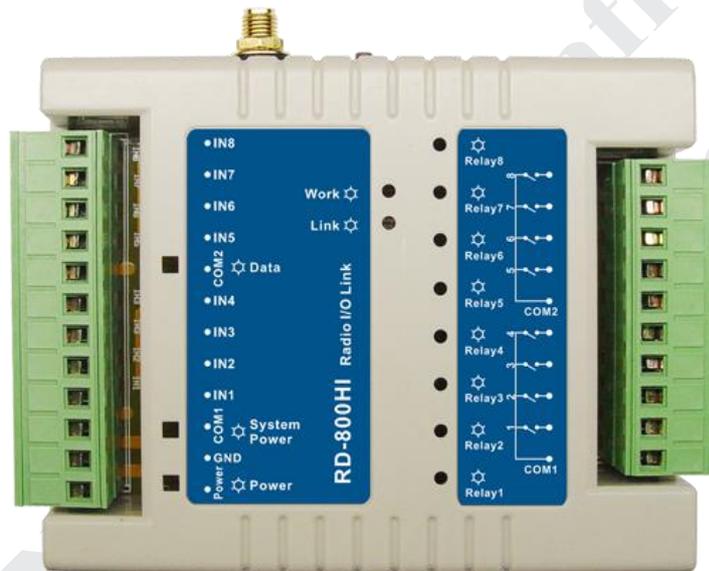


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 902~928MHz Wireless Hi Power Controller 16 Loop
 

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**Version History**

Version	Date	Changes
V1.01	Apr.28, 2009	1 <sup>st</sup> Edition
V1.02	Jul.16, 2009	2 <sup>nd</sup> Edition

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## Important Event

- This product is in general use for the equipment on the premise of the development, design, manufacture. Do not use that require high security purposes, such as machinery or medical, aviation equipment, machinery and transport-related deaths are directly or indirectly related to the system.
- This product should be in this brochure by the instructions of the types and rated voltage power under the current proper use. If violation of this statement by the safety records of the supply operation, I am afraid our company cannot afford any of the responsibility.
- Do not self-decomposition, alteration, repair of the products also will cause fire, electric shock, fault, and dangerous. In addition, their decomposition, alteration, repair the product, failure is not within the scope of warranty.
- The products are not waterproof, so please do not use and touch water. Take off and on also please note. Rain, spray, drinks, steam, sweat may be a failure.
- Use of this product, please be sure to use according to the statement recorded by the use of methods to operate. Please do not violate particular attention to the matter reminded to use.
- Please respect this statement recorded by the note. When consumers in contravention of this statement recorded note of the operation, I am afraid our company could not shoulder any responsibility.
- Products are defective, the Company will be responsible for free to amend the flaws, or to the same flawless product or its equivalent products in exchange. However, the Company does not assume based on the requirements of the flaw and loss responsibility.
- The Company reserves the right to retain without notice to users of the cases, the product of hardware / software (version upgrade) is with the right to edit.
- All script, communications, forms and images may not be private information without permission to use.

## Declaration

This product provides different frequency for user selection to meet different telecommunication regulation and FCC/CE on different countries.

## Warranty

The warranty time is within one year from purchased date. The warranty scope are used in normal situation and none vandalism. (Some function harmful out of warranty scope and Vandalism are Un-warranty).

- Because the natural disaster, accident or human factor to cause the bad damage.
- Violate the product instruction manual to cause the damage of the products.
- The improper assemble causes damage.
- The products used the unsanctioned accessory to cause damaged.
- Overstep the allowed used environment to cause the products damaged.

## Contact Us

WENSHING ELECTRONICS CO., LTD.  
No.82, Chong De St. 11054 Shin Yi Dist, Taipei, Taiwan  
Tel: +886-2-27353055  
Fax: +886-2-27328813

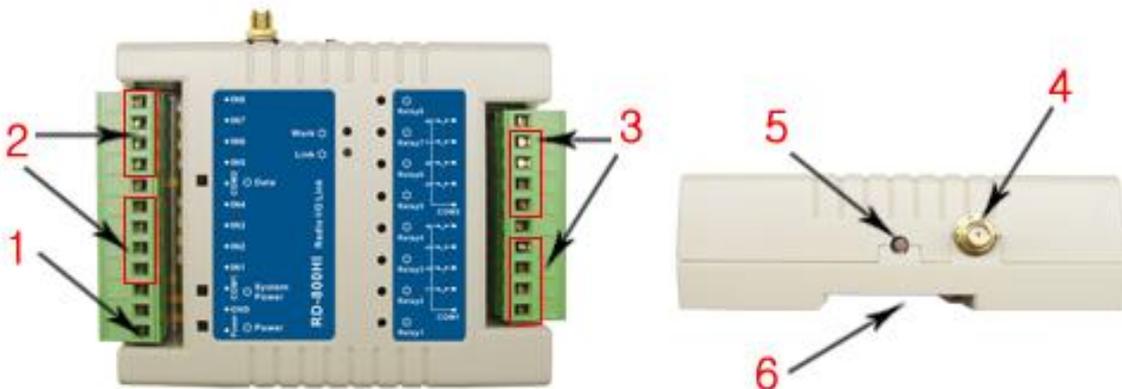
## Product Instruction

RD-800HI is the latest new product from WENSHING Electronics Co., Ltd. that is hi power wireless 8 junction industrial control products, mainly provide a wireless control interface for industry control equipment interface RD-800HI communication mode is taking hopping technology. The system will self-detect the available frequency band; effectively reduce interference with the external environment. Group internal offered 8 sets input signal control and 8 sets output equipment control, the farthest distance can up to over 1KM. It's only needed several simple wiring steps, the wired environment will be replace into a wireless control environment, can effective reducing the connecting cost of the equipment; also, you can collocate with our Wireless RS232 Hi Power through the equipment which is provide RS232 interface to do wireless control and monitor RD-800HI actions, modifications every set within RD-800HI.

## Introduce

The following describes detail of RD-800HI wireless 8 junctions industrial control box of relevant hardware interfaces and operation instructions,. RD-800HI integrates the intact circuit radio frequency, especially suitable for the connection all kinds of industrial control apparatus. The scope of application is very extensive. The RF module of RD-800HI is used TRW-909HI RF Transceiver Module, it will greatly reduce the size and weight of this product.

