GOTI

User Manual

VER:V1.3

TS–KW SERIES

Wireless Industrial Remote Control

FCC STATEMENT

1. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

(2) This device must accept any interference received, including interference that may cause undesired operation.

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1. Product Overview

Industrial remote control system is more and more widely used in various industrial fields and brings much positive effects. With the industrial remote control system, workers can hold the portable transmitters on hand, walk freely and choose the best position to operate. It makes the working environment be safer, reduces the injury accidents and saves manpower cost during the operation. With remote control, the operator can finish various tasks independently, which will improve the working efficiency.

The GOTI Industrial remote control is very flexible and convenient, and it can be configured with multiple functions. The system can adapt to all kinds of complex industrial environment and meet the strict requirements of modern industry for reliability and safety. It can be used in most areas. At present, GOTI remote control system is mainly used in 4 areas: vehicles equipment, industrial control, lifting machinery and door control system. Such as crane, engineering machinery, lifting platform, travelling crane, hydraulic equipment, automobile tail boad, breakdown vehicle, conveyor belt, industrial door and robot, etc.

2. Product Features

This series of industrial remote controllers is a wireless control device specifically engineered for industrial environments, applicable to cranes, construction machinery, automated production lines, and similar scenarios to achieve remote operation of equipment. Compared to conventional industrial remote controls on the market, it exhibits the following distinctive technical.

1. Advanced GFSK Wireless Communication.

GFSK wireless communication transmit information through frequency change because it is not sensitive to industrial interference, environmental noise and other adverse factors. Therefore, it is more suitable for use in complex electromagnetic environments. Under the condition of low signal-to-noise ratio SNR, the bit error rate is low and the reliability is high, so its anti-interference performance is more powerful than that of conventional industrial remote controllers.

2. Enhanced Safety Mechanisms.

The remote control transmitter is equipped with a emergency stop, which is easy to trigger in an emergency situation and easily realizes one-handed blind operation. In tight In case of emergency, the power supply of the equipment can be quickly cut off or stop running to ensure the safety of personnel and equipment. When pressed, the emergency stop button will be locked to prevent the equipment from restarting unexpectedly. At this time, manual reset is required to resume operation. The transmitter also has a rotary start switch with the characteristics of preventing misoperation and safe start. At the same time, it is equipped with a start button to ensure that the operator can only start running after making clear the operation intention, thus avoiding accidental start. The IP65 protection rating provides the industrial remote control with core protection against dust and low pressure water spray, allowing it to maintain stable operation in complex industrial environments.

3. Long-Range Signal Transmission

In order to achieve stable transmission of long-distance signals in complex environments, it is necessary to integrate various technologies for optimization: A. Select using dedicated ISM frequency

band signals, it has strong diffraction ability and good penetration. B. GFSK modulation technology improves spectral efficiency. C. Optimize filter and matching circuit to reduce signal attenuation. D. Reduce reception link noise and improve signal-to-noise ratio. E. Use a high-gain antenna to expand the receiving range. F. Increase shielding and grounding contacts to reduce electromagnetic leakage inside the circuit board. G. Optimize the protocol to reduce the amount of data transmitted in a single time and reduce air time, etc.

4. Modular Hardware Design

In order to realize core solutions for complex industrial environments, this series of products adopts more intelligent building block modular design measure. By splitting the system into independent functional modules, then selecting module combinations according to specific scenarios, and reserving standardized interfaces to support future technology upgrades. During later maintenance, the modular design allows the isolation of faulty modules, and only the damaged modules need to be replaced instead of the whole machine, shortening the fault handling time and avoiding the downtime of the whole machine. It not only improves the adaptability and reliability of equipment, but also provides enterprises with full life cycle value optimization from procurement, transportation to upgrade and maintenance.

5. Bidirectional Communication

The two-way communication module supports data CRC verification and lost packet retransmission functions. Common electromagnetic interference in industrial environments field, significantly reducing the probability of misoperation. The remote controller monitors the quality of the RSSI value of the communication link in real time, prompts information when the signal is weak, and avoids the risk of losing control during operation.

6. User-Friendly Interface

Key information such as battery power, signal strength, equipment status, and operating parameters can be displayed on the screen at the same time, and the equipment can be reflected in real time standby status changes to help operators respond quickly to abnormalities. The transmitter is equipped with a more energy-saving OLED screen, which not only improves human-computer interaction efficiency and system security, but also extends battery life. The remote controller's built-in sound and vibration prompts are a dual feedback mechanism specially designed for complex industrial environments. Through multi-channel collaboration, graded warnings and humanized design, a set of interactive systems that adapt to extremely complex environments, reduce human errors, and meet strict safety standards are built.

7. Dedicated Memory Card

Using a dedicated memory card has the following advantages: (1). The design of the memory card can conveniently save the data of the remote control, which is convenient for subsequent analysis or maintenance. (2). Using the memory card as a medium, the configuration of the remote controller can be imported and exported. When changing operators or equipment, the previous settings can be applied by directly changing the card, saving time. (3). In some specific environments, such as when the devices are widely distributed or difficult to contact, it is difficult to upgrade online. At this time, the data can be downloaded to the memory card, and then inserted into the remote controller to repair vulnerabilities or add or modify functions. (4). The memory card can also be used as a hidden key. If the card is inserted, it can be controlled. When the card is pulled out, it is forbidden to control, it to prevent unauthorized personnel from using it (optional).

8. Ultra-Low Power Consumption

In order to meet users' needs for long-term work, this series of remote controllers uses ultra-low

power wireless modules and is equipped with MCU with deep sleep mode, and the standby power consumption can be as low as 1mA. In the software algorithm, the protocol layer is optimized, the duty cycle of wireless communication is shortened, the activation time of RF module is reduced by burst transmission mode, the execution of non-critical tasks is delayed, and the transmission of control signals is guaranteed first. At the same time, multiple LDOs and DC-DC converters are integrated, and the power management conversion efficiency is increased to more than 95%.

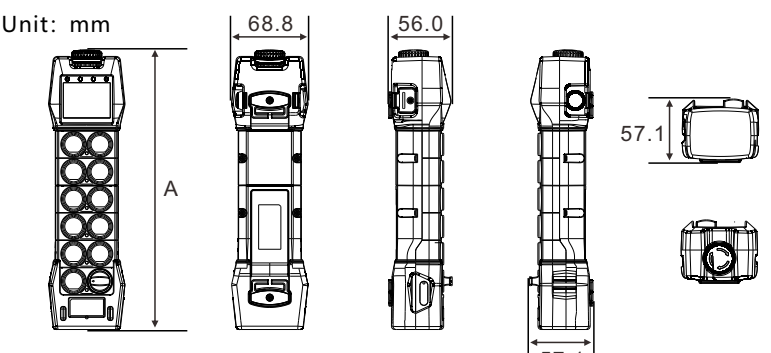
9. Wireless Charging

While improving the battery life of the system, this series of remote controllers also satisfies the needs of most users, hoping to make the current commonly available on the market popular large-capacity rechargeable batteries and wireless charging technology are applied to industrial remote controllers, which greatly improves the endurance and convenience of use of remote controllers. Four rechargeable lithium batteries (four AA alkaline batteries are standard) are optional as the power supply of the transmitter. When tested in the same environment, the endurance is increased by 23%. Equipped with a dedicated wireless charging device, it supports on-demand charging, which is convenient for flexible recharge between work and break. While using the equipment frequently for a long time, it can avoid damage caused by repeated plugging and unplugging of interfaces due to charging.

10. IC Card Authorization

The remote control must read and verify the authority of the encrypted IC card identity tag carried by the operator before it is allowed to be unlocked. Through multiple layers of protection, this product can achieve high-reliability authorization management in complex environments, balancing security and operational efficiency.

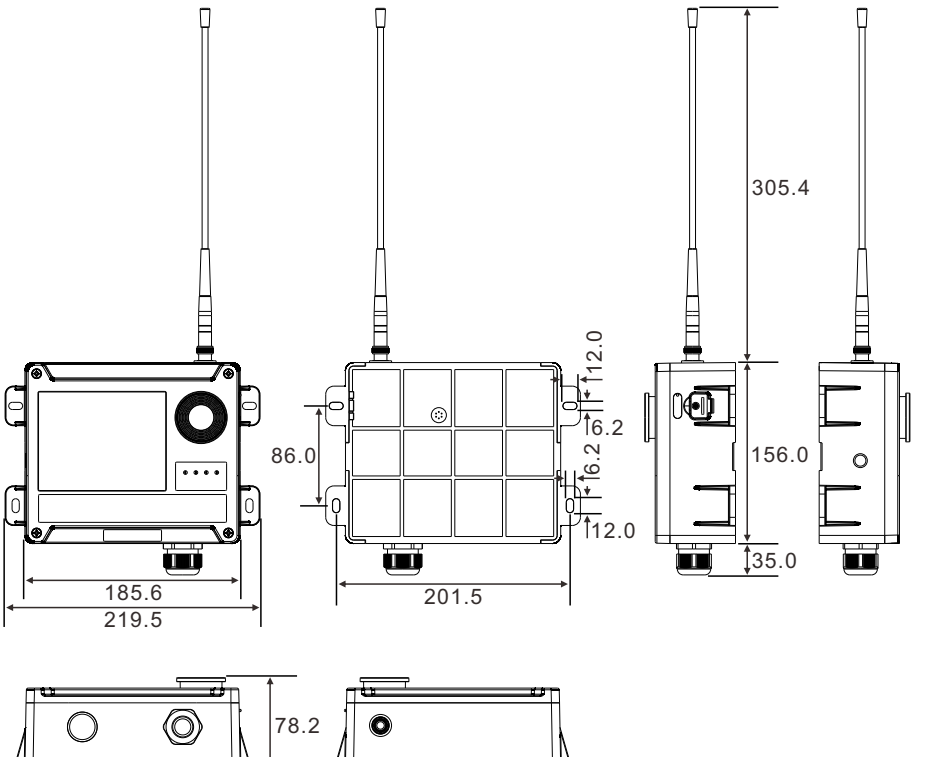
3. Product Dimensions (Transmitter)



Model	TS-KW02	TS-KW04	TS-KW06	TS-KW08	TS-KW10	TS-KW12	TS-KW14	TS-KW16	TS-KW18	TS-KW20
Dimension (A)	202.3	202.3	202.3	227.0	251.6	276.2	300.8	325.4	350.0	374.6

4. Product Dimensions (Small Receiver)

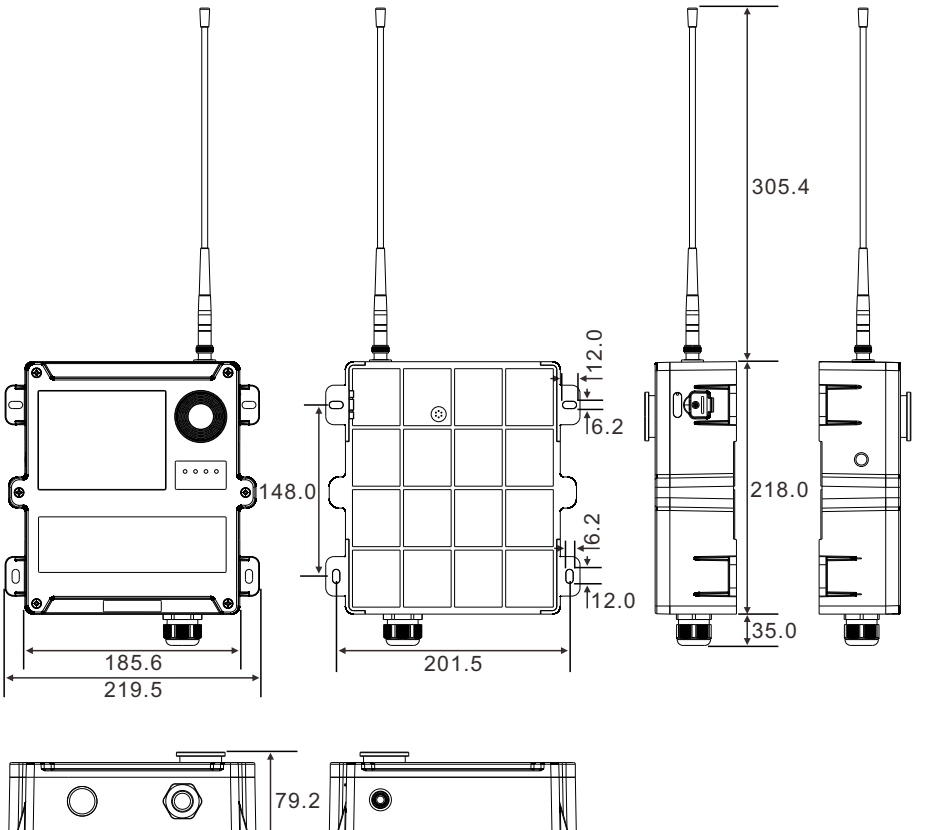
Unit: mm



Applicable Models	TS-KW02	TS-KW04	TS-KW06	TS-KW08	TS-KW10	TS-KW12	TS-KW14	TS-KW16	TS-KW18

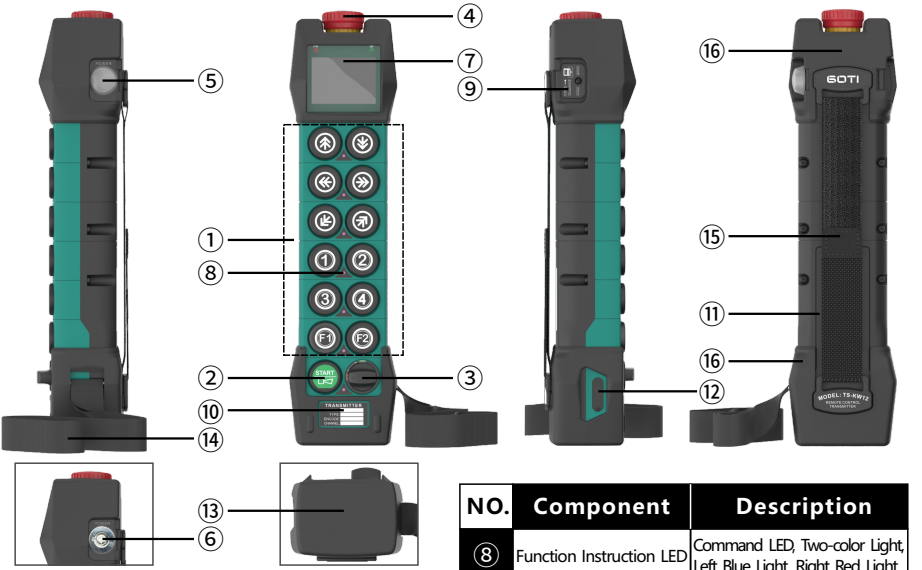
5. Product Dimensions (Large Receiver)

Unit: mm



Applicable Models	TS-KW14	TS-KW16	TS-KW18	TS-KW20

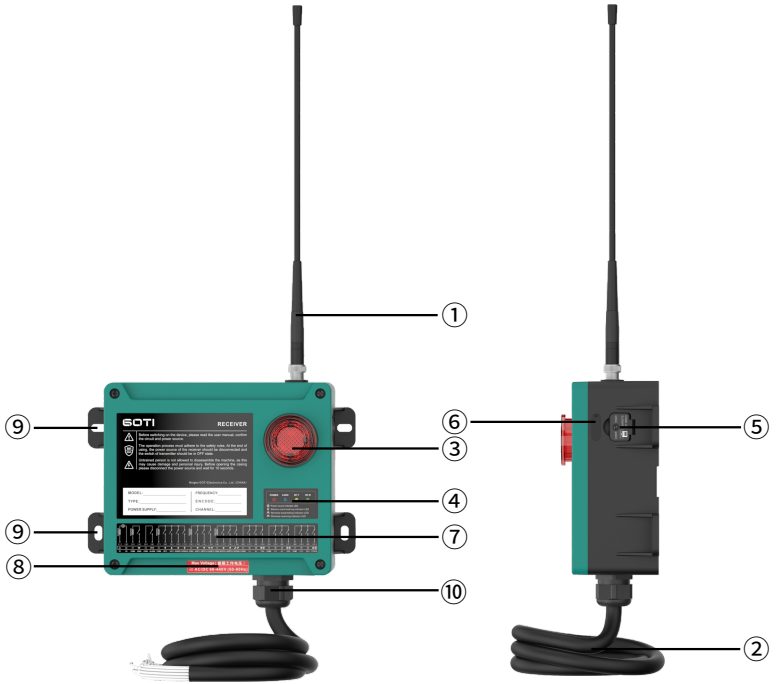
6. Appearance And Functional Description (Transmitter)



NO.	Component	Description
①	Function Control Area	Includes: 1 Gear Button, 2 Gears Button, Rotary Switch, Analog Knob, And Joystick.
②	START Button	Activates Transmitter Functions And Alarm Button.
③	Rotary Enable Switch	OFF-ON: Enables START Button OFF/A/A+B/B: AB Selection.
④	Emergency Stop	Press To Trigger Emergency Stop; Bounce Back To Reset.
⑤	POWER Button	Long Press 5s To Turn On/off; Short Press To Toggle Display.
⑥	Key Power Lock (Optional)	Key-operated Power Switch (The Key Can't Be Removed).
⑦	OLED Display	Display: Battery Level, Memory Card Status, Connection, Signal Strength, Command Icon, Etc.

NO.	Component	Description
⑧	Function Instruction LED	Command LED, Two-color Light, Left Blue Light, Right Red Light.
⑨	Dedicated Memory Card	Includes: Storage Function Data, Update Firmware, Limited Use.
⑩	NFC Antenna Area (Optional)	Built-in NFC Antenna, Restricted To Authorized Users.
⑪	Battery Compartment (Li-ion Battery Optional)	Battery: 4×AA (1.5V) Alkaline Or 4×3.7V Li-ion Rechargeable.
⑫	Data Communication /Charging Port	Connect Via Type-C Port to PC Configuration And Updates, The Optional Li-ion Charges At 5V
⑬	Wireless Charging Area (Optional)	Optional Li-ion Transmitter: Supports Wireless Charging Via The GOTI Wireless Charger.
⑭	Lanyard	Includes 40cm Lanyard To Prevent Accidental Drops.
⑮	Convertible Wristband	Included Hook-and-loop Strap To Prevent Accidental Drops.
⑯	Silicone Cover	Includes 2 PCS (One On Each End) To Prevent Damage And Keep Transmitter Lasting Longer.

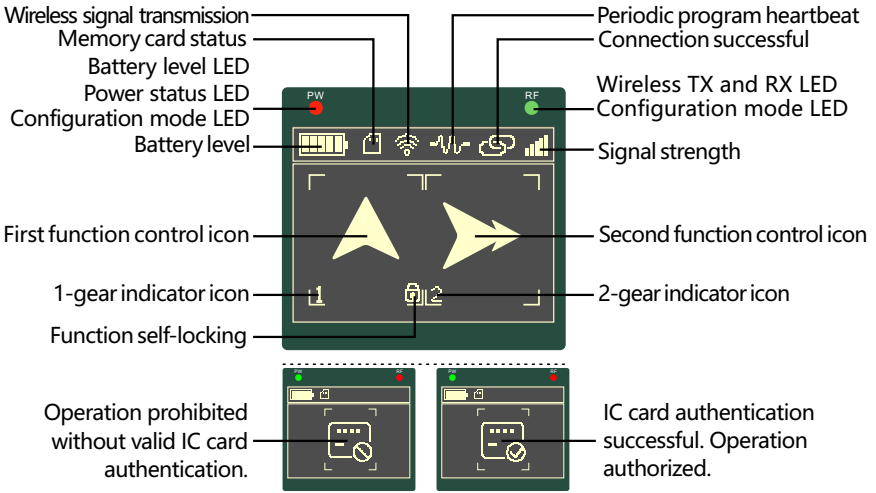
7. Appearance And Functional Description (Receiver)



NO.	Component	Description
①	Receiver Antenna	Randomly Bundled 4dB High-gain Antenna.
②	Input/output Cables	1.5m Cable With U-type Terminals (0.75mm²).
③	Receiver START LED	High-luminosity Red LED Indicator Enabling Long-range Visibility Of Startup Conditions.
④	Receiver Status Indicator Light	Includes: Power, Storage Status, Signal Transmission And Reception Indicators.
⑤	Dedicated Memory Card	Includes: Storage Function Data, Update Firmware, Limited Use.

NO.	Component	Description
⑥	Data Communication Port	Connect Via Type-C Port to PC Configuration And Updates.
⑦	Wiring Diagram	Corresponding Product Input And Output Wiring Diagram.
⑧	Supply Voltage Label	Three Operating Voltage Ranges For The Receiver: 90-440V, 20-56V, DC 8-30V.
⑨	Fixed Mounting Hole	4 Mounting Holes For Securing The Receiver.
⑩	Waterproof Connector	Ensures IP65 Compliance.

8. Transmitter Display Function Description



9. Product Specifications

Housing Material	Glass Fiber Reinforced Nylon	Protection Rating	IP65
Frequency Range	WB433：422.5~457.5MHz	Security Code	32 Bit (4.3 Billion Groups)
Channel Spacing	250KHz	Receiver Sensitivity	-114dBm
Channel Group	010~150	Receiver Limit Power Supply (Choose 1 of 3)	DC 8~30V AC/DC 20~56V AC/DC 90~440V
Modulation Model	GFSK		
Transmitter Power	≤10dBm		
Transmitter Power Supply Battery (Choose 1 of 2)	4×AA Alkaline Batteries And 4×Li-ion Rechargeable Batteries	Output Contact Rating	8A 250V Relay Output
		Receiver Cable Length	1.5m
Transmitter Display	1.92-Inch Monochrome OLED Display With 128x160 Resolution	Control Distance	100m (open field)
		Operating Temperature	-20℃~+80℃

10. Product Naming Rules

The numerical value in the model code represents the total number of button slots, except the START button and rotary enable switch. (Note: Each joystick occupies 4 button slots.)

The model prefix TS-KW denotes the TS series handheld remote controller.

Receiver Power Supply Voltage		
Voltage Range	Standard Voltages	Letter
AC/DC 90-440V	380/220/110V	H
AC/DC 20-56V	48/36/24V	L
DC 8-30V	DC12/DC24V	B

The voltage code denotes the power supply voltage for the receiver.

SPECIFICATION

TS-KW12-AGAM-H

MODEL VOLTAGE

The first character in the specification code denotes the total number of 1 gear buttons.

The second character in the specification code denotes the total number of 2 gear buttons.

The third character in the specification code denotes the total number of joysticks.

The fourth character in the specification code denotes combinations of additional hardware and functional options.

Total Number Of 1 Gear Buttons	
Quantity (1 Gear)	Letter
0	A
2	B
4	C
6	D
8	E
10	F
12	G
14	H
16	I
18	J
20	K

Total Number Of 2 Gears Buttons	
Quantity (2 Gears)	Letter
0	A
2	B
4	C
6	D
8	E
10	F
12	G
14	H
16	I
18	J
20	K

Total Number Of Joysticks For Different Gears			
Quantity (2 Gears)	Quantity (3 Gears)	Quantity (5 Gears)	Letter
0	0	0	A
0	0	1	B
0	0	2	C
0	1	0	D
0	1	1	E
0	2	0	F
1	0	0	G
1	0	1	H
1	1	0	I
2	0	0	J

Optional Combinations Of Additional Hardware				
Screen	Battery	POWER SWITCH	NFC	Letter
No	AA	Button	No	A
No	AA	Button	Yes	B
No	AA	Key Lock	No	C
No	AA	Key Lock	Yes	D
No	Li-ion	Button	No	E
No	Li-ion	Button	Yes	F
No	Li-ion	Key Lock	No	G
No	Li-ion	Key Lock	Yes	H
Yes	AA	Button	No	I
Yes	AA	Button	Yes	J
Yes	AA	Key Lock	No	K
Yes	AA	Key Lock	Yes	L
Yes	Li-ion	Button	No	M
Yes	Li-ion	Button	Yes	N
Yes	Li-ion	Key Lock	No	O
Yes	Li-ion	Key Lock	Yes	P

11. Startup And Shutdown Steps

1. Remote control startup steps:

(1). Receiver power-on operation steps:

A. Install the random antenna on the receiver according to the interface direction of the receiving antenna, and tighten it to prevent it from falling off.

B. Select an appropriate position to fix and install the receiver around the control circuit. The installation location should be as far away as possible from generating electricity field and magnetic field radiation equipment to avoid interference and affect the control effect.

C. When the control circuit is powered off, refer to the wiring diagram of the receiver and sequentially connect the input and output lines of the receiver respectively connect to the control circuit (it is recommended that the power supply cord be connected last).

D. According to the voltage range displayed by the supply voltage label, connect the power wire to the power supply circuit in the same voltage. To improve the anti-interference performance of the receiver, please connect the grounding wire of the receiver to the earth or to the shielding wire of the equipment. If none of the above is available, please connect it to the iron sheet of the equipment.

E. After checking all wiring is correct, turn on the power and the receiver starts to power on.

(2). Transmitter startup operation steps:

A. Loosen the two battery compartment cover screws, remove the battery compartment cover, and insert the four fully power AA alkaline batteries into the battery compartment correctly according to the direction marked by the positive and negative poles in the battery compartment, cover the battery compartment and tighten the screws. (If the transmitter is equipped with a rechargeable Li-ion battery, it is pre-installed at the factory and does not need to be reinserted. In order to extend the service life of the Li-ion battery, before the first use, please use a random wired charger with a Type-C interface or a special wireless charger for GOTI remote control to charge the transmitter until the battery level prompts full before using it.)

B. Press and hold the POWER button for 5 seconds to power on the transmitter. (If optional key power lock, simply turn the key clockwise to power on the transmitter). The rechargeable Li-ion battery transmitter will automatically power on when charging, so there is no need to operation this step.

