Step8: Click the “CANopen Device 4” item to configure the CANopen messages (the device 4 is an 8-ch AI module with node ID 4). For example, add two TxPDO messages with Cob ID 0x284 with 4-word data and 0x384 with 4-word data into the configuration of the GW-7433DD.

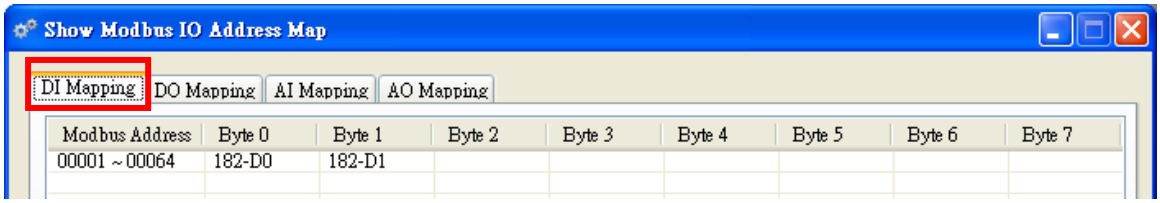


Step9: After finishing the setting (Setp5 ~ 8), click the “Save” button to save these parameters. If successfully, the GW-7433D utility will show a message box as below.



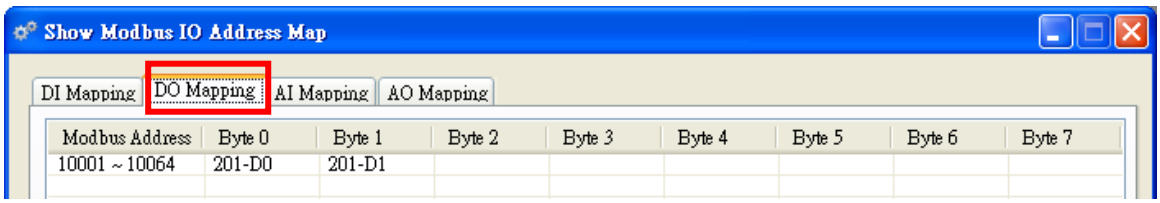
Step10: Click “Mapping” item on the tool bar to see mapping of Modbus address for each data of the CANopen messages. The following figures are DI, DO, AI, AO map dialog.

In the DI mapping list, the Modbus address 00001 ~ 00008 is mapped to TxPDO 0x182 D0 byte and 00009 ~ 000016 is mapped to TxPDO 0x182 D1 byte.

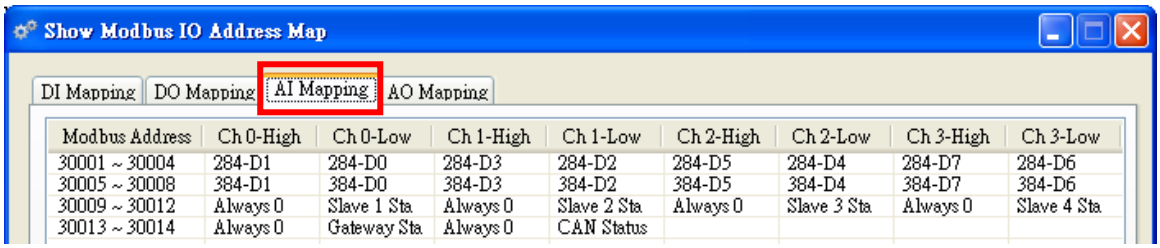


In the DO mapping list, the Modbus address 10001 ~ 10008 is

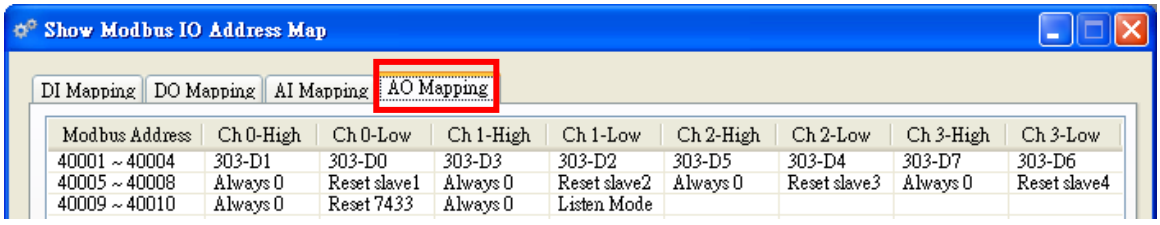
mapped to RxPDO 0x201 D0 byte and 10009 ~ 100016 is mapped to RxPDO 0x201 D1 byte



