

# ZB-2000 Series Modules

## Quick Start Guide



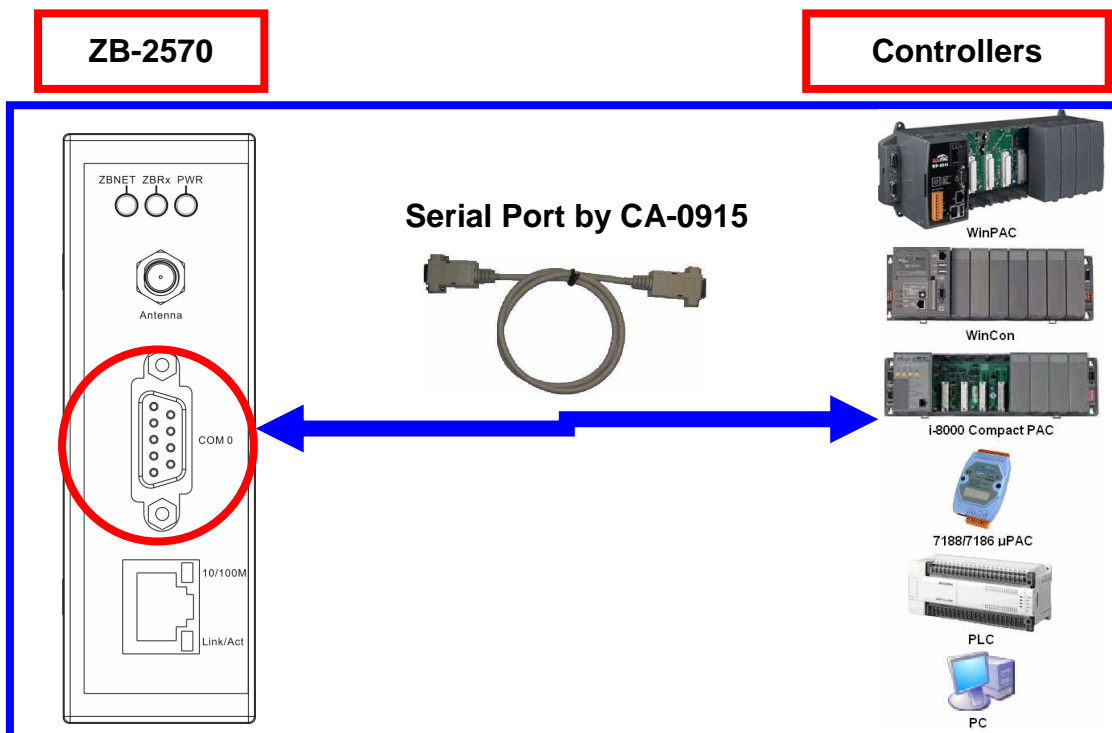
## Introduction

This Quick Start document describes the methods used to quickly set up and test the ZB-2000 series modules using the ICP DAS DCON Utility. First, you must set the ZB-2570 before using any ZB-2000 modules because the ZB-2570 is a Net Server of ZigBee. For more information about the ZB-2570, please refer to the Section 1 ~ Section 4 below or the following links : (“ ZigBee converter quick start “)

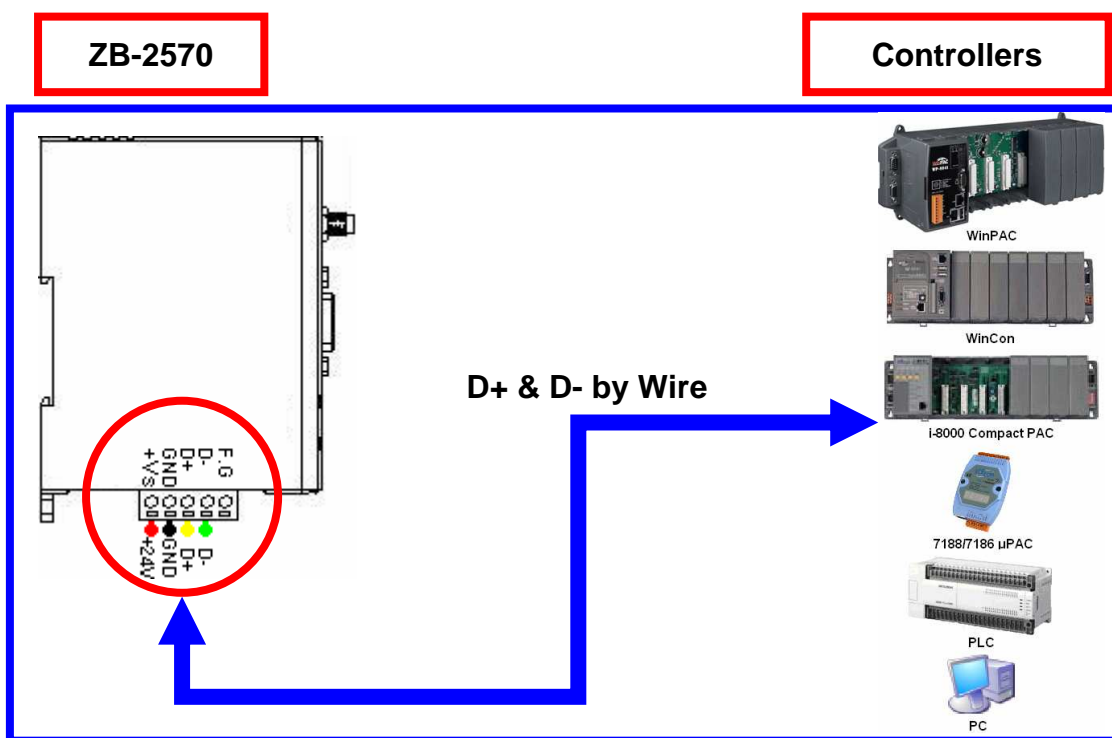
<http://ftp.icpdas.com/pub/cd/usbcd/napdos/zigbee/manual/>

# 1. Installation of the ZB-2570

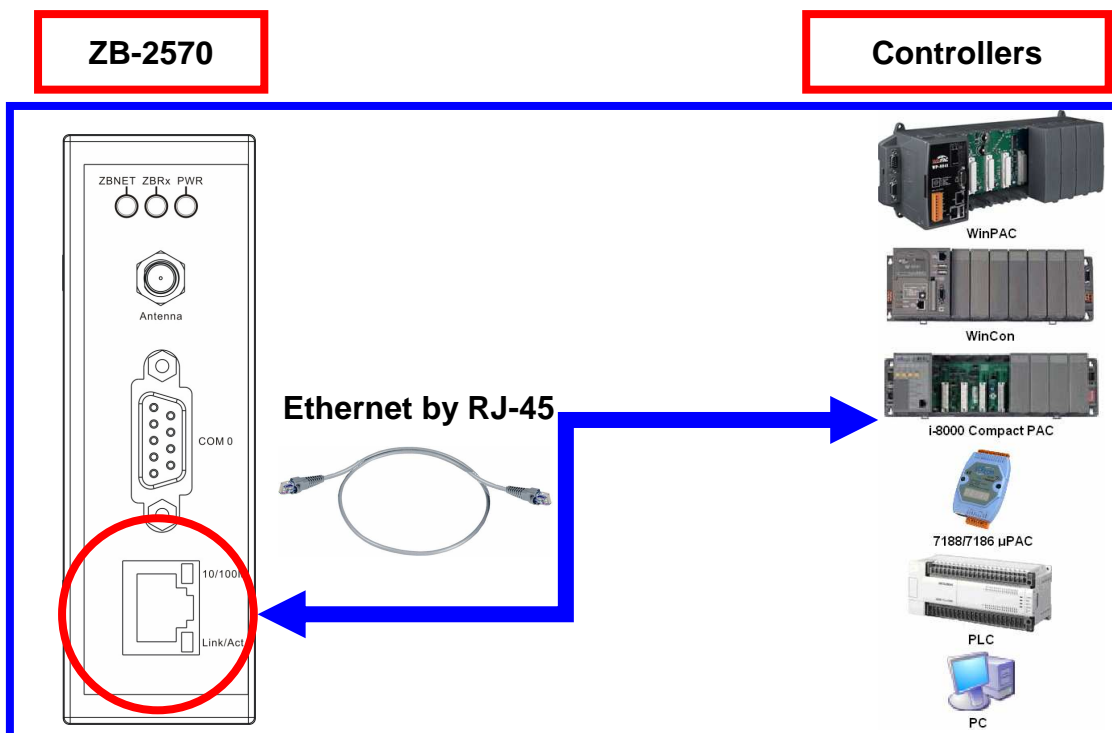
## 1.1. Connecting devices to ZB-2570 by RS-232



## 1.2. Connecting devices to ZB-257x by RS-485



### 1.3. Connecting devices to ZB-257x by Ethernet



## 2. Installation of the Configuration Tool

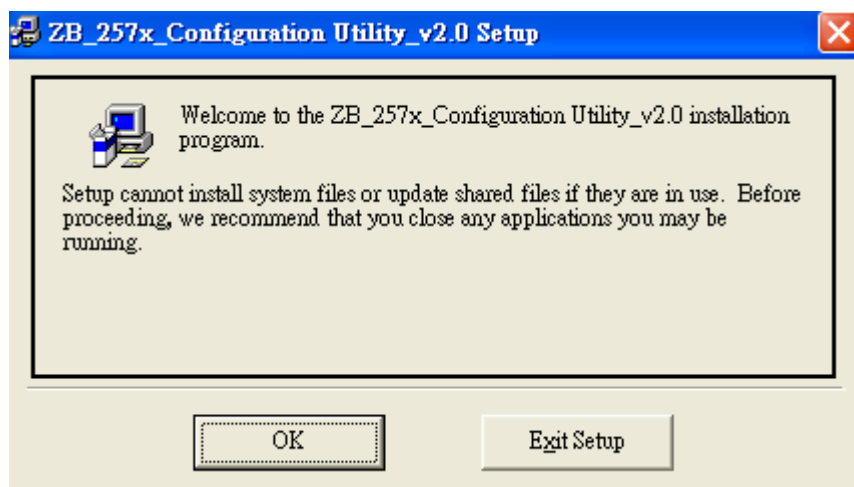
2.1. Please download the file from


<http://ftp.icpdas.com/pub/cd/usbcd/napdos/zigbee/utility/>

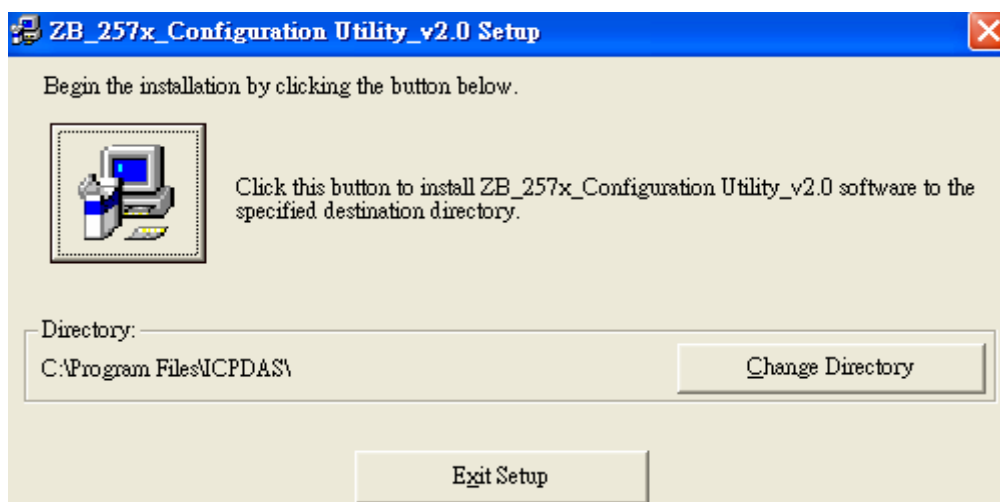
2.2. Uncompress the file in your PC and double-click the **setup.exe** to install the configuration tool for ZigBee converter.



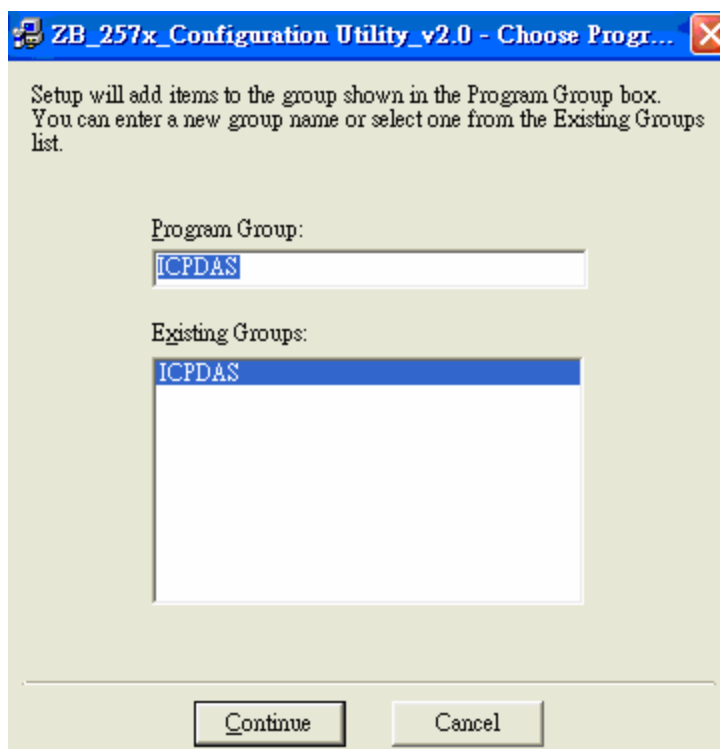
2.3. Click the **OK** button to start the installation when the following screen pops up.