## Every Part of Name and Function



Position the picture	Name	Description
1	AC/DC Input	Outer power input
2	Controlled Signal Input	Provide 8 sets signal input
3	Device Controlled Output	Provide 8 sets signal output
4	Antenna	The position for antenna inserts
5	Setting Key	Function setting
6	Track	Put in the position of aluminum track

### Product Block Diagram

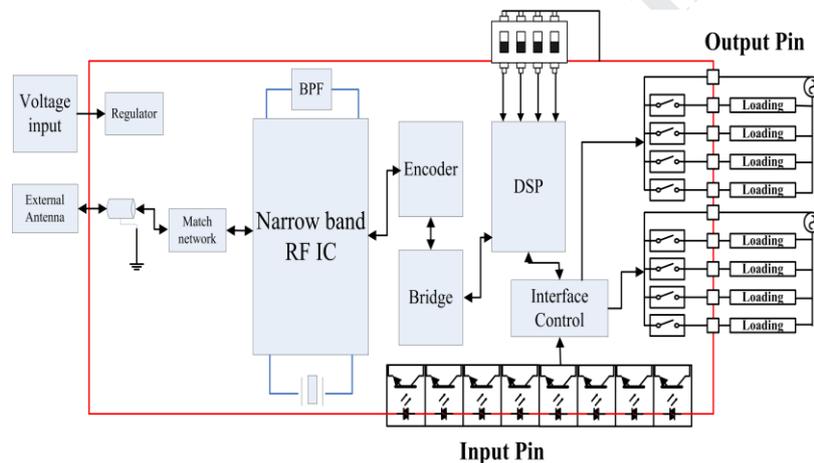


Chart 1 RD-800HI Product Block Diagram

RD-800HI has the complete RF receiving and transmitting circuit and interface, Chart 1 is the function block diagram of RD-800HI, main components are as followings: DSP processor, circuit of RF frequency, memory, power and system connector and all can connect outer antenna. When through system connector is able to link 8 sets control signal input port and 8 sets equipment control output port.

In Chart 1, inside the red line frame is the each component part of the main board of RD-800HI. The outside of red line is outer interface. RD-800HI main board has finished all the function of wireless control. Include RF specification and the code of RF data, regulation frequency indication. Additionally, the main board also include: 8sets control signal input port and 8 sets equipment control output port. LED light instruction. Following, we will separate to introduce each part function of main board and outer interface.

## Introduction of Each Function

- **DSP Processor**

DSP processor finished all signals handle function of RD-800HI, including receiving and transmitting RF data, LED light instruction, and judgment of the button.

- **Circuit of radio frequency**

The circuit of radio frequency offers the pass way of receiving and transmitting of 902~928MHz, including receiving circuit, transmitting circuit, frequency compose the circuit.

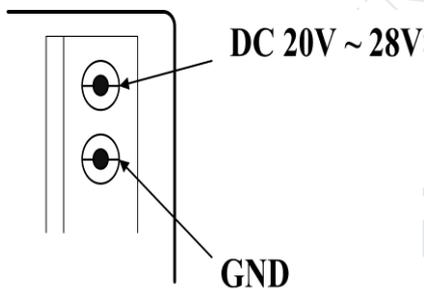
- **Memory**

The memory is mainly used in storing the present working frequency and RF transmitting speed.

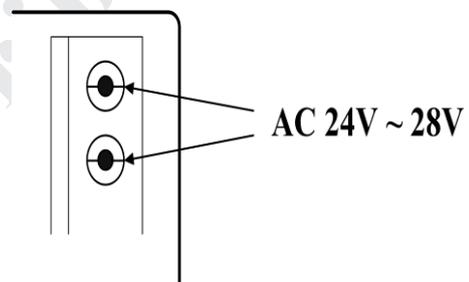
- **Circuit of the power**

Circuit of the power offered AC 24~28V or DC 20~28V input in power supply.

DC Linking Mode



AC Linking Mode



## Electronic Characteristic

Item	Specification	Remark
Voltage Range	AC : 24~28V DC : 20~28V	
Frequency Range	902~928MHz	
Output Power	0.5W	Collocate with Wireless RS232 Hi Power, it can adjust from 100mW to 2W.
Antenna	1/4λ wire antenna	Gain of 2.14 dBi or less
Antenna Power	Within 8 (+20% -50%)	Contact (50 Ω)
Modulation System	Binary FSK	Hopping
Oscillation System	PLL synthesizer system	
Radio Communication Speed	12.8Kbps	
Number of Channels	5	
Receiver Sensitivity	-118 dBm (1200bps)	Packet error rate 1% (253 bytes/1 packet)
Input I/O	$V_{IL} \leq 10V$ · $12V \leq V_{IH} \leq 28V$	Pulse wide > 200ms
Output I/O	AC 125V 5A · AC 250V 3A · DC 30V 3A	
Working Temperature	-10°C ~+70°C	
Storage Temperature	-30°C ~+95°C	
Consumption Current	MAX : 300mA MIN : Disconnect : 40mA Connect : 25mA	