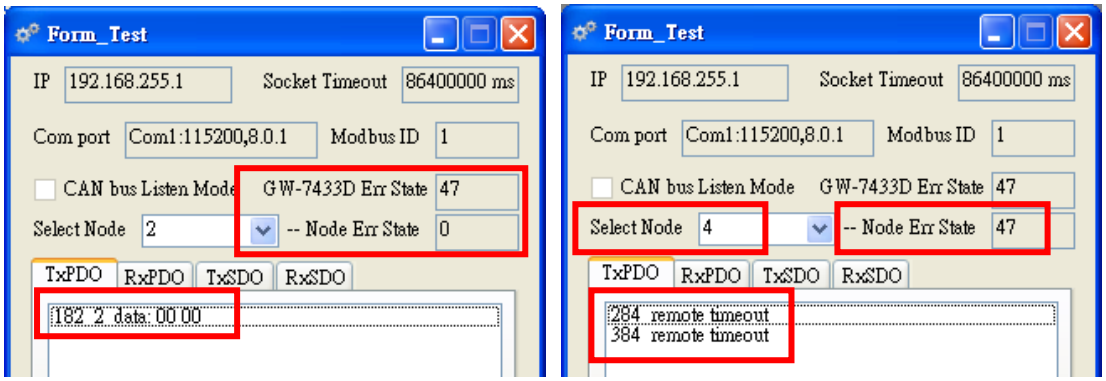
In AI mapping list, the Modbus address 30001 is mapped to TxPDO 0x284 D1 and D0 bytes, 30002 is mapped to TxPDO 0x284 D3 and D2 bytes, 30003 is mapped to TxPDO 0x284 D4 and D5 bytes, and so on. And the special addresses (30009 ~ 30014) are slave status (slave 1 ~ 4), GW-7433D status, and CAN bus status. About the detail information of the special addresses please refer to the GW-7433D user manual section 4.2.2.



In AO mapping list, the Modbus address 40001 is mapped to RxPDO 0x303 D1 and D0 bytes, 40002 is mapped to RxPDO 0x303 D3 and D2 bytes, 40003 is mapped to RxPDO 0x303 D4 and D5 bytes, and so on. And the special addresses (40005 ~ 40010) are slave reset command (slave 1 ~ 4), GW-7433D reset command, and Listen Mode setting command. About the detail information of the special addresses please refer to the GW-7433D user manual section 4.2.2.



Step11: Click “Test” item on the tool bar to into test mode. The test mode can help user to check if the setting of the GW-7433D is correct.



On the "Test" dialog, users can check some important parameters such as if the IP address, Com port setting, and Modbus station ID are correct, if the socket timeout value is long enough, if the GW-7433D is in listen mode, and if the connection is no problem. For example, the above dialog in the left hand side shows that the GW-7433D has error code 47 (a CANopen slave had disconnected) but the slave node 2 has no error (Node Err State is 0). So user can know that, at least one node is disconnected but not the node 2. After checking all nodes, users can find the nodes which have disconnected or have some problems in CAN message configuration. For example, the dialog in the right hand side indicates that the node 4 is disconnected. Users need to check the connection or the message configuration of the node 4 to solve the problems.

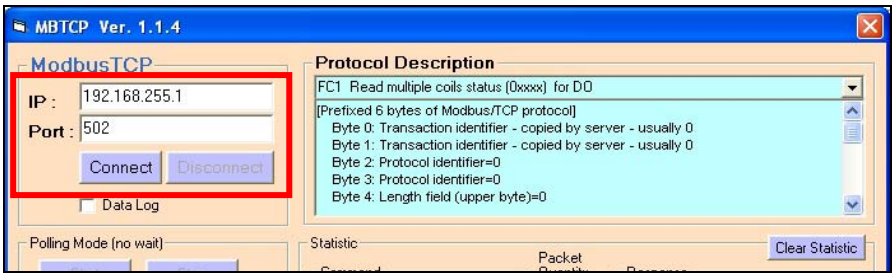
Step12: If the test has problems, close the test mode, change the configuration, save it to GW-7433D, and test again until the configuration is OK.

4. Start to Read Write GW-7433D

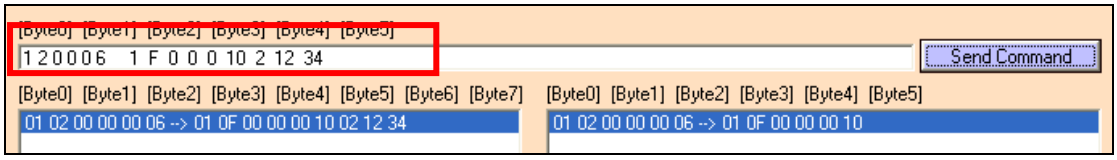
Execute Modbus TCP software which can send standard Modbus TCP command such as ICP DAS Modbus utility. Users can free download from the following web site:

http://www.icpdas.com/products/PAC/i-8000/modbus_web_download.htm

Before sending the Modbus TCP command, users need to input the correct IP address of the GW-7433D in the Modbus TCP utility to build the connection between the utility and the GW-7433D.

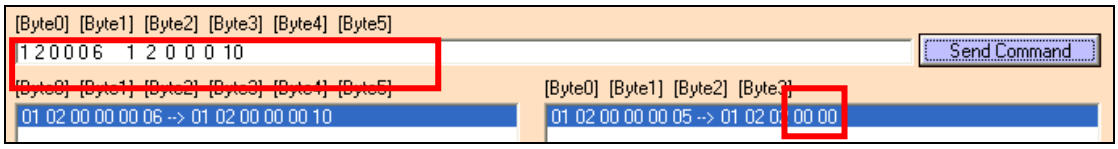


Output DO:



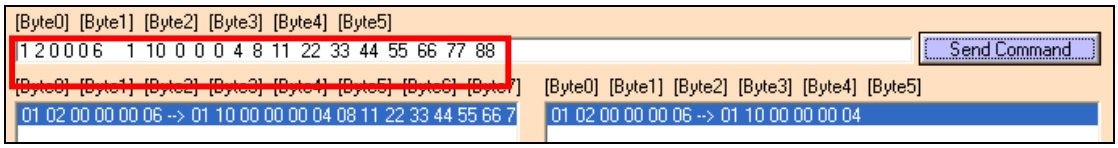
In order to send an output DO command, the Modbus TCP header is “0x1 0x2 0x0 0x0 0x0 0x6”, the GW-7433D Modbus station ID is “0x1”, the Modbus function code is “0xF”. The output start address is set to 0x0000 (PLC address is from 10001), and output length is 0x0010 and 0x02 (means 16 bits, or 2 bytes), and the output DO data is “0x12” and “0x34”. When the GW-7433D receives this command, it will send a CANopen PDO message with Cob ID 0x201, data length 2 bytes and output data D0 = 0x12, D1 = 0x34.

Input DI:



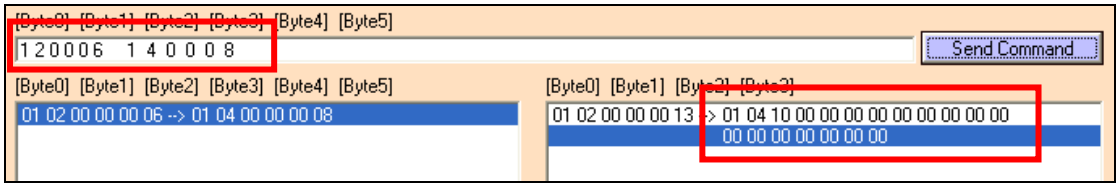
The read DI command from address 0x0000 responses the data “0x0000” for 16-ch DI.

Output AO:



Send the above command to the GW-7433D, the GW-7433D will send a PDO message with Cob ID 0x303 and 8-bytes length data, 0x22, 0x11, 0x44, 0x33, 0x66, 0x55, 0x88, 0x77 to the CANopen network.

Input AI:



Send the above command to read 8-ch AI data. The GW-7433D will send two RTR PDO messages with Cob ID 0x284 and 0x384 to get the AI data.