C. Rotate and bounce back the emergency stop, let the emergency stop is in an inactive state.

D. Rotate the rotary enable switch on the right side of the last row of buttons of the transmitter from the "OFF" position to the "ON" position to enable transmission's other function buttons. Other function buttons and switches of the transmitter are allowed only after rotate to the "ON" position.

E. If the transmitter is equipped with the optional IC card authorization function, within 10 seconds after the above transmitter operation steps are completed, place the authorized IC card near the NFC antenna area on the transmitter until two "Di Di" is heard, and the transmitter vibrates for two short time before continuing the next step. The authorization operation is maintained for 10 seconds, and continuing to the next operation will be prohibited after timeout. If you want to continue, please repeat Step D and re-swipe the IC card to authorize. If the IC card authorization function is not optional or NFC is disabled, skip this step and proceed directly.

F. Press the START button on the left side of the last row of buttons of the transmitter to start up the transmitter. If the transmitter is within the receiver's signal reception range and the receiver is already powered on, the receiver will simultaneously start up when the transmitter's "START" button

is pressed, and the receiver's start LED will light up.

G. When both the transmitter and receiver are started up, operators shall correctly operate the buttons and switches on the transmitter according to their predefined functions. The receiver will output the designated relay switch signals or other configured signals accordingly.

2. Remote control shutdown steps:

(1). Transmitter shutdown operation steps:

A. Press the emergency stop, let the emergency stop is in an active state.

B. Rotate the rotary enable switch on the right side of the last row of buttons of the transmitter from the "OFF" position to the "ON" position

C. Press and hold the POWER button for 5 seconds to power off the transmitter. (If optional key power lock, simply turn the key counterclockwise to power off the transmitter).

(2). Receiver shutdown operation steps:

Disconnect the receiver's power supply wire or turn off the receiver's power switch.

12. Transmitter-Receiver Pairing Steps

Remote control pairing steps

This series of industrial remote controllers is designed with 3 pairing methods. Users can choose the most suitable method for pairing operation.

1. PC software-based read, modify and write pairing steps:

The dedicated GOTI TS Series Configuration Software allows users to read, modify, and write pairing parameters of the remote controller, and also can modify the codes and channels. Follow these steps:

A. Connect the transmitter or receiver to a computer via the Type-C cable.

B. Launch the software and click "Read" to read the current device parameters.

C. Modify the code and frequency channel value on the PC software to identical values on transmitter and receiver.

D. Click "Write" to write the configuration to the device.

(Refer to the TS Series Configuration Software User Guide for detailed instructions.)

2. Wireless pairing steps:

In complex on-site environments where personnel may struggle to access the receiver without additional tools, the wireless pairing method can be adopted to save time and effort. Based on the direction of data transmission, the wireless pairing process is categorized into two modes: Transmitter-to-receiver pairing and receiver-to-transmitter pairing.

(1). Transmitter-to-receiver pairing steps:

A. Disconnect the receiver's power supply. Press and hold the transmitter's POWER button for five seconds to power off the transmitter (If optional key power lock turn the key counterclockwise).

B. Press the emergency stop, let the emergency stop is in an active state.

C. Press and hold the START button on the left side of the last row of buttons of the transmitter while simultaneously pressing and holding the POWER button for five seconds (If optional key power lock, turning the key clockwise). At this time, the PW red LED of the transmitter flashes quickly, and the transmitter enters the configuration state.

D. Press and hold any one function button (It must be only one button, excluding the START button) for five seconds. At this time, the PW red LED continues to flash quickly, and RF red LED also flash quickly. This indicates that the transmitter is in a standby state, awaiting communication with the receiver.

E. Reconnect the receiver's power supply. Wait a few seconds before the receiver completes receiving the wireless data. At this time, the PW green LED flashing for three times, accompanied by three "Di Di Di" tones at the same time, and the wireless pairing is completed.

Follow the transmitter startup operation steps (C, D, E, F, G) to resume normal operation.

(2). Receiver-to-transmitter pairing steps:

A. Disconnect the receiver's power supply. Press and hold the transmitter's POWER button for five seconds to power off the transmitter (If optional key power lock turn the key counterclockwise).

B. Press the emergency stop, let the emergency stop is in an active state.

C. Press and hold the START button on the left side of the last row of buttons of the transmitter while simultaneously pressing and holding the POWER button for five seconds (If optional key power lock, turning the key clockwise). At this time, the PW red LED of the transmitter flashes quickly, and the transmitter enters the configuration state.

D. Press and hold any two function buttons simultaneously (It must be two buttons are pressed simultaneously, excluding the START button) for five seconds. At this time, the PW red LED continues to flash quickly, and RF red LED also flash quickly. This indicates that the transmitter is in a standby state, awaiting communication with the receiver.

E. Reconnect the receiver's power supply. Wait a few seconds before the receiver completes receiving the wireless data. At this time, the PW green LED flashing for three times, accompanied by three "Di Di Di" tones at the same time, and the wireless pairing is completed.

Follow the transmitter startup operation steps (C, D, E, F, G) to resume normal operation.

3. Via dedicated memory card pairing steps

The TS series remote control automatically copies data from the dedicated memory card to the receiver's or transmitter's onboard memory shortly after the receiver or the transmitter is powered on. Additionally, the transmitter features card-writing functionality, allowing all functional data stored in its onboard memory to be written back to the dedicated memory card. This design enables users to perform pairing operations efficiently. Before pairing, users need to disconnect the receiver's power supply. Press and hold the transmitter's POWER button for five seconds to power off the transmitter (If optional key power lock turn the key counterclockwise). Then extract the memory cards from both the receiver and transmitter respectively. Label the memory cards clearly to avoid data loss due to mishandling. According to the source data and the target data, the dedicated memory card pairing process is categorized into two modes: Copy data from transmitter to receiver and copy data from receiver to transmitter. The users can select one of the operation modes to operate according to their needs.

(1). Copy data from transmitter to receiver via dedicated memory card pairing steps

A. Power off the transmitter.(Press and hold the transmitter's POWER button for five seconds, if optional key power lock turn the key counterclockwise).

B. Press the emergency stop, let the emergency stop is in an active state.

C. Press and hold the START button on the left side of the last row of buttons of the transmitter while simultaneously pressing and holding the POWER button for five seconds (If optional key power

lock, turning the key clockwise). At this time, the PW red LED of the transmitter flashes quickly, and the transmitter enters the configuration state.

D. Place the receiver's memory card into the transmitter's card slot.

E. Press and hold any three function buttons simultaneously (It must be three buttons are pressed simultaneously, excluding the START button) for five seconds. At this time, the RF green LED flashing for three times, accompanied by three "Di Di Di" tones at the same time. This indicates that the operation of writing the memory card is completed by transmitter.

