



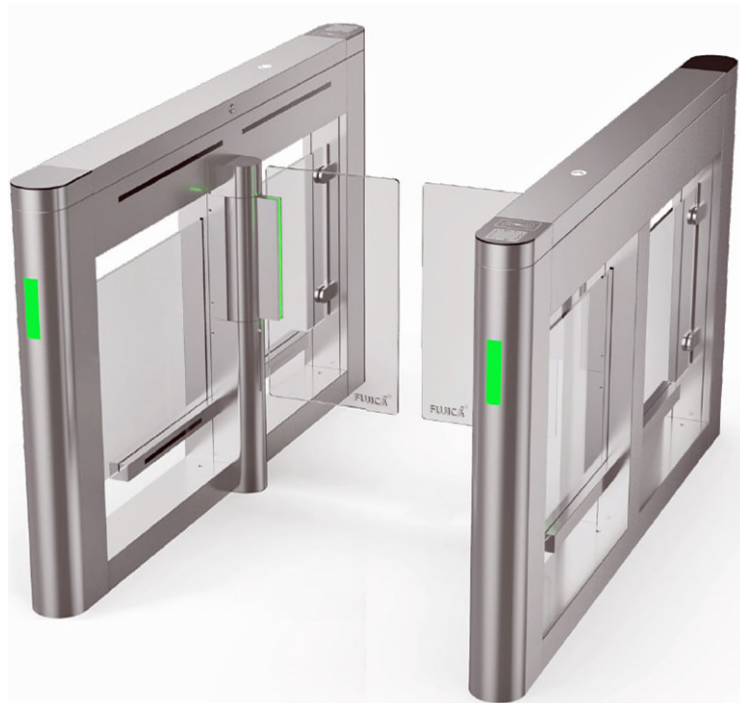
Vehicle Access Control
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Sentinel Z23 Fast Access Swing Gate USER MANUAL



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Chapter 1 Product

1.1 Introduction

It is a new generation of access gate adapted to modern safe, fast, efficient, and quality management and carefully designed and developed by FujicaSystem based on years of experience in the industry, with high standards, high quality, and high integration. It is fashionable, artistic and durable. Equipped with standard signal input interface, it is compatible with all kinds of access control, and applicable to business buildings, communities, exhibition halls, government buildings, financial institutions, and other sites, to meet different scenarios and user needs.

The product you bought is developed and produced in accordance with the requirements of the ISO9001 quality management system and is rated as qualified after strict and careful inspection. It has been strictly tested before shipment, but to ensure its safe and reliable operation, it is recommended that users read the instruction carefully before use, so as to avoid improper operation and damage to their rights and interests.