## Interface Instruction

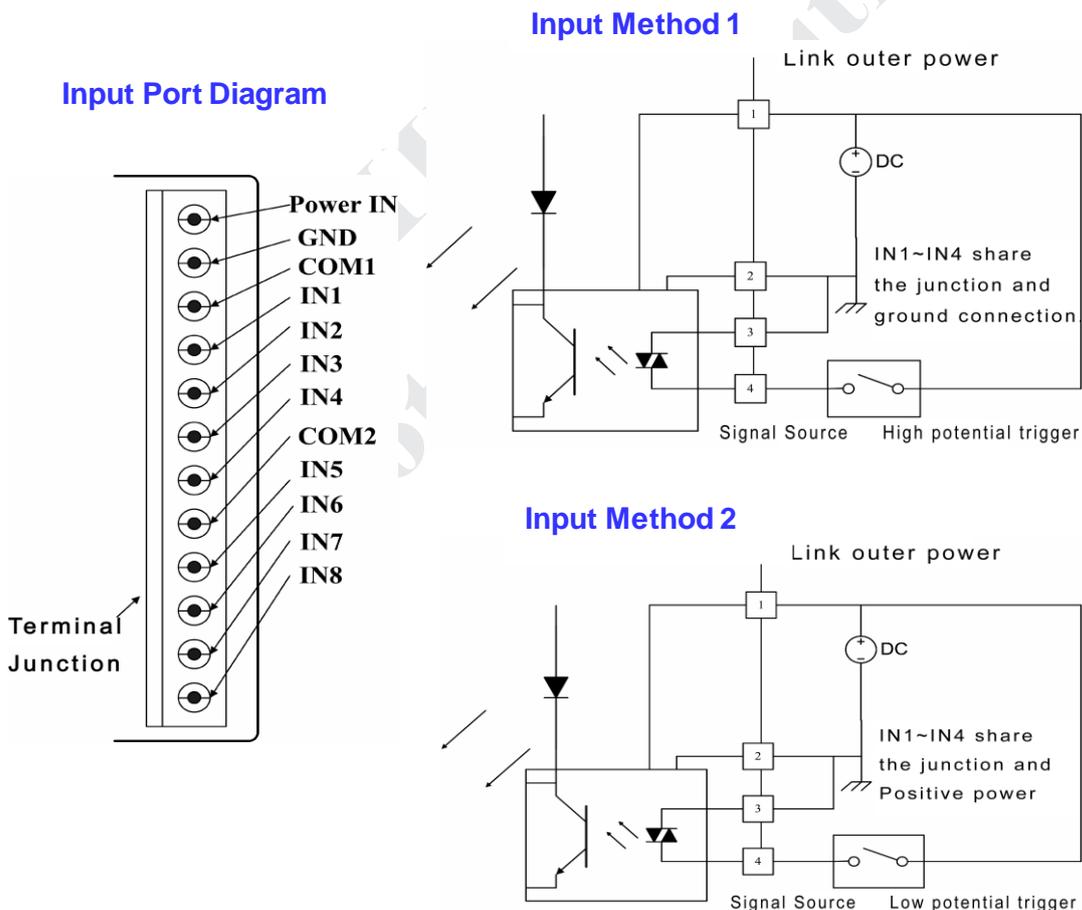
### Power

RD-800HI provides 2 methods of linking outer power which are AC 24V~28V or DC 20V~28V. In order to guarantee the module works normally, the direct current source should have the output ability of 500mA of peak value electric current.

### Input Connection

RD-800HI is able to offer 8 sets signal input port. IN1~IN4 shares COM1 and IN5 ~ IN8 shares COM2.

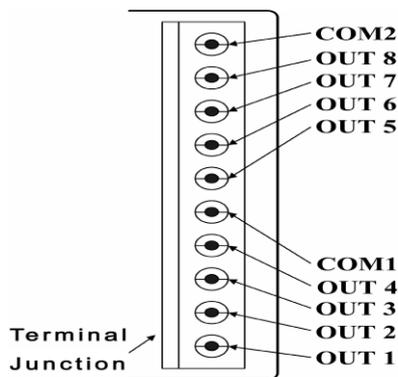
Two sets input ports are able to adopt different touch ways. One is the joint (COM) altogether receiving low electric potential, and touch the signal (IN) adopt the high electric potential. Another is the joint (COM) altogether touch off the signal (IN) adopt the high electric potential, one is the joint (COM) altogether receive the high electric potential, touch signal (IN) adopt the low electric potential. Trigger signal must be greater than the width of 200ms also can be used according to different purpose.



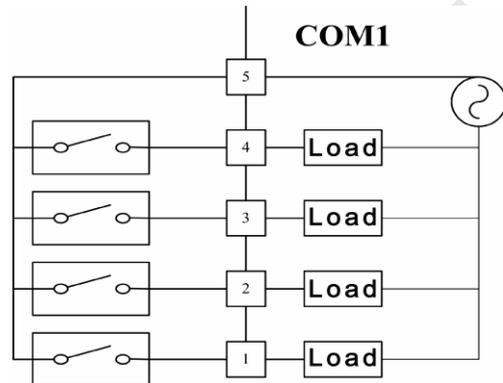
## Output Connection

RD-800HI offered 8 sets signal output port, OUT1~OUT4 share with COM1 and OUT5~OUT8 share with COM2, also provide high bearing press and the high electric current relay (AC 125V 5A, AC 250V 3A, DC 30V 3A) to be the output exchange switch. It makes RD-800HI can be applied in extensive purpose.

Output Port Diagram

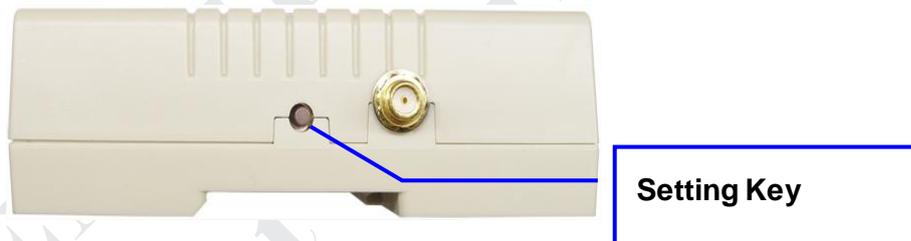


Output Port Model



## Equipment Connect Key

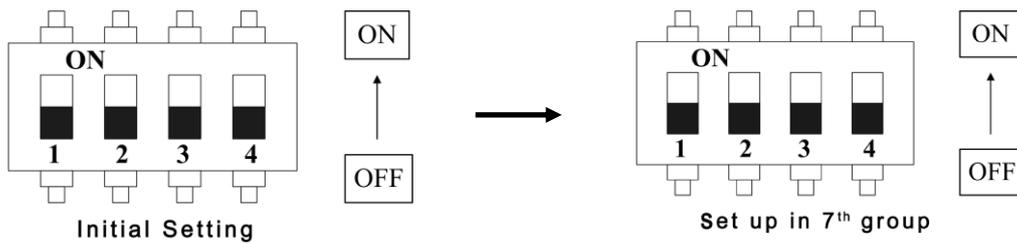
Please press the setting key under boot status until LED light flashes to entry set mode. You can adjust internal every parameter setting through our Wireless RS232 HI Power Transceiver. (Details setting way, please check for Wireless RS232 Hi Power data sheet.)



## Setup the Group Switch

Built-in setup group switch in RD-800HI, provide users to adjust transmitting and receiving working group, established the assemble steps simply and settled more humanized. Please see the following illustration and form to know the setup way.

