

Zigbee1081

User's Manual

 **Beijing ART Technology Development Co., Ltd.**

Contents

<i>Contents</i>	2
<i>Chapter 1 Overview</i>	3
<i>Chapter 2 Components Layout Diagram and a Brief Description</i>	5
2.1 The Main Component Layout Diagram	5
2.2 The Function Description for the Main Component	5
2.2.1 Signal Input and Output Connectors	5
2.2.2 Mode DIP Switch	6
2.2.3 Status Indicator	6
2.2.4 Reset Button	6
<i>Chapter 3 Signal Connectors</i>	7
3.1 The Definition of Analog Signal Input Connectors	7
3.2 The Definition of Analog Signal Output Connector	8
3.3 The Definition of Digital Signal Input Connectors	9
3.4 The Definition of Digital Signal Output Connectors	10
3.5 The Definition of RS232 Serial Port	11
3.6 The Definition of RS485 Interface	11
<i>Chapter 4 Connection Ways for Each Signal</i>	12
4.1 Analog Input Single-ended Connection	12
4.2 Analog Signal Output Mode	12
4.3 Digital Signal Input Connections	12
4.3.1 Dry contact signal input mode	12
4.3.2 Wet contact signal common anode input mode	13
4.3.3 Wet contact signal common cathode input mode	13
4.4 Digital Signal Output Connections	13
<i>Chapter5 Operation Interface</i>	14
5.1 Configure the server	14
5.2 Configure Zigbee1081	16
5.3 Acquisition System Composition	18
5.4 Application Method of Zigbee1081	18
<i>Chapter6 Notes and Warranty Policy</i>	20
6.1 Notes	20
6.2 Warranty Policy	20

Chapter 1 Overview

ZigBee is the specification of a low-cost, low-power wireless communications solution, meant to be integrated as the main building block of ubiquitous networks.

Zigbee1081 is a data acquisition module based on ZigBee wireless transmission. It can sample data and transfer the data to processing device to constitute the laboratory, product quality testing center and systems for different areas of data acquisition, waveform analysis and processing. It may also constitute the monitoring system for industrial production process.

Unpacking Checklist

Check the shipping carton for any damage. If the shipping carton and contents are damaged, notify the local dealer or sales for a replacement. Retain the shipping carton and packing material for inspection by the dealer.

Check for the following items in the package. If there are any missing items, contact your local dealer or sales.

- Zigbee1081
- ART Card
 - a) user's manual (pdf)
 - b) drive
 - c) catalog
- Warranty Card

Product Information

- Core Module: 66MHz main frequency 32-bit RISC processor
- Memory
 - 2MB NorFlash
 - 512KB SRAM
- Communication Interface
 - One Zigbee module, external antenna
 - One 3-wire RS232 serial port, baud rate up to 115200Kbps
 - One isolation RS485 interface
- Other Devices
 - One recalibrate external RTC
 - 4 LED indicators
 - Hardware Watchdog to ensure the system reliability
 - Support CF card (optional)
- Display System (optional)
 - 320 x 240 monochrome LCD, human display device
 - 4-wire resistive touch screen human-machine interfaces
- Analog/Digital Signal
 - Analog Input: 16-ch 16-bit analog input, range $\pm 10V$, $\pm 5V$, $\pm 2.5V$, 0~10V, 0~5V (isolated)
 - Analog Output: 8-ch 12-bit analog output, range 0~5V, 0~10V, $\pm 5V$, $\pm 10V$ (isolated)
 - Digital Input: 16-ch dry contact input (default) or 8-ch wet contact common anode/cathode
 - Digital Output: 16-ch relay output
- System Power Supply:
 - 9V~30V

- Operation Temperature
 - 40°C~+80°C (without LCD screen)
 - 0°C~+70°C (with LCD screen)

FEATURES

Analog Input

- Input Range: $\pm 10V$, $\pm 5V$, ± 2.5 , 0~10V, 0~5V
- 16-bit resolution
- Analog Input Mode: 16SE
- AD Conversion Time: $\leq 1.25\mu s$
- Non-linear error: $\pm 1LSB$ (Maximum)
- System Measurement Accuracy: 0.1%
- Isolation Voltage: 3000V
- Operating Temperature Range: 0°C~ +50°C
- Storage Temperature Range: - 20°C~ +70°C

Analog Output

- Output Range: $\pm 10V$, $\pm 5V$, 0~10V, 0~5V
- 12-bit resolution
- Set-up Time: 10 μs
- Channel No.: 8-channel
- Isolation Voltage: 3000V
- Non-linear error: $\pm 1LSB$ (Maximum)
- Output error(full-scale): $\pm 1LSB$
- Operating Temperature Range: 0°C~ +50°C
- Storage Temperature Range: - 20°C~ +70°C

Digital Input

- Channel No.: 16-channel
- Input Type: dry contact, wet contact
- Input high level: +4V~+30V
- Input low level: 0~+1V
- Isolated voltage: 3000V