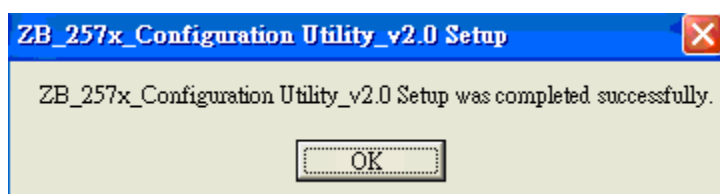
2.4. When the following screen shows up afterwards, you can use our default directory or click **Change Directory** to change the installation directory in your PC. Click  install the software or click **Exit Setup** to exit the installation.



**2.5.** Click **C**ontinue to complete the software installation or click **C**ancel to exit the installation.



**2.6.** Click **O**K. And the installation is successfully completed.



### 3. Quick Start for ZB\_257x Configuration Utility v2.0

3.1. When you configure the ZB-257x, you need to turn the switch to the **ZBSET**, and then make its power on (**Figure 1**). After configuration is done, you need to turn the switch to the **RUN**, and make the power on again (**Figure 2**).

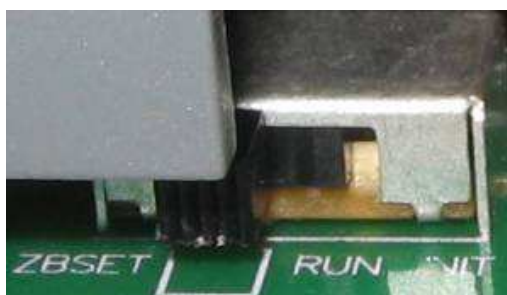


Figure 1

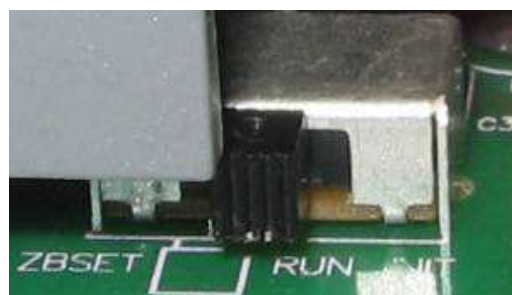


Figure 2

3.2. After you install the utility, you can find the executable file at **Start\Application file\ICPDAS\ZB\_257x Configuration Utility v2.0**



3.3. Connect one of the communication interface (RS-232, RS-485 or Ethernet; the default configuration interface is RS-232) and execute the utility.

