ZT-2550/ZT-2551

Quick Start

1 What's in the shipping package?

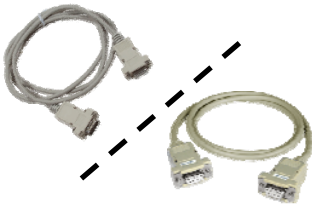
The package includes the following items:



ZT-255x Device



ANT-124-05



CA-0915 (ZT-2550) /
CA-0910N (ZT-2551)



Release Note

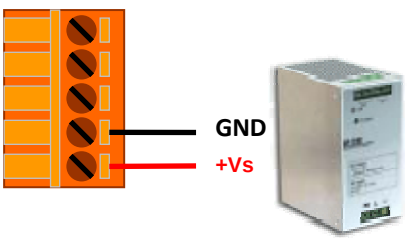


CD

If any of these items are missing or damaged, please contact the local distributor for more information. Save the shipping materials and cartons in case you want to ship the module in the future.

2 Preparing the device

1. Install the ZT Configuration Utility (v1.0.0 or later),
   CD: \Napdos\ZigBee\ZT_Series\Utility
   http://ftp.icpdas.com/pub/cd/usbcd/napdos/zigbee/zt_series/utility
2. Power Supply: +10 ~ +30 V_{DC}



3 Introduction of configurations

Overview of the ZT-255x Configurations Options/Parameters

1. **"Pan ID"** is the group identity of a ZigBee network, and must be the same if they are in the same ZigBee network.
   (Valid values range from 0x0000 to 0x3FFF)

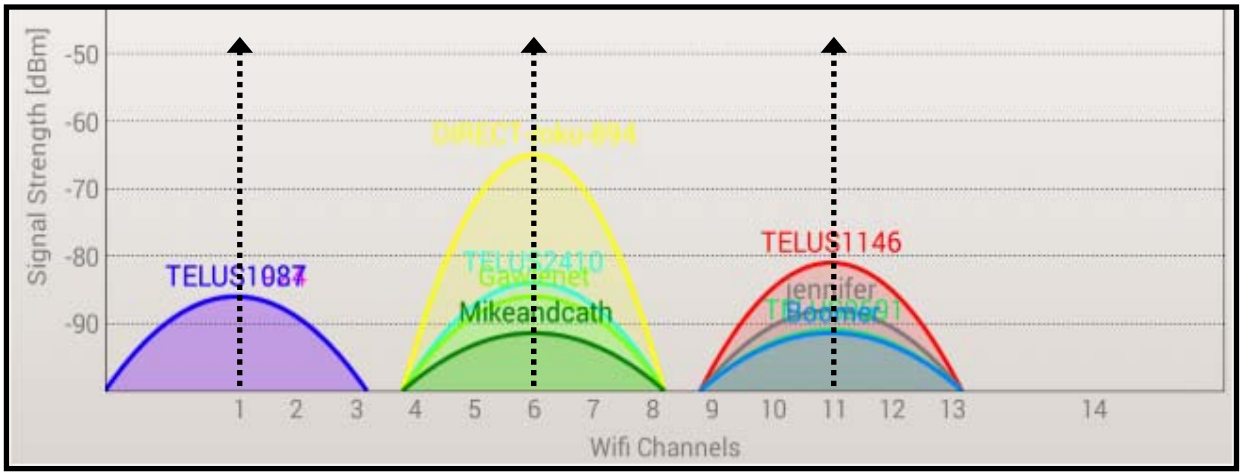
2. **"Node ID"** is the identity of the ZigBee module.
   The identity number must be unique if it is in the same ZigBee network as other ZigBee module. (Valid values range from 0x0001 to 0xFFF7 for a ZigBee Router, but is fixed to 0x0000 for a ZigBee Coordinator)

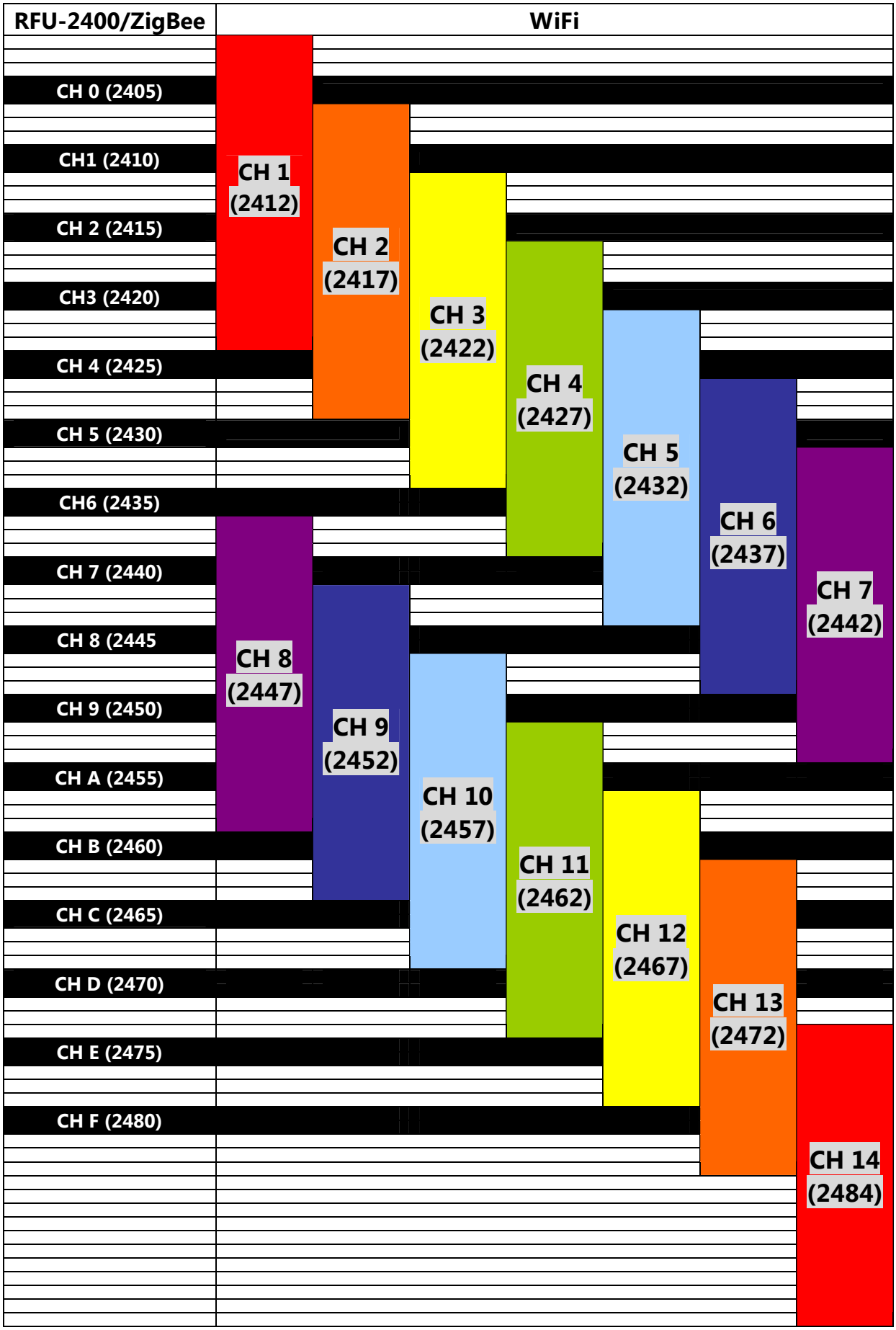
3. **"RF Channel"** indicates the radio frequency channel, and must be set to the same channel if the module is in the same ZigBee network as other ZigBee modules.

Channel	0x00	0x01	……	0x0F
Frequency(MHz)	2405	2410	……	2480

Use application tools or analyzers to detect the wireless signal, chose a RF Channel which has not been occupied. E.g. Wifi Analyzer

As below the screenshot shown, there were several WLANs over the channel 1, 6 and 11. Referring to the channel table of WiFi and ZigBee, the channels of ZigBee 4, 9, E and F are not overlap with WLAN. So, the RF Channel 4, 9, E and F of ZigBee are recommended in this case.





• RF Channel Table to ZigBee(802.15.4) and WLAN(IEEE 802.11b/IEEE 802.11g)

4. "RF Power" denotes the wireless transmit power value.

Code	Note
0x0F	Typical Maximum
0x08	Fit the CE/FCC certification
0x00	Typical Minimum

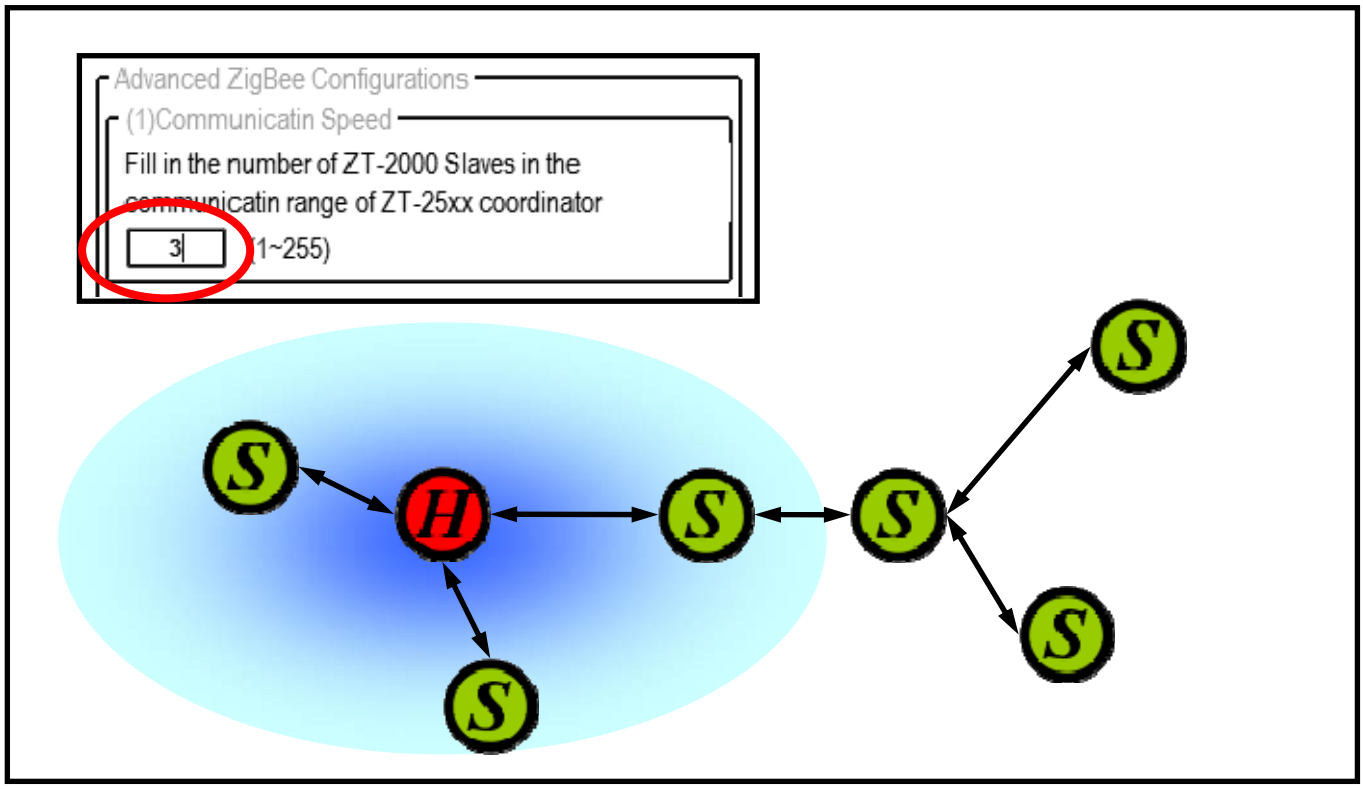
※ *The parameter adjustment purely personal behavior, ICP DAS can not guarantee to pass CE/FCC certification if adjusting this parameter, nor assume any liability because of the adjustment parameters derived from the RF Power.*

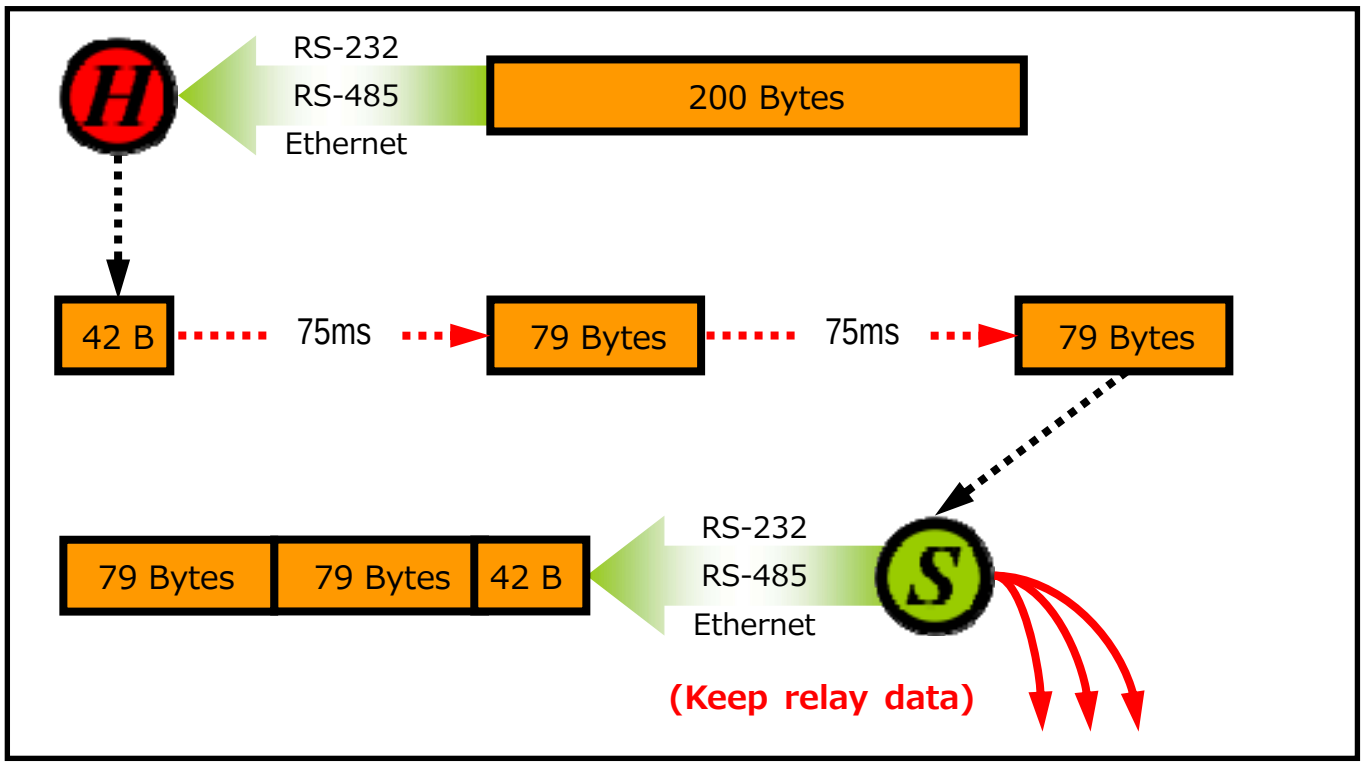
5. "Baud Rate and Data Format" values are based on the configuration of the serial port.

Item	Specification
Parity	None, Odd, Even, Space and Mark
Data Bit	7, 8
Stop Bit	1, 2
Baud rate	1200 to 115200 bps

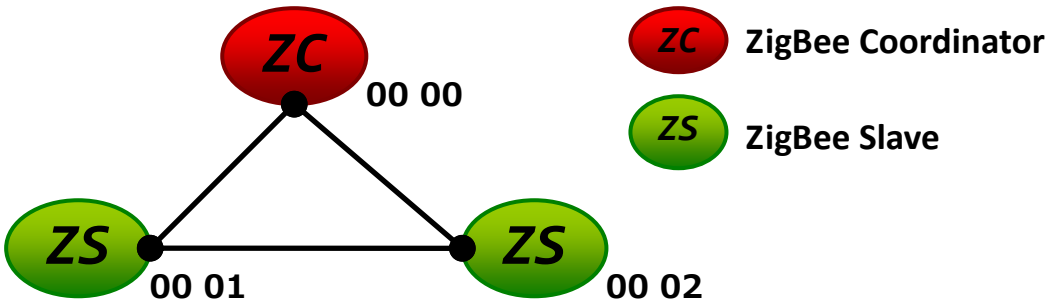
6. **Communication Speed** (The Interval Time of Sending Broadcast Frame): The data payload of ZT-2000 series modules is 79 bytes. Once the data is more than 79 bytes, it will be divided into several packets. This parameter is used to decide the interval time of sending broadcast frame in order to prevent the network crashes. Please fill in the number of ZT-2000 slaves nearby the ZigBee Coordinator.

➢ Example:





7. **"Application Mode"** can be changed and used for certain specific purpose.



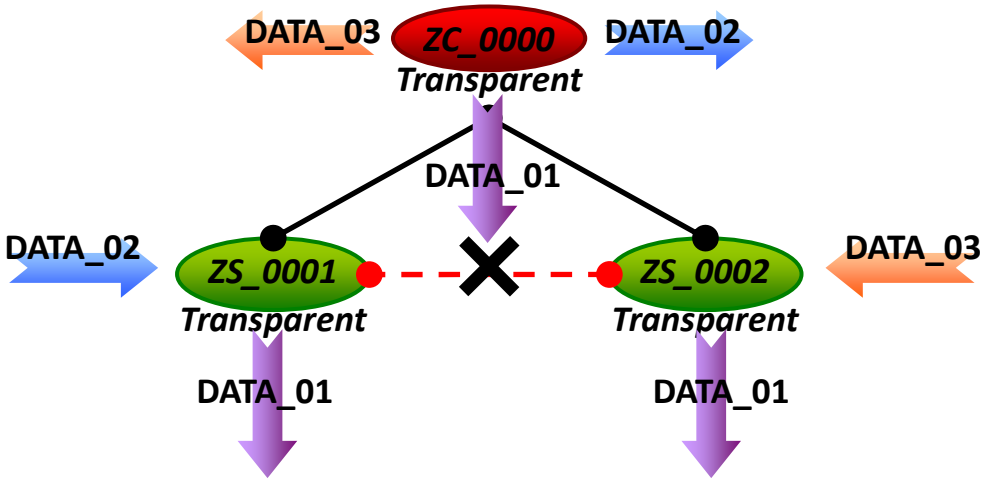
The above schematic diagram is showing what the difference of using different application modes.

a. **Transparent Mode** is the default application mode, and always transmits data to the remote device via broadcasting. Unless there are specific purposes, the application mode can be retained as default.
The mode always bypasses data to remote side via broadcasting. If there is no particular purpose, user only keeps this application mode.