Digital Output

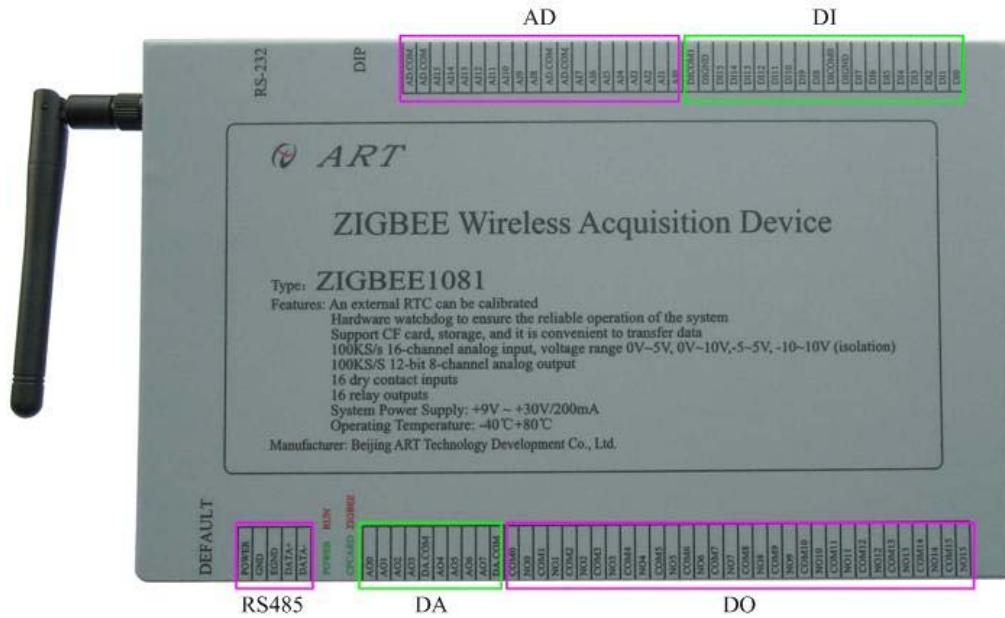
- Channel No.: 16-channel
- Output Type : power relay
- Contact Rating: 250VAC@5A

Dimension

- 226mm(L)*140mm(W)*37mm(H)

Chapter 2 Components Layout Diagram and a Brief Description

2.1 The Main Component Layout Diagram



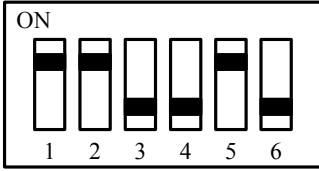
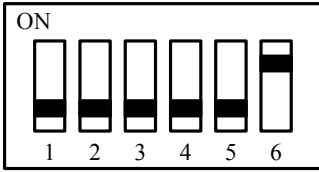
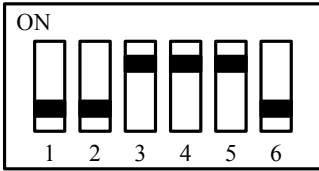
2.2 The Function Description for the Main Component

2.2.1 Signal Input and Output Connectors

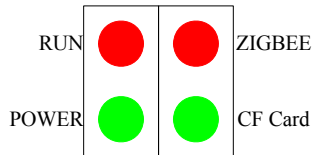
- AD: analog signal input
- DA: analog signal output
- DI: digital signal input
- DO: digital signal output
- RS232: RS232 serial port
- RS485: RS485 serial port

2.2.2 Mode DIP Switch

DIP: Mode DIP Switch. It can be set to RS232 mode, RS485 mode and CONFIG configure Zigbee mode.

Mode	DIP Switch Status	Graphic
RS232	1, 2, 5=ON 3, 4, 6=OFF	
RS485	6= ON 1, 2, 3, 4, 5= OFF	
CONFIG	3, 4, 5=ON 1, 2, 6=OFF	

2.2.3 Status Indicator



RUN: Program run indicator

POWER: power supply indicator

CF Card: CF card indicator

ZIGBEE: Zigbee transmission mode indicator

2.2.4 Reset Button

DEFAULT: System reset button, reset the system to the initial value. The default initial value: baud rate 9600bps, address 1.

Chapter 3 Signal Connectors

3.1 The Definition of Analog Signal Input Connectors

AD.COM
AD.COM
AI15
AI14
AI13
AI12
AI11
AI10
AI9
AI8
AD.COM
AD.COM
AI7
AI6
AI5
AI4
AI3
AI2
AI1
AI0

Pin definition

Pin name	Pin feature	Pin function definition
AI0~AI15	Input	Analog input, reference ground is AGND.
AD.COM	GND	Analog ground. This AGND pin should be connected to the system's AGND plane.

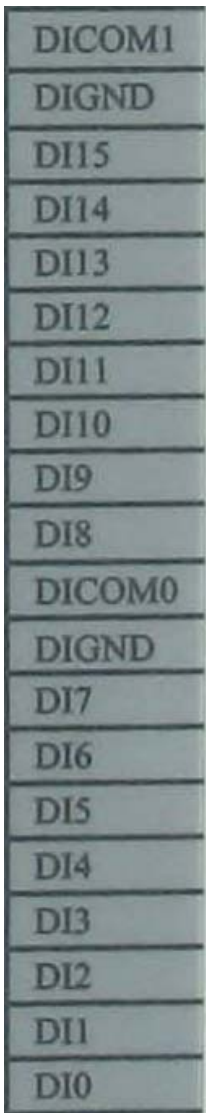
3.2 The Definition of Analog Signal Output Connector

AO0
AO1
AO2
AO3
DA.COM
AO4
AO5
AO6
AO7
DA.COM

Pin definition:

Pin Name	Type	Function definition
AO0~AO7	Input	Analog output, reference ground is DAGND
DA.COM	GND	Analog ground.

3.3 The Definition of Digital Signal Input Connectors



Pin Definition:

Signal Name	Type	Function definition
DI0-DI15	Input	Digital signal input pins, reference ground is DGND.
DIGND	Input	Digital input (dry contact) common terminal.
DICOM0~DICOM1	Input	Digital input(wet contact) common terminal

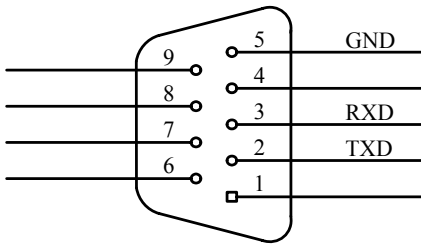
3.4 The Definition of Digital Signal Output Connectors

COM0
NO0
COM1
NO1
COM2
NO2
COM3
NO3
COM4
NO4
COM5
NO5
COM6
NO6
COM7
NO7
COM8
NO8
COM9
NO9
COM10
NO10
COM11
NO11
COM12
NO12
COM13
NO13
COM14
NO14
COM15
NO15

Pin Definition:

Pin Name	Type	Function definition
COM0~COM15	Output	The positive terminal of digital output.
NO0~NO15	Output	The negative terminal of digital output.

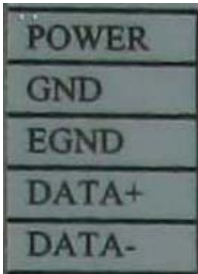
3.5 The Definition of RS232 Serial Port



CN1 pin definition:

Pin Name	Function definition
TXD	Send data
RXD	Receive data
GND	Signal ground.

3.6 The Definition of RS485 Interface



Pin Name	Function definition
POWER	Power supply
GND	Power supply ground
EGND	Signal ground
DATA+	Positive terminal of the data
DATA-	Negative terminal of the data

Chapter 4 Connection Ways for Each Signal

4.1 Analog Input Single-ended Connection

Single-ended mode can achieve a signal input by one channel, and several signals use the common reference ground. This mode is widely applied in occasions of the small interference and relatively many channels.

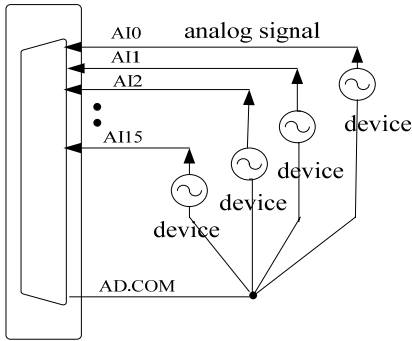


Figure 4.1 single-ended input connection

4.2 Analog Signal Output Mode

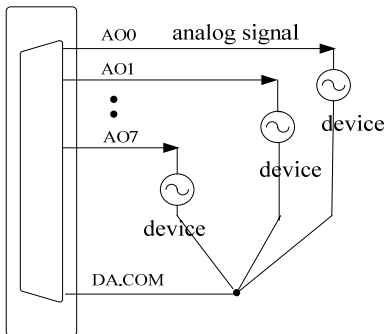
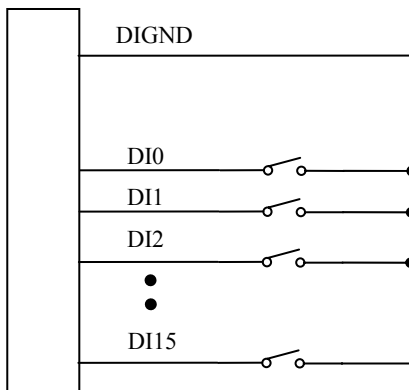


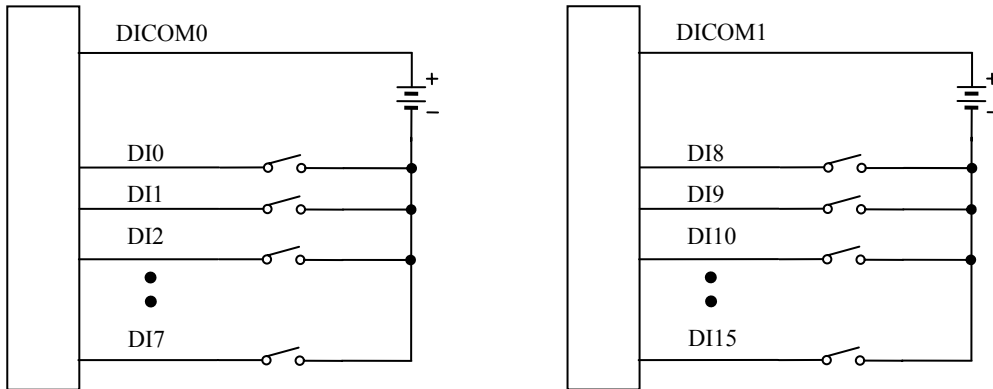
Figure 4.3 analog signal output connection

4.3 Digital Signal Input Connections

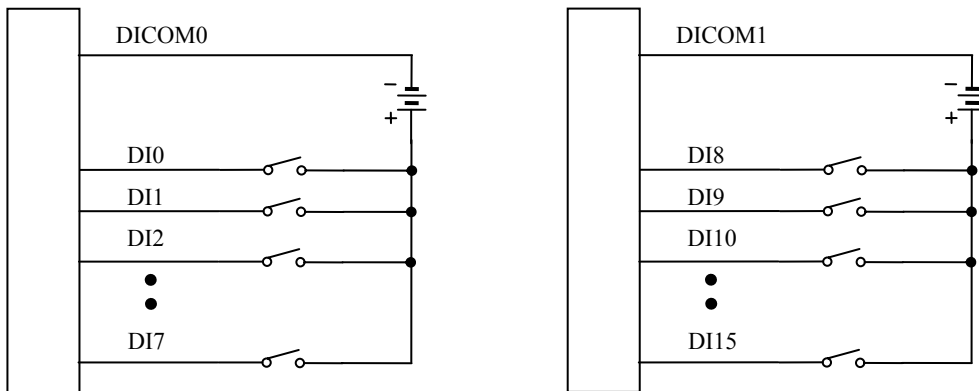
4.3.1 Dry Contact Signal Input Mode



4.3.2 Wet Contact Signal Common Anode Input Mode

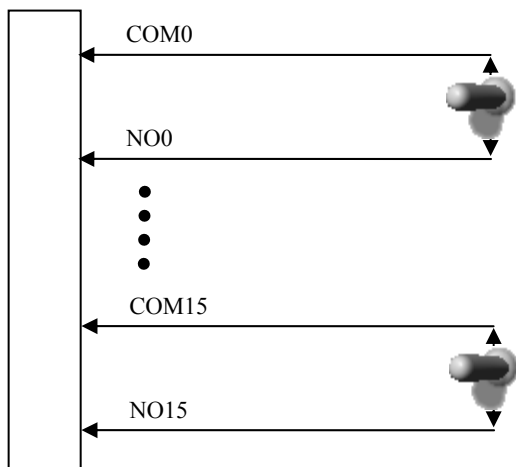


4.3.3 Wet Contact Signal Common Cathode Input Mode



4.4 Digital Signal Output Connections

COM0~COM15 are relay output positive terminal, NO0~NO15 are relay output negative terminal.



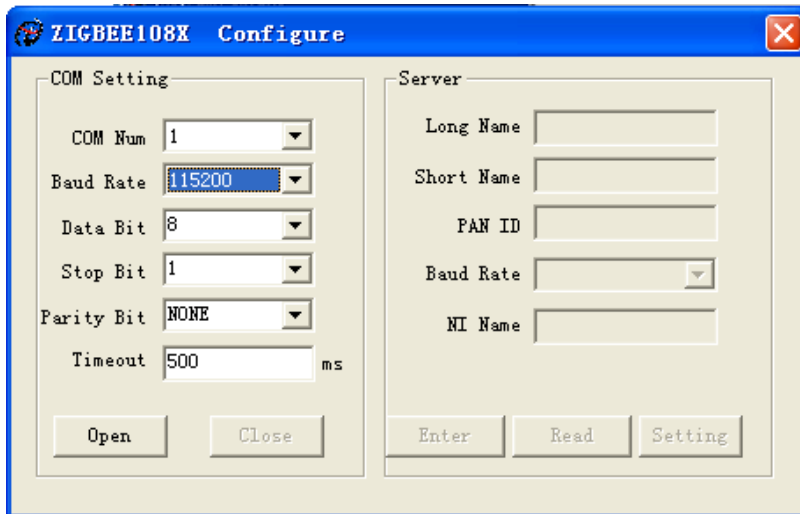
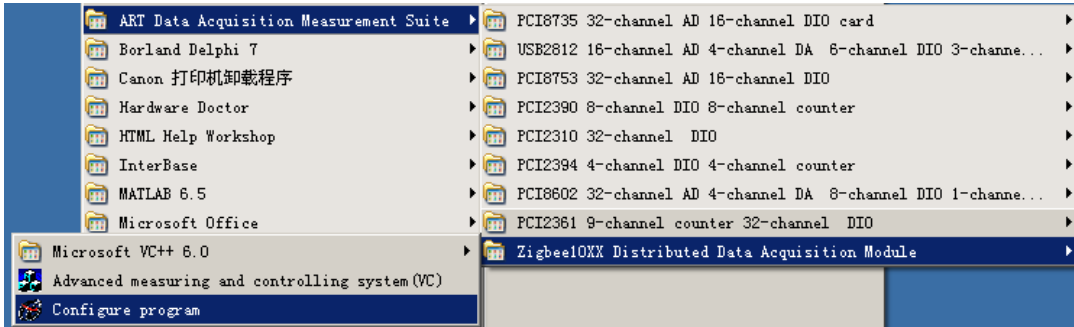
Chapter5 Operation Interface

5.1 Configure the server

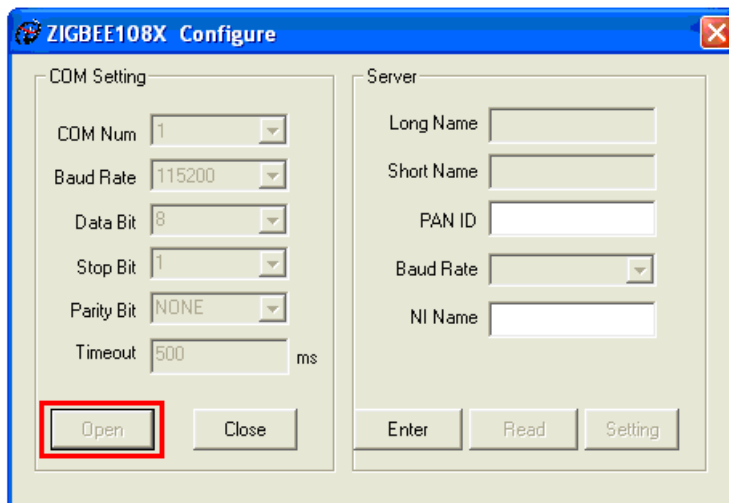
1. Connect the server to the PC.

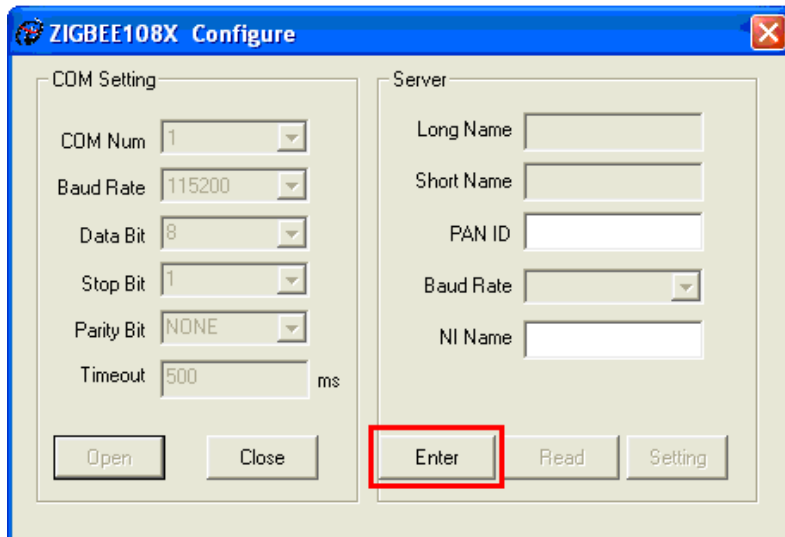
Open the “Configure program”: according to the path “Start--Program—ART Data Acquisition Measurement Suite—Zigbee10XX Distributed Data Acquisition Module—Configure program” to configure the server.

Note: the server's baud rate is 115200, and it can't be modified by users.

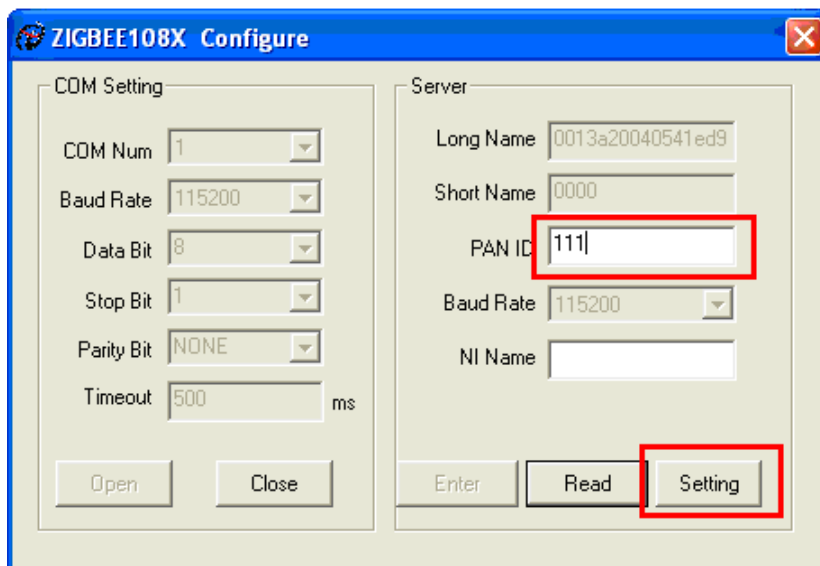
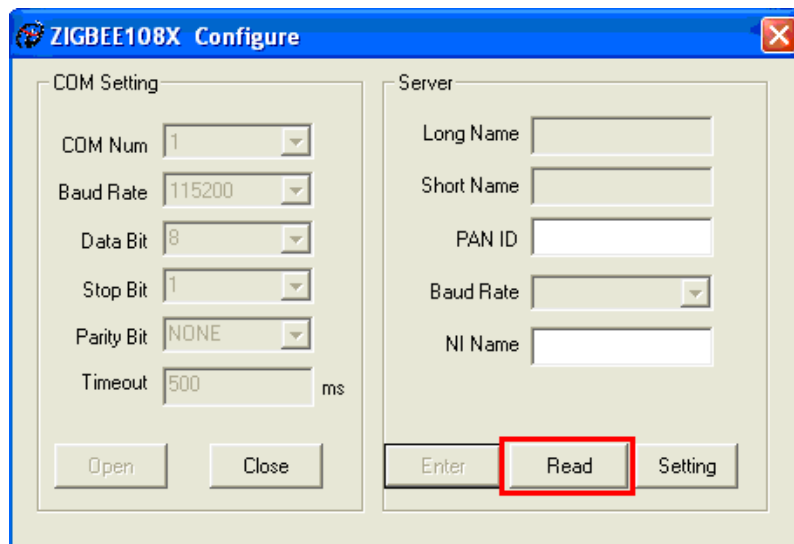


2. Click “Open”, and then “Enter”, the figures are as followed.





4. Click “Read”, and then set the PAN ID, at last, click “Setting.”. PAN ID’s range is 1-3FFF.

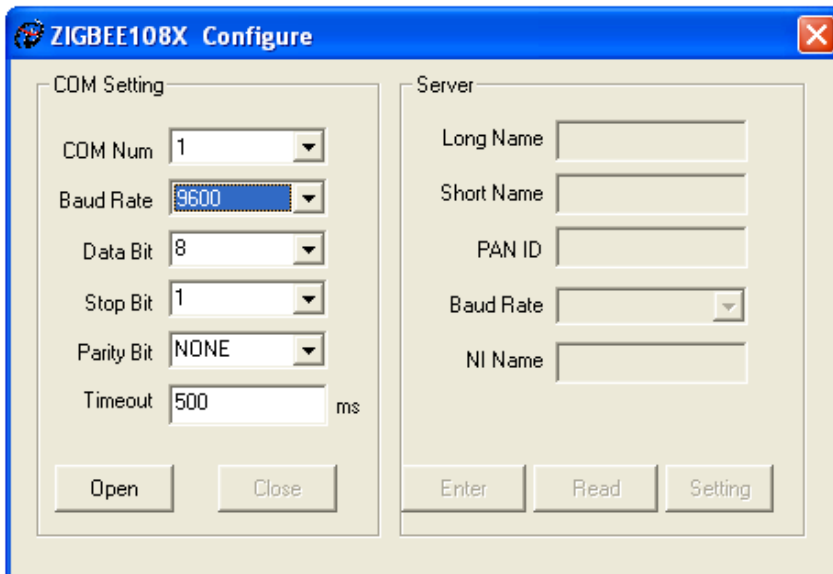
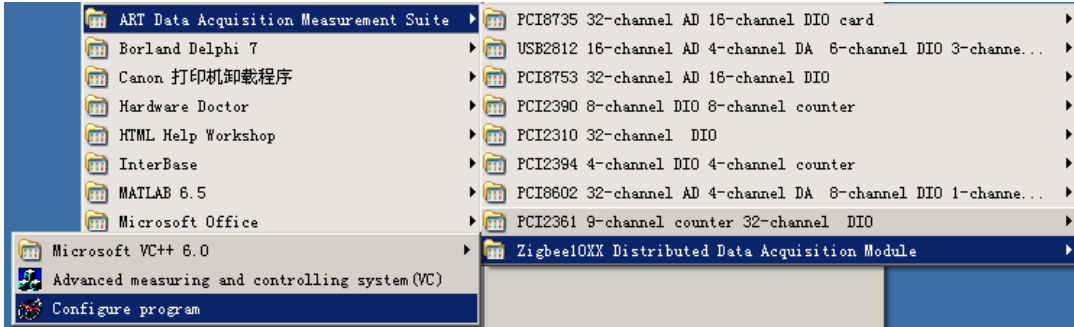


5.2 Configure Zigbee1081

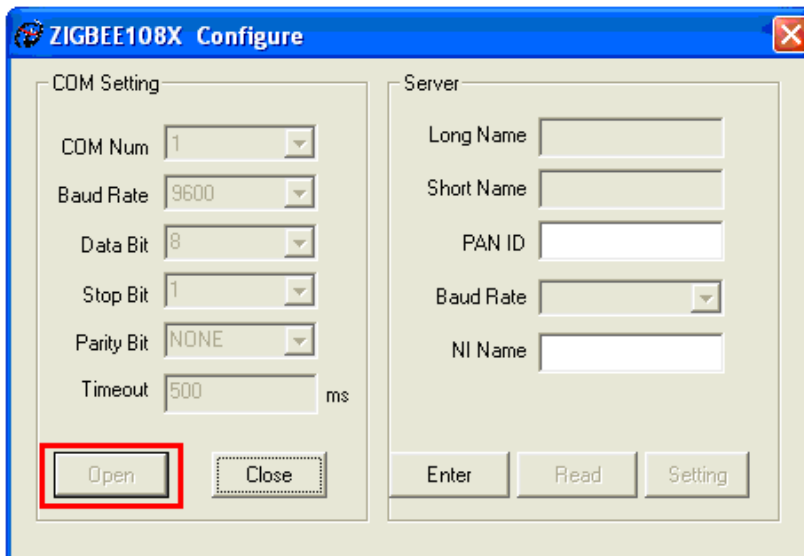
1. Connect Zigbee1081 to the PC.

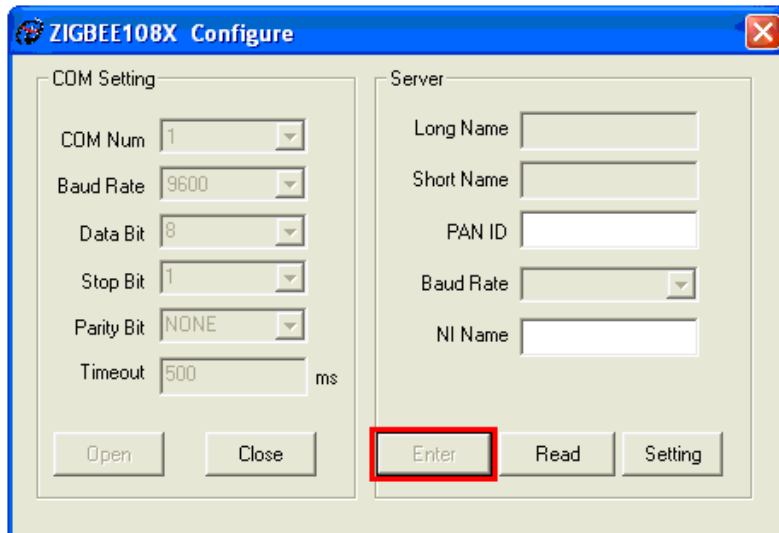
Open the “Configure program”: according to the path “Start--Program—ART Data Acquisition Measurement Suite—Zigbee10XX Distributed Data Acquisition Module—Configure program” to configure the server.

Note: the module's serial port baud rate is 9600, and it can't be modified by users.



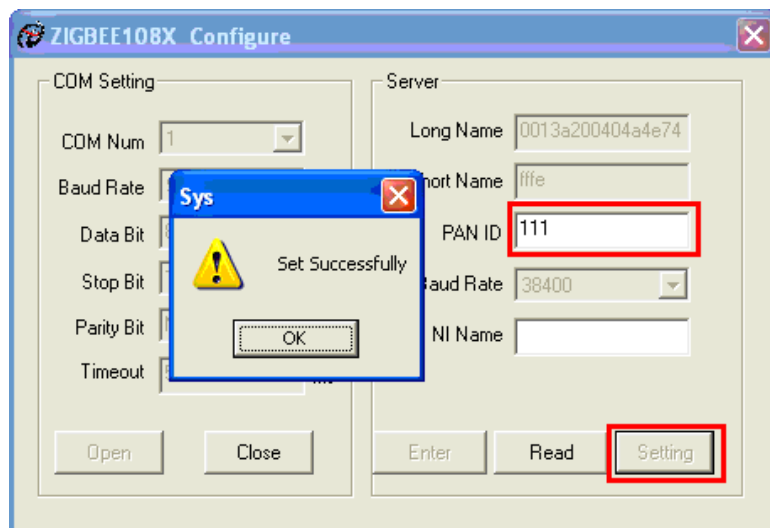
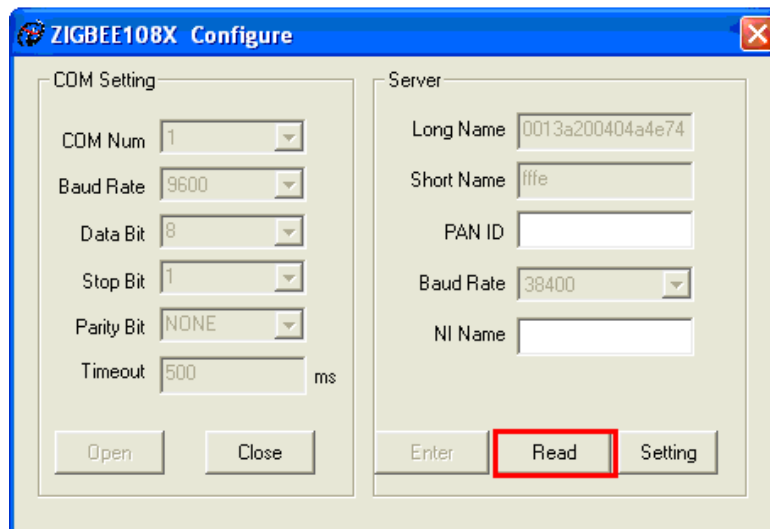
2. Click “Open”, and then “Enter”, the figures are as followed.