3.4. When the following screen shows up:

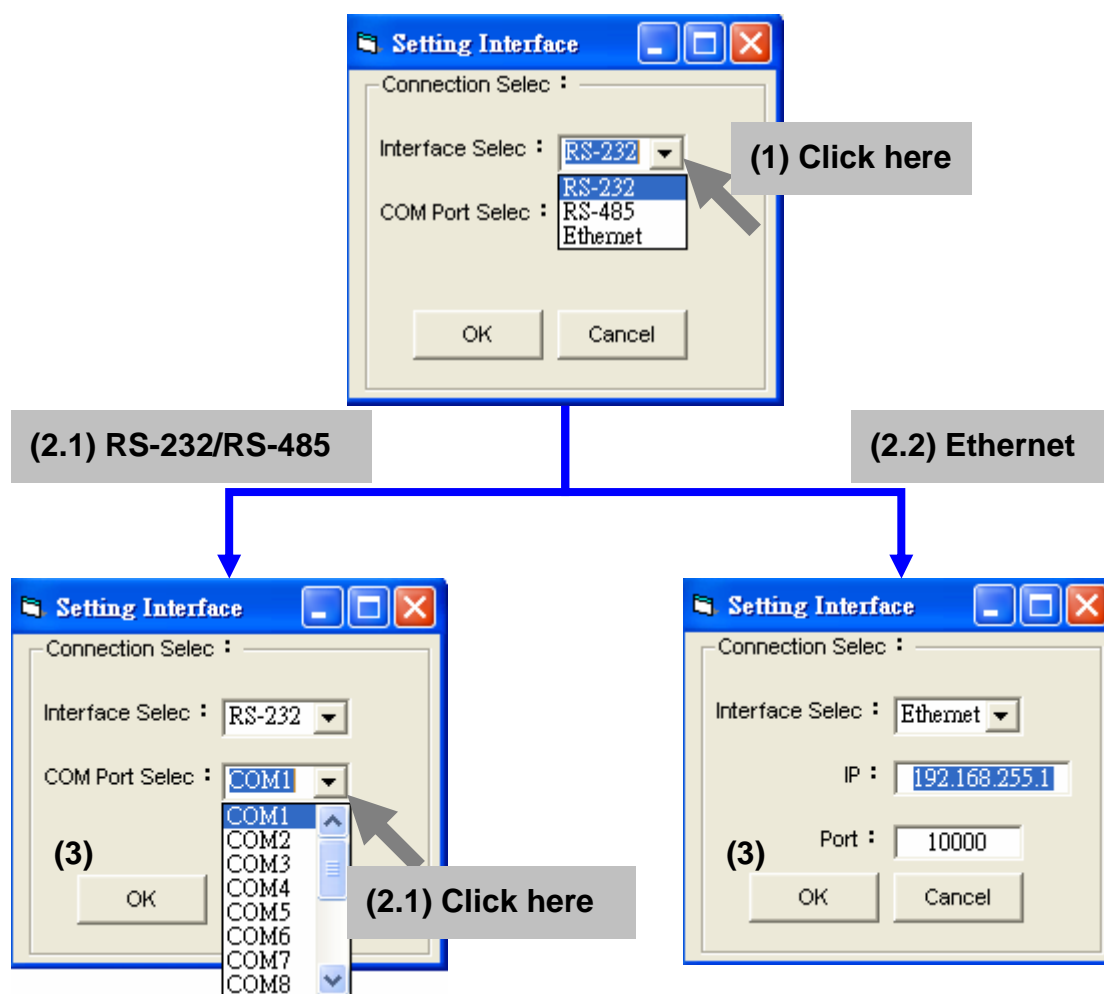


(1) Click **Module** to select the module which you want to configure (**ZB-2570** or **ZB-2571**).

(2.1) Click **Connection** to configure the ZB-257x.

(2.2) Or click **Connect** to configure the ZB-257x.

### 3.5. When the following screen shows up:



- (1) Click “(1) Click Here” to select the interface that brings the PC and the ZB-257x together.
- (2.1) If you use the serial port as the configuration interface, Click “(2.1) Click Here” to select the port number of PC that connects to the ZB-257x.
- (2.2) If you use Ethernet as the configuration interface, enter IP and port of the ZB-257x; the default IP is **192.168.255.1**, and the default port is **10000**.
- (3) Click **OK** to configure the ZB-257x or Click **Cancel** to cancel connection.

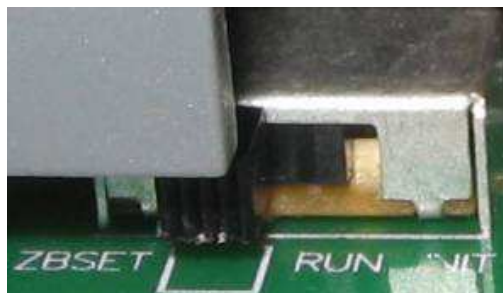
When the following screen displays, it means that connection succeeds, and click **OK** to continue the configuration.



