



Project: COPM user manual

Objective: To teach the user how to use COPM module.

Author: Ken (INVT)

CANopen communication module configuration

1. Auto Station software configuration

You can select **Project Manager->System Block->Communication Module** to enter the interface of communication module configuration and then set the type for PLC main module and the property of each communication module (the interface will be invisible if PLC main module does not support the setting).

The interface of communication module configuration is shown in Figure 1.

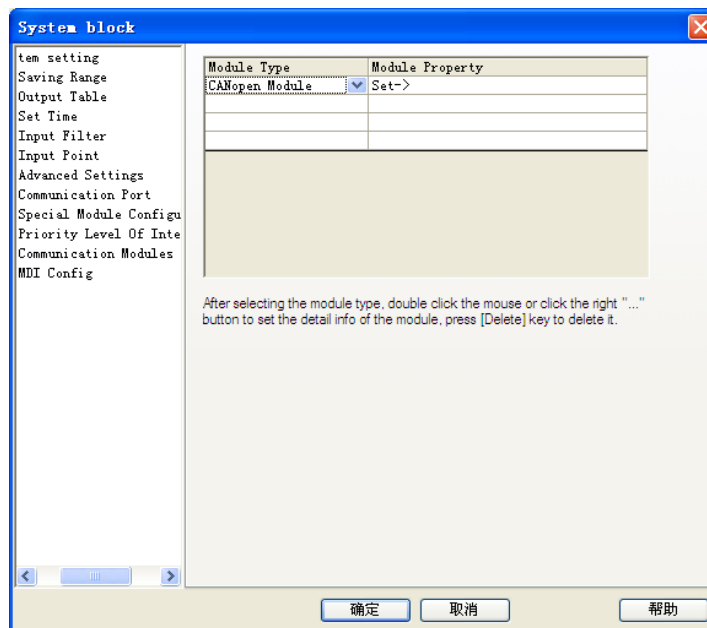


Figure 1 Interface of communication module configuration

After selecting the type of CANopen module, you can set the module in details by double click the column or click the **Set** button.

The interface of CANopen module configuration is shown in Figure 2.

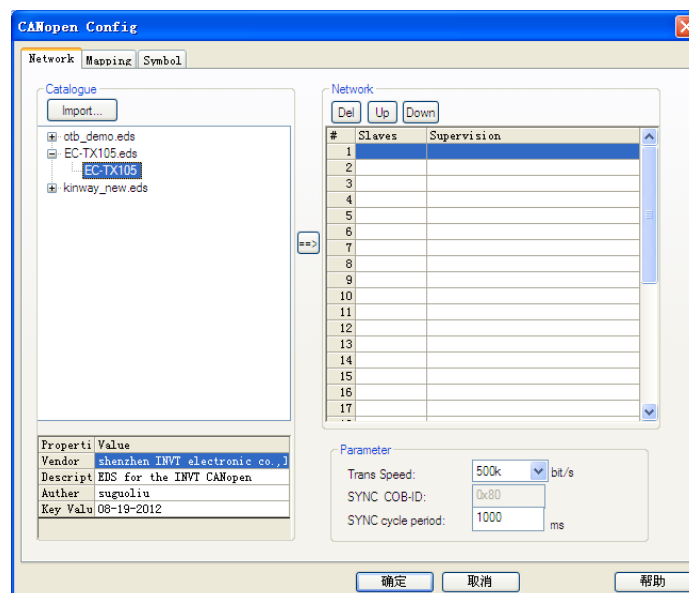


Figure 2 Interface of CANopen module configuration

Configuration procedures:

(1) Import eds file

Click the **Import** button and open the eds file in the storage directory. After imported successfully, the file appears in the catalog of configuration interface.

(2) Add node to network

Double click the product name below the added eds file, or after selecting the product name, click the ==> button to add it to network. You can click the **Up** or **Down** button to select the station and click the **Del** button to delete the station.

The interface for adding node to network is shown in Figure 3.

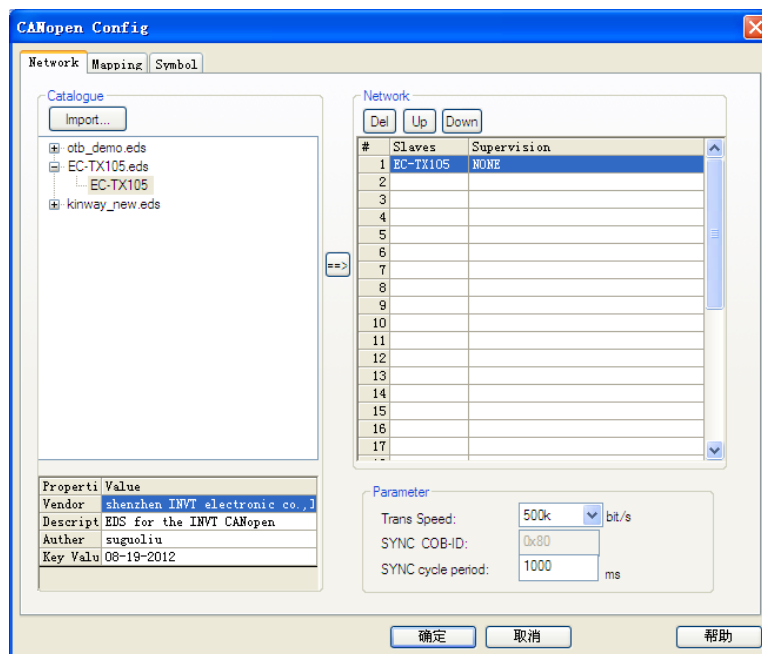


Figure 3 Add node to network

(3) Select error control protocol

Select the error control protocol by double click the station. According to the conditions of the equipment, you can select None, Heartbeat protocol and Node Guarding protocol.

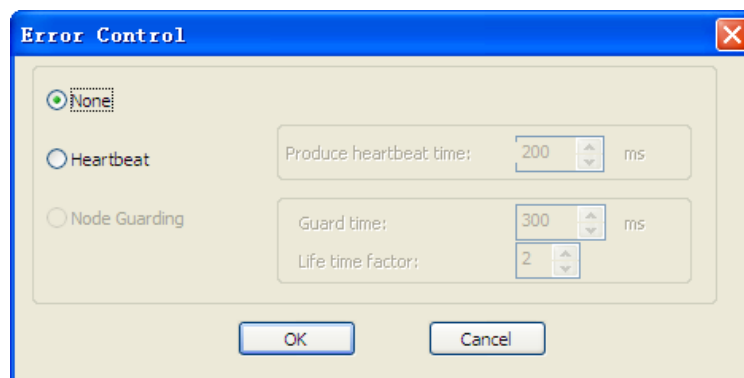


Figure 4 Select error control protocol

(4)Configure mapping relationship

You can open the interface of mapping configuration by selecting the **Mapping** option in the interface of CANopen configuration. The available object, PDO and mapped object will be displayed on the right by click the **Slaves** Station, as shown in Figure 5.

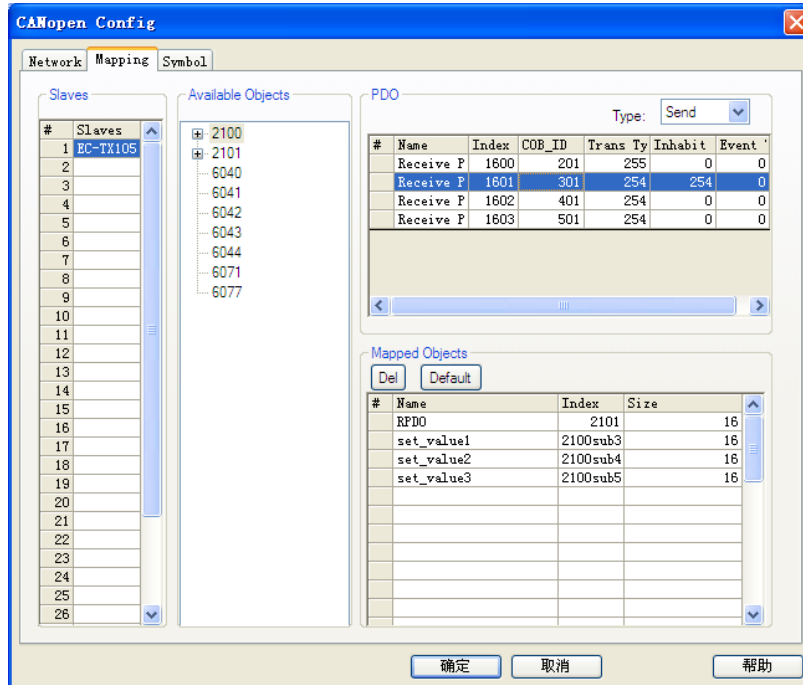


Figure 5 Station mapping relationship

(5)Add object to PDO

You can switch **receive** or **send** PDO display by PDO type selection and add the object to the mapped object by double click the **Available Object**.