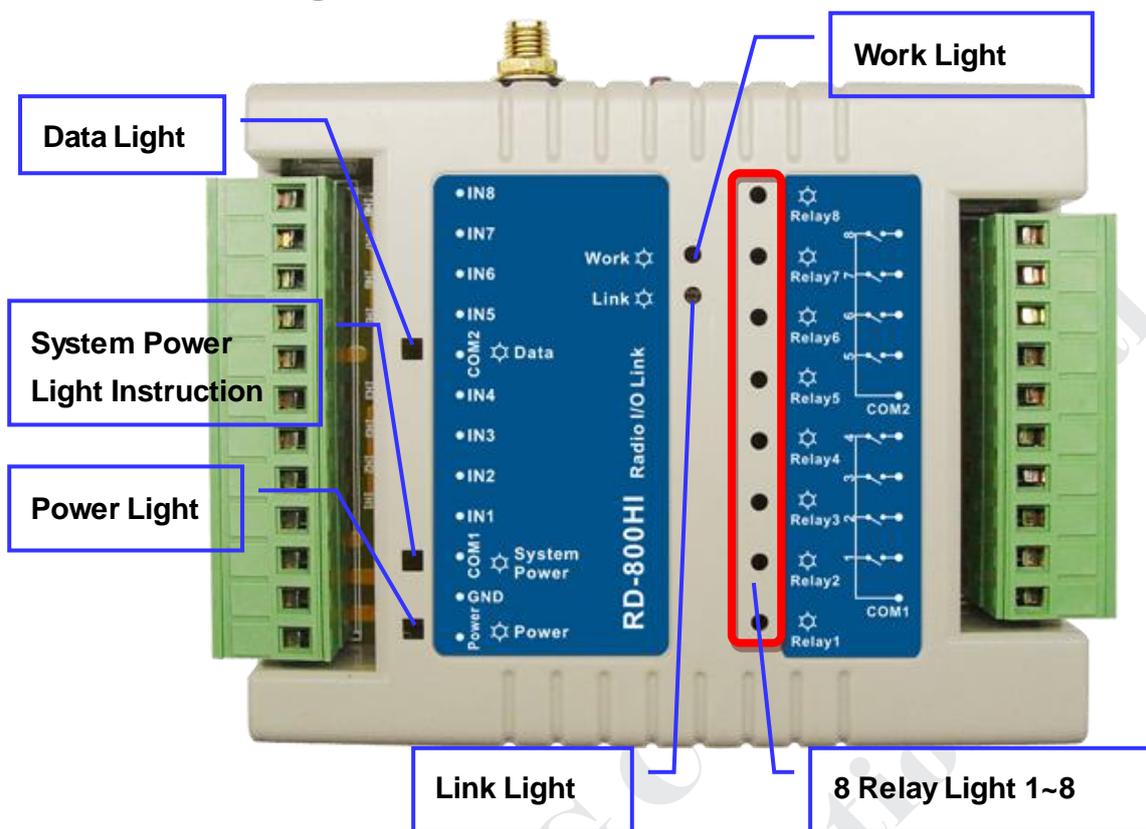
If you would like to set up in 6th group, to set up the switch of the back group No.2 and No.3 to ON, No.1 and No.4 don't have any change. When start the power, the RD-800HI will connect to setup group automatically. To set up the other group settings, please refer to the following table.



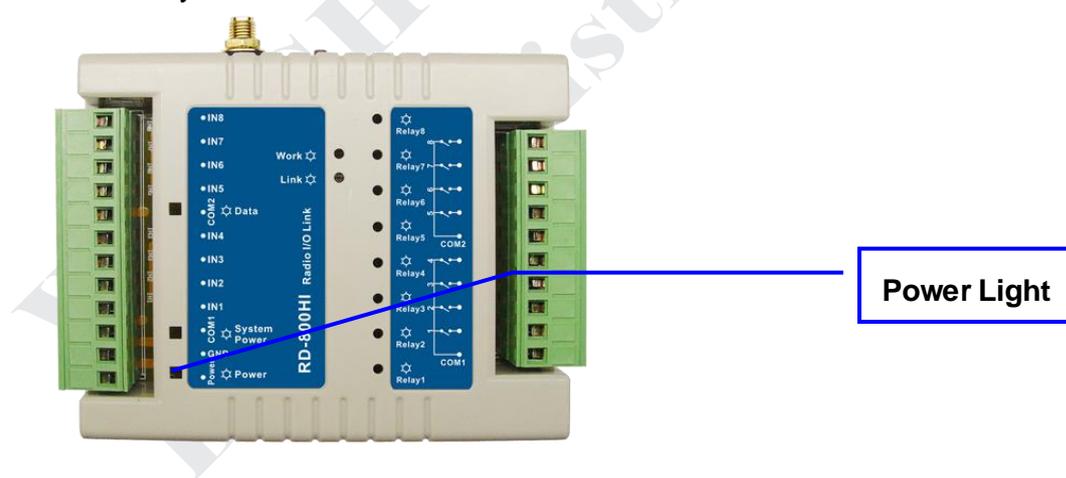
Switch 1	Switch 2	Switch 3	Switch 4	Working Speed
0	0	0	0	Test Mode
1	0	0	0	1st Group
0	1	0	0	2nd Group
1	1	0	0	3 <sup>rd</sup> Group
0	0	1	0	4 <sup>th</sup> Group
1	0	1	0	5 <sup>th</sup> Group
0	1	1	0	6 <sup>th</sup> Group
1	1	1	0	7 <sup>th</sup> Group
0	0	0	1	8 <sup>th</sup> Group
1	0	0	1	9 <sup>th</sup> Group
0	1	0	1	10 <sup>th</sup> Group
1	1	0	1	11 <sup>th</sup> Group
0	0	1	1	12 <sup>th</sup> Group
1	0	1	1	13 <sup>th</sup> Group
0	1	1	1	14 <sup>th</sup> Group
1	1	1	1	Command Mode

- When you adjust the switch to test mode, user will easily test where the problem is and decrease equipment setting time and cost. Also can test Output side is normal working or you can input signal through Input side, corresponding Relay side will action.

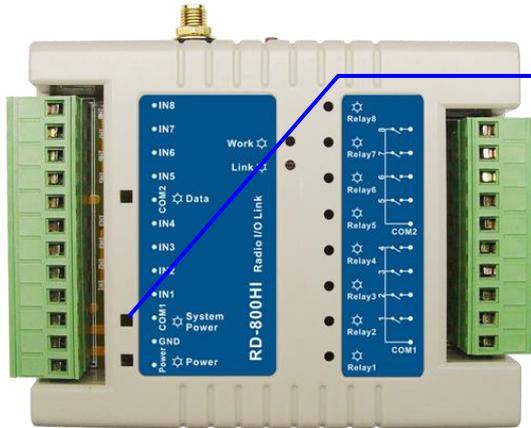
## LED Indicator Light



- Power Light: When the light is bright, it means the device is opened and to electrify.

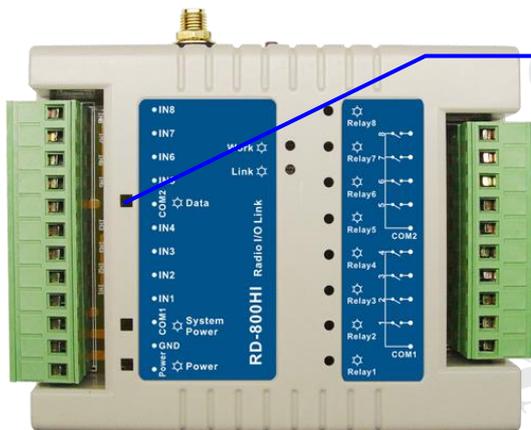


- System Power Light: When the indicator light keep being bright, it means the each working voltage is no problem.



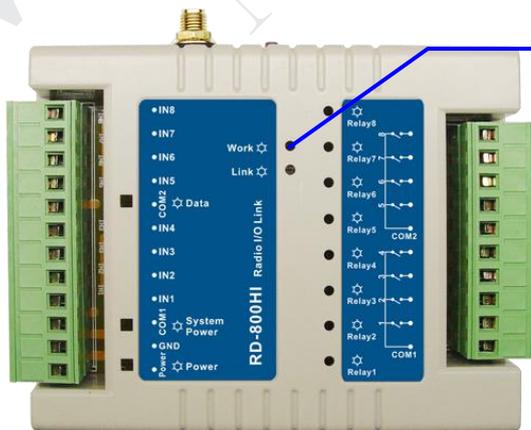
**System Power keep bright is meaning all working voltage is no problem.**

- Data Light: When receiving input data to RD-800HI, the Data indicator light will glimmer once.



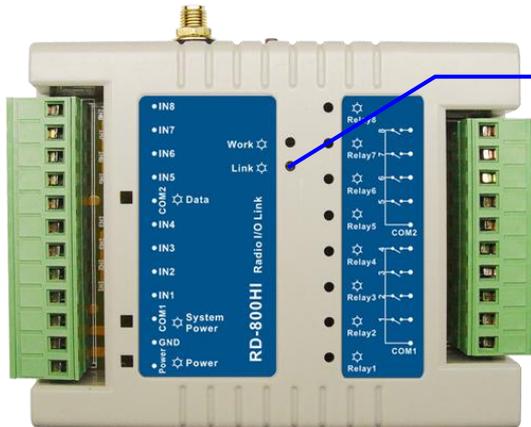
**RD-800HI received signal, Data Light will glimmer once.**

- Work Light: When RD-800HI is in the normal working state, Work indicator light will keep being bright.



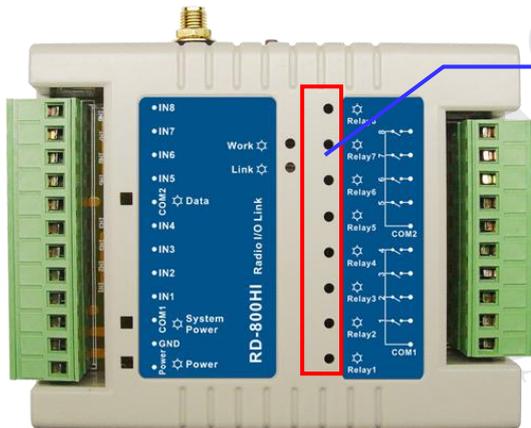
**Under RD-800HI normal working status, Work Light keeps bright.**

- Link Light: When RD-800HI link to the settle group in working range, the link indicator will keep being bright.



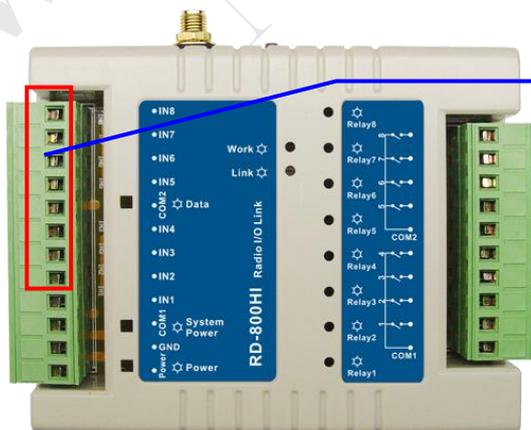
When RD-800HI link to the settle group in working range, the link indicator will keep being bright.

- Relay Light 1~8: When RD-800HI receives controlling signal to drive the relay movement, the corresponding relay indicator light will follow the relay movement to glimmer or keep being bright.



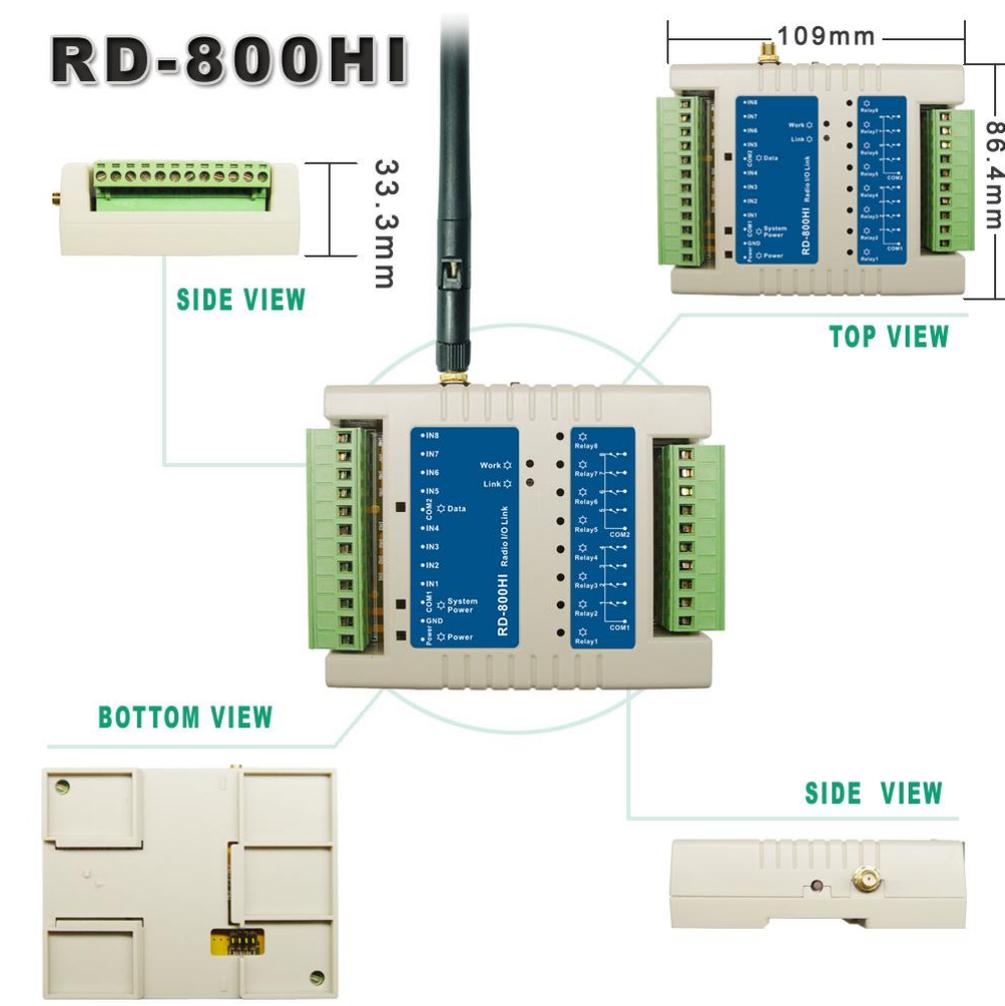
When RD-800HI receives controlling signal to drive the relay movement, the corresponding relay indicator light will follow the relay movement to glimmer or keep being bright.

- In1~In8 Light: When having data input to each input port, the corresponding indicator light will be glimmer once.



When having data input to each input port, corresponding indicator light will be glimmer once.

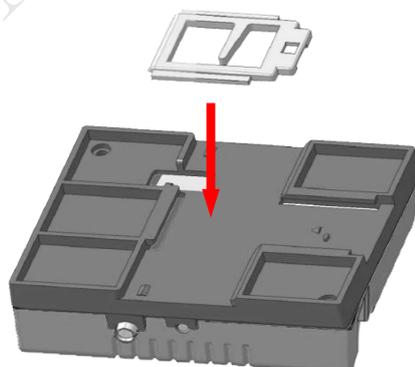
## Product External



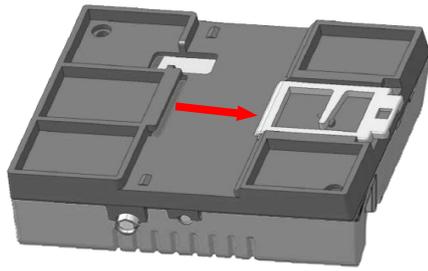
## Assemble

**Put into Aluminum Rail of Industry Control Box.**

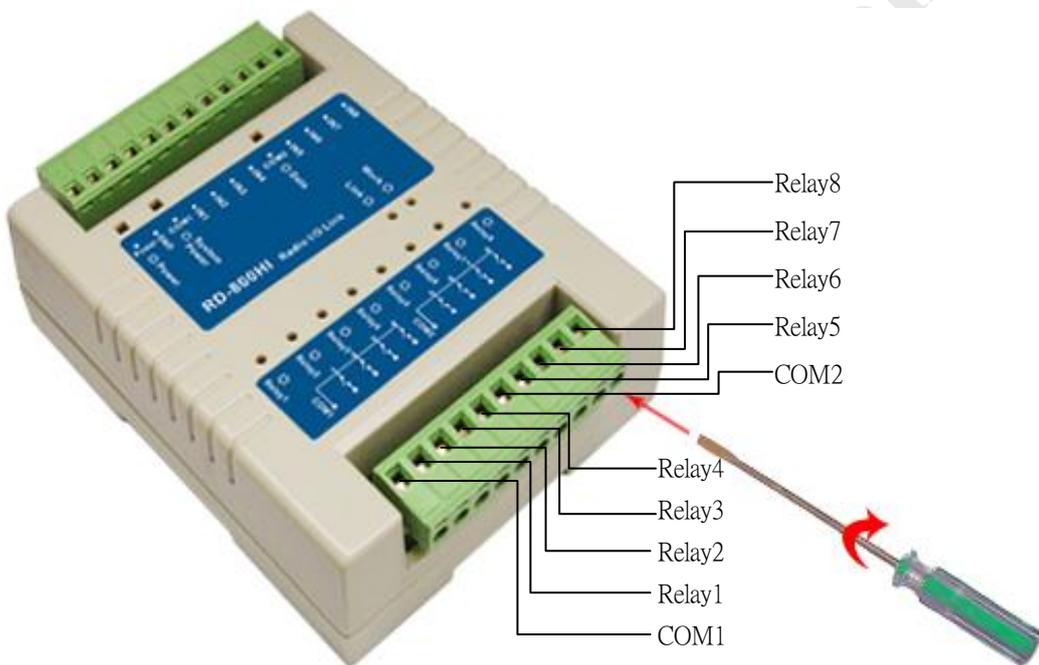
- Step 1



● Step 2

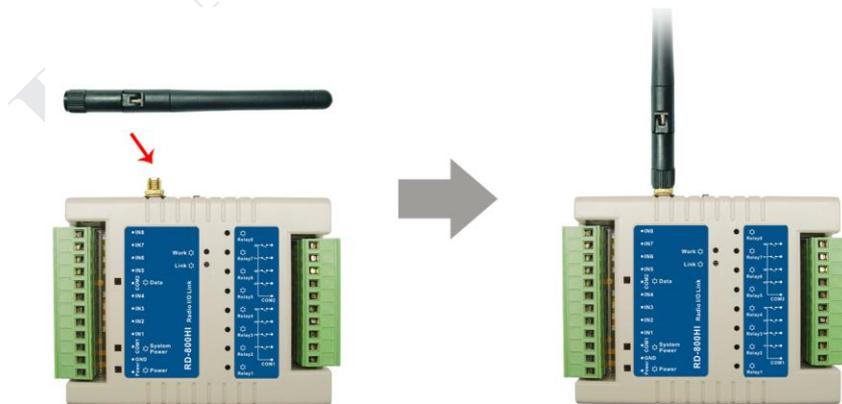


**Line Connection**

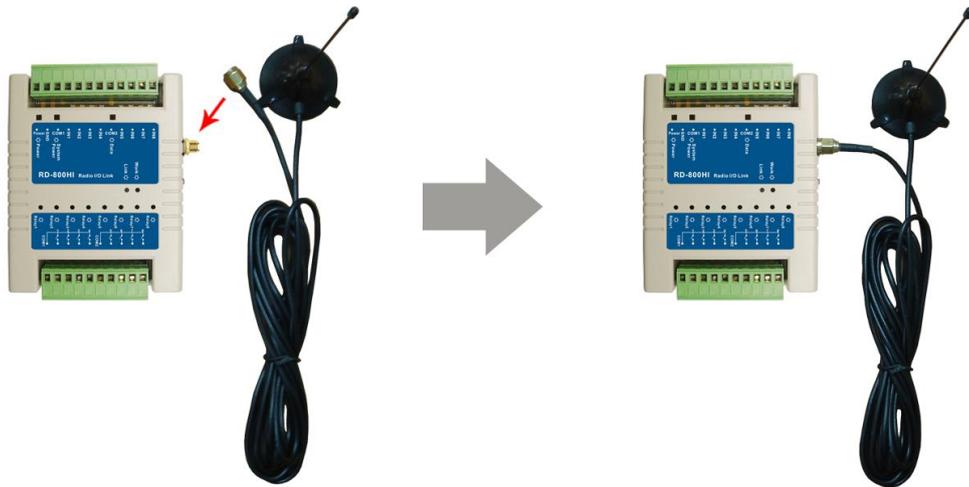


**Install Antenna**

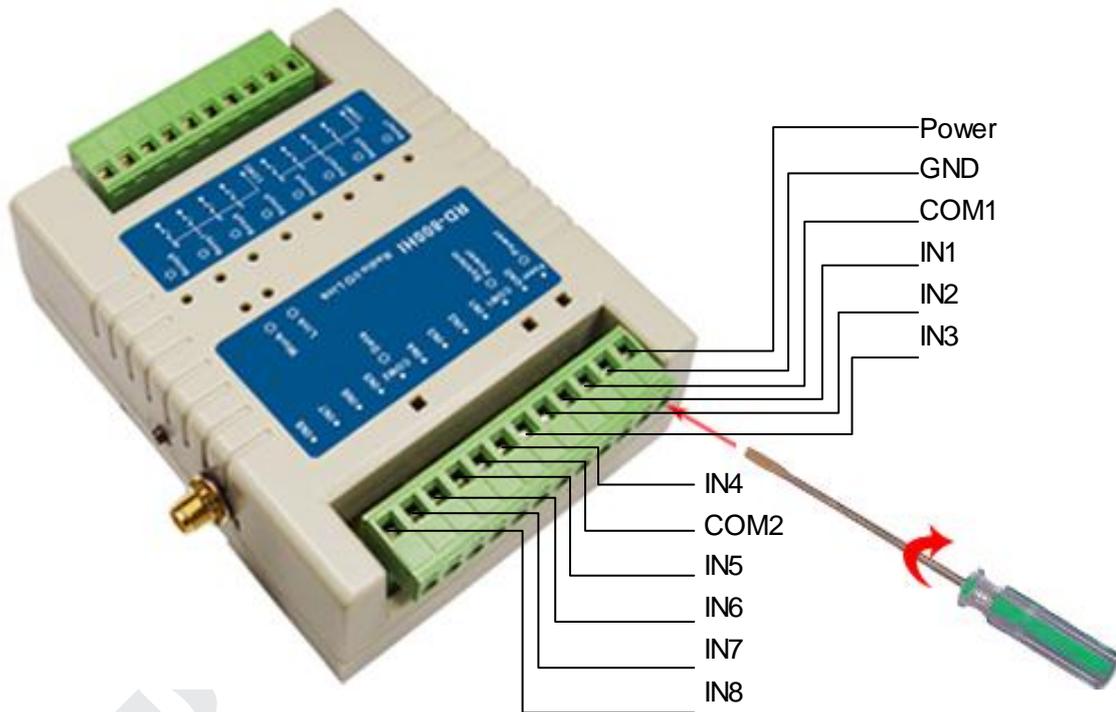
● Standard Antenna



● Sucker Antenna

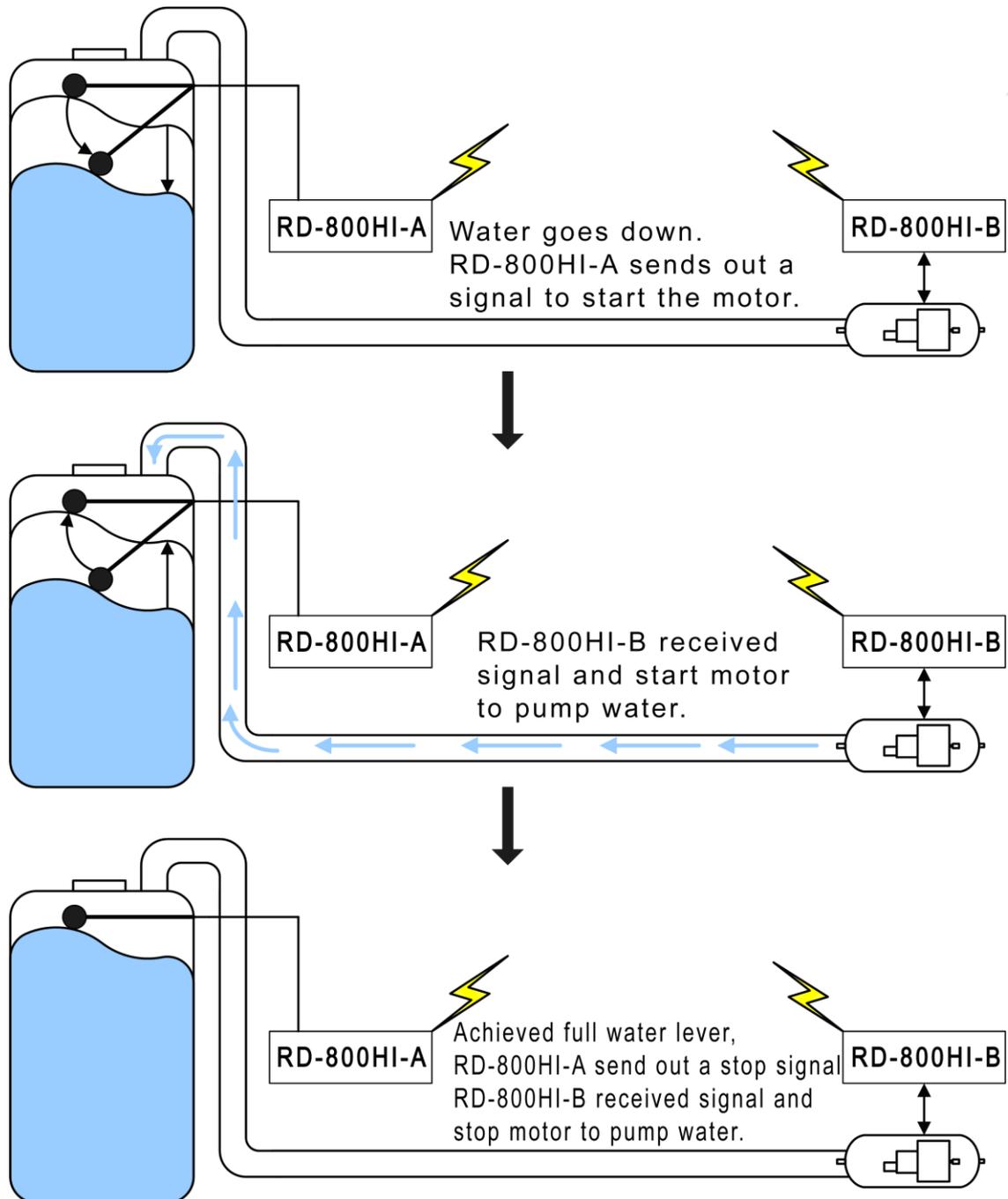


**Connect Power**



## Application

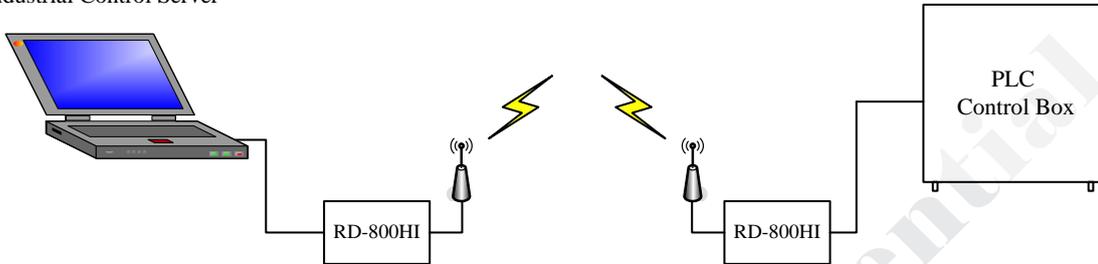
- Example 1



- Example 2

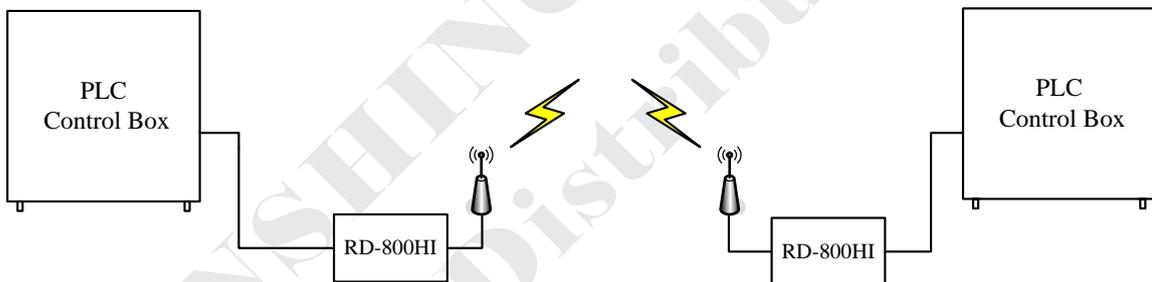
**Example 2: Wireless industrial control transmission**

Industrial Control Server



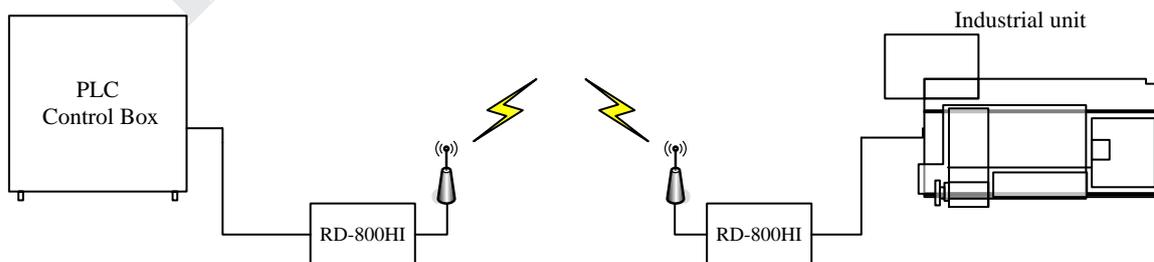
- Example 3

**Example 3: Industrial unit transmission data per wireless connect in RD-800HI**



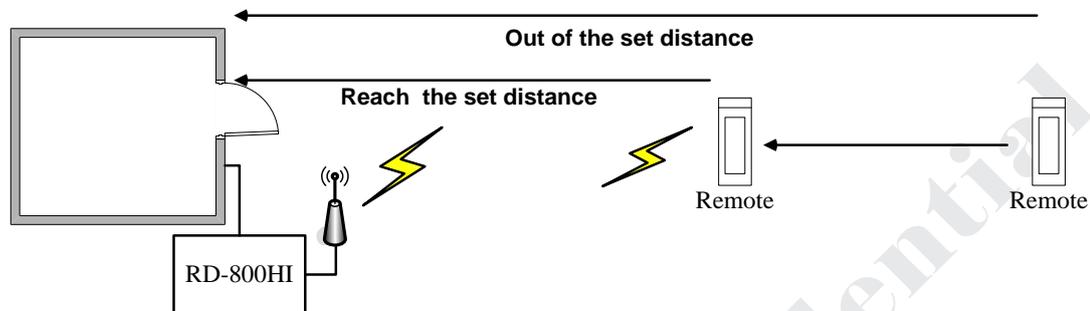
- Example 4

**Example 4: PLC Control Box wireless control Industrial unit**



- Example 5

### Example 5: Wireless Door Access Control system



### Failure Rejection

#### The Device is Unable to Communicate

- Working LED does not work means having trouble in DSP processor and device power.
- If the working LED is bright, please confirm the settle group switch if setting up normally.
- Please confirm RD-800HI is during effective distance for receiving and transmitting.

#### Device Unable Normal Movement

- Confirmed the device power whether the correct specification is within the range of movement.
- Confirmed the input signal and voltage are normal or not.
- Working the built-in self-test function to measure RD-800HI if all function is normal.

## **CE Caution Note (European Union)**

Symbol of  it accords with EMC regulation (89/336 / EEC) to represent this device, and the low-voltage regulation of European Union (73/23/EEC). It represents to follow the following standard regulations of European Union (The bracket is a reciprocal international standard reciprocal international standard and regulation).

- EN 60950/A11: 1997/(IEC 60950/A4: 1996),The ones that includes information science and technology of apparatus of e-commerce safe.
- EN 55024: 1998 (IEC 1000-4-2, 1000-4-3, 1000-4-4, 1000-4-5, 1000-4-6, 1000-4-8, 1000-4-11) -' scientific and technological apparatus of information - The characteristic of interfere avoided - Restrain and test method '
- Chapter 2 -Static release (ESD) Demand
- Chapter 3 -Radiate the static field demand
- Chapter 4 -The electron is transmitted / produced and washed (EFT) fast Demand.
- Chapter 5 -surge demand
- Chapter 6 -Resistance demand caused in field of wireless frequency.
- Chapter 8 -Magnetic field demand of electric frequency.
- Chapter 11 –Shortly cut off the demand of making a variation with the voltage transiently under the voltage.

EN 55022:1998/(CISPR 22:1997) ,Class B, ' "To assess information scientific and technological apparatus wireless restriction and way of interfering with the characteristic."

## **FCC Consistent Declaration ( U.S.A. Only)**

Attention: FCC rule regulation, modified and changed must allowed by WENSHING Electronics company, otherwise that would make you operate this apparatus invalid. This apparatus adopted test, according to chapter 15 that FCC regulation, accord with Class B digital restrictions of device. These limits are designed to provide reasonable protection, avoid to having harmful interference at home's environment.

This device may have radiated wireless frequency energy. If don't allow the instruction manual, then may will interfere wireless communication. However, there is no any way to guarantee, it will not be interfered in particular installed. If this device really causes harmful interference, (It could be confirmed by turning on or off this device.) Advise you to try to use the following ways modifying the interference situation.

- Relocation receiving antenna or altering its direction.
- Increase the distance between device and receiver.
- Please connect this device to the outlet in the circuit different from the receiver.
- The following manuals is published by Federal Communications Commission, they must be helpful to all users.
- How to Identify and Resolve Radio-TV Interference Problems. (This manual can be obtained by relevant departments of publication of the U.S. government.)
- Government Printing Office, Washington D.C., 20402. Stock No. 004-00398-5