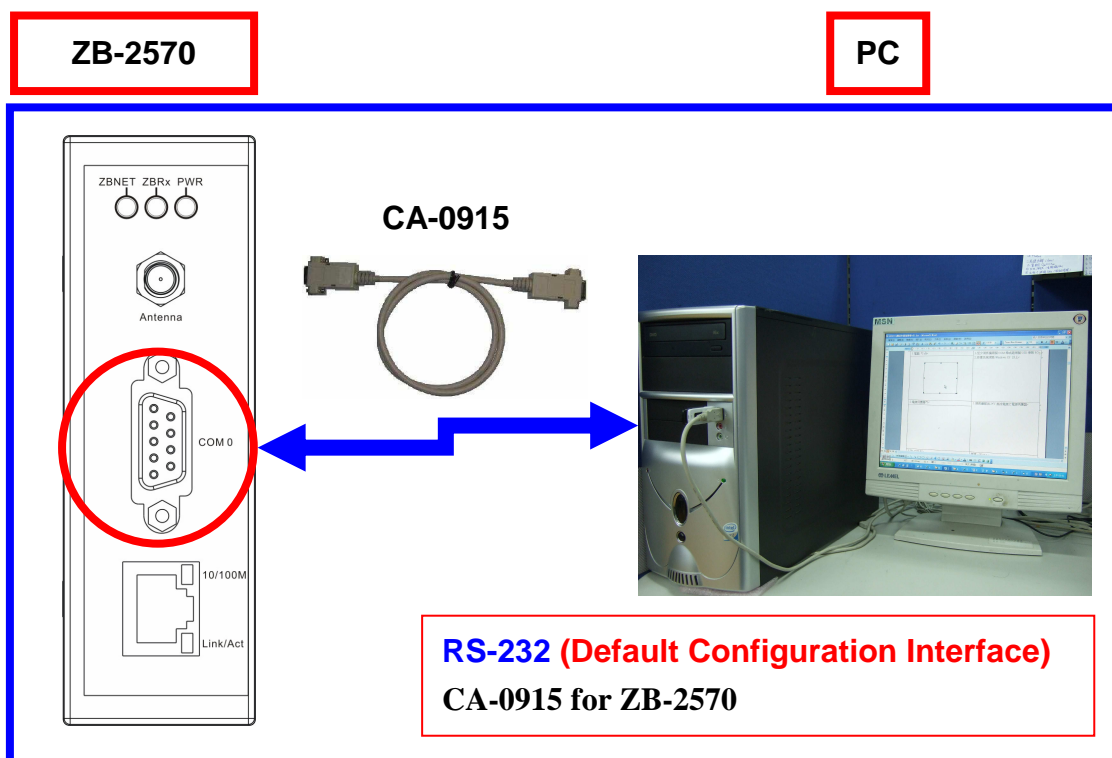
## 4. Configure the Serial Port of the ZB-2570

### 4.1. ZB-2570 Serial Port Hardware

4.1.1. You need to turn the switch to the **ZBSET**, and then make its power on.



4.1.2. How to configure the Serial Port!






## 4.2. ZB-2570 Serial Port Mod

(1) **PAN ID, Channel and Mode** must be the same as each other, ZB-2570's NodeID must be **00 00**, ZB-2000 modules's NodeID is **00 01 ~ 00 0F**.

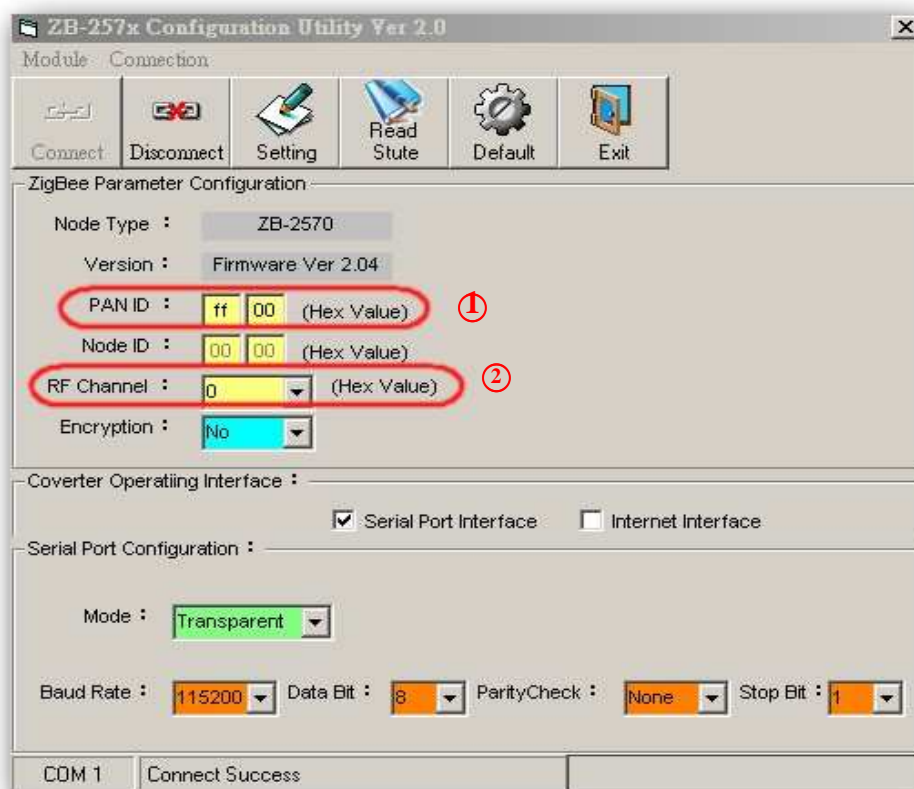
(2) check **Serial Port Interface**, then **Mode** chooses **Transparent**.

(3) Click **Setting**.

(4) When the window pops up like the picture , click **Disconnect** button in the "Configuration Utility" window.