1.2 Structure

1.2.1 Internal structure diagram of FJC-Z2358GB-H

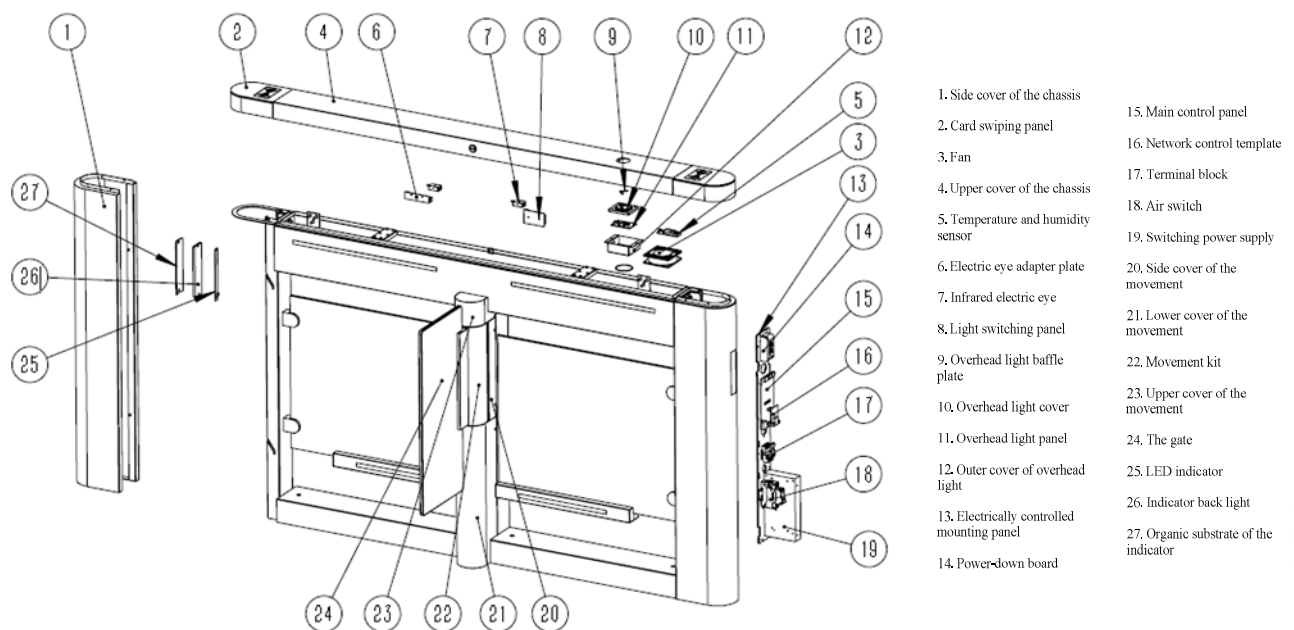


Figure 1-1 Internal Structure Diagram of FJC-Z2358GB-H

1.3 Technical parameters

1.3.1 Technical parameters of Z2358GB-H

Item		Z2358GB-H
Material process	Body and side frame	304 stainless steel
	Side frame material	304 stainless steel
	Top cover material	304 stainless steel
	Gate material	10mm thick tempered glass or 10mm thick acrylic plate

Item		Z2358GB-H
Specification and dimension	Dimension (L*W*H)	1,600mm*116mm*950mm
	Lane width	Tempered glass gate plate for 600mm-900mm
		Acrylic plate for 600mm-1,150mm
	Gate interception height	800mm
	Gate height from the ground	240mm
Supply voltage	Voltage	AC 220V/110V $\pm 10\%$, 50/60Hz
	Motor power	40W
	Total power	100W
Access indicator	Normally closed mode	20 people/minute
	Normally opened mode	40 people/minute
	Open-closing speed	0.5s-1.5s adjustable
Access detection	Detection method	Photoelectric switch
	Number of electric eyes	10 pairs
Related interfaces	Communication interface	Serial port and multiple-channel I/O interface
	Communication method	RS485, TCP/IP
Working environment	Noise	$\leq 65\text{dB}$
	Working temperature	-25°C - $+70^{\circ}\text{C}$
	Storage and transportation temperature	-30°C - $+70^{\circ}\text{C}$
	Working humidity	$\leq 90\%$, no condensation
	Storage and transportation humidity	$\leq 95\%$, no condensation
	IP ratings	IP54
	Working environment	Indoor and outdoor

1.4 Functional features

Type		Description
Functional features	Voice broadcast	Rich voice content, supporting Chinese and English voice, and supporting voice volume adjustment
	Anti-pinch detection	Equipped with multiple anti-pinch detection mechanisms to ensure safe access
	Automation	Equipped with automatic reset, unlocking when being powered off, self check when being powered on, and zero point correction
	Power off opening	Standard power-off opening device, automatic power-off opening, automatic power-on reset, in line with security requirements
	Partition detection	Set up strict protection zone by zoning detection + fuzzy algorithm to effectively protect pedestrians

Type		Description
	Anti-following	Strict anti-following mechanism, such as trailing alarm or trailing gate closure
	Anti-reverse access	Accurate determination of reverse passing, and the corresponding sound and light prompts to ensure the legality and effectiveness of access
Mechanical structure	Jaw clutch	Fast response time for clutch clamping and popping open
	All-in-one motor mechanism	All-in-one motor mechanism design, solid structure, high concentricity of assembly
Electronic control design	Motor	DC brushless motor
	Master controller	Integrated voice announcement, voice control, DC brushless motor control, RS485 bus, TCP/IP network interface and other functions
Maintenance & Installation	Easy installation	Modular design, simpler structure, easy installment
	Expandable	Diversified access permissions, and expandable to face recognition, IC card swiping, QR code, and ID card swiping, etc.
	Easy maintenance	It takes less than 30 minutes to remove and replace core components to achieve rapid operation and maintenance

Chapter 2 Definition

2.1 Swing gate

The swing gate is composed of a chassis and two movable swings, which can rotate $\pm 90^\circ$ to stop or release pedestrians. According to the different combinations of motor mechanism type, the swing gate can be divided into side unit swing gate and central unit swing gate. As shown in Figure 1 above, 2 side unit swing gates constitute 1 swing gate channel, of which 1 is the master machine and the other is the slave machine; 2 side unit swing gates and 1 central unit swing gate constitute 2 swing gate channels, and so on for multiple channels.

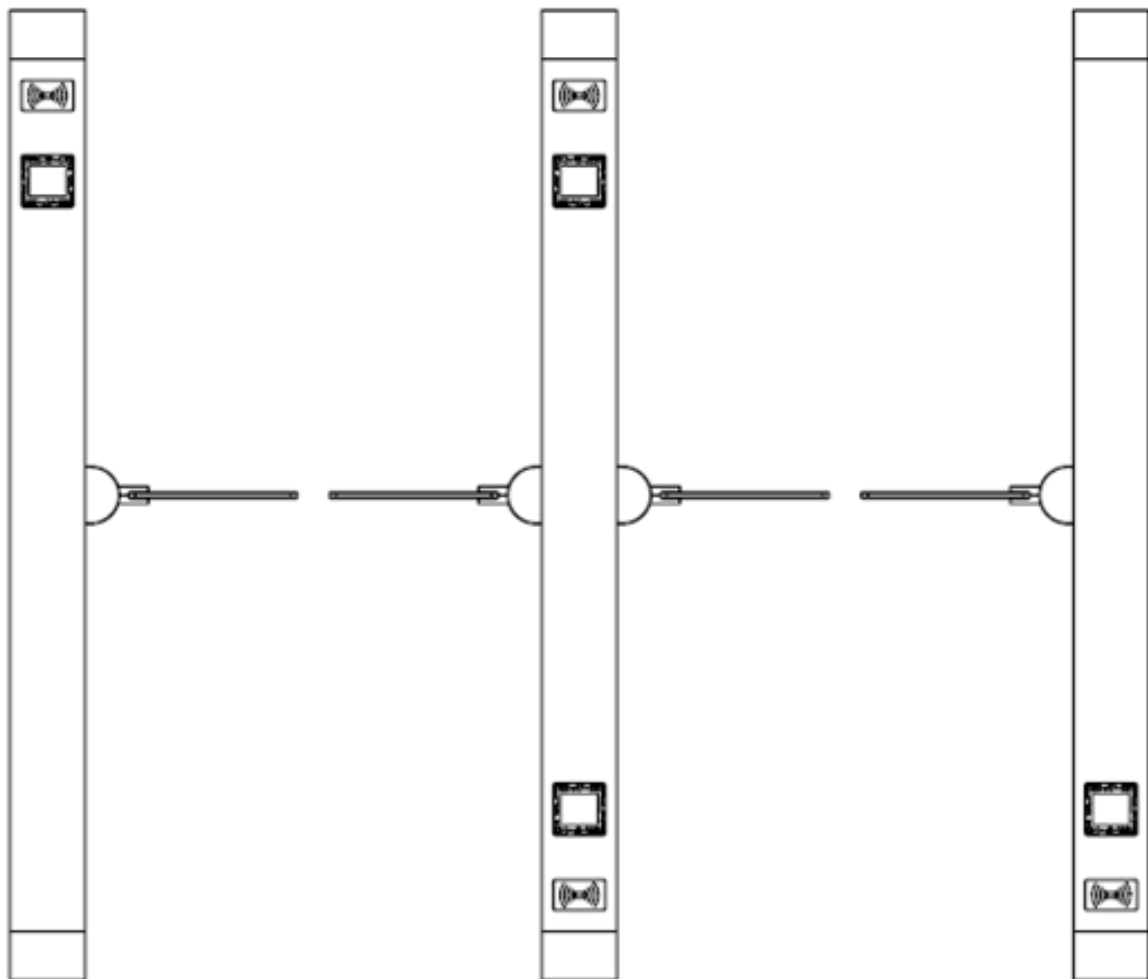


Figure 2-1 Schematic Diagram of Swing Gate Channel

2.2 Gate passing mode

Passing mode	Description
Entrance & exit by control	Open the gate immediately after receiving a valid opening signal (including card swiping, face recognition and QR code)
Entrance & exit free access	There is no need to receive a valid opening signal, and the gate opens immediately after the infrared detection of pedestrians

Passing mode	Description
Entrance & exit prohibited	With no any valid opening signal received, the gate is not opened until it is converted to other passing modes or can be opened in case of emergency
Entrance by control + exit free access	The gate opens immediately after the import receives a valid opening signal (including card swiping, face recognition and QR code); the exit does not need to receive a valid gate opening signal, and the gate opens immediately after the infrared detection of pedestrians
Entrance by control + exit prohibited	The gate opens immediately after the import receives a valid opening signal (including card swiping, face recognition and QR code); the exit does not receive any valid opening signal, the gate is not opened until it is converted to other passing mode or can be opened in case of emergency
Entrance free access + exit by control	The import does not need to receive a valid opening signal, and the gate opens immediately after the infrared detection of pedestrians; the exit does not receive any valid opening signal, and the gate is not opened until it is converted to other passing mode or can be opened in case of emergency
Entrance free access + exit prohibited	The import does not need to receive a valid opening signal, and the gate opens immediately after the infrared detection of pedestrians; the exit does not receive any valid opening signal, and the gate is not opened until it is converted to other passing mode or can be opened in case of emergency
Entrance by control + exit free access	The gate opens immediately after the import receives a valid opening signal (including card swiping, face recognition and QR code); the exit does not need to receive a valid gate opening signal, and the gate opens immediately after the infrared detection of pedestrians
Entrance prohibited + exit by control	The import does not receive a valid opening signal, and the gate is not opened until it is converted to other passing mode or can be opened in case of emergency; the gate opens immediately after the export receives a valid opening signal (including card swiping, face recognition and QR code)
Evacuation mode	Open the gate immediately when the equipment receives the fire alarm signal

For detailed configuration, please refer to Appendix 2 Parameter Description

Chapter 3 Product Installation and Commissioning

3.1 Product installation

- (1) Prepare the tools needed to install the gate and pick out the auxiliary parts according to the packing list.
- (2) Determine the composition and operation mode of the system and prepare for installation after completing the system planning.
- (3) After determining the hole location, drill holes and pre-bury expansion bolts. Please refer to the installation diagram for details:
- (4) Separate the strong/weak cables and place them in the corresponding outlet holes of the equipment.
- (5) Open the chassis door, select a gate as a reference (it is recommended to select the middle gate as a reference), align the drilled holes of the bolts on the base plate with the ground bolts respectively, and then initially tighten the nuts.
- (6) Open the door of the adjacent gate chassis, align the drilled holes of the bolts on the base plate with the ground bolts respectively, refer to the appropriate arrangement of the reference gate linkage, and then initially tighten the nuts.
- (7) In accordance with the wiring diagram of the gate, correctly connect the power cord, the control cord and the ground wire of the system.
- (8) Adjust the size and horizontal position and fasten the gate.

Installation diagram of Z2358GB-H

Pre-bury 6 M12*150 expansion bolts

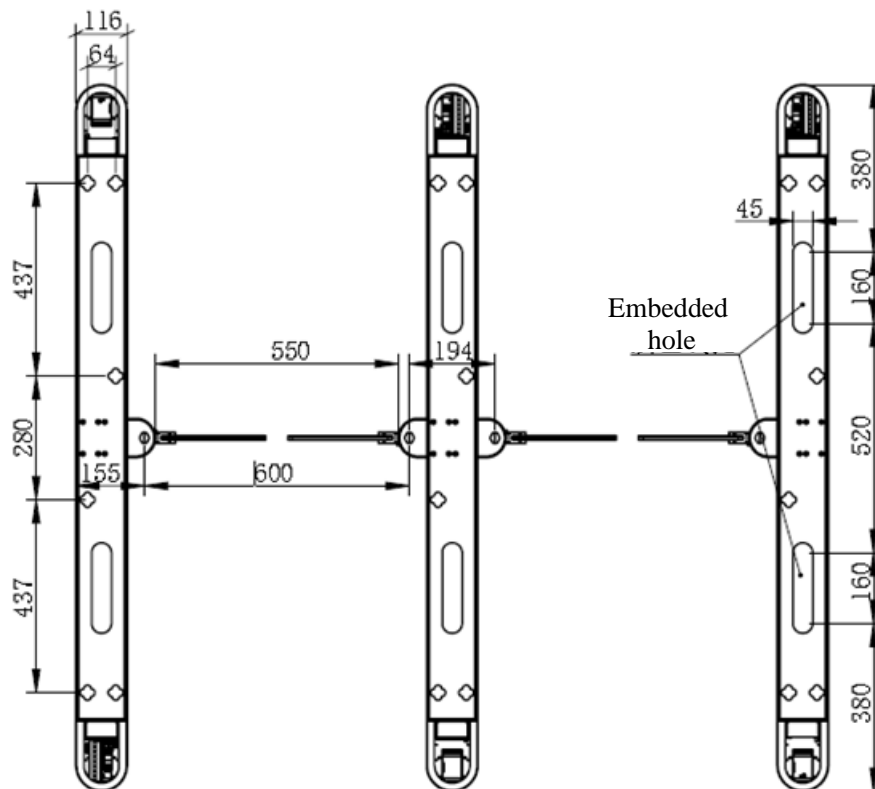


Figure 3-1 Installation Diagram of Z2358GB-H

3.2 External wiring

To facilitate field wiring, we have connected the pins that need to be wired on the master controller to the relevant external terminals. Only the external terminals need to be connected during field wiring. Only one triplex button needs to be connected to a group of channels, either to the master machine or to the slave machine.

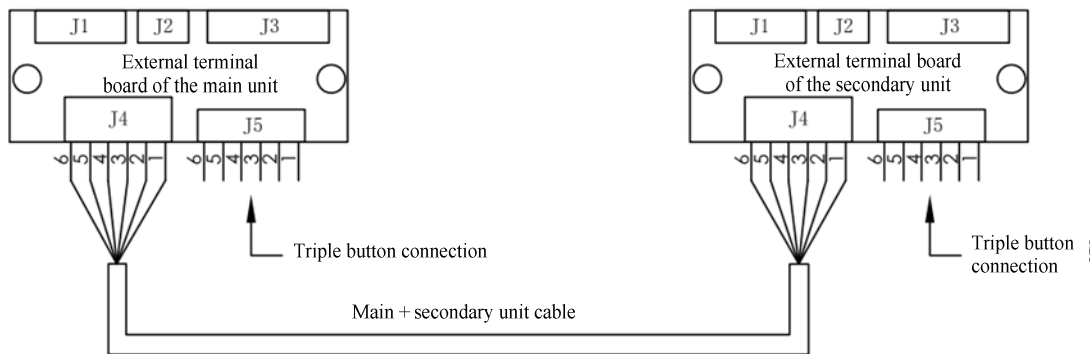


Figure 3-2 External Wiring Diagram

J4	1	SYN SYN	Synchronous signal line of the master machine and the slave machine
	2	RS485A RS485A	
	3	RS485B RS485B	
	4	+24V +24V	
	5	GND GND	
	6	+12V +12V	
J5	1	VDD VDD	External control signal line (connected to triplex button)
	2	Left opening gate	
	3	Right opening gate	
	4	Close the gate	
	5	Fire alarm (normally opened)	
	6	GND GND	

The connection cable of the master machine and the slave machine can be a RVVP 6*0.75 or 6*1.0 6-core wire.

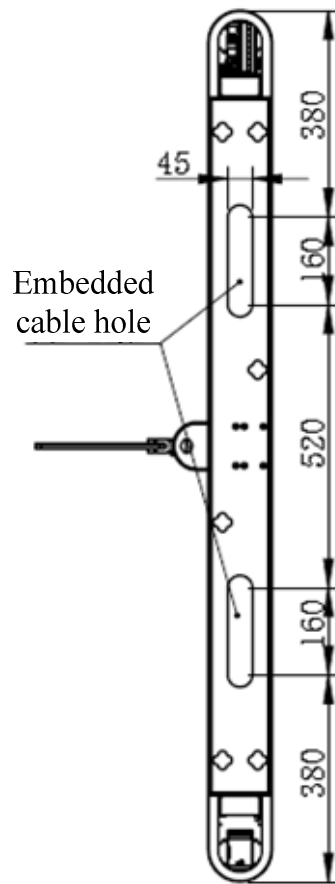


Figure 3-3 Schematic Diagram of Z2358GB-H Pre-Buried Wire

3.3 Internal cabling

- ◆ **When the external total power supply enters the chassis, the front-end circuit breaker must have a leakage protection device.** Bring the external 220V/110V power supply into the chassis, and since 24V uses independent switching power supply, the host is equipped with 24V switching power supply.
- ◆ If the channel equipment is more than two channels, another RVV3*1.0 power cable should be laid between host A and host B.
- ◆ All chassis should ensure good grounding and connect the ground wire.

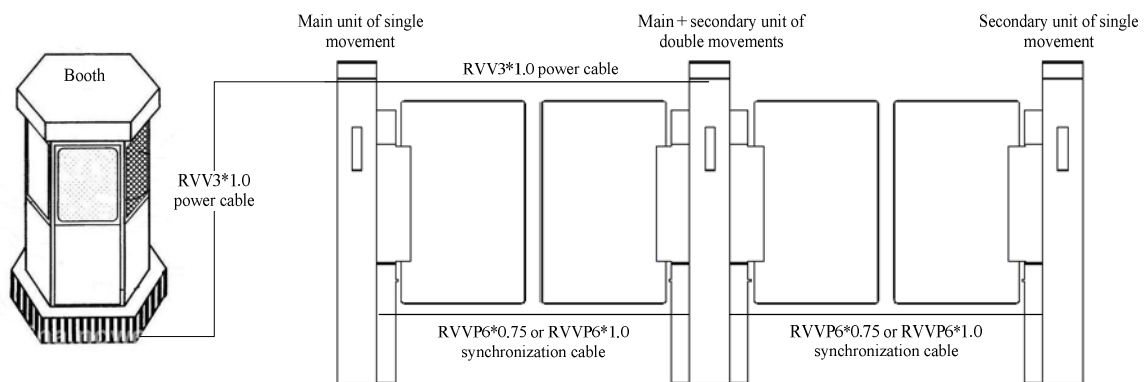


Figure 3-4 Cabling Diagram

Description: the control line for manually controlling the channel gate uses an RVVP6 * 0.5 control cable, and the master machine is connected to the control buttons in the management duty room. (If the sentry box needs to be controlled by a triplex button, each group of channels needs to be equipped with a control cable, and this cable is not needed.)

3.4 Product status inspection

The user must check the gate status after correctly installing the gate. The specific inspection steps are listed as follows:

- (1) Check if electrical control components are correctly connected. Please refer to the appendix for details.
- (2) Power on the gate system after the inspection of the gate's electrical accessory connection is qualified.
- (3) Conduct a self-check after the swing gate is powered on. The swings on both sides should swing back and forth, and they should stay in the middle and remain closed after the self-check.
- (4) Check if the gate works as the user requires. Please refer to the appendix table for details and adjustments.
- (5) Check if the gratings of each lane work well: check in pairs, block each grating, and the corresponding indicator light on the motherboard - grating receiving board will be on.
- (6) Check the working status of swings of each lane: When the gate is in standby, press the testing button attached for an opening signal. The swings should be opened/closed synchronously and stably, and the gate should be opened or completely closed completely. If the swings run abnormally, please ask for technical support.

□ *Note:*

The product has undergone a series of inspections and tests before delivery, but it is necessary to check the gate status after the gate is installed correctly on site to ensure the system's smooth operation. The inspection operations should be confirmed by a professional before execution, and the gate parameters can't be modified without the manufacturer's permission.

3.5 Product function configuration

After the checking of the gate status, check the gate functions, including the power-on self-check function test, normal passing test, entrance and exit passing mode configuration, alarm function configuration, anti-pinch function configuration and emergency escape function configuration.

3.6 Power-on self-check function test

Conduct a self-check after the swing gate is powered on. The swings on both sides should swing back and forth. After stopping swinging, the swings should automatically remain closed.

3.7 Normal passing test

When the gate is in standby, the swings should be closed. When pedestrians press the opening button attached for a legal opening signal, the swings should be opened, and pedestrians can pass within the allowed passing time (usually 8 seconds). During passing, the gate shouldn't give an alarm. After passing, the swings should be closed.

3.8 Alarm function configuration of the gate

During configuration, in case of the gate's power-on self-check, as well as illegal passing, reverse passing or following passing of pedestrians, the buzzer and voice should give an alarm prompt.

3.9 Anti-pinch function configuration of the gate

The gate's anti-pinch function for doors' obstruction: provide a legal opening signal, and the swings should stop working when they're blocked by hand in the opening or closing process.

Infrared anti-pinch function of the gate: if the infrared ray in the anti-pinch area is blocked when the swings work, the swings should stop working. After pedestrians/obstacles leave the anti-pinch area, the swings should continue to work.

Chapter 4 Product Cleaning and Maintenance

It is recommended to clean the swing gate once a week, and daily cleaning and maintenance should be carried out as follows:

- (1) Laymen shouldn't open the chassis for configuration, maintenance and product services;
- (2) It is forbidden to wipe the gate's surface with hard objects, or the gate may be scratched and ugly;
- (3) It is forbidden to rinse the gate, or its electrical accessories are prone to short circuit, and the gate can't work well;
- (4) It is forbidden to clean the chassis' stainless steel surface with strongly basic or acidic solvents;
- (5) It is necessary to regularly check the connection of each interface of the motor mechanism to prevent connection fasteners from being loose;
- (6) It is necessary to regularly lubricate the motor mechanism's components;
- (7) It is necessary to regularly check the connection between sockets and wires to ensure the stable connection of wires;
- (8) It is necessary to regularly check the grounding connection of electrical system to prevent electric leakage;
- (9) After the inspection and maintenance, please power on the gate system and close the repair door.

Chapter 5 Common Troubleshooting

5.1 Common faults

As the swing gate is an integrated product of machinery and electronics, it is necessary to appropriately upkeep and maintain the gate in use. Effective upkeep and maintenance can prolong its service life and ensure the user's use quality.

Maintenance parts	Potential faults	Checking method	Solutions
Motor, coupling	1. One of the swings is opened, while the other one keeps still 2. When being powered on, the door can be pushed casually	1. Check if the motor fails. You can connect the master controller to the motor separately. If the motor can work when being powered on, it doesn't fail. 2. Check if the coupling slips, or it may fail to lock the motor mechanism	Replace the motor Replace the coupling
Grating board/photoelectric switch	Abnormal gate logic	Check if the grating board/photoelectric switch is damaged or misaligned; check if the relevant wires are	Align or replace the grating board or photoelectric switch

		inserted correctly after the grating board is replaced.	
Access control	The card reader doesn't read the card, or it reads the card but the gate doesn't open	If the connection between the card reader and gate is loose, if the card is out of service, or if the card reader fails.	Check the circuit and card reader, detect the card

5.2 Fault description

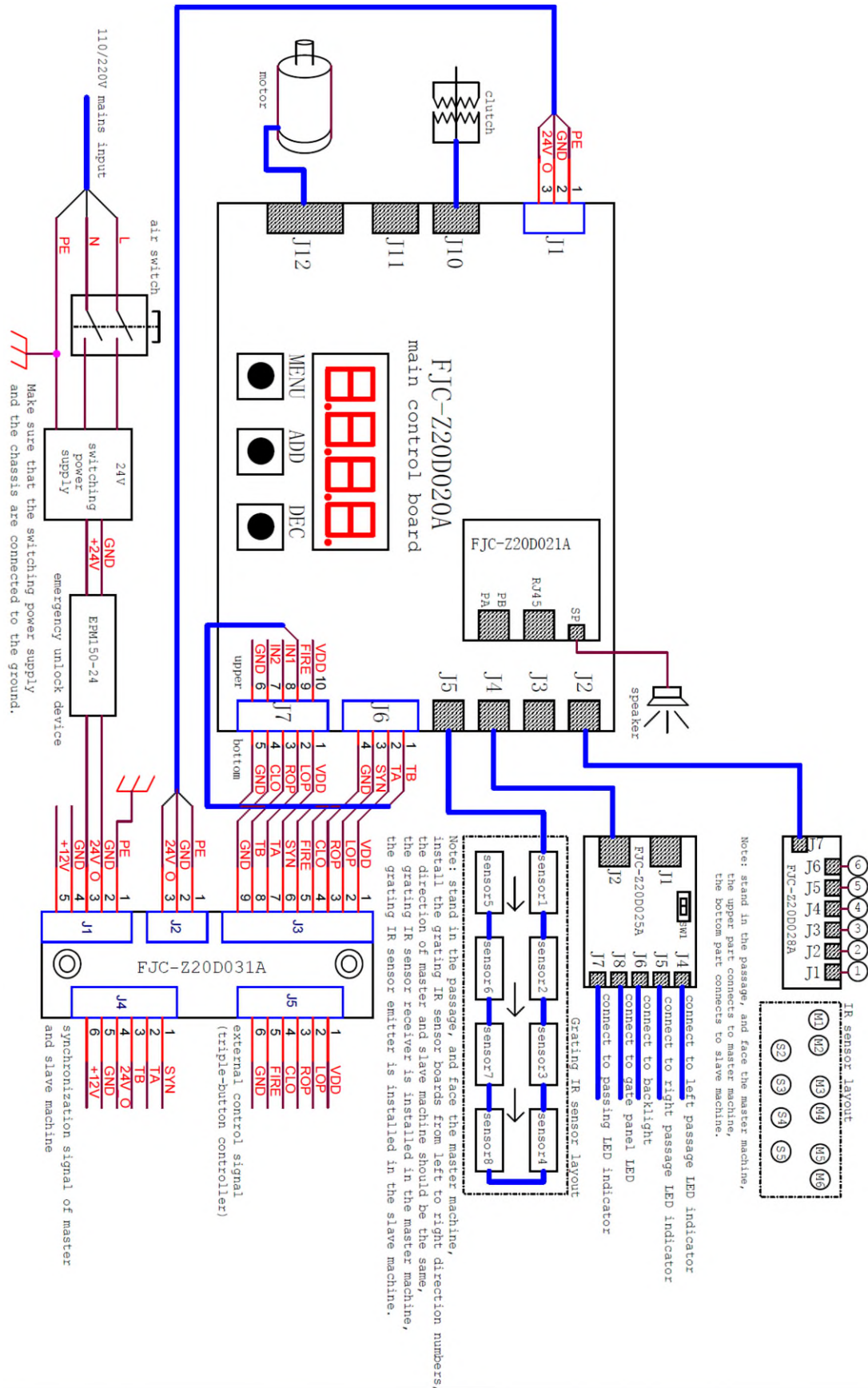
In case of any device error, the motherboard will buzz to report it. Please refer to Appendix 3 for error information and solutions.

Chapter 6 Maintenance and Precautions

Although the gate has undergone a series of inspections before delivery to ensure its safe and smooth operation, but the users must correctly install and configure the delivered gate in strict accordance with the operation instruction before use. The manufacturer may refuse to be liable for any consequences caused by incorrect operation and man-made damage. Before the product is installed, please pay attention to the following safety precautions:

- ◆ Technicians without an electrician certificate or undergoing electrical training are not allowed to be engaged in strong current and other electrical connection operations.
- ◆ It is forbidden to install fixed gates without a suitable installation foundation.
- ◆ During maintenance, please disconnect the system power supplies (e.g. access control, visitor system) other than the gate.
- ◆ There must be a leakage protector or other current control operating device.
- ◆ It is necessary to connect the gate's wires according to the wiring diagram in the appendix.
- ◆ Please ensure that the gate function test is passed before the gate is put into use.
- ◆ Please check the fastening bolts during maintenance.
- ◆ After the gate is powered on, please don't touch charged parts, such as switch power supply, motor reducer, resistor and lighting fixtures, because the charged parts' high temperature may burn your skin.
- ◆ Heavy objects can't squeeze and press the gate in case of unnecessary damage.
- ◆ It is recommended to separate the power interfaces of the gate from those of other equipment, or the product is prone to faults due to mutual interference of the equipment.
- ◆ Without explosion-proof devices, the equipment is not allowed to be used in flammable and explosive environments.

Appendix 1: Wiring Diagram for the FJG-S2358GB-H



Appendix 2: Parameter Setting

(1) Description of step setting

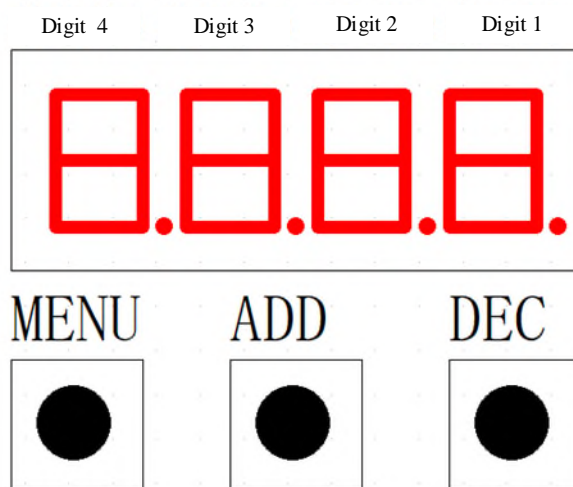


Figure 3

- ① Press and hold "MENU" for two seconds to enter the menu;
- ② Short press "MENU" to select the menu item;
- ③ Short press "ADD" to increase parameters, while short press "DEC" to decrease parameters;
- ④ Press and hold "MENU" for two seconds to quit the menu and save the parameters.

(2) Parameter description

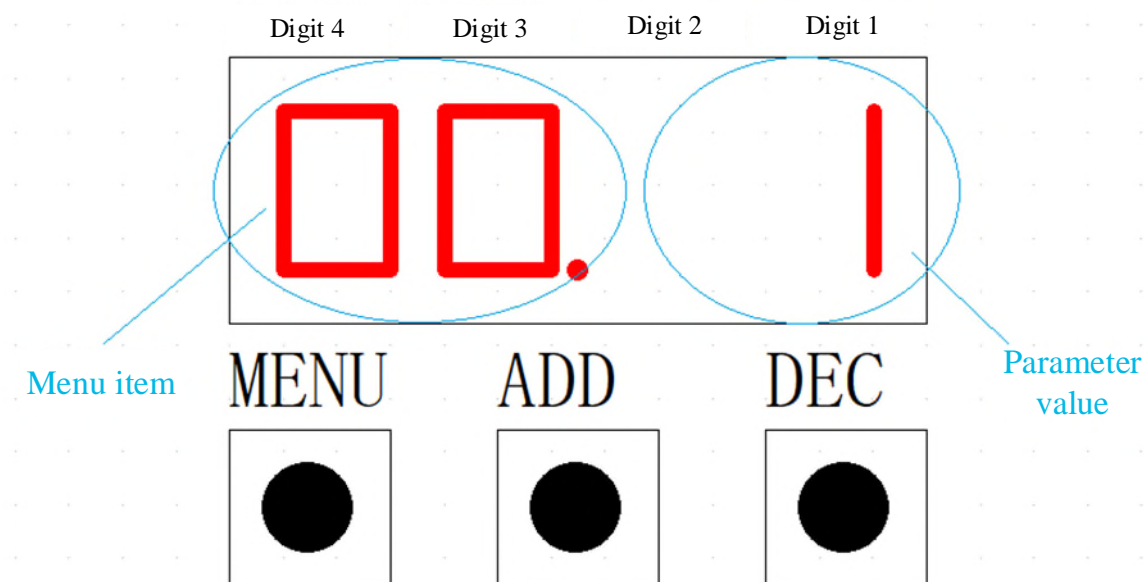


Figure 4

Menu item	Parameter value
P00- Display setting	0- Default display 1- Pulse display 2- Version display 3- Detection display Note: after the setting mode is quit, the content is displayed digitally.
P01- Operating mode	0- Normal operation 1- Aging test
P02- Master and slave machines	0- Single machine 1- Master machine 2- Slave machine
P03- Access mode	0- Left controlled, right controlled 1- Left free, right controlled 2- Left controlled, right free 3- Left free, right free 4- Left controlled, right prohibited 5- Left prohibited, right controlled 6- Left free, right prohibited 7- Left prohibited, right free 8- Left prohibited, right prohibited Note: the gate's inside faces the master machine, with the left hand side as left and the right hand side as right.
P04- Opening count (memory)	0- Not count 1- Count
P05- Entrance and exit settings	0- Left in and right out 1- Left out and right in Note: the gate's inside faces the master machine, with the left hand side as left and the right hand side as right.
P06- Effective passing time	3-60s
P07- Opening or closing speed level	0-10 (slow>>>fast). See Parameter Description (4) for recommended speed.
P08- Deceleration stroke setting	0-50, increase appropriately at the time of being in place and overshooting.
P09- Brake speed setting	0-50, reduce appropriately when the gate plates are heavy.
P10- Forward in-place setting	0-10 (angle)
P11- Backward in-place setting	0-10 (angle)
P12- Zero adjustment	0- Reserve, 1 - Adjust, only for the swing gate. After the gate is completely closed, adjust its position, quit the menu and save the settings.
P13- Opposite delayed card swiping time	0-10s
P14- Voice type	0- Chinese

Menu item	Parameter value
	1- English 2- Mute
P15- Entrance voice selection	0-DING DONG 1- Welcome 2-Welcome home
P16- Exit voice selection	0-DING DONG 1- Have a safe journey 2- Bon voyage
P17- Protection action	0- OFF 1- ON Note: when the swing gate protection stops, the blocking swing protection can be selected as "OFF/ON".
P18- Completely closed clutch locking setting	0- Loose 1- Lock
P19- If the card swiping is effective within the gate	0- Effective 1- Non-effective
P20- