ZT-2510 Series

User Manual

Warranty

All products manufactured by ICP DAS are under warranty regarding defective materials for a period of one year, beginning from the date of delivery to the original purchaser.

Warning

ICP DAS assumes no liability for any damage resulting from the use of this product. ICP DAS reserves the right to change this manual at any time without notice. The information furnished by ICP DAS is believed to be accurate and reliable. However, no responsibility is assumed by ICP DAS for its use, not for any infringements of patents or other rights of third parties resulting from its use.

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Trademark

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Technology Support

If you have any problems, please feel free to contact us via email at service@icpdas.com

Table of Content

What's in the shipping package?

The package includes the following items:


ZT-2510 Device


ANT-124-05


CA-USB18


Release Note


CD

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

More Information

- Documentation :

  CD: \Napdos\ZigBee\ZT_Series\Document
  http://ftp.icpdas.com/pub/cd/usbcd/napdos/zigbee/zt_series/document

- Software :

  CD: \Napdos\ZigBee\ZT_Series\Utility
  http://ftp.icpdas.com/pub/cd/usbcd/napdos/zigbee/zt_series/utility

1 Introduction of ZigBee

ZigBee is a specification for a suite of high level communication protocols using small, low-power digital radios based on an IEEE 802.15.4 standard for personal area networks. ZigBee devices are often used in mesh network form to transmit data over longer distances, passing data through intermediate devices to reach more distant ones. This allows ZigBee networks to be formed ad-hoc, with no centralized control or high-power transmitter/receiver able to reach all of the devices. Any ZigBee device can be tasked with running the network.

ZigBee is targeted at applications that require a low data rate, long battery life, and secure networking. ZigBee has a defined rate of 250 kbit/s, best suited for periodic or intermittent data or a single signal transmission from a sensor or input device. Applications include wireless light switches, electrical meters with in-home-displays, traffic management systems, and other consumer and industrial equipment that requires short-range wireless transfer of data at relatively low rates. The technology defined by the ZigBee specification is intended to be simpler and less expensive than other WPANs.

2 Introduction of ZT-2510

The Basis of ZT-2510 Series Product

The ZT-2510 series module is small-sized wireless ZigBee repeater based on the IEEE802.15.4 standard. It supports network routing and signal relay transmission function in a personal area ZigBee network. The typical transmission of ICP DAS ZT series ZigBee products is 700 meters (LOS, line of sight), with a transmission frequency range of between 2.405 GHz and 2.48 GHz, separated into 5 MHz sectors, providing 16 channels and 16384 PAN IDs. ZT-2000 series is a long distance wireless repeater and you are able to use it to extend the transmission range and improve the quality of wireless signal.

ZT-2000 series products are specification for a suite of high level communication protocols using small, low-power digital radios module, which are fitted the ZigBee 2007 (ZigBee Pro) of ZigBee Alliance. In the ZigBee network, it is only allowed one ZigBee Host and called “ZigBee Coordinator”, ZT-2550/ZT-2570 series products, are used to initialize and manager the routing. In addition, One ZigBee network are able to manager 255 ZigBee router and responsible for receiving or bypassing data from parent or child node. In ICP DAS products, the ZT-2551, ZT-2571, ZT-2000 I/O and ZT-2510 are the ZigBee routers.

The Benefits of ZT-255x Series Product

A Windows compatible GUI configuration utility is available. The utility allows users to set different configurations based on the type of application, together with several of required ZigBee variables such as Pan ID. The friendly user interface is also helping user be familiar with ZT-2000 series.

For more information, please refer to the relevant documents for these devices, which can be found at following link:

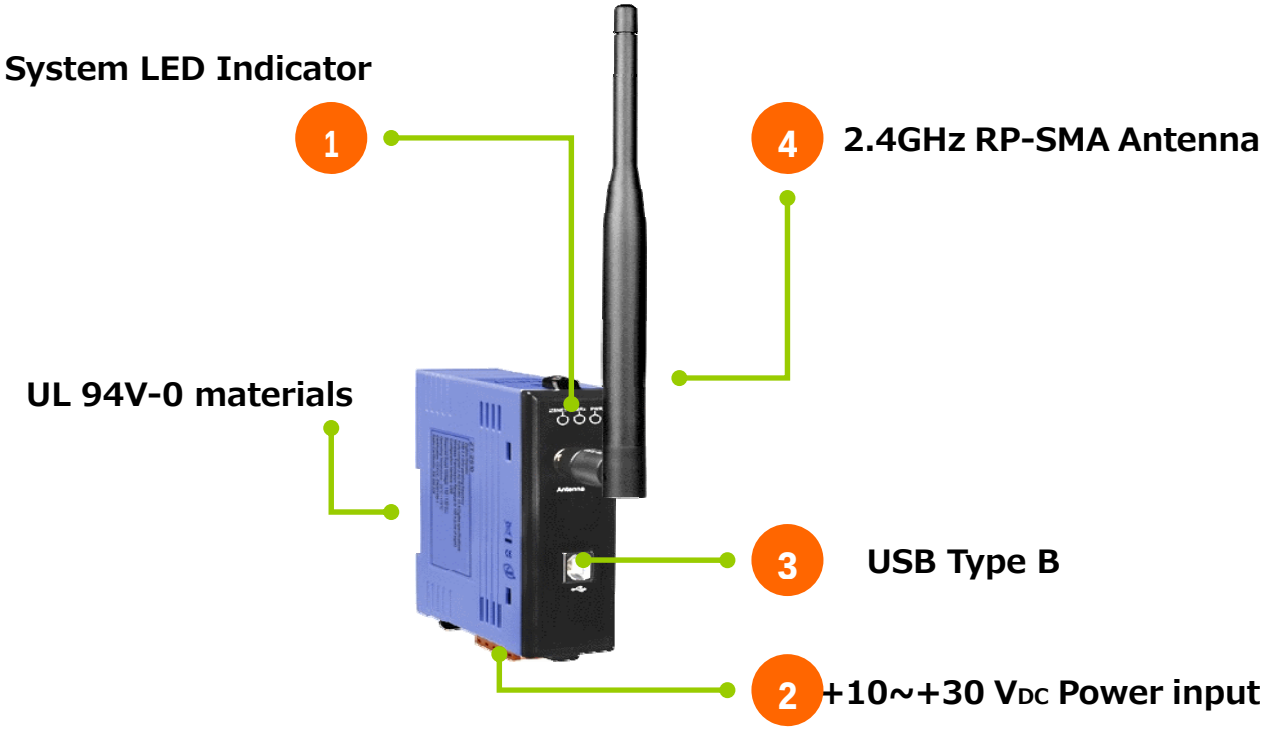
http://ftp.icpdas.com/pub/cd/usbcd/napdos/zigbee/zt_series/document

3 Hardware Information

3.1 Specifications

Part Number		ZT-2510 (ZigBee Router)
Configuration Interface		
USB		Type B
Cable		CA-USB18 (1.8 M Cable) x 1; USB Type A connector (Type A to Type B cable provided)
Compatibility		USB 1.1 and 2.0 standard
Driver		Windows 98/ME/2000/XP/Vista/7/Linux 2.6.19
LED Indicator Display		
LED	**Green**	ZigBee Net
	Yellow	ZigBee RxD
	Red	ZigBee Power
Power		
Protection		Power reverse polarity protection
EMS Protection		ESD, Surge, EFT
Required Supply Voltage		$+10V_{DC}$ ~ $+30V_{DC}$
Power Consumption		0.5 W (Max.)
Mechanism		
Casing		Plastic
Flammability		UL 94V-0 materials
Dimensions		33 mm x 78 mm x 107 mm (W x L x H)
Installation		DIN-Rail
Environment		
Operating Temperature		-25 °C ~ +75 °C
Storage Temperature		-40 °C ~ +80 °C
Relative Humidity		5 ~ 95% RH (non-condensing)
Wireless		
RF Channel		16
RF Transmit Power		11 dBm
Antenna (2.4GHz)		5 dBi Omni-Directional antenna
Transmit Range (LOS)		700 m (Typical)
Max. Slaves Supported		255
EMI Certification		CE/FCC, FCC ID

3.2 ZT-255x Front View



1. LED Indicator of System :

LED Indicator	LED Color	Explain
ZigBee Net	Green	The status of ZigBee network.
ZigBee RxD	Yellow	The status of ZigBee communication
ZigBee PWR	Red	The status of module board

※ *For more details, please see the section 6 troubleshooting.*

2. +10 ~+30V_{DC} Power input :

➢ The ZigBee PWR indicator will be steady light if correct power input.

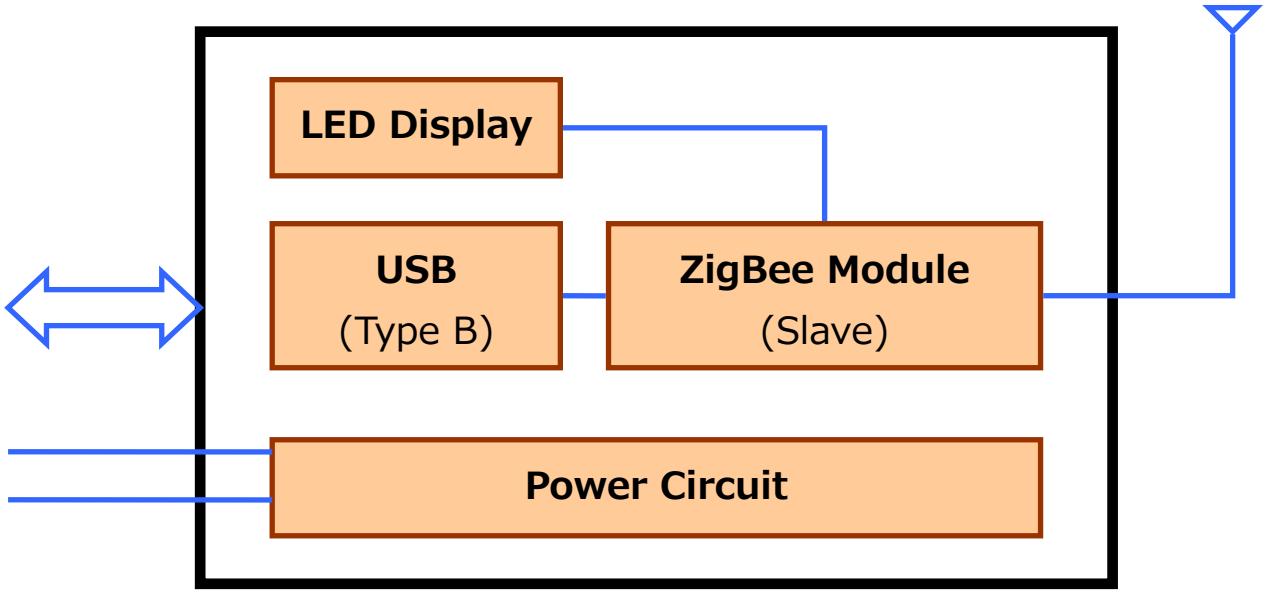
3. USB Type B :

➢ The port is used to configure ZT-2510 without providing any power additionally.

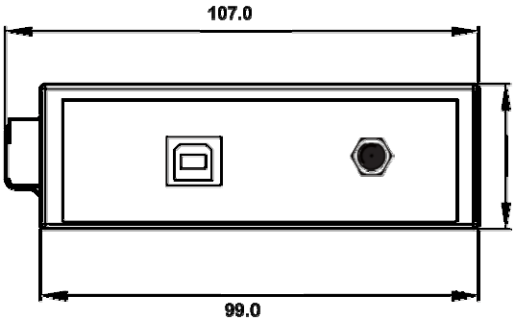
4. 2.4GHz RP-SMA Omni-directional Antenna :

➢ If there is any requirement for extension cable, it must be a connector with the type RPSMA and resistance 50 Ohm. Ex. 3S001-1, 3S003-1...etc

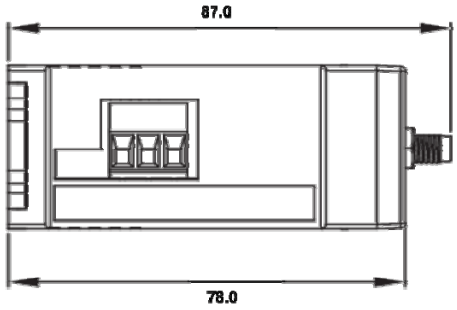
3.3 ZT-2510 Block Diagram



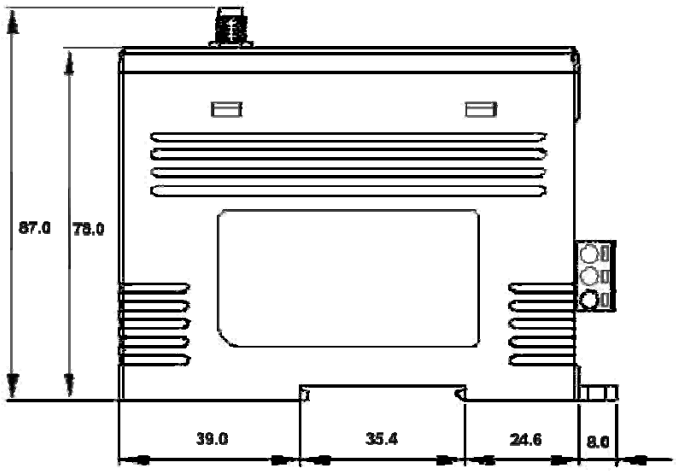
3.4 ZT-2510 Dimensions (Units: mm)



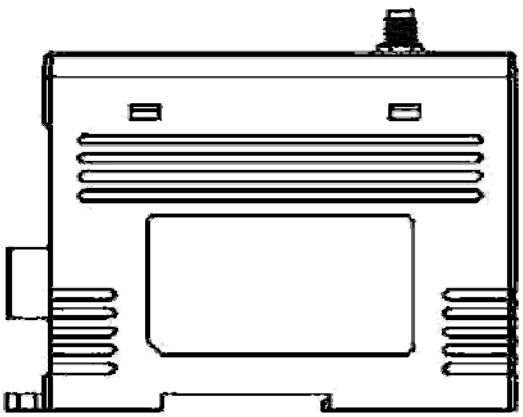
Front View



Bottom View



Left Side View



Right Side View

4 Set up the ZT-2510 module

4.1 Introduction of configurations

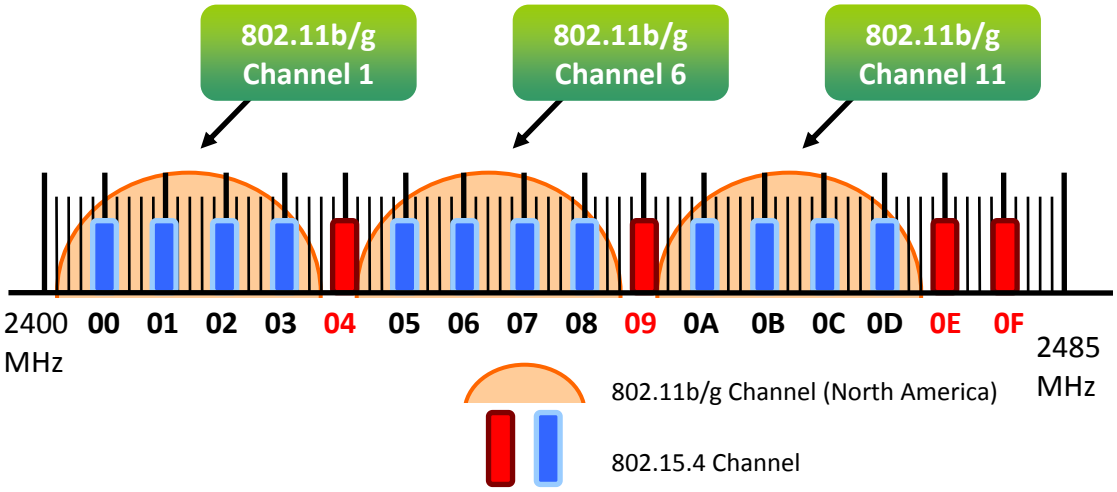
A. "Pan ID" is the group identity of a ZigBee network, and must be the same if they are in the same ZigBee network.
(Valid values range from 0x0000 to 0x3FFF)

B. "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)

C. "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

※ *In addition, the RF channels 0x04, 0x09, 0x0E and 0x0F are recommended because they are not covered with the frequency of Wi-Fi.*



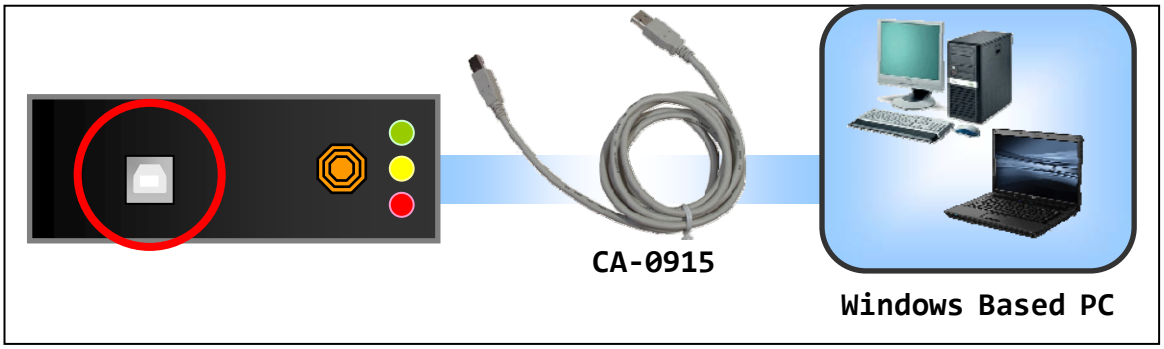
D. "RF Power" is the transmit power.

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.*

4.2 Connecting the Power and Host PC

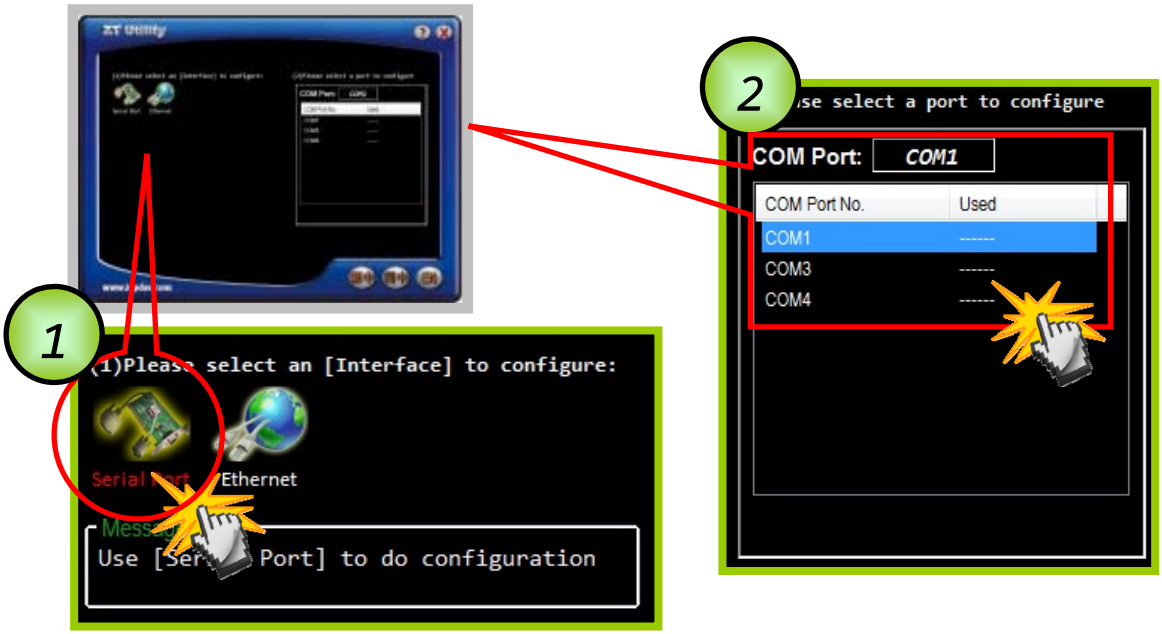
1. Connect the interface USB port for doing configuration.



4.3 Configuring ZigBee Setting

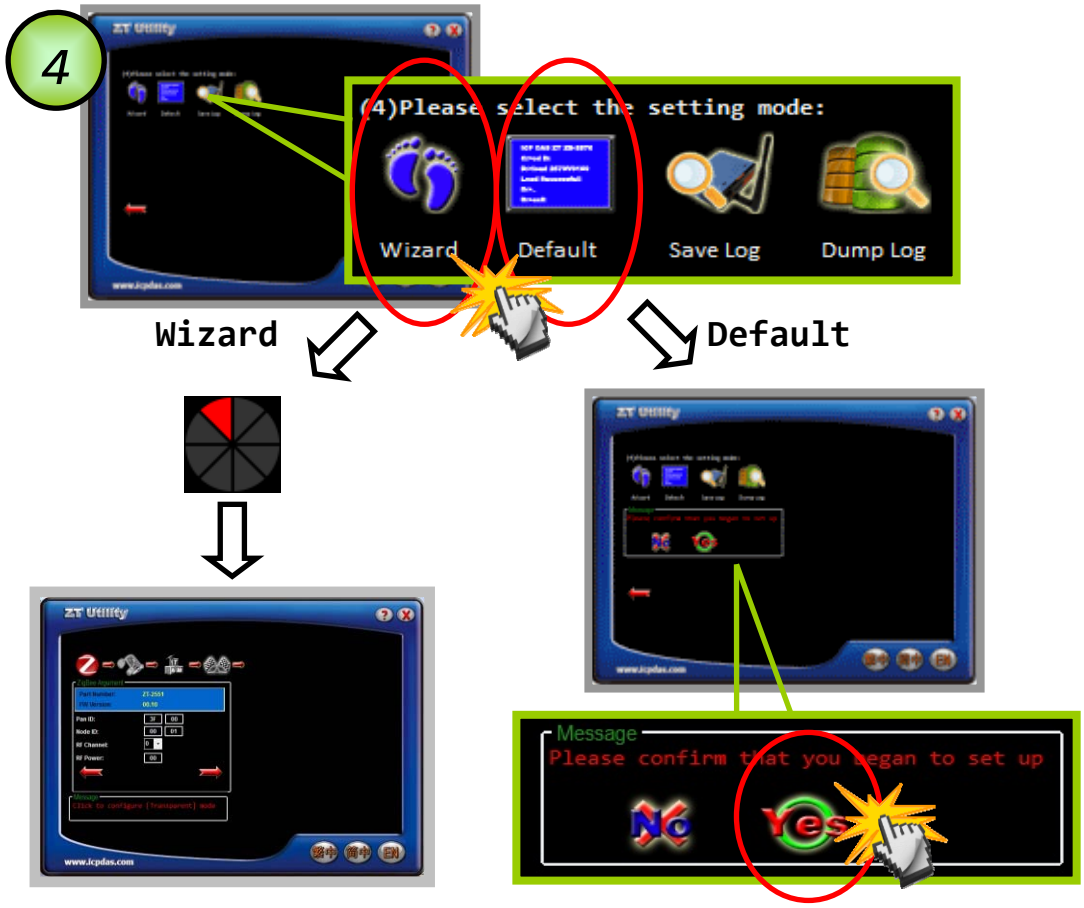
1. Launch the “ZT Configuration Utility” and click the [ZT Series] button.

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.

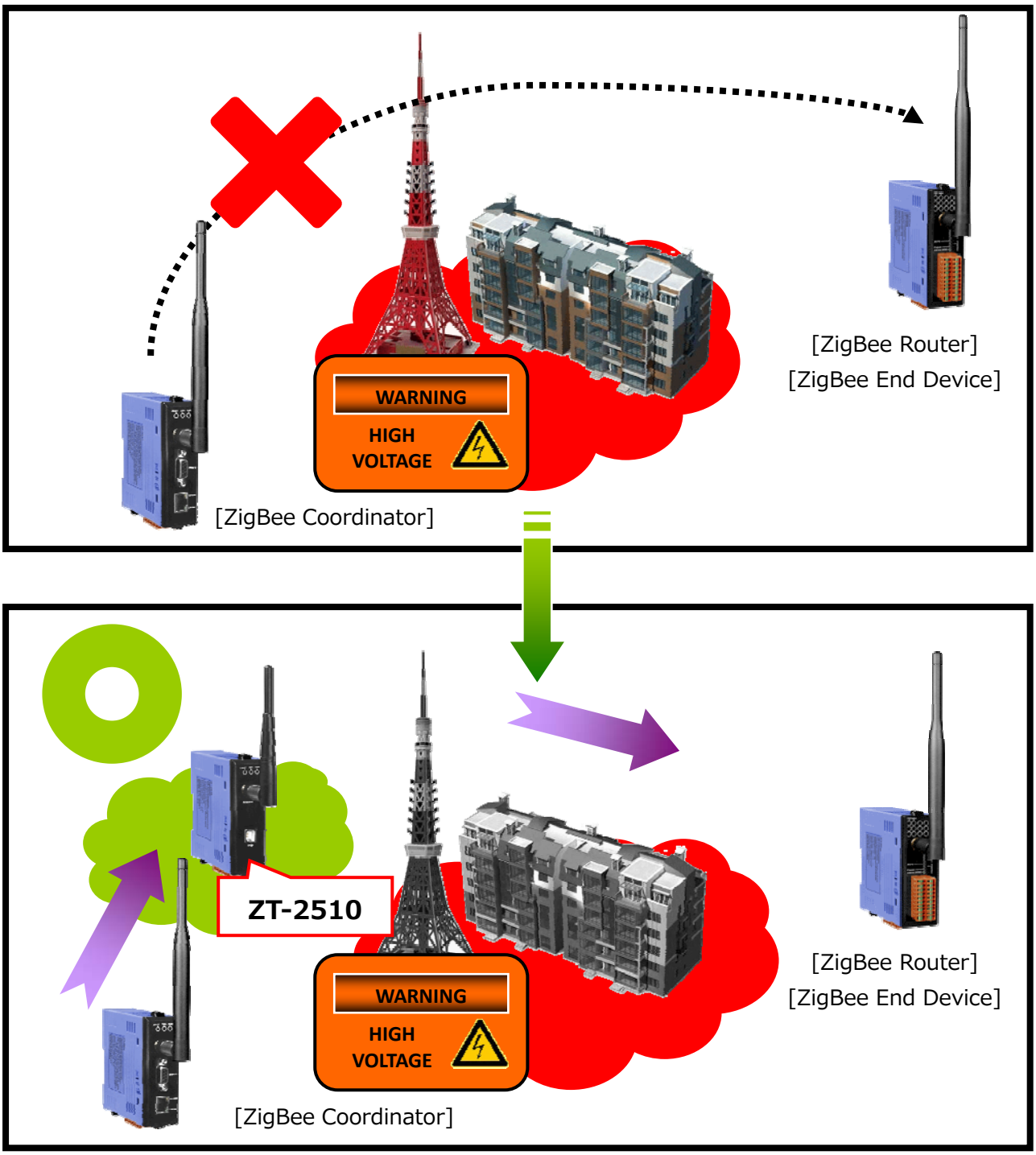


5. Whether you select either the [Default] or the [Wizard] option for performing configuration, both are used to configure the Pan ID, Node ID, RF Channel, RF Power and so the relevant parameters.

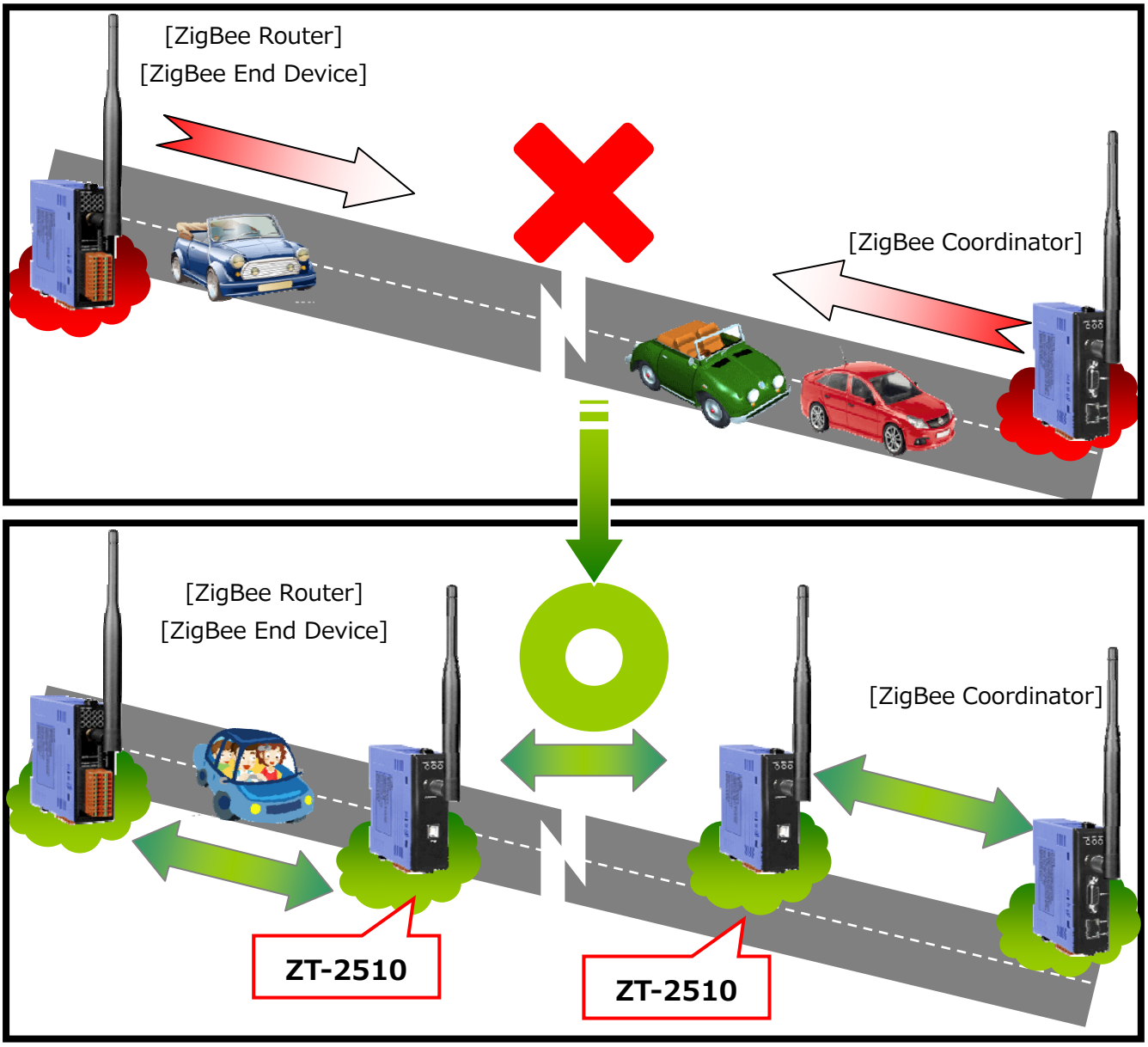
6. Once the module configuration has been completed, the message “The Configuration was successful” will be displayed and it means the configuration has completed.

5 ZT-2510 Applications

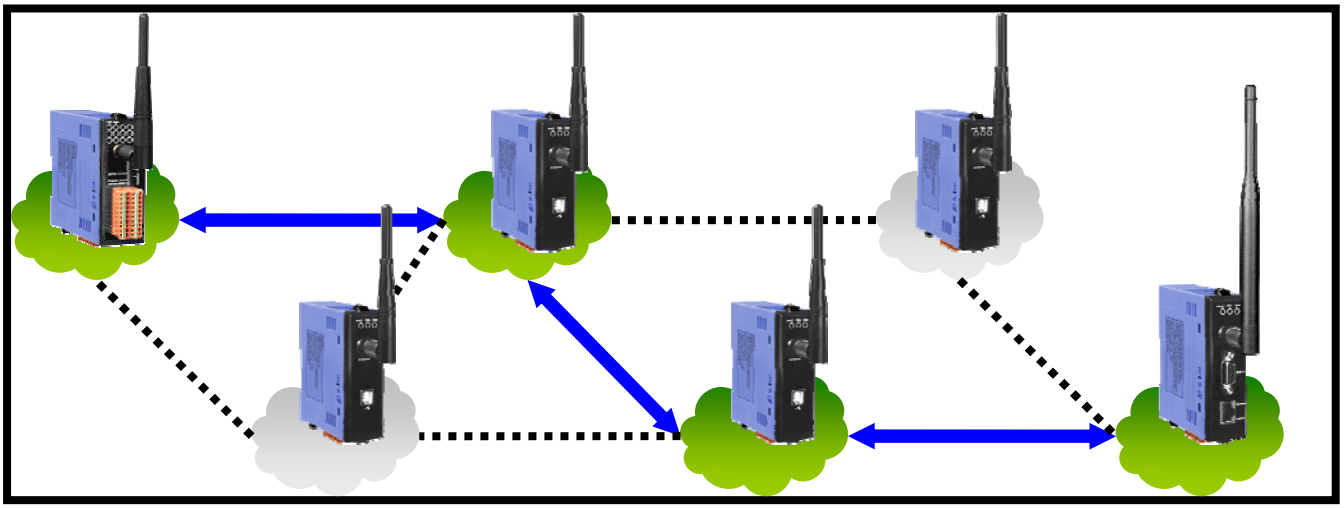
(1) ZT-2510 is suitable used in which environment is many obstacles and interferences.



(2) ZT-2510 is suitable used in which environment need to extend the communication range.



(3) ZT-2510 is suitable used as redundant routing path.



6 Trouble shooting

(1) LED Indicator Status :

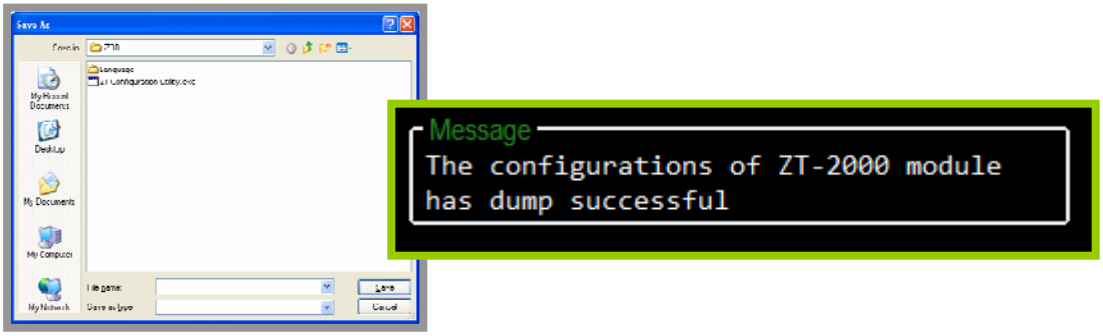
LED Indicator	Status	Introduction
ZigBee Net (Green LED)	The status of ZigBee network [ZigBee Router (Slave)]	
	Steady Lit	Signal Strength
	Blinking (500 ms)	Signal Available
	Blinking (1s)	Signal Weak
	Blinking (2s)	Signal Terrible or No ZigBee Network
ZigBee RxD (Yellow LED)	The status of ZigBee communication	
	Blinking	Receiving ZigBee data
	Steady Unlit	No ZigBee data received
ZigBee PWR (Red LED)	The status of module board	
	Steady Lit	Power on
	Steady Unlit	Power off

(2) Technical Support.

If you are any difficulties using the ZT-255x module, save the ZigBee configurations using the described below. Please also provide a description of problem and attach file to an email and send it to service@icpdas.com

1. 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 ZT-255x as a file.

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



7 Appendixes

◆ Technology Support

If there is any question or concerns for using ZT-2000 series module, please feel free to contact us : Service@icpdas.com

If there is any question or concern for using ZT-2000 series module, please feel free to contact us. ICP DAS will reply you within three days at most as possible as we can.

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