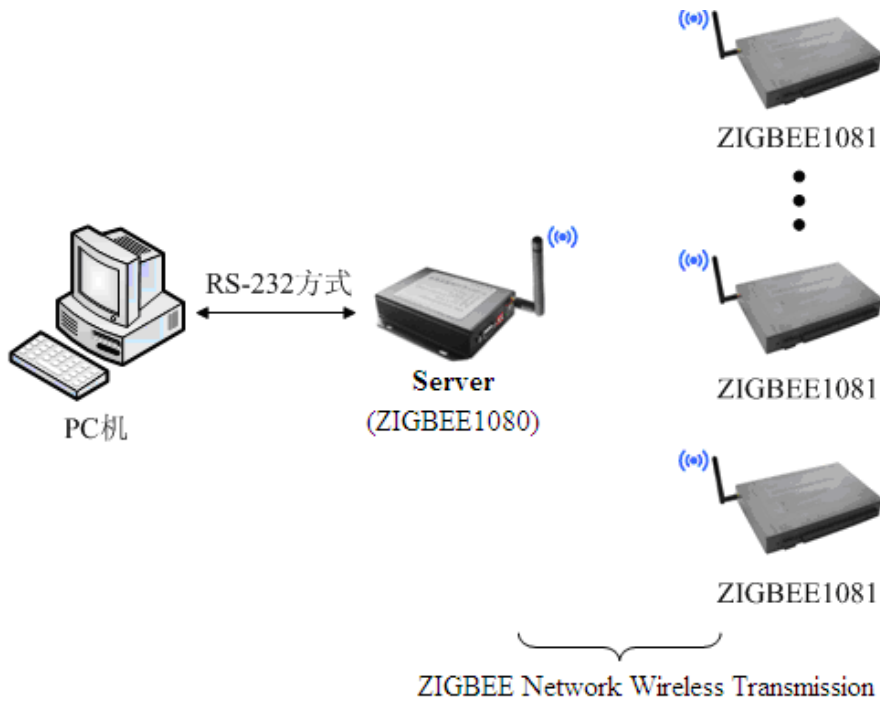


4. Click “Read”, and then set the PAN ID, at last, click “Setting.”

Note: Zigbee1081’s “PAN ID” must be the same as the server’s. Its range is also 1-3FFF.

