



晶發科技有限公司
GI FAR TECHNOLOGY CO.,LTD

No. 11, Lane 249, Sec. 2, Chung Shan Rd., Shulin City, Taipei Hsien, Taiwan, R.O.C.

GFR-2488L

SPECIFICATIONS

CUSTOMER : _____
SAMPLE CODE : **GFR-2488L**
DRAWIG NO. : _____
DATE : **2008.07.08**

Customer Sign	Sales Sign	Approved By	Prepared By

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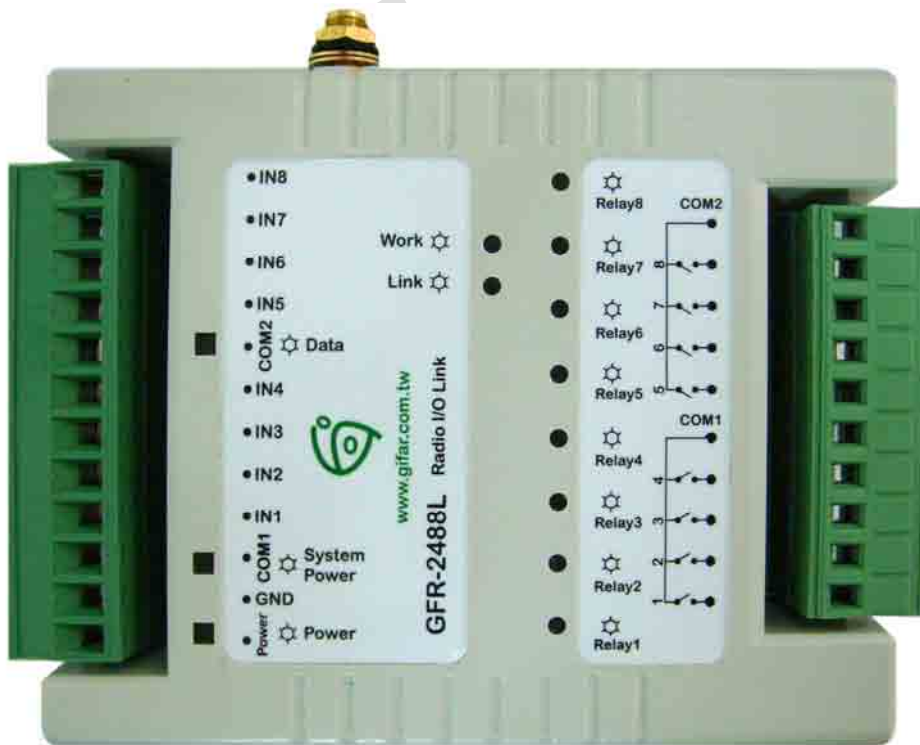
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GFR-2488L

Wireless 8 In-Out Industry Control Box Instruction Manual

Model: GFR-2488L





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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 can not 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.
- Failure on the products, our company is under certain conditions guarantee maintenance.
- 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.

■ Declaration

This product can accord with telecommunication regulation FCC/CE norms of various countries according

■ Certificate

This product can be set to different frequencies, to comply with the national telecommunications laws and FCC/CE norms.



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■ 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).

Un-warranty Scope Description:

- 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

Taipei office No. 11, Lane 249, Sec. 2, Chung Shan Rd., Shulin City, Taipei Hsien, Taiwan

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Products Instruction

GFR-2488L is the latest new product of GI FAR TECHNOLOGY CO.,LTD. that is wireless 8 junction industrial control products. The main function is provided the interface of Industry control equipment to wireless control interface. GFR-2488L offered 8 sets control signal input and 8 sets equipment control output. It's only needed several simple wiring steps, the wired environment will be replace into a wireless control environment, It's effective reducing the connecting cost of the equipment.

■ Introduce

The following describes the detailed of GFR-2488L wireless 8 junction industrial control box of relevant hardware interfaces and operation instructions, Because GFR-2488L integrates the intact circuit radio frequency, especially suitable for the connection of applying to all kinds of industrial control apparatus. The scope of application is very extensive.

This description also covers the developed and designed required by all of interface specification and electric parameter else with the latest information.

We also reserve the right to upgrade the edition in case of UN-notify users. Kindly inform customer to pay more attention on our website newest information. In order to describe the perfect instruction manual, we will have right to reserve and revise not notify to customers.

All script, communications, forms and images may not be private information without permission to use.

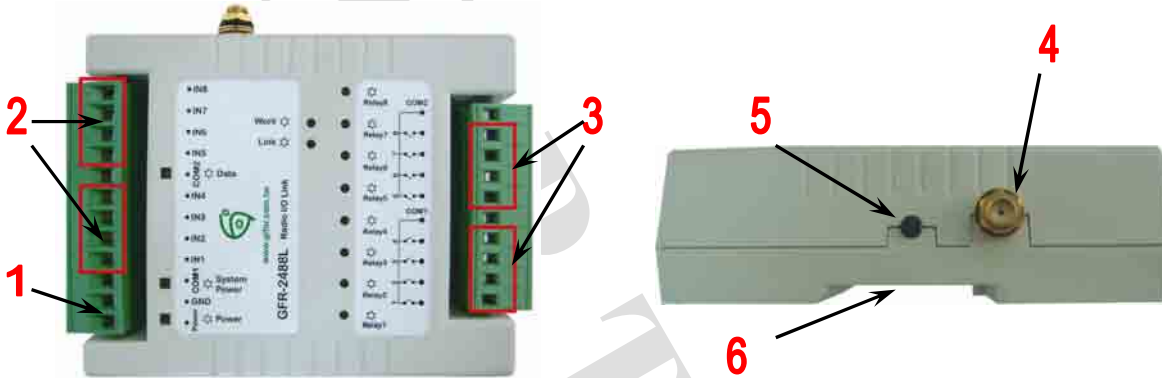


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■ Every part of names and functions



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 insert.
5	Link key equipment	Link equipment and self-test function keys
6	Track	Put in the position of aluminum track.