## 5. Configure the Setting of the ZB-2000

If you have installed ZB-257x Utility already, you only need to set PAN ID and ZB Channel as same as ZB-2570's setting as following:



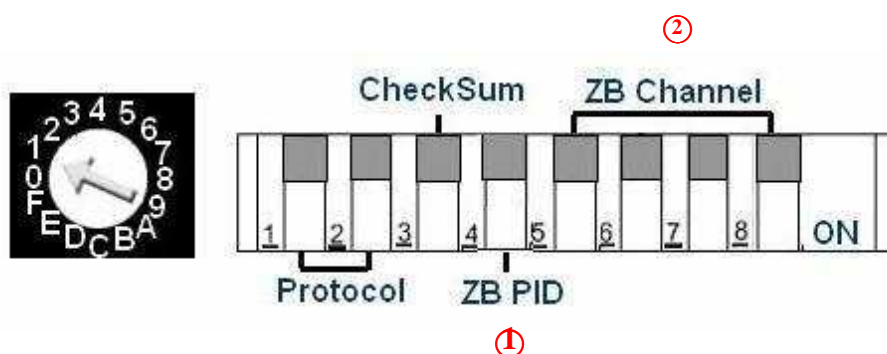
## Dip Switch (ZB-2000 Series Modules)

1	2	3	4	5	6	7	8
Protocol		CheckSum	ZB PID	ZB Channel			

Protocol	DCON : (Dip Switch Bit 1 Off, Dip Switch Bit 2 Off) Modbus RTU : (Dip Switch Bit 1 Off, Bit 2 On) Modbus ASCII : (Dip Switch Bit 1 On, Bit 2 On) DIO Mapping : (Dip Switch Bit 1 On, Bit 2 Off)
CheckSum	Disabled : (Dip Switch Bit 3 Off) Enabled : (Dip Switch Bit 4 On)
ZB PID	0xFF01 (Dip Switch Bit 4 On) 0xFF00 (Dip Switch Bit 4 Off)
ZB Channel	0~0x0F (bit 8 is LSB, bit 5 is MSB)

## Rotary Switch (ZB-2000 Series Modules)

N	0	1	2	3	4	5	6	7	8	9
Address	FF	01	02	03	04	05	06	07	08	09
N	A	B	C	D	E	F				
Address	0A	0B	0C	0D	0E	0F				



- **Configure the Setting of the ZB-2000 modules**

You have to set the switch configuration of ZB-2000 modules as same as ZB-2570 module's configuration setting. Please refer to "1.8 Configuration Tables " for more switch pin (or see chart above) configuration.

For instance, take the pin of ZB-2000 module's dip switch to put into "off "(see chart above), Indicate module's protocol is DCON , Checksum is disabled now, and you can communicate with the setting of ZB-2570 below.

- PAN ID : FF00
- ZB Channel : 00

Take the pin of ZB-2000 module's Rotary switch to put into "1", Indicate module's address(ID) is 01, you can use the "DCON Utility" through ZB-2570 to command to ZB-2000 modules and receive the value of response, as shown in the following figure. (Command \$01M and receive the value of response, !012053)





ICP DAS ZB-2000 modules are command based. A series of commands are provided to allow the configuration and DI/O functions to be set. The basic DI/O and configuration commands are listed below. Refer to the following links for more information.

<ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/7000/manual/modbusdio.pdf>

The Configuration command structure of the Modbus RTU is as follows:

Field ①	Field ②	Field ③	Field ④ ~ Field *n	Field (④+*n)
Module Address	Function code	Sub function	Configuration field	CRC16

\*n: This value depends on the Sub-function code. Please refer to the “Modbus DIO User’s Manual” for more details.

Ex: To modify the power-on value of the module from 01, the following command should be sent:

01 46 27 0F BB F9

The supported DI/O commands are as follows:

Function code	Description
0x01	Read coils
0x02	Read discrete inputs
0x03	Read multiple registers
0x04	Read multiple input registers
0x05	Write single coils
0x0F	Write multiple coils



Ex: To read the current DI value of channels 0 to 5, the following command should be sent:

01 02 00 00 00 05 B8 09

Ex: To write the DO value 0x0F from channels 0 to 4, the following command should be sent:

01 0F 00 00 00 04 01 FF 7E D6

Ex: To only set the DO value of channel 2 to 1, the following command should be sent:

01 05 00 02 FF 00 2D FA

The Configuration command structure of the Modbus ASCII is as follows:

**Command Format:**

Leading Character	Module Address	Command	[LRC]	CR	LF
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**Response Format:**

Leading Character	Module Address	Data	[LRC]	CR	LF
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Using Modbus ASCII Protocol, all command are coded in hexadecimal values, represented with readable ASCII characters. Only the characters 0...9 and A...F are used for coding.



Using Modbus ASCII Protocol, characters are used to start and end a frame. The Leading Character ':' is used to flag the start of a command and each command is ended with a CR•LF combination. The LRC characters are appended to the command preceding the CR•LF characters.

### **LRC Calculation:**

All characters except for Leading Character (:) and delimiter (CR•LF) are added with a carry being discarded. Total value is converted to binary notation, is converted to 2's complements, then to hexadecimal figures, that is, LRC.

### **Example :**

Modbus RTU => 01 46 00 [ 12 60 ]

Modbus ASCII => :014600B9(CR•LF)

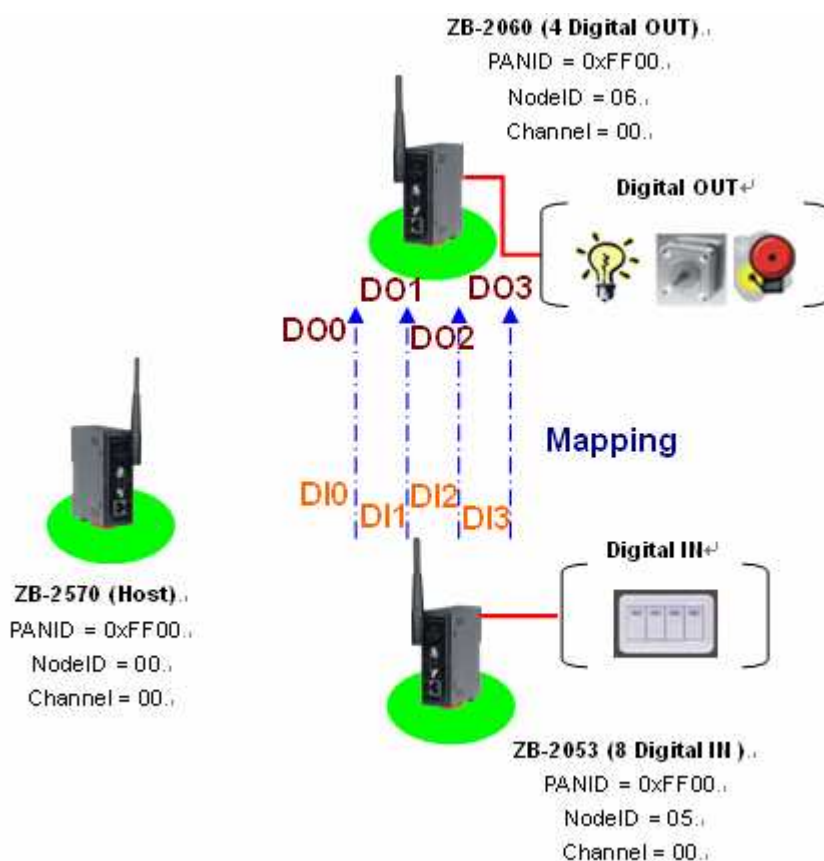
(1.) hexadecimal = 01h+46h+00h = 47h

(2.) 2's complement: = B9h (LRC)

## ● DIO Mapping

You can put the Module's address into following value to work DIO mapping function. (Make sure that The PID and ZB Channel is the same setting value)

Protocol	DI Module's Address	DO Module's Address
DIO Mapping	0x01	0x02
	0x03	0x04
	0x05	0x06
	0x07	0x08
	0x09	0x0A
	0x0B	0x0C
	0x0D	0x0E



- **LED Display Status**

An LED indicator is used for the PWR, the ZigBee, and each DI or DO channel status.



LED	Status	LED
PWR	Flash(per 100ms)	Power supply is ok. The module is reading ZigBee's setup parameter.
	Flash(per 50ms)	Power supply is ok. The ZigBee read failed, and All LED indicator will turn on. Please reset the power supply.
	Flash(per 250ms)	Power supply is ok. The firmware have loaded, and a host watchdog timeout occurs. It is normal operation.
	On	Power supply is ok. The firmware have loaded. It is normal operation.
	Off	Power supply have failed.
ZigBee	Flash	The ZigBee is searching the Net Server. (ZB-2570), the network isn't survival.
	On	The network is survival. (The PID is as same as ZB-2570)
	Off	Power supply have failed.
DI/DO	On/Off	The LED indicators to display the DI/O states





- **Technical Support**

If you have problems about using the ZB-2000 series modules, please contact ICP DAS Product Support.

Email: [Service@icpdas.com](mailto:Service@icpdas.com)