Module	Frame Type	Note
ZT-2550	Broadcast	Data will be sent to all ZigBee slaves
ZT-2551	Unicast	Data will only be sent to the coordinator

[Eg1] When ZT-2550 ZigBee Host sends "DATA_01" via broadcasting frame,
→Both of the ZigBee slave 0x0001 and 0x0002 will receive the DATA_01.
(*Note: Broadcasting type frame, data will be sent to every ZigBee slaves in the same ZigBee network*)

[Eg2] When the ZigBee slave 0x0001 sends "DATA_02" via unicast frame,
→Only ZT-2550 receives DATA_02.
(*Note: Unicast type frame, data will only be sent to the ZigBee host*)



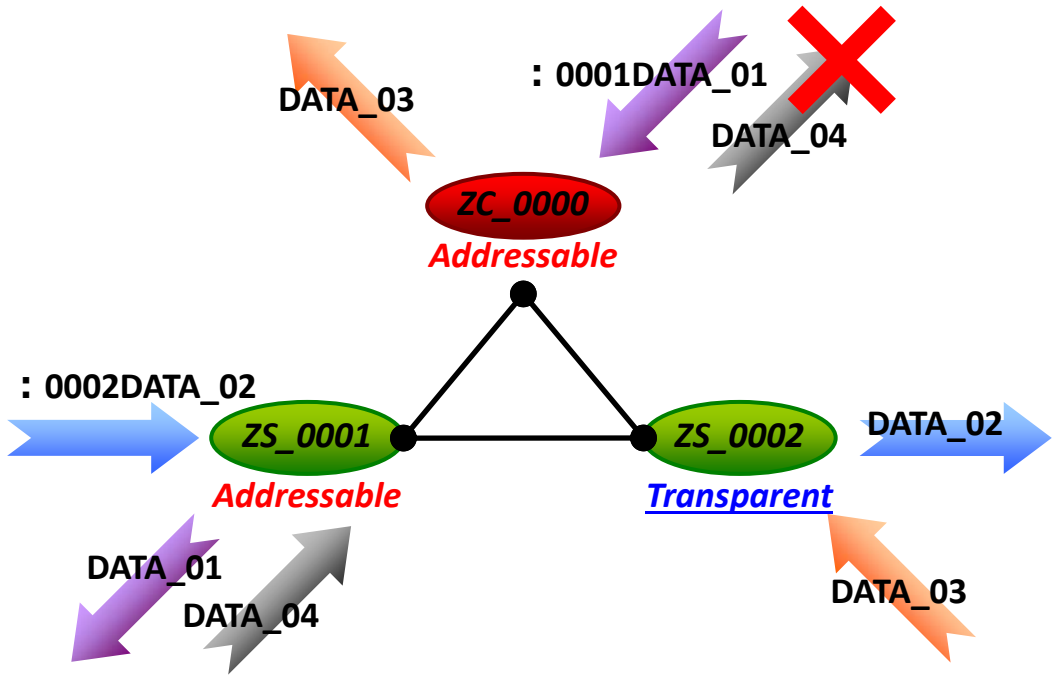
※ There is an "Advanced Settings" for some specific user, please refer the user manual section 7.3 "Non-addressable Device Communication" for more information.

b. Addressable Mode is an advanced application mode and it is used to send data to specific ZigBee nodes. It is not only used to transmit data to specific ZigBee slaves from host but also transmit data between ZigBee slaves. A 5-byte ASCII code should be added as an index before the data.

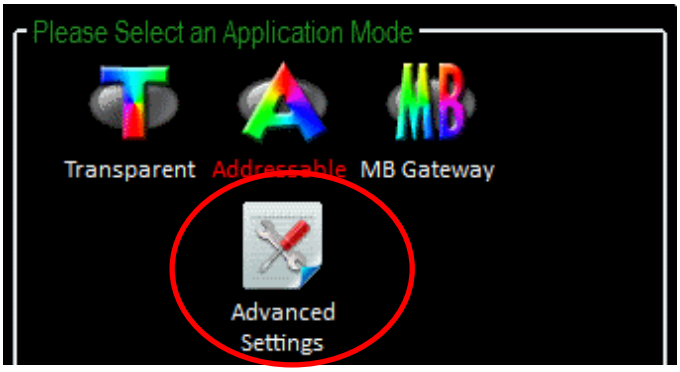
Module	Frame Type	Note
ZT-2550 ZT-2551	Unicast	Data will be sent to a specific ZigBee slave. Format: ":AAAA" + Data

[Eg1] When ZT-2550 ZigBee Host sends ":0001DATA_01" via unicast frame,
→Only the ZigBee Slave 0x0001 receives DATA_01.
(*Note: Unicast type frame, data will be only sent to the specific ZigBee node*)

[Eg2] When ZigBee slave 0x0001 sends ":0002DATA_02" via unicast frame,
→Only the ZigBee Slave 0x0002 receives DATA_02.
(*Note: Unicast type frame, data will be only sent to the specific ZigBee node*)



※ There is an "Advanced Settings" for some specific user, please refer the user manual section 7.3 "Non-addressable Device Communication" for more information.



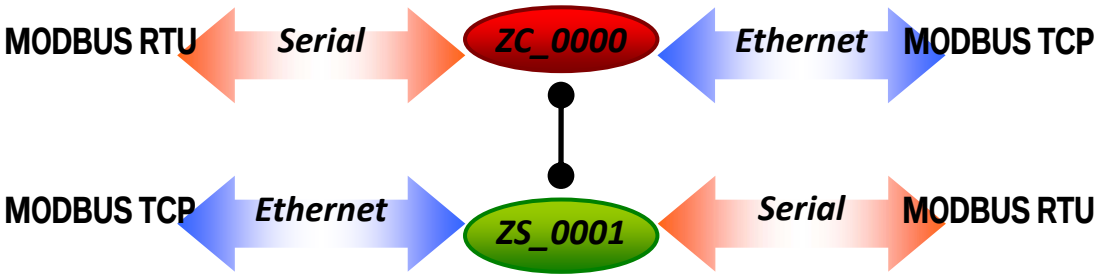
c. **Gateway Mode** is an advanced application mode and it is used to convert the Modbus protocol. But there is only RS-232 and RS-485 interface supported in the ZT-255x device, so the data is always regarded as Modbus RTU format.