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■ Product Block Diagram

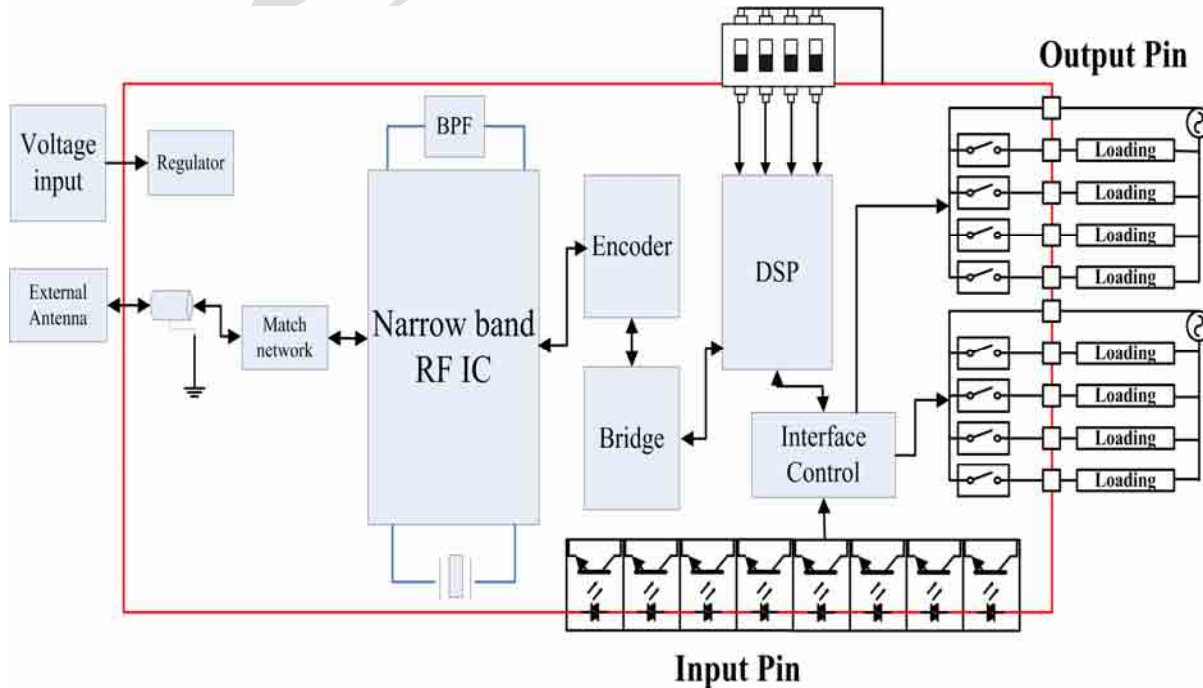


Chart 1 GFR-2488L Product Block Diagram

GFR-2488L has the complete RF receiving and transmitting circuit and interface, Chart 1 is the function block diagram of GFR-2488L, the main components are as follows, DSP processor, circuit of RF frequency, memory, power and system connector, 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 GFR-2488L. The outside of red line is outer interface. The narrow band of GFR-2488L 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: 8 sets control signal input port and 8 sets equipment control output port. LED light instruction. The follows we will separate to introduce each part function of main board and outer interface.



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■ Introduction of Each Function

➤ *DSP Processor*

DSP processor finished all signals handle function of GFR-2488L, 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 868~928MHz. 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.

■ Electronics Characteristic

Item	Specification	Remarks
Voltage Range	AC : 24~28V ; DC : 20~28V	
Frequency Range	922~928MHz	
Output Power	10mW	
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	
Oscillation System	PLL synthesizer system	
Radio Communication Speed	1.2~250Kbps	
Number Of Channels	16	
Receiver Sensitivity	-112 dBm (1200 bps)	Packet error rate 1% (253 bytes/1 packet)
Working Temperature	-40°C ~ +85°C	
Storage Temperature	-50°C ~+150°C	
Consumption Current	MAX : 177mA MIN : Disconnect : 36mA Connect : 43mA	
External Dimensions	109mm × 86.4 mm × 33.3mm (W × D × H)	
Unit Weight	215 g	



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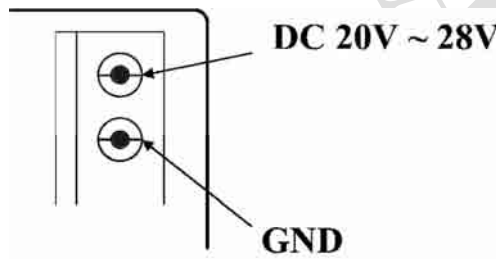
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Interface Instruction

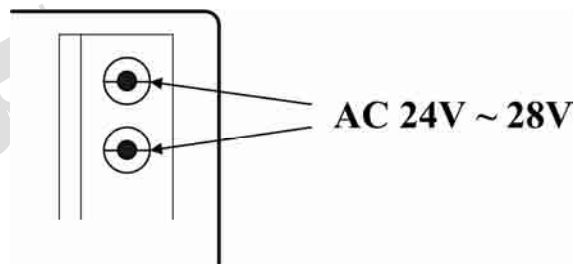
➤ Power

There are 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 200mA of peak value electric current.



DC Linking Mode



AC Linking Mode



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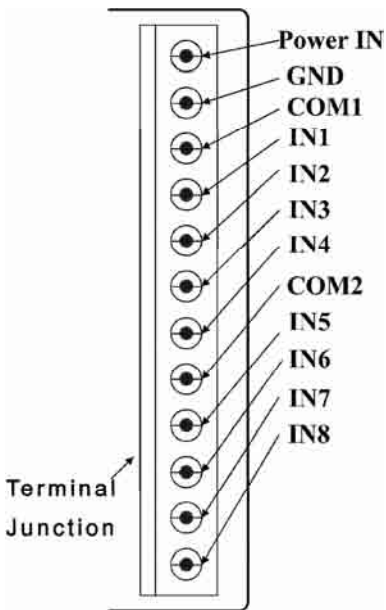
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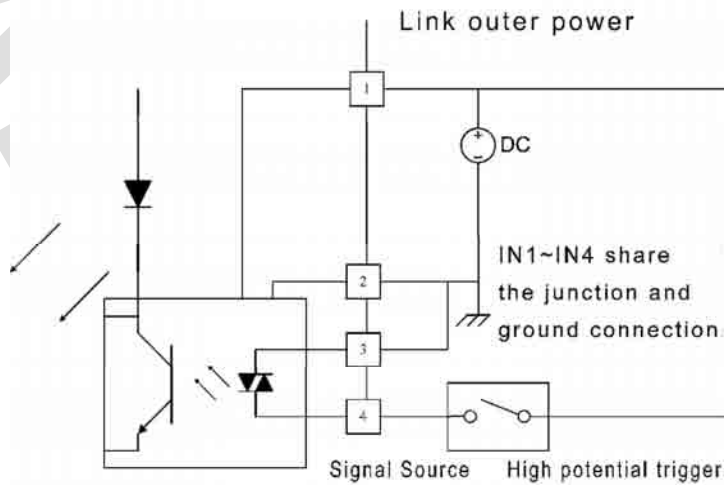
➤ Input Contact

GFR-2488L is able to offer 8 sets signal input port. IN1 ~IN4 shares COM1 and IN5 ~ IN8 shares COM2.