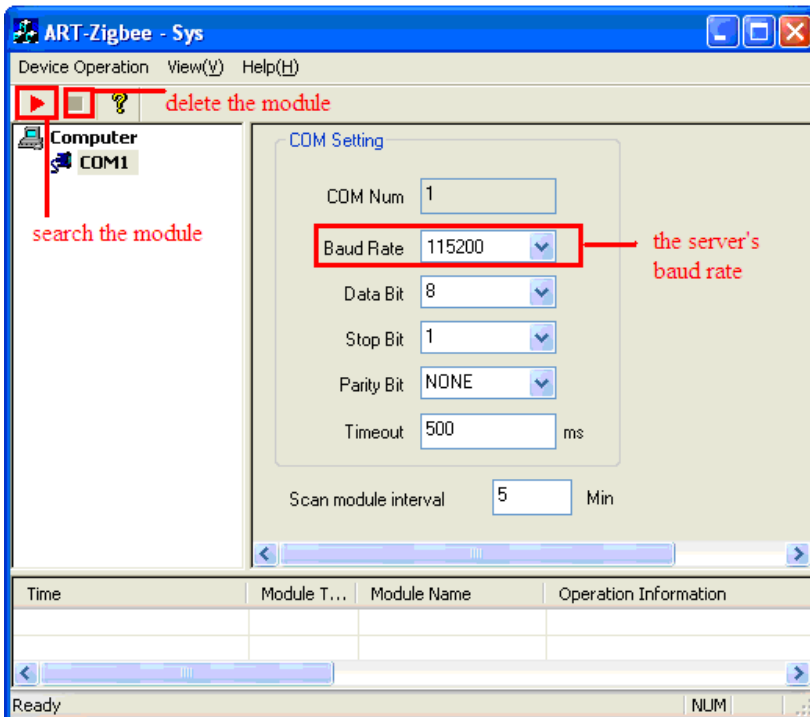


5.3 Acquisition System Composition

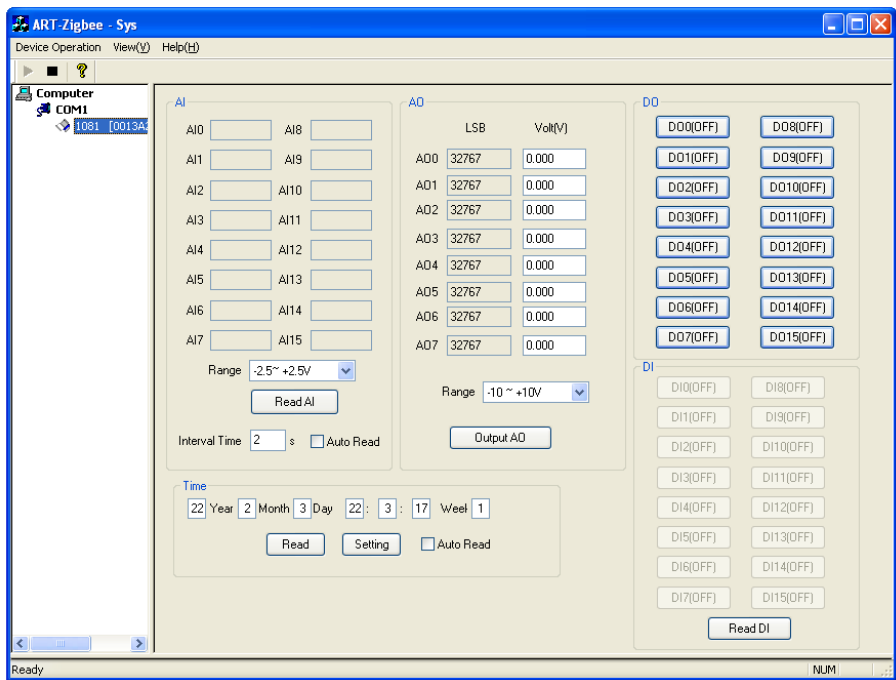
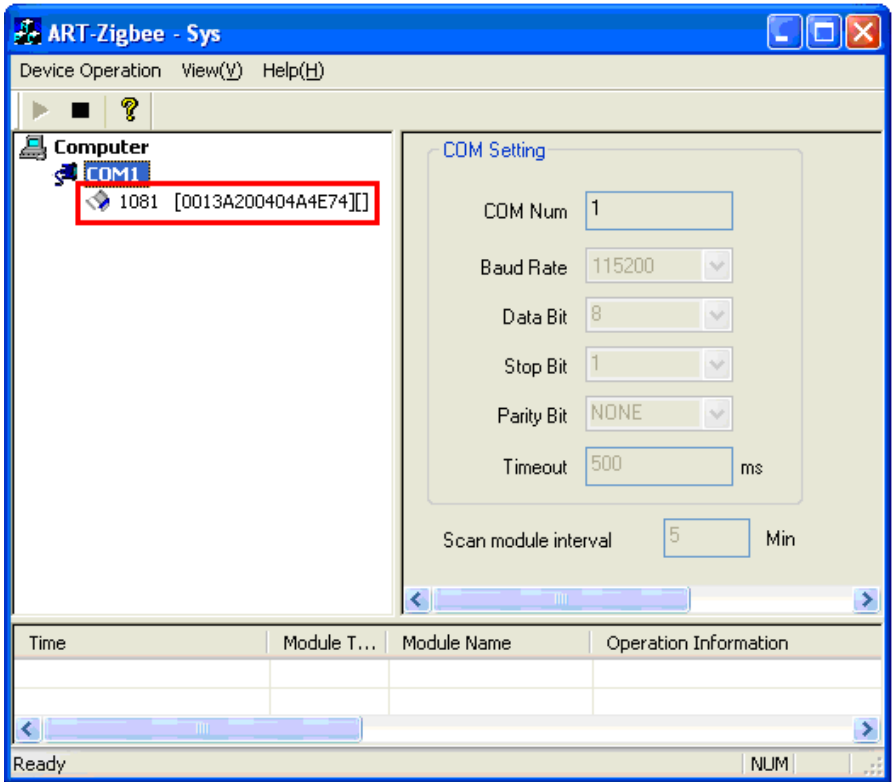


5.4 Application Method of Zigbee1081

1. After configure the server and Zigbee1081, re-power them.
2. Open the “Advanced measuring and controlling system”, the path is “Start--Program—ART Data Acquisition Measurement Suite—Zigbee10XX Distributed Data Acquisition Module—Advanced measuring and controlling system”. The interface is as followed.



3. Search the module.



Chapter6 Notes and Warranty Policy

6.1 Notes

In our products' packing, user can find a user manual, a Zigbee1081 module and a quality guarantee card. Users must keep quality guarantee card carefully, if the products have some problems and need repairing, please send products together with quality guarantee card to ART, we will provide good after-sale service and solve the problem as quickly as we can.

When using Zigbee1081, in order to prevent the IC (chip) from electrostatic harm, please do not touch IC (chip) in the front panel of Zigbee1081 module.

6.2 Warranty Policy

Thank you for choosing ART. To understand your rights and enjoy all the after-sales services we offer, please read the following carefully.

1. Before using ART's products please read the user manual and follow the instructions exactly. When sending in damaged products for repair, please attach an RMA application form which can be downloaded from: www.art-control.com.
2. All ART products come with a limited two-year warranty:
 - The warranty period starts on the day the product is shipped from ART's factory
 - For products containing storage devices (hard drives, flash cards, etc.), please back up your data before sending them for repair. ART is not responsible for any loss of data.
 - Please ensure the use of properly licensed software with our systems. ART does not condone the use of pirated software and will not service systems using such software. ART will not be held legally responsible for products shipped with unlicensed software installed by the user.
3. Our repair service is not covered by ART's guarantee in the following situations:
 - Damage caused by not following instructions in the User's Manual.
 - Damage caused by carelessness on the user's part during product transportation.
 - Damage caused by unsuitable storage environments (i.e. high temperatures, high humidity, or volatile chemicals).
 - Damage from improper repair by unauthorized ART technicians.
 - Products with altered and/or damaged serial numbers are not entitled to our service.
4. Customers are responsible for shipping costs to transport damaged products to our company or sales office.
5. To ensure the speed and quality of product repair, please download an RMA application form from our company website.