Module	Frame Type	Note
ZT-2550	Broadcast (Default)	Data is sent to all of ZigBee slaves
	Unicast (Advanced)	Data will be sent to a specific ZigBee slave. The Address of DCON/Modbus command is regarded as destination ZigBee address
ZT-2551	Unicast	Data only be sent to coordinator

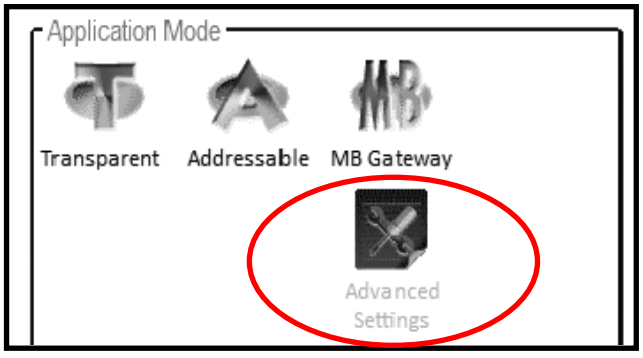
[Eg1] When ZT-2550/ZT-2570 receives data "MRTU_CMD_01" from serial port,
→ZT-2551 will output the data "MRTU_CMD_01" to serial port directly.

[Eg2] When ZT-2570 receives data "MTCP_CMD_02" from Ethernet,
→ZT-2551 will convert protocol then output "MRTU_CMD_01" to serial port.

[Eg3] When ZT-2551 transmits the acknowledgement "MRTU_ACK_03",
→ZT-2550/ZT-2570 will response the acknowledgement "MRTU_ACK_03" to serial port directly.
→ZT-2570 will convert protocol then output "MTCP_CMD_01" to Ethernet.
(*Note: Unicast type frame, data will only be sent to the ZigBee host*)

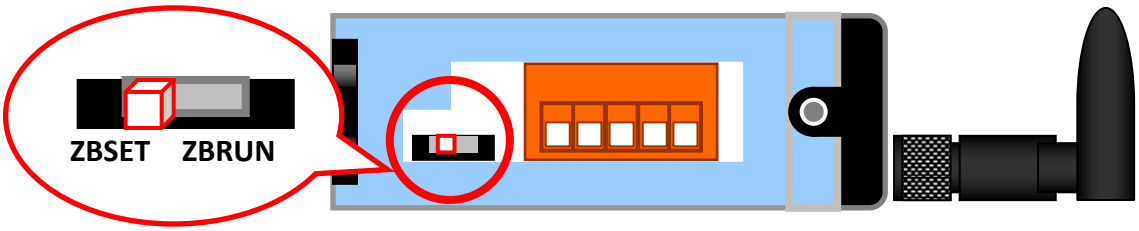


※ There is an "Advanced Settings" to the Gateway Mode for some specific users, please refer the user manual section 7.2 "DCON/Modbus Device Communication" for more information.

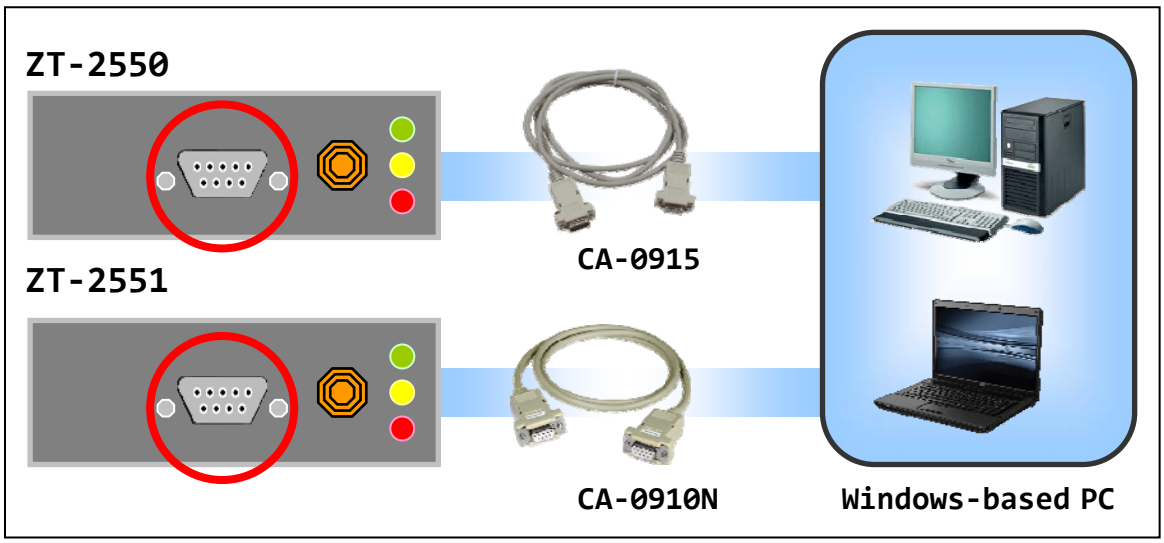


4 Connecting the Power and Host PC

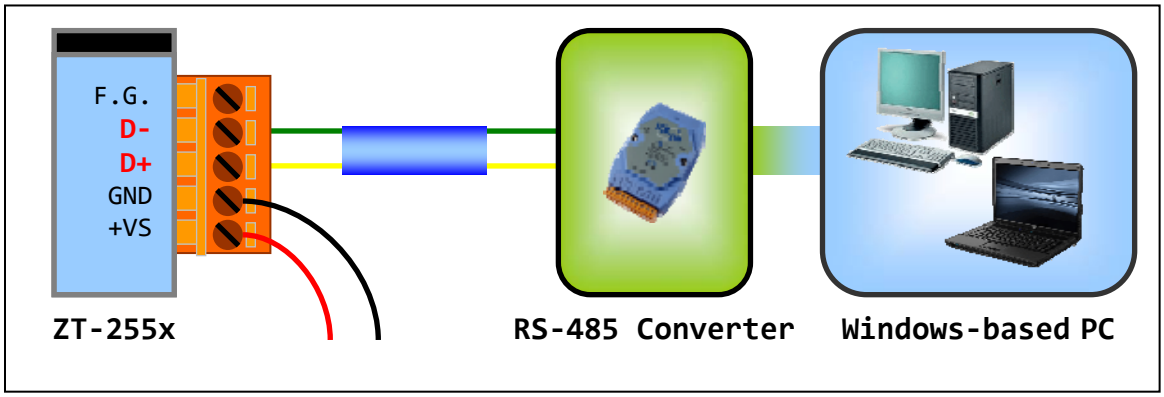
1. Confirm that the DIP switch is set to the "ZBSET" position.