F. Pull out the receiver memory card that installed in the transmitter and successfully write data. Then reinsert the memory card into the receiver card slot and power receiver on.

G. Reinsert the original transmitter memory card back into the transmitter card slot. From now on, the pairing operation of copying the data in the transmitter to the receiver via the memory card is completed.

Follow the transmitter startup operation steps (C, D, E, F, G) to resume normal operation.

(2). Copy data from receiver to transmitter via dedicated memory card pairing steps

A. Power off the transmitter.(Press and hold the transmitter's POWER button for five seconds, if optional key power lock turn the key counterclockwise).

B. Place the receiver's memory card into the transmitter's card slot.

C. Power on the transmitter.(Press and hold the transmitter's POWER button for five seconds, if optional key power lock turn the key clockwise).

D. Wait for 10 seconds after the transmitter is powered on, power off the transmitter again. (Press and hold the transmitter's POWER button for five seconds, if optional key power lock turn the key counterclockwise).

E. Pull out the receiver memory card that installed in the transmitter. Then reinsert the memory card into the receiver card slot and power receiver on.

F. Press the emergency stop, let the emergency stop is in an active state.

G. Press and hold the START button on the left side of the last row of buttons of the transmitter while simultaneously pressing and holding the POWER button for five seconds (If optional key power lock, turning the key clockwise). At this time, the PW red LED of the transmitter flashes quickly, and the transmitter enters the configuration state.

H. Reinsert the original transmitter memory card back into the transmitter card slot.

I. Press and hold any three function buttons simultaneously (It must be three buttons are pressed simultaneously, excluding the START button) for five seconds. At this time, the RF green LED flashing for three times, accompanied by three "Di Di Di" tones at the same time. This indicates that the operation of writing the memory card is completed by transmitter. From now on, the pairing operation of copying the data in the receiver to the transmitter via the memory card is completed.

Follow the transmitter startup operation steps (C, D, E, F, G) to resume normal operation.

13. IC Card Authorization Setup

1. Registering or deregistering authorized IC cards steps (optional)

A. Power off the transmitter.(If the transmitter is powered on, press and hold the transmitter's

POWER button for five seconds, if optional key power lock turn the key counterclockwise).

B. Press the emergency stop, let the emergency stop is in an active state.

C. Press and hold the START button on the left side of the last row of buttons of the transmitter while simultaneously pressing and holding the POWER button for five seconds (If optional key power lock, turning the key clockwise). At this time, the PW red LED of the transmitter flashes quickly, and the transmitter enters the configuration state.

D. Press and hold any four function buttons simultaneously (It must be four buttons are ressed simultaneously, excluding the START button) for five seconds, the PW red LED of the transmitter continue flashes quickly, and the transmitter will enter the read IC card state.

E. If bring an unauthorized IC card close to the NFC antenna area, the RF green LED flashes quickly three times and accompanied by three "Di Di Di" tones at the same time, indicating the unauthorized IC card is registered as an authorized IC card. If bring an authorized IC card close to the NFC antenna area, the RF red LED flashes quickly two times and accompanied by two "Di Di" tones at the same time, indicating the authorized IC card is registered as an unauthorized IC card. Multiple IC cards can be authorized or deregistered sequentially where without exiting the read IC card state.

F. After completing all registrations/deregistrations, rotate and bounce back the emergency stop, let the emergency stop is in an inactive state. At this time, the PW LED changes from red flashing to green and remain lit. This indicates that the transmitter exits the configuration state. And the operation of registering or deregistering the authorization IC card is completed.

2. Enabling or disabling NFC card authorization function (optional)

A. Power off the transmitter.(If the transmitter is powered on, press and hold the transmitter's POWER button for five seconds, if optional key power lock turn the key counterclockwise).

B. Press the emergency stop, let the emergency stop is in an active state.

C. Press and hold the START button on the left side of the last row of buttons of the transmitter while simultaneously pressing and holding the POWER button for five seconds (If optional key power lock, turning the key clockwise). At this time, the PW red LED of the transmitter flashes quickly, and the transmitter enters the configuration state.

D. Press and hold any four function buttons simultaneously (It must be four buttons are ressed simultaneously, excluding the START button) for five seconds, the PW red LED of the transmitter continue flashes quickly, and the transmitter will enter the read IC card state.

E. Long-press the START button on the left side of the last row of buttons of the transmitter for 5 seconds. At this time, if the RF green LED flashes quickly three times and accompanied by three "Di Di Di" tones at the same time, indicating NFC authorization is activated. If the RF red LED flashes quickly two times and accompanied by two "Di Di" tones at the same time, indicating NFC authorization is deactivated. Long-press the START button for 5 seconds to switch enabling or disabling NFC card authorization function.

F. After completing enabling or disabling NFC card authorization, rotate and bounce back the emergency stop, let the emergency stop is in an inactive state. At this time, the PW LED changes from red flashing to green and remain lit. This indicates that the transmitter exits the configuration state. And the operation of enabling or disabling NFC card swiping function is completed.

14. Description Of The Transmitter Rotary Switch LED

Press and hold any function buttons of the transmitter, check the status of the rotary switch LED, and find the fault reason in combination with the following table.

LED Flashing Regularities		Situation description and handling methods
The red light is always on		The transmitter is working properly.
Flashes Once Per Interval		In Transmitter Startup Operation Steps Not Pressing The Start Button Or In The Two-way Communication Mode, The Transmitter Is Not Connected To The Receiver For Communication; Restart The Power Of The Receiver, Then Proceed With Operations After Pressing The START Button.
Flashes Twice Per Interval		In Transmitter Startup Operation Steps Not Rotating The Rotary Enable Switch To The "ON" Position; Proceed With Operations After Rotating The Rotary Enable Switch To The Not "OFF" Position.
Flashes 3 Times Per Interval		In Transmitter Startup Operation Steps Not Let The Emergency Stop Is In An Inactive State; Proceed With Operations After Rotating And Bouncing Back The Emergency Stop.
Flashes 4 Times Per Interval		Low Battery Charge; Replace With New Batteries Or Ensure Rechargeable Lithium Batteries Are Fully Charged Before Operation.
Flashes 5 Times Per Interval		In Transmitter Startup Operation Steps The IC Card Is Not Authorized; Proceed With Operations After Swipe The IC Card For Authorization After Reset The Rotary Enable Switch.

15. Precautions

1. Personnel without professional training are prohibited from disassembling this machine, as it may cause equipment damage or personal injury.

2. After use, deactivate the main power supply to cut off the receiver's power. Then press the transmitter's emergency stop button and hold the POWER button for 5 seconds (or rotate the POWER key clockwise) to power off the transmitter as a safety measure.

3. When installing the receiver, ensure its power is turned off and disconnected to prevent electric shock hazards.

4. The installation position of the receiver must avoid areas with potential spark generation. Be positioned away from motors, contactors, and cables. Maintain distance from high-voltage wiring or facilities to prevent signal interference. Avoid conflicts with protruding building structures.

5. When installing the receiver, confirm all mounting screws are securely tightened to prevent loosening or accidental falls.

6. Prior to operation, thoroughly review the control device's circuitry, the remote control's wiring instructions, and functional settings to avoid incorrect wiring that could damage the equipment or remote control.

7. Do not install the receiver inside a control cabinet. Metal enclosures will shield wireless signals, reducing the operational range or causing control failure. The correct method is to mount the receiver externally on top of the control cabinet and route its cables into the cabinet for wiring.

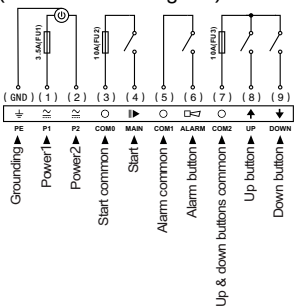
8. This series of remote controls features 4.3 billion unique security codes, with each unit preset to a distinct code during production. During installation:Verify no other remote controls with identical security codes are operating in the same area.Ensure no devices using the same frequency channel are active within 200 meters of the receiver's location to prevent mutual interference and malfunctions.

9. The receiver provides three power supply options (AC/DC 90-440V, AC/DC 20-56V and DC 8-30V) The voltage range is factory-preset. Confirm the required power supply matches your setup before wiring.

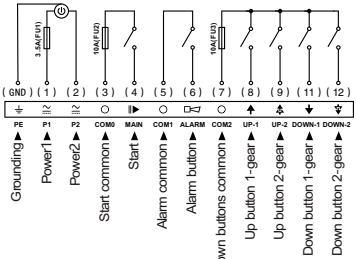
10. The transmitter has a power monitoring function. If a low-battery alert is triggered, immediately halt operations (for example, lower suspended loads to the ground). Replace with new batteries or recharge the lithium batteries to full capacity before resuming use.

16. Appendix (Standard Wiring Diagrams)

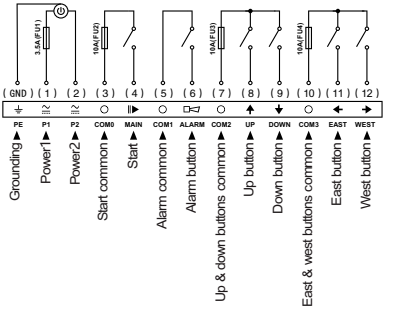
TS-KW02-BAA✻ (2 buttons all 1 gear) receiver wiring diagram



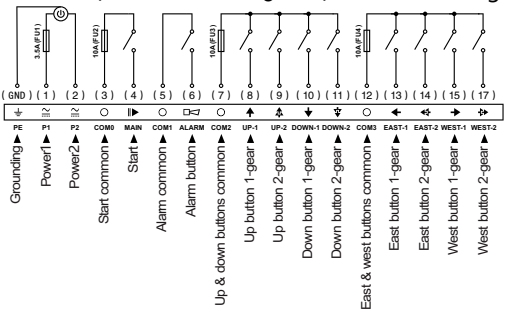
TS-KW02-ABA✻ (2 buttons all 2 gears) receiver wiring diagram



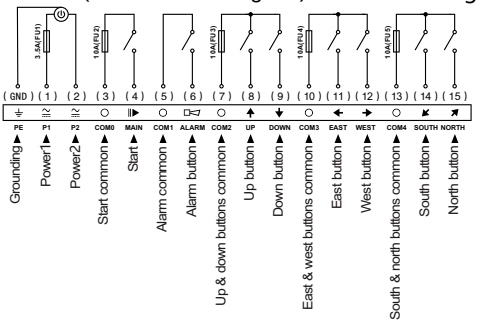
TS-KW04-CAA✻ (4 buttons all 1 gear) receiver wiring diagram



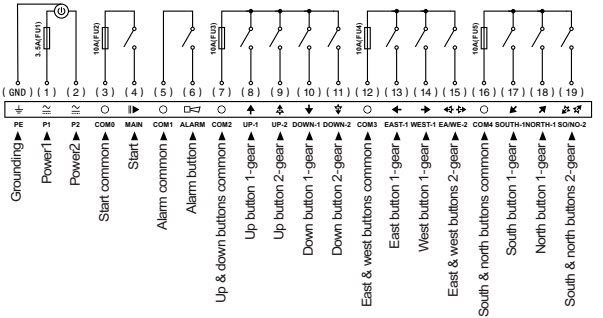
TS-KW04-ACA✻ (4 buttons all 2 gears) receiver wiring diagram



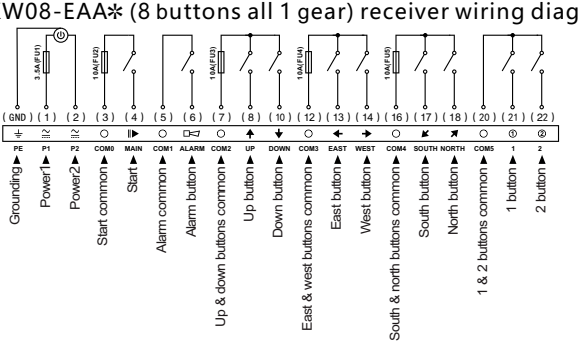
TS-KW06-DAA✲ (6 buttons all 1 gear) receiver wiring diagram



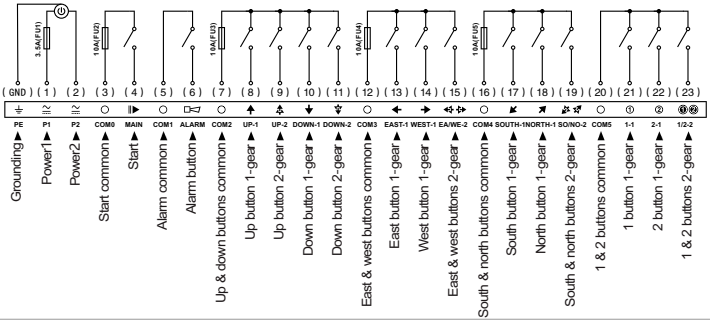
TS-KW06-ADA✲ (6 buttons all 2 gears) receiver wiring diagram



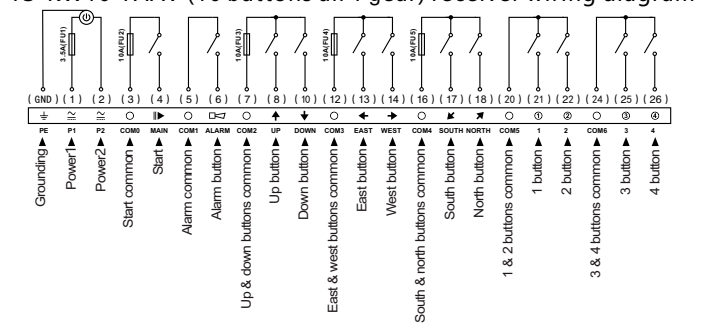
TS-KW08-EAA✲ (8 buttons all 1 gear) receiver wiring diagram



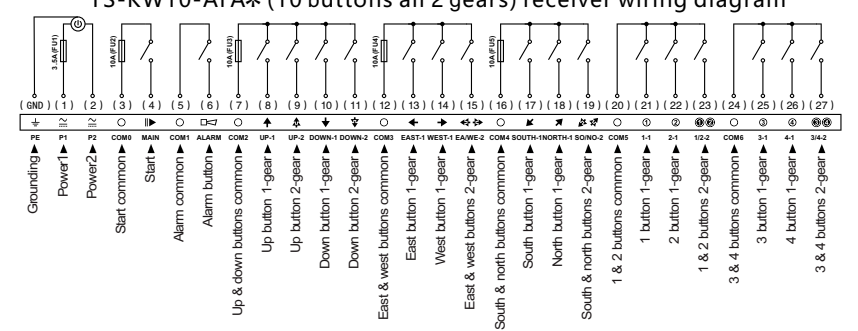
TS-KW08-AEA* (8 buttons all 2 gears) receiver wiring diagram



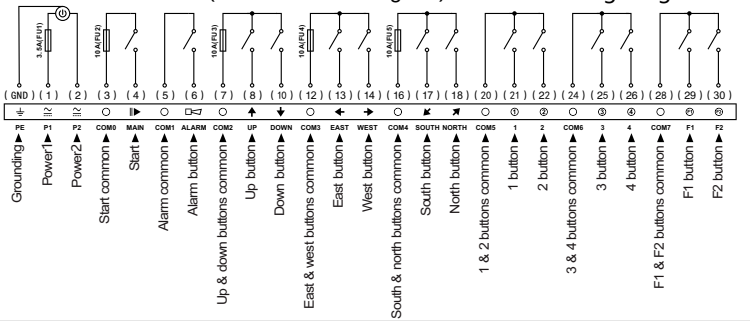
TS-KW10-FAA* (10 buttons all 1 gear) receiver wiring diagram



TS-KW10-AFA* (10 buttons all 2 gears) receiver wiring diagram



TS-KW12-GAA✻ (12 buttons all 1 gear) receiver wiring diagram



For wiring diagrams of other models remote control, please refer to the provided documentation.

FCC Warnning:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection againstharmful interference in a residential installation. This equipment generates, uses and can radiateradio frequency energy and, if not installed and used in accordance with the instructions, maycause harmful interference to radio communications. However, there is no guarantee thatinterference will not occur in a particular installation. If this equipment does cause harmfulinterference to radio or television reception, which can be determined by turning the equipmentoff and on, the user is encouraged to try to correct the interference by one or more of thefollowing measures:
Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
• Consult the dealer or an experienced radio/TV technician for help.
Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1)This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 0cm between the radiator and your body.

17. Warranty Policy

Quality Assurance

GOTI Company ensures that the product manufactured is in full compliance with the specifications of its publication. With the proper installation, it can be used normally. But GOTI Company does not guarantee the product is operating without interruption or error-free.

Warranty Period

The product enjoys one-year warranty from exit factory date. We ensure that customers will not have any problem on the product in one year. During the warranty period, if products are proved with the quality defect, Company is willing to maintain. Any product in need of repair is required to send to the Company specified service place. The customer has to pay one-way shipping cost to service place and GOTI Company will pay the return shipping cost within warranty period and send back the product.

No warranty committed in the following sequence

The foregoing warranty does not include buttons, relays, fuses, batteries and other wear and tear of parts or board damaged by wrong installation etc. and does not include the faults caused by customer improper use, force majeure, natural factors, lack of maintenance, neglect of operating environment specifications, unauthorized alteration, incorrect use or customers setting up their own interface. Company does not assume any responsibility for any loss due to non-compliance with this user manual. Company does not assume responsibility for any failure due to in conjunction with any device unrelated with GOTI Company.

REMARKS: **Foregoing warranties do not include other expressed or implied warranties. Repairing is the only compensation for customers. GOTI Company does not assume any direct, indirect, special, incidental or causal damages.**

1、品质保证

GOTI公司保证本产品出厂时完全符合其所公布的各项规格，只要适当安装都可正常使用，但是GOTI公司并不保证本产品的操作是毫无中断或零错误。

2、保修期间

本产品自出厂日起享有一年的保修期，保证客户在一年内不会有任何产品上的问题，若在保修期内，只要证明产品品质有瑕疵，公司愿意维修。任何需要维修的产品，都必须送往指定的服务处，该客户必须承担产品运往服务处的单程运费，GOTI公司的服务处在保证期间内将负担回程费用寄还该产品。

3、不保修事项

前述的保修范围，并未包含按键、继电器、保险丝、电池等损耗性零件或是装机错误所造成的基板损坏等，且未包含因客户使用不当、不可抗拒原因、天然因数、维护不足、操作环境规格的忽略、未经许可的变更、错误的使用或客户自行设置界面而造成的故障。公司对因未遵守使用说明而引起的任何损失不承担任何责任。公司对因与GOTI无关的设备结合使用而引起的故障造成的任何损失不承担责任。

备注：前述的保修事项，并无其它明述或隐含的保修事项。保修所提供的赔偿是客户唯一的赔偿，GOTI公司并不负任何直接、间接、特殊、意外或因果的损毁责任。

18. Service Registration Record (Certificate)

Seller information 经销商信息	Product model 产品型号		Seller name 经销商名称	
			Contact phone 联系电话	
	Product code 产品序号		Sale date 销售日期	
User information 用户信息	Username 用户姓名		Contact phone 联系电话	
	Contact address 通讯地址		E-mail 邮箱	

Date 日期	Fault description 故障现象	Fault reason 故障原因	Repair result 检修结果	Signature 签字

QUALIFIED CERTIFICATE

合格证

MODEL(型号): _____

CHECKER(检验员): _____

DATE(出厂日期): _____

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