(6)Configure PDO

Double click any PDO, and after the dialog pops up, you can configure the PDO transmission type and property. Ensure the specific settings are consistent with hardware device.

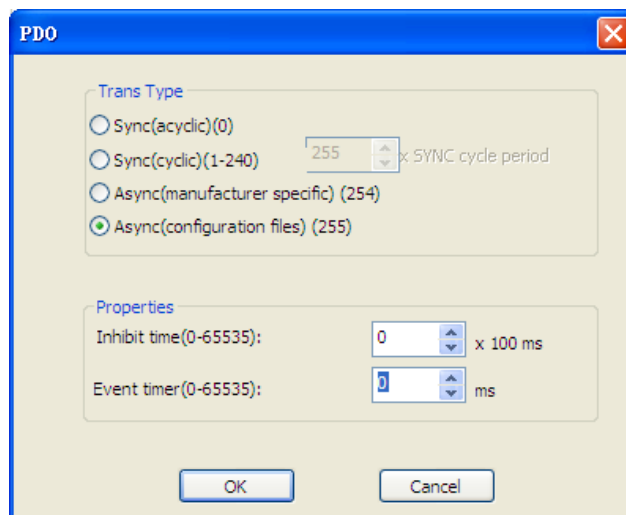


Figure 6 PDO configuration

(7)Configure PDO corresponding to D elements

Select the **Symbol** option in the interface of CANopen configuration, set the corresponding First D element in BFM area, and then set the access address from the First D element for the elements receive and send PDO. The access address shall be greater than or equal to the First D element. For example, if the First D element is D5000, the access address will be D5000+n. The element access addresses can be filled automatically through **Reset Access Address** button and the distributed access addresses can be added to the global variable table through **Generate Global Variable** button for the convenience of LAD programming.

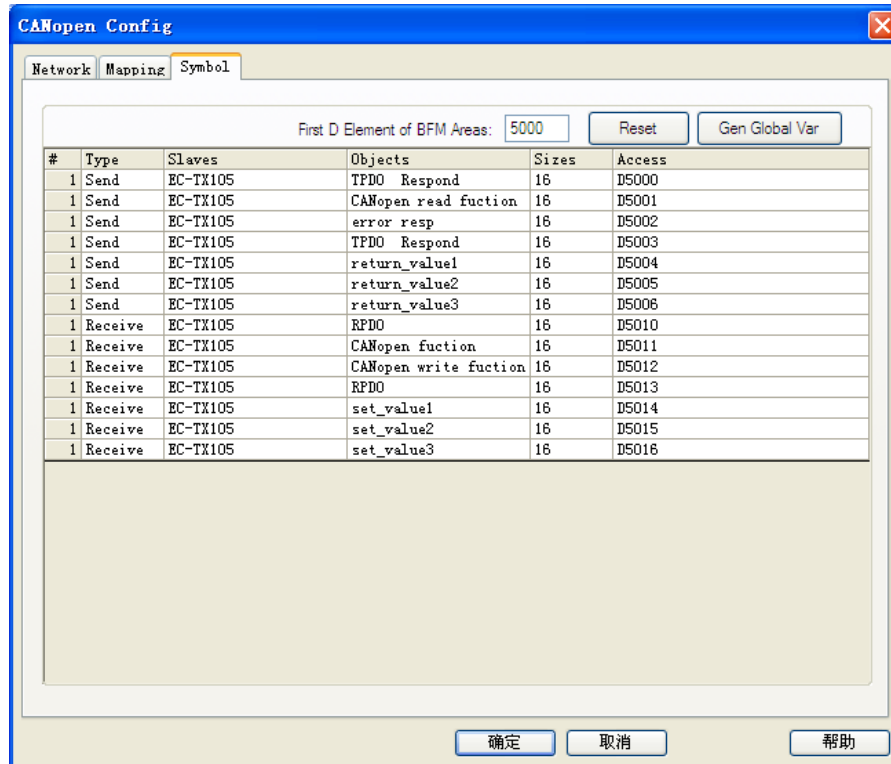


Figure 7 D element configuration

(8)Set bus parameters

The bus transmission speed shall be consistent. Synchronous message cycle setting is used for data sending of slave station. (Default transmission speed: 500k/s, default synchronous message cycle: 0ms)

(9)Compile PLC application program

Use the mapped D elements to compile PLC application program and download to PLC.

(10)Establish communication

Monitor and modify the parameters of the equipment via element monitoring table, or read and change CANopen object values via SDO of PLC.

2. INVT inverter configuration (GD300)

V/F control mode

- (1) Wiring: Connect DB9 male to DB9 female of EC-TX105 communication card, solder the wires at 2 and 7 pins, and connect 2 pin to CAN_L of COPM module and 7 pin to CAN_H of COPM module. Or connect CAN_L of 3PIN open terminal to CAN_L of COPM module and CAN_H to CAN_H of COPM module.
- (2) Import the configuration file EC-TX105.eds of EC-TX105 communication card which can be downloaded from official website.
- (3) Set **P00.01** running command channel to 2 (communication running command channel).
- (4) Set **P00.02** communication channel selection to 1 (PROFIBUS\CANopen communication channel).
- (5) Set **P00.06** A frequency command selection to 9 (PROFIBUS\CANopen communication setting).
- (6) Set **P15.00** module type to 1: CANopen.
- (7) Set **P15.01** module address according to the actual situation.
- (8) Set **P15.02** PZD2 receiving to 1: set frequency (unit: 0.01Hz).
- (9) Set **P15.13** PZD2 sending to 1: running frequency (unit: *100, Hz).
- (10) Set **P15.27** CANopen communication baud rate in accordance with bus baud rate.

The settings are only used to test whether COPM module communication is normal. For other mode settings of the inverter, please refer to *Operation Manual of EC-TX105 CANopen Communication Card* and the manual of the inverter.

3.INVT servo drive configuration (DA100)

(1)Wiring

Connect CAN_H of CN3 to CAN_H of COPM module and CAN_L to CAN_L of COPM module.

(2)DA100 configuration

Before using CANopen to control DA100, set the following parameters via LED panel, PC software or SDO:

- 1)P4.02 (CAN communication baud rate selection): communication address: 0x2402; set to 1, baud rate: 500k;
- 2)P4.05 (CAN communication node): communication address: 0x2405; set to 1~127 according to the actual situation;
- 3)P4.10 (type of upper computer), set to 1 (communication bus), communication address: 0x240A; valid after restart;
- 4)P0.03 (control mode selection), configure control mode, 0: position mode; 1: speed mode; 2: torque mode; 3: position/speed compound mode; 4: position/torque compound mode; 5: speed/torque compound mode; 6: fully closed-loop mode; communication address: 0x2003; valid after restart; set to 1, speed mode
- 5)P0.40 (speed command selection), communication address: 0x2028; set to 2, bus input

Note: If one single control mode is used, set the parameter P0.03 via SDO;

If the control mode needs to be changed in operation, select one compound mode of 3, 4 and 5 in P0.03, then map P4.15 (shifting command of control modes) to PDO and shift two different control modes according to P4.15; the communication address of P4.15 is 0x240F, valid immediately.

DA100 needs to set the synchronous message cycle to 1000ms for PDO communication.

For more specific settings of INVT servo drive, please refer to the manual of the servo.

4. Problems during use

(1) After importing the EDS file, PDO cannot display, such as importing EC-TX105.EDS.

The test comes that the problem is caused by:

1) COB-ID value error. For example, entry [1400sub1], DefaultValue=\$NodeID+0x0200. "NodeID" must be all capitalized, that is to say "NODEID"; both the left and right sides of "+" have no spaces; the correct form is DefaultValue=\$NODEID+0x0200.

2) Sub-entry error. For example, the sub-entry [2100suba] must be written in the form of [2100subA].

(2) After downloading PLC program, the red LED of COPM module will be on.

The bus does not work. After PDO or SDO communication, the error will be eliminated.

(3) Abnormal communication

Need to connect the terminal resistor.