2. Connect either the RS-232 or RS-485 interface to configure the ZT-255x.
   - RS-232



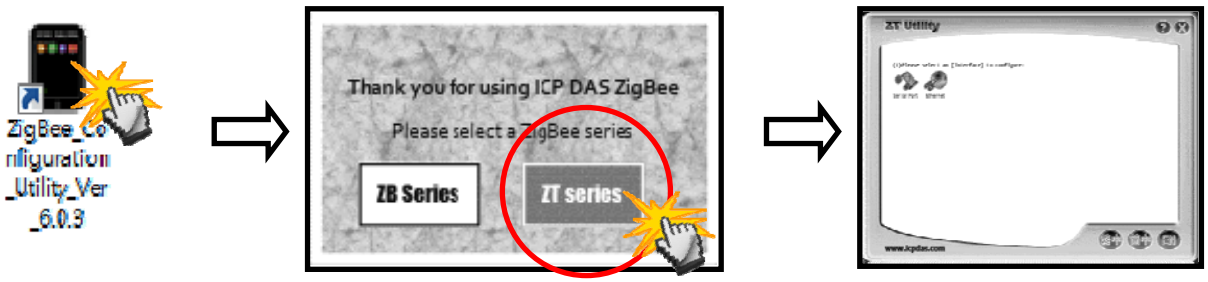
   - RS-485



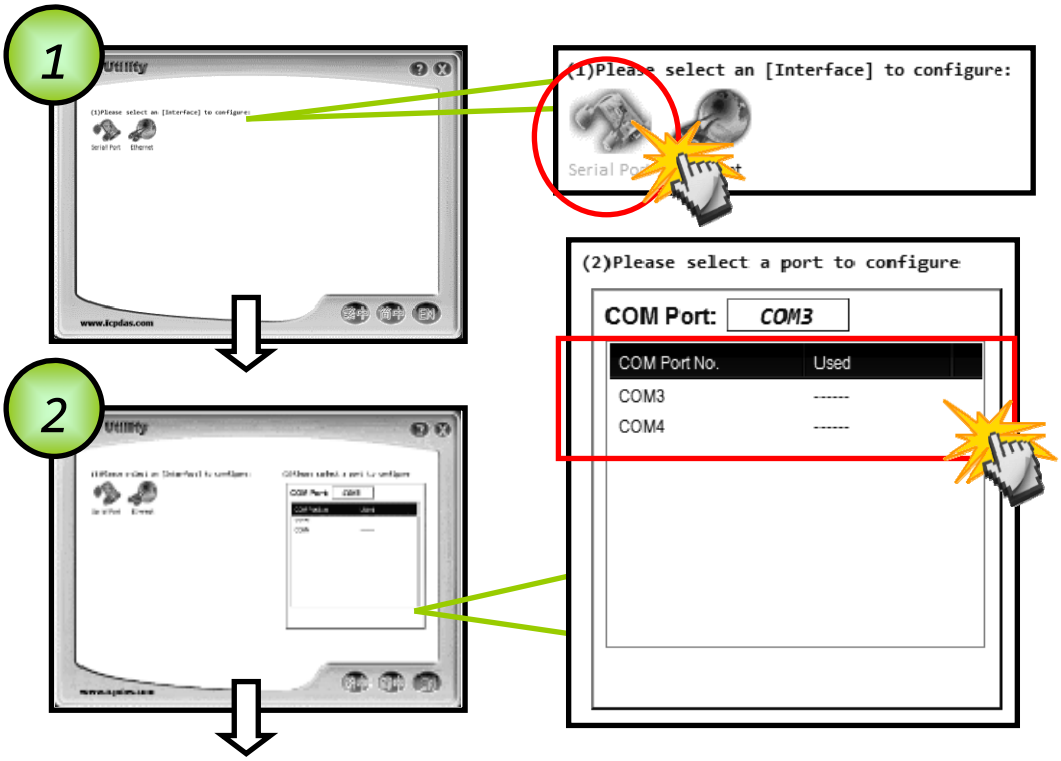
3. Enable the power. It means that the ZT-255x start-up procedure has been completed. If the red LED has changed from blinking to a steady light.

4 Configuring ZigBee Setting

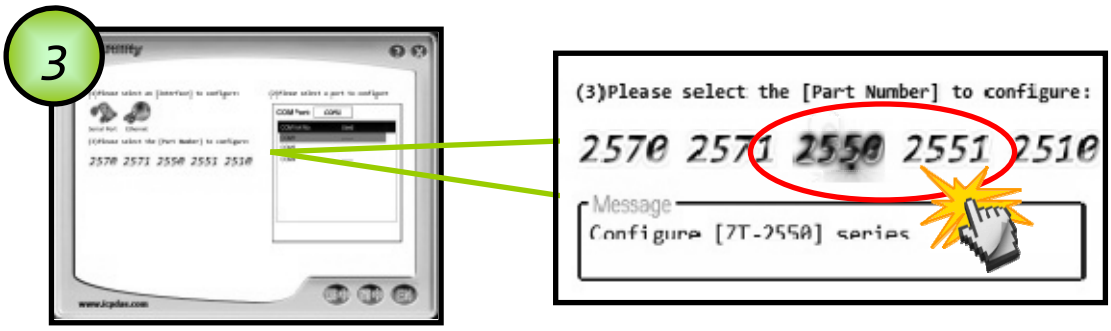
1. Launch the “ZT Configuration Utility” and click the [ZT Series] button



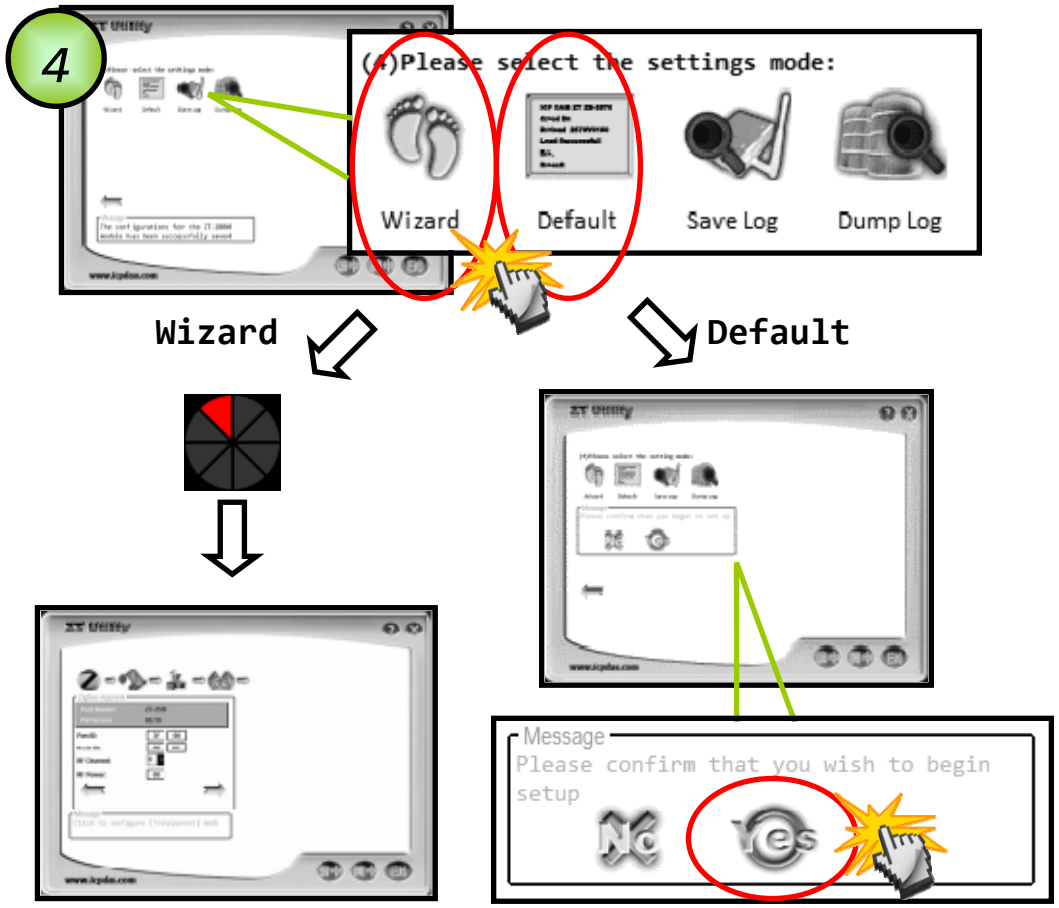
2. Click the [Serial Port] icon and then select the COM Port number.



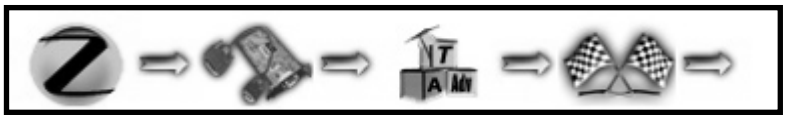
3. After selecting the COM Port number, a list of model numbers will be displayed. Select the name of the module that you want to configure. After clicking the button, the utility will begin checking the connection.



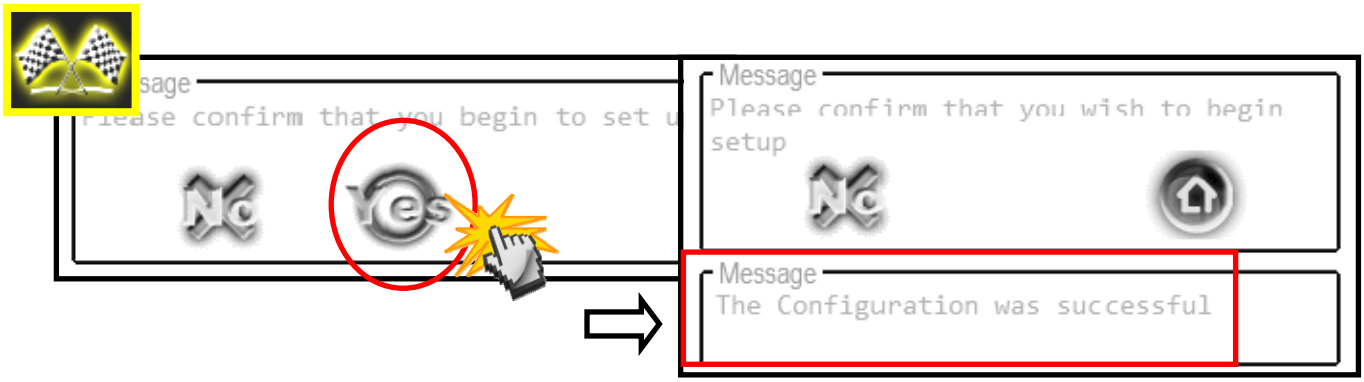
4. Once a connection is established, select either the [Default] or the [Wizard] function from the settings mode page.



5. Whether you select either the [Default] or the [Wizard] option for performing configuration, both are used to configure the Pan ID, Node ID, RF Channel, RF Power, Baud rate, Data Format, Application Mode and so the relevant parameters.



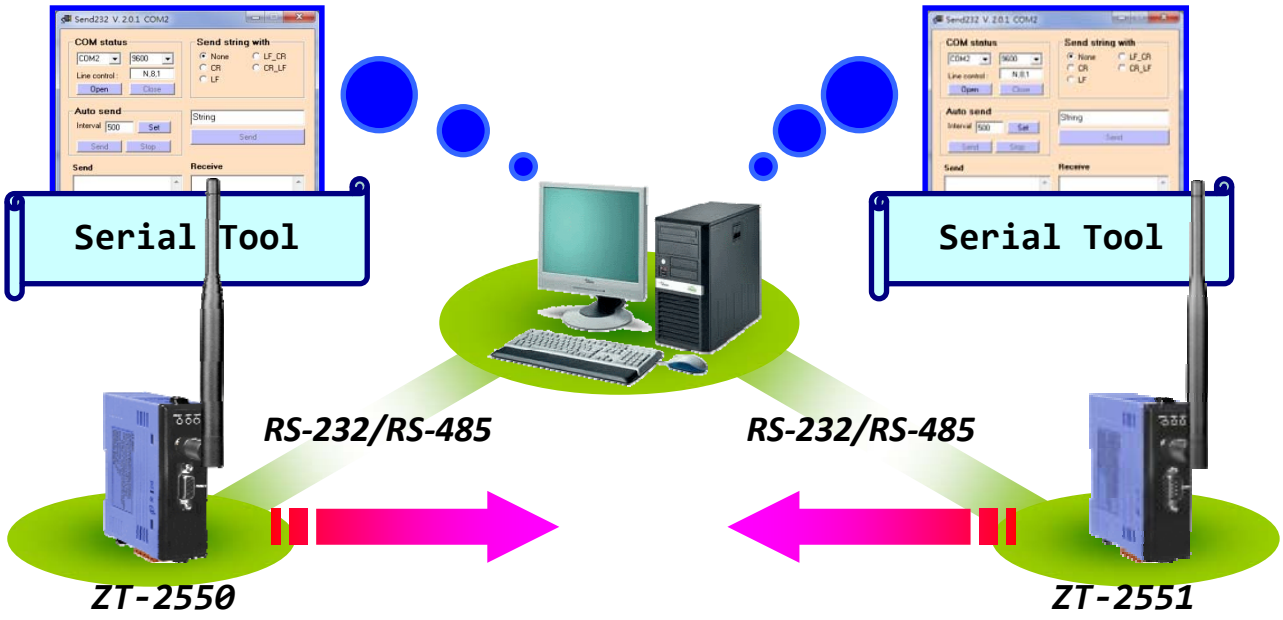
6. Once the module configuration has been completed, the message “The Configuration was successful” will be displayed. Return the DIP switch to the “ZBRUN” position and reboot the ZT-255x device.



5 Testing Communications

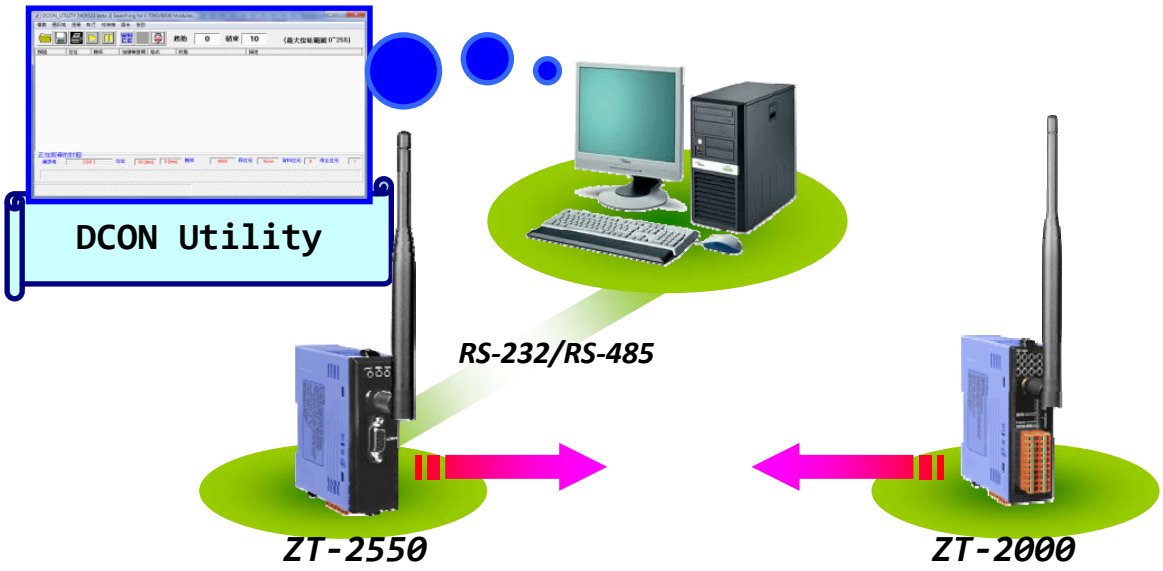
Method (1)

Connect both the ZT-2550 and ZT-2551 to the Host PC via the RS-232 port.
You may need to use two serial port tools to simulate the data transmission.



Method (2) :

Use the DCON Utility on the Host PC to search for ZT-2000 series I/O modules.
If there any devices are found, it means that the configuration is correct.



6 Troubleshooting

(1) Technical Support.

If you have any difficulties using your ZT-255x series module, please send a description of the problem to service@icpdas.com

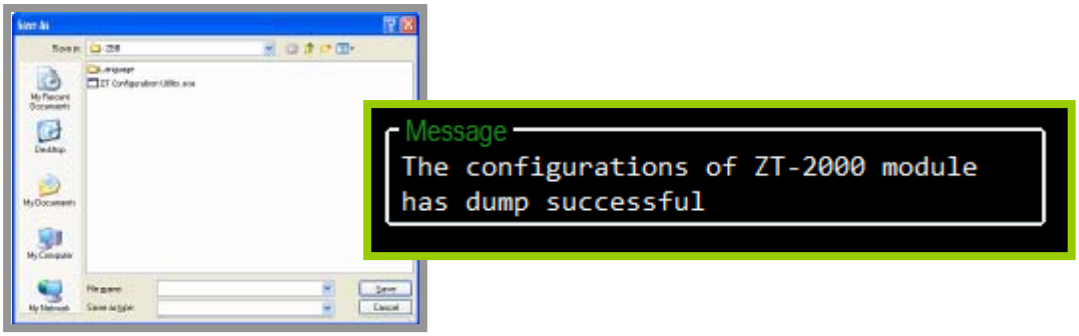
Include the following items in your email:

- *A description to the communication protocol for more information.*
- *A copy of the configuration file for the ZT-255x module. This file can be obtained using the procedure outlined below and should be attached to your email.*

a. Set the DIP switch of the ZT-255x device to the [ZBSET] position then reboot the device. Launch the ZT Configuration Utility and select [Save Log] icon to save the configuration of the ZT-255x as a file.



b. After clicking the [Save Log] icon, enter the “File Name” and the “File Path” in the Windows “Save” dialog box. Once the configuration has been successfully saved, the following message will be displayed.



(2) LED Indicator Status :

LED Indicator	Status	Introduction
ZigBee Net (Green LED)	ZigBee Coordinator (Host)	
	Steady Lit	ZigBee network is Establish
	Blink to Steady Lit	Rejoin ZigBee Network or It has Occupied
	ZigBee Router (Slave)	
	Steady Lit	The Signal is Strong
	Blinking (500 ms)	The Signal is Available
	Blinking (1s)	The Signal is Weak
	Blinking (2s)	The Signal is Unstable or There is no Available
ZigBee RxD (Yellow LED)	The status of ZigBee communication	
	Blinking	Receiving ZigBee Data
	Steady Unlit	No ZigBee Data Received
ZigBee PWR (Red LED)	The status of module board	
	Steady Lit	Power ON
	Blinking (200ms)	Module Initialization Failure
	Blinking (500ms)	Configuration Mode
	Blinking (1s)	Watchdog Enabled
	Steady Unlit	Power OFF