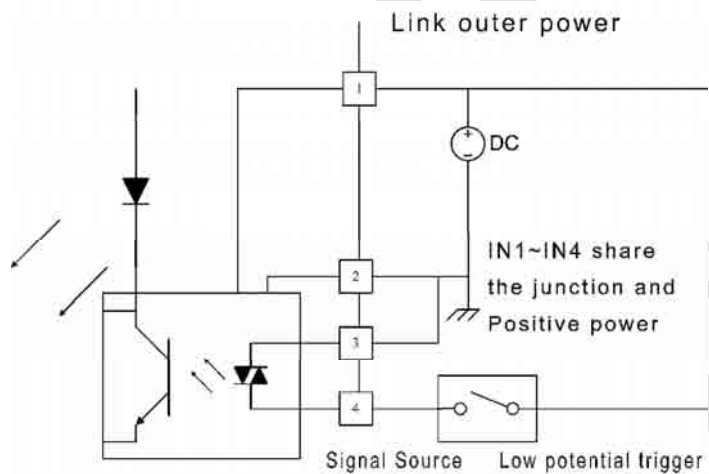
Two sets input ports are able to adopt different touch ways. One is the joint (COM) altogether receiving low electric potential, and touch the signal (IN) Adopt the high electric potential. Another is the joint (COM) altogether touch off the signal (IN) Adopt the high electric potential, one is the joint (COM) altogether Receive the high electric potential, touch signal (IN) Adopt the low electric potential, can be according to the different purpose to be used.



Input Port Diagram



Input method 1



Input method 2



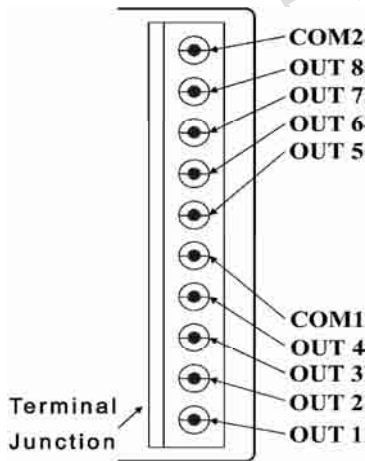
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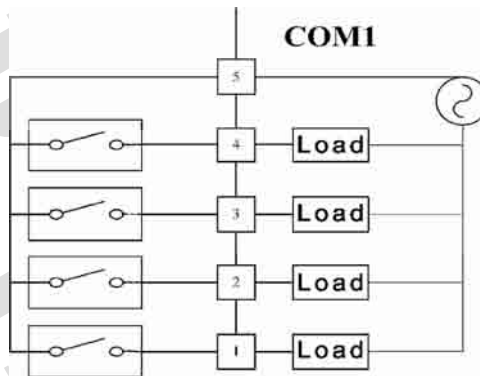
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➤ Output Contact

GFR-2488L offered 8 sets signal output contact, OUT1~OUT4 share with COM1 and OUT5~OUT8 share with COM2, and 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 GFR-2488L can be applied in extensive purpose.



**Output Port
Diagram**



**Output Port
Model**

Two GFR-2488L will be set up in the same group after the implementation of equipment to be the link to ensure that will not be subject to other devices nuisance. Configure that you hold down the key link more than five seconds after release. When Link Work lights and turn signals are flashing representative has entered the link model, question and Work Link lights are flashing lights at the same time and that represent link is success.

Another key feature of this self-test is through this testing mechanism. User can easily detect the problem lies, greatly reducing the time and cost of erecting. Mode of entry for holding down the link button three seconds after release, GFR-2488L within the DSP processor immediately start rotating and lit Relay. Relay LED indicator light to be detected output is normal, or Input-input signal after its counterpart Relay will be the output of action.



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➤ **Self-test Button**

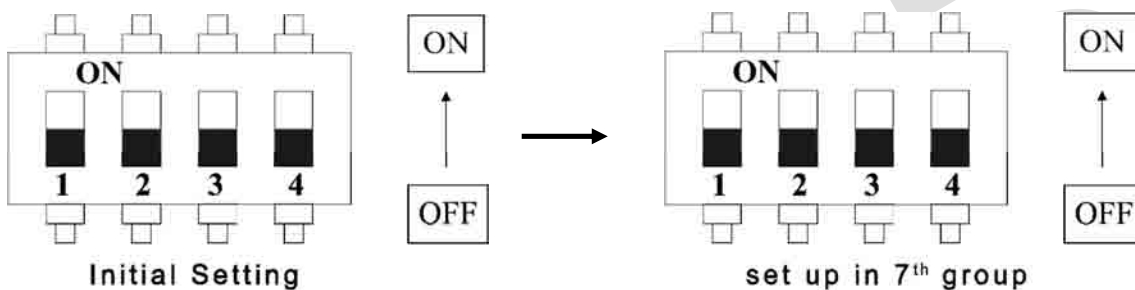
Built-in the Self-test button in GFR-2488L and only require to press short and once in tested button, the DSP processor of GFR-2488L immediately output signal go to Output end and start Relay and light Relay LED indicator automatically. Hence, the tested mechanism user is able to find out where is the problem and greatly reduced the erected time and cost.



➤ **Setup the Group Switch**

Built-in setup group switch in GFR-2488L, 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 7th group, to set up the switch of the back group No.2 and No.3 to ON, No.1 and No.2 don't have any change. When start the power, the GFR-2488L will connect to setup group automatically, please consult the following establishment forms, Command Mode is for reserve expansion group. Do not set up in this way.





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Switch 1	Switch 2	Switch 3	Switch 4	Working Speed
0	0	0	0	1st Group
1	0	0	0	2nd Group
0	1	0	0	3rd Group
1	1	0	0	4 th Group
0	0	1	0	5 th Group
1	0	1	0	6 th Group
0	1	1	0	7 th Group
1	1	1	0	8 th Group
0	0	0	1	9 th Group
1	0	0	1	10 th Group
0	1	0	1	11 th Group
1	1	0	1	12 th Group
0	0	1	1	13 th Group
1	0	1	1	14 th Group
0	1	1	1	15 th Group
1	1	1	1	16 th Group



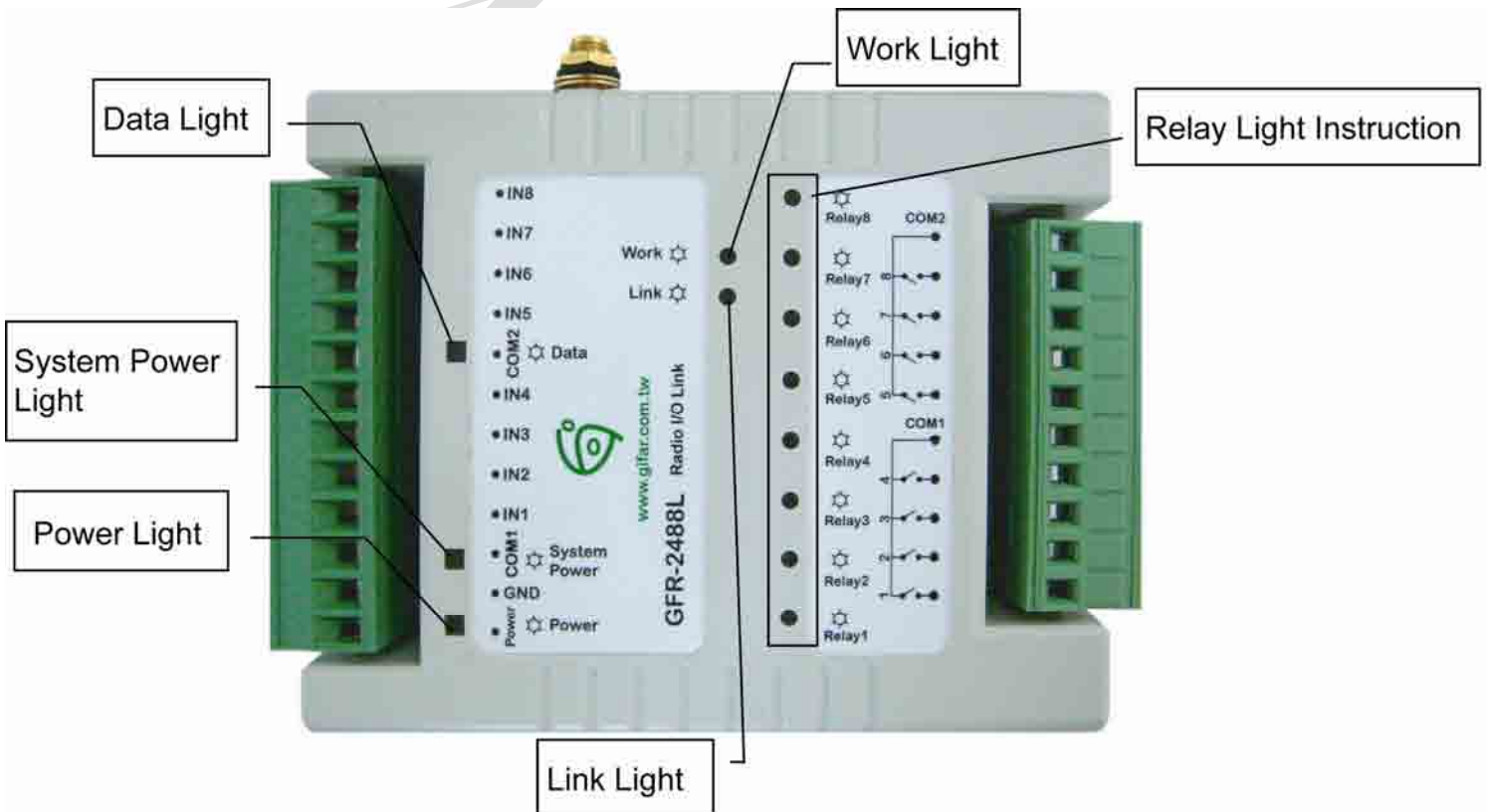
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■ LED Indicator Light

➤ GFR-2488L offers 21 LED indicator light.



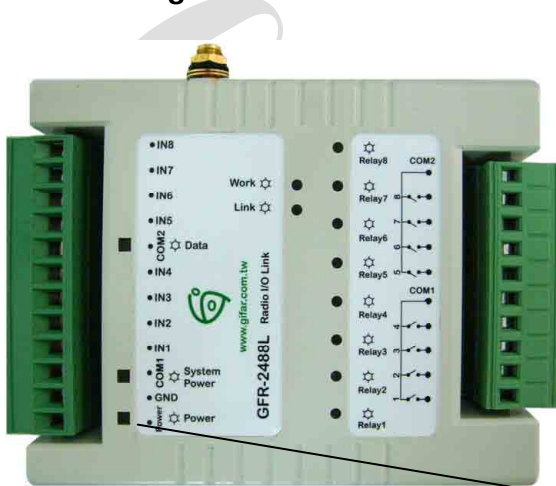


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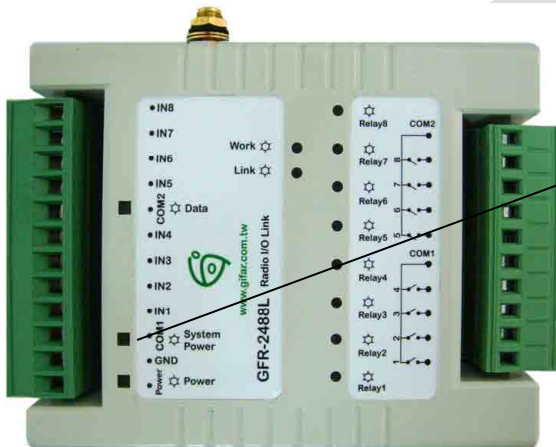
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- **Blue Indicator Light for Power:** When the blue light is bright, it means the device is opened and to electrify



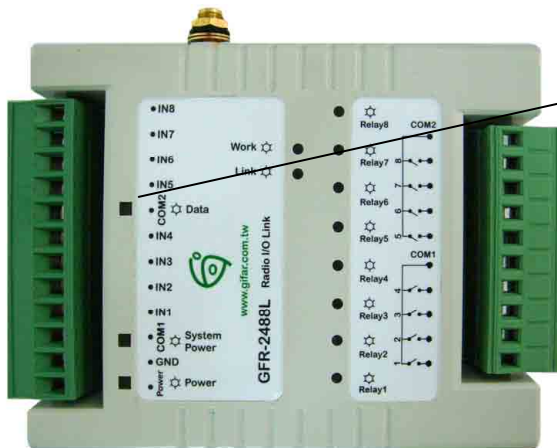
Blue Indicator Light for Power

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



System Power Indicator Light

- **Data Indicator Light:** When receiving input data to GFR-2488L, the Data indicator light will glimmer once.



Data Indicator Light

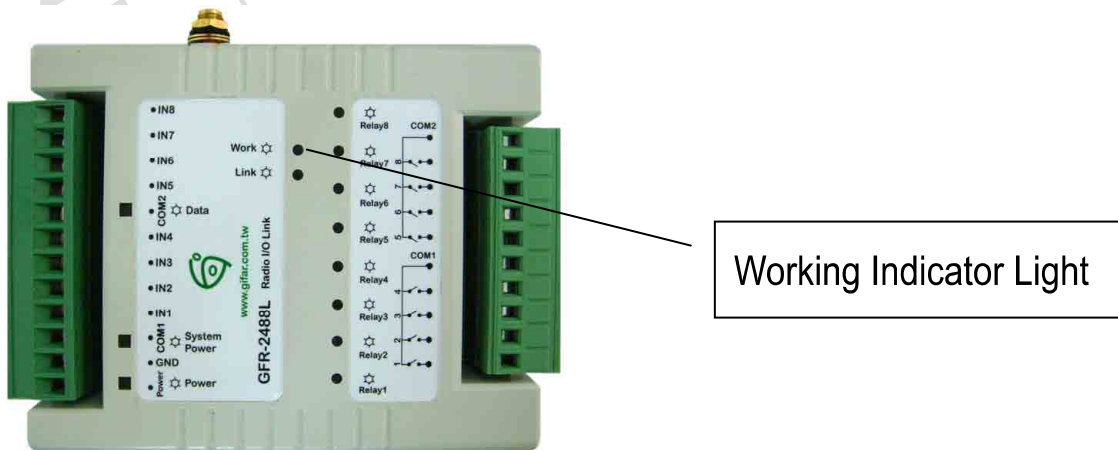


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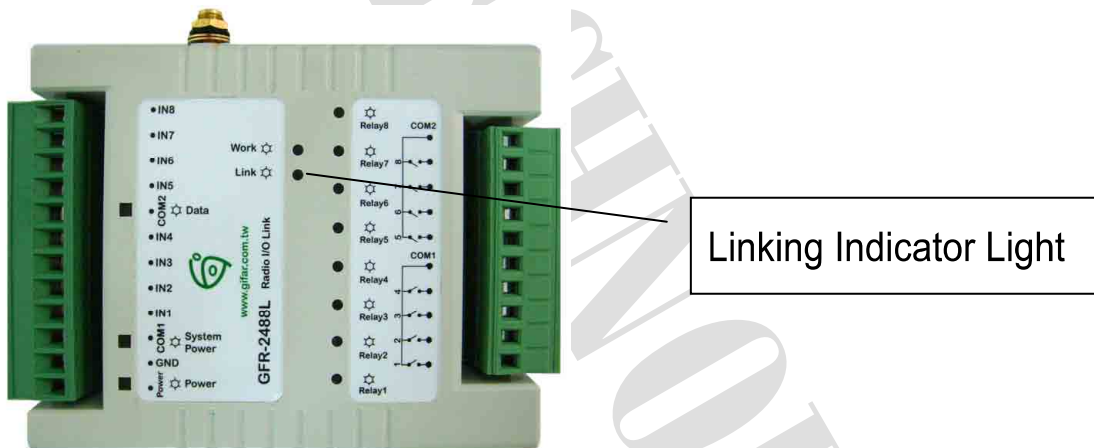
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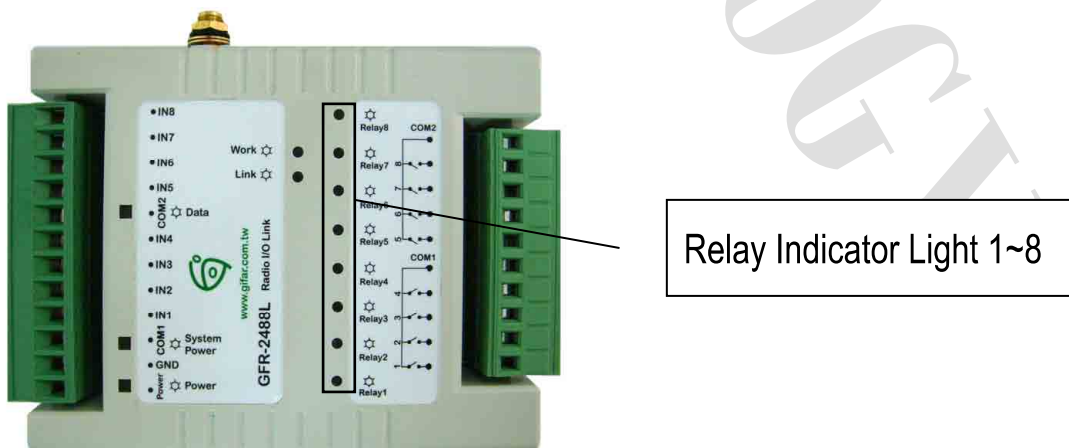
- **Working Indicator Light:** When GFR-2488L is in the normal working state, Work indicator light will keep being bright.



- **Linking Indicator Light:** When GFR-2488L link to the settle group in working range, the linking indicator will keep being bright.



- **Relay Indicator Light1~8:** When GFR-2488L receives controlling signal to drive the relay movement, the corresponding relay indicator light will follow the relay movement to glimmer or keep being bright.



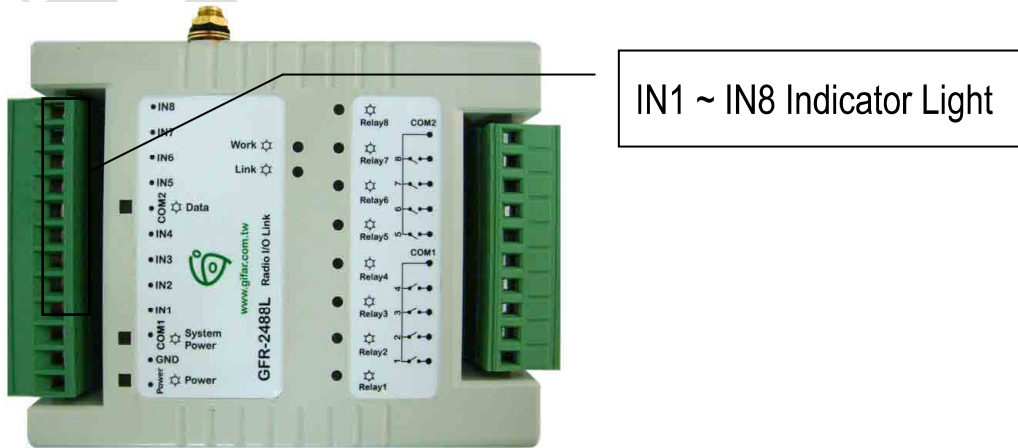


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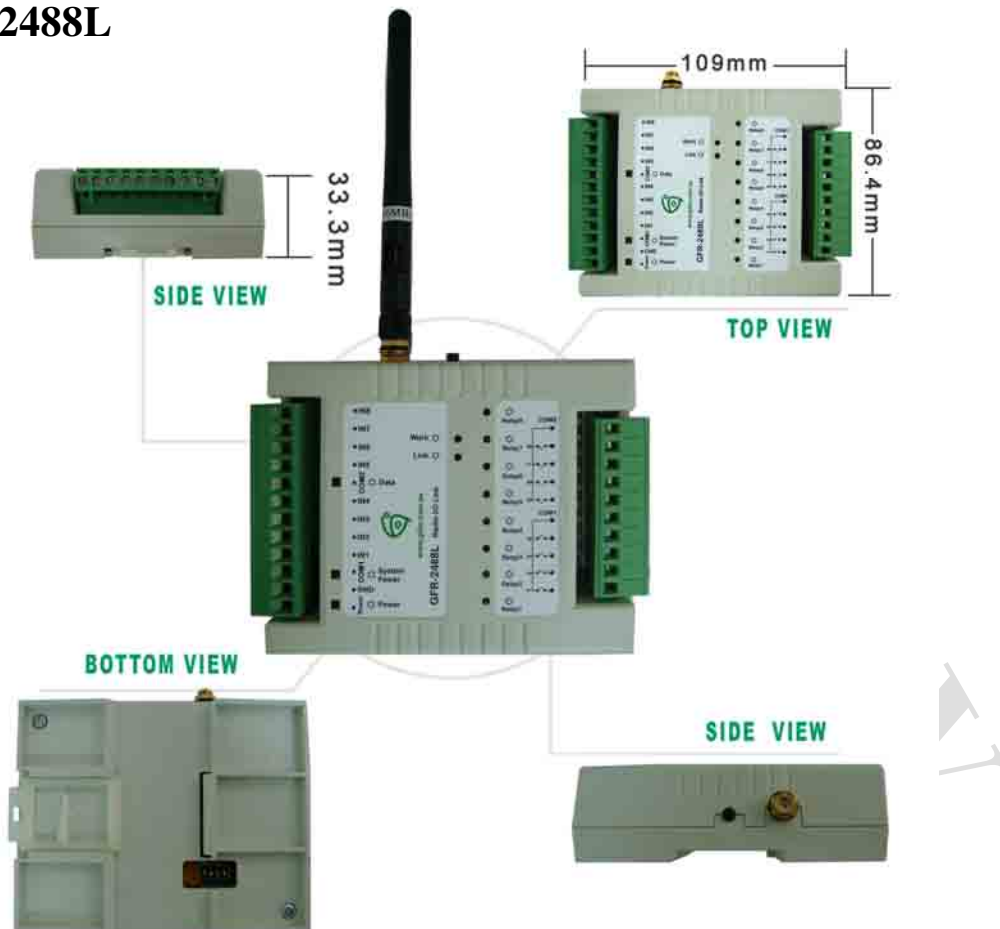
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- **IN1~IN8 Indicator Light:** When having data input to each input port, the corresponding indicator light will be glimmer once.



■ Product External

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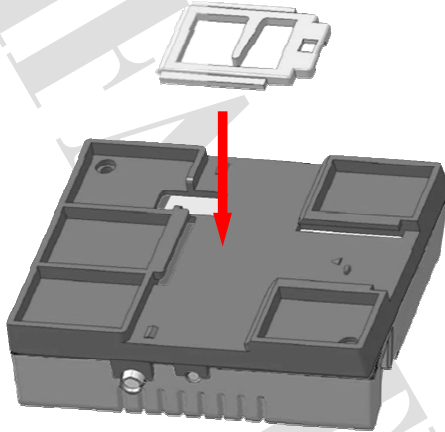
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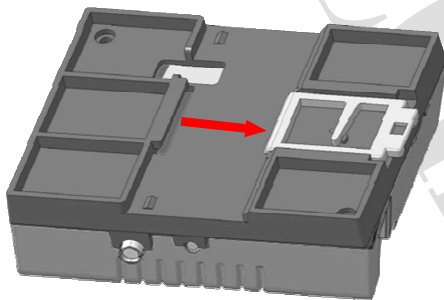
■ Assemble Mode

➤ Put into aluminum rail of industry control box

Step 1 :

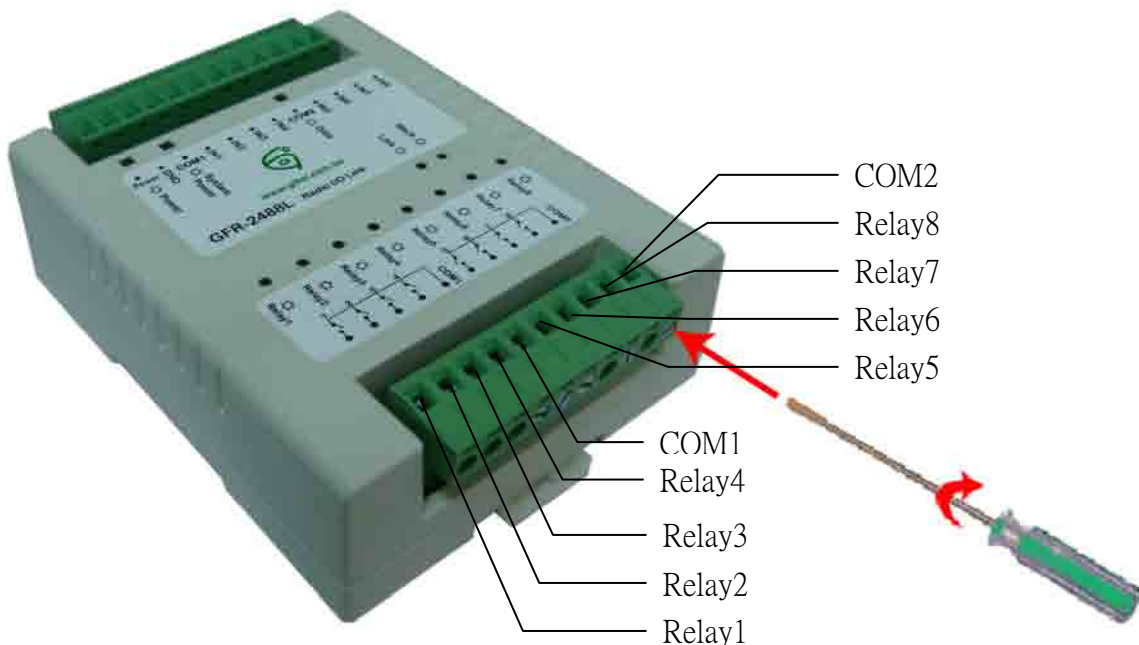


Step 2 :



➤ Connection Line

Step 3 :





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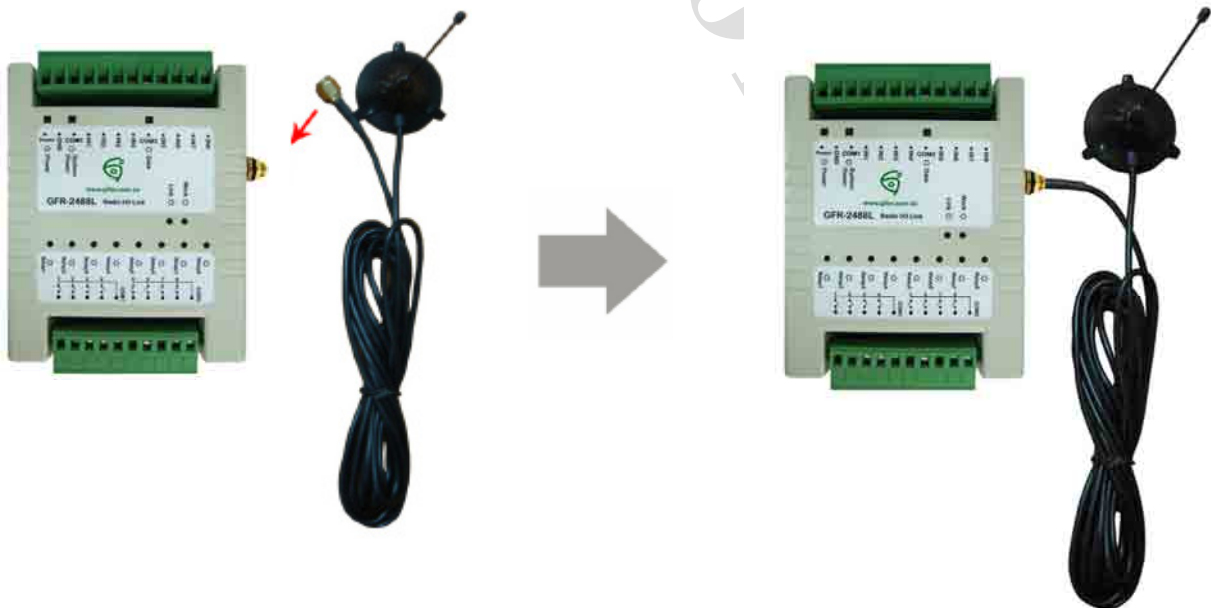
➤ Setup Antenna

Step4 :

1. Built-in



2. To Extend by extra outer antenna



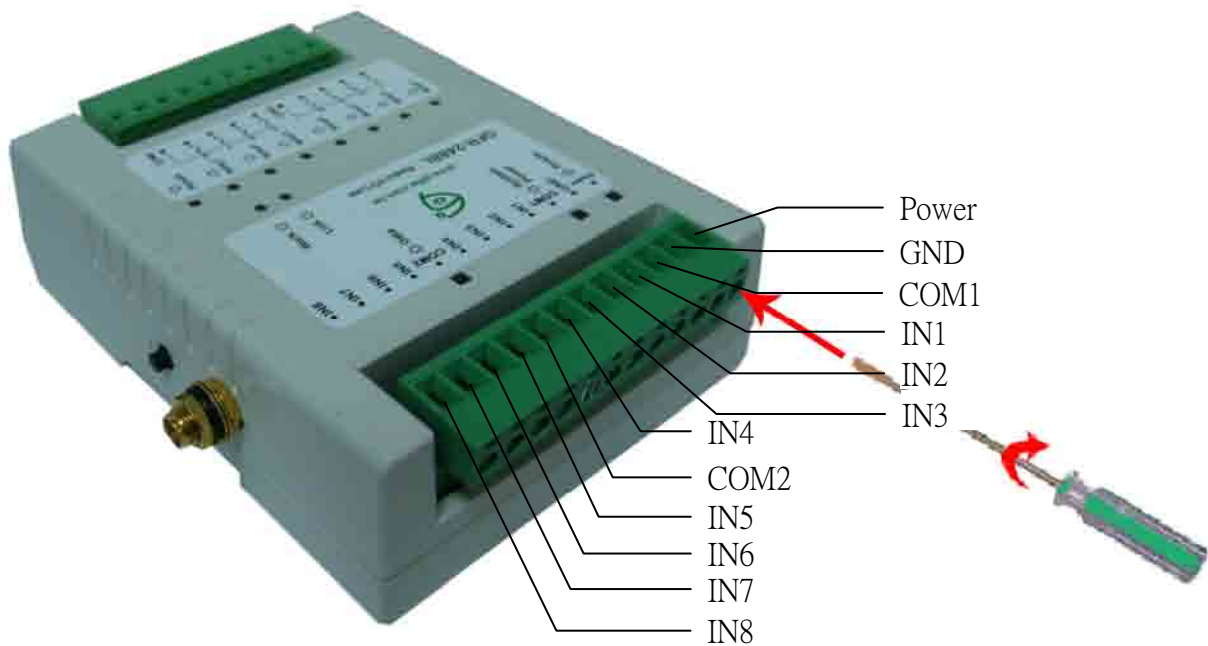


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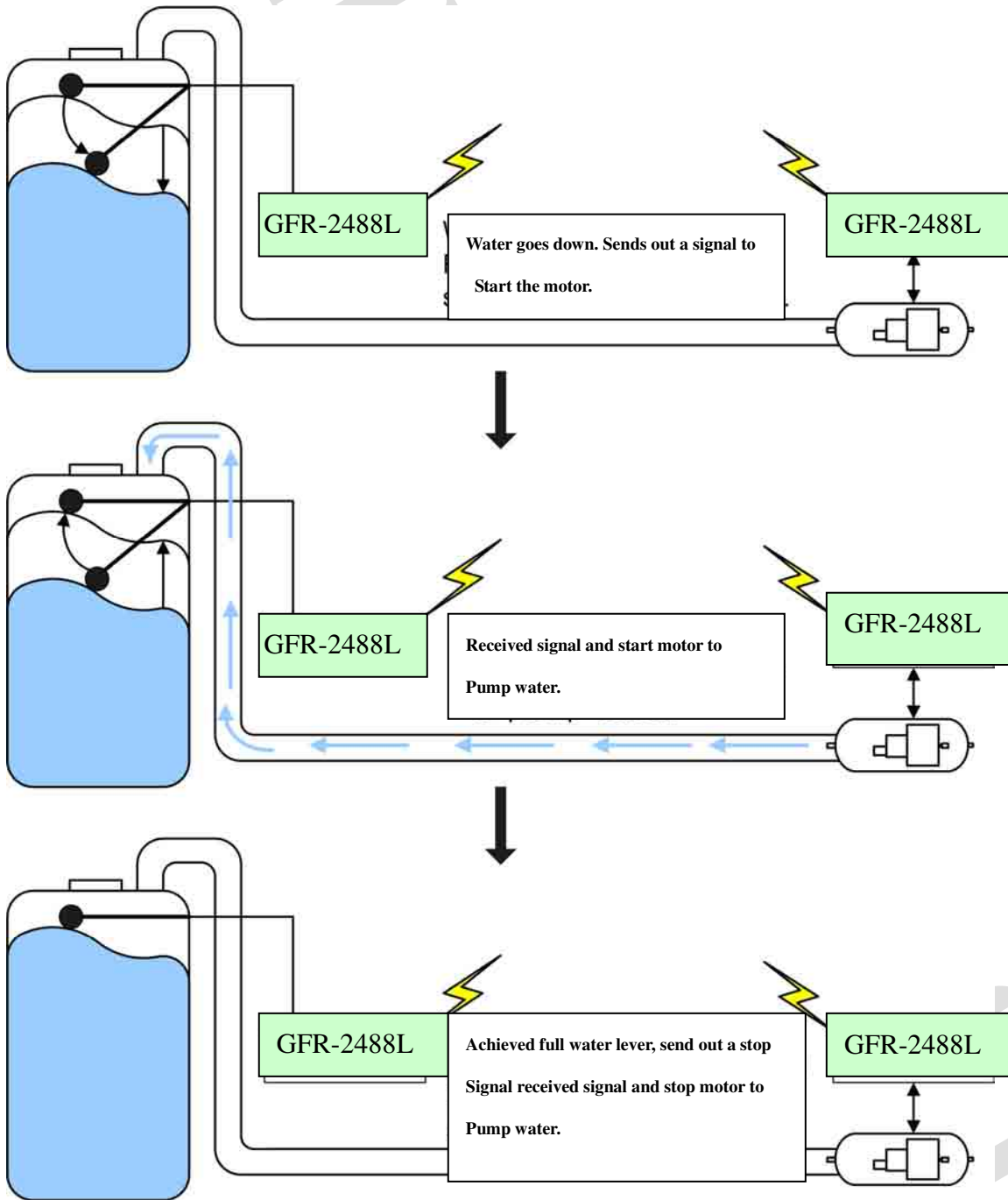
➤ **Contact Power**
Step5 :





Application

➤ **Example 1 :**





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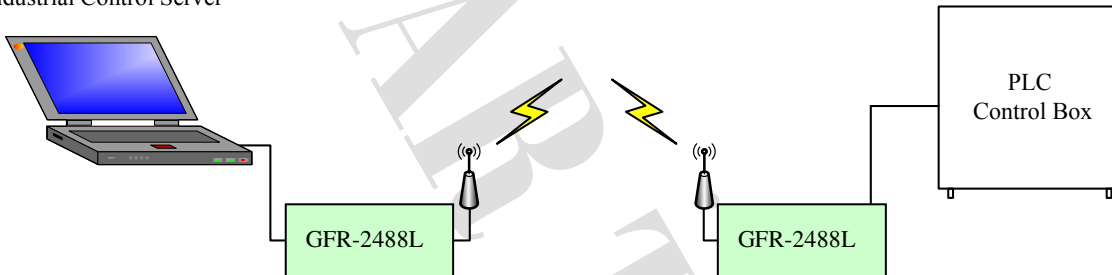
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➤ Example 2 :

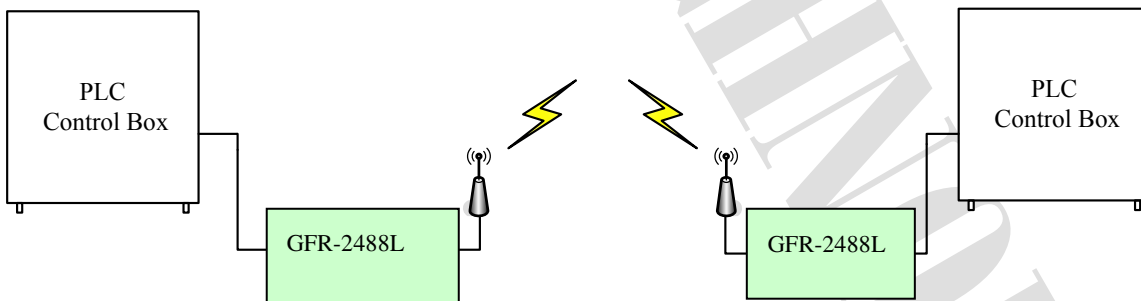
Example 2: Wireless industrial control transmission

Industrial Control Server



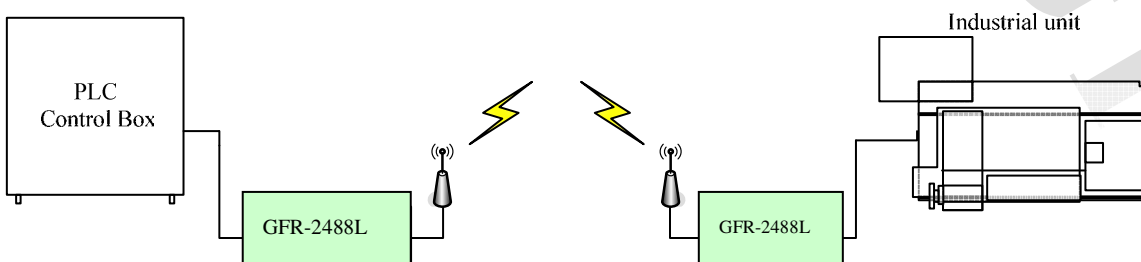
➤ Example 3 :

Example 3: Industrial unit transmission data per wireless connect in GFR-2488L



➤ Example 4 :

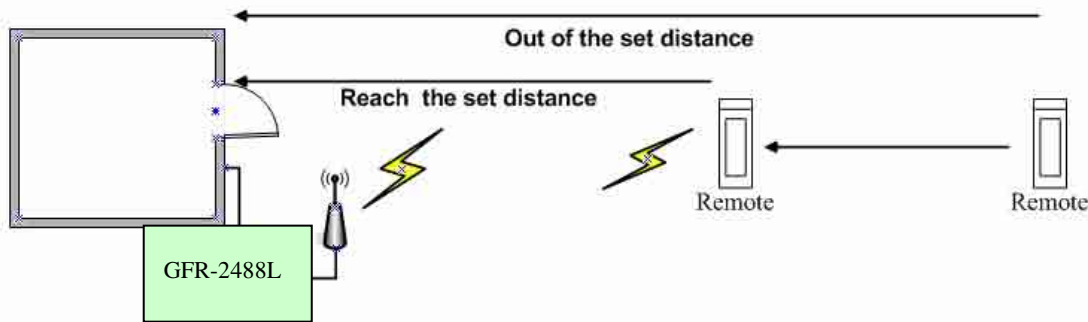
Example 4: PLC Control Box wireless control Industrial unit





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.
- Confirmed whether GFR-2488L in the fixed distance between 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 if all function is normal.



CE Caution Note (European Union)

Symbol of **CE** 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."



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GFR-2488L

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

Attention: FCC rule regulation, modified and changed must allowed by GI FAR TECHNOLOGY CO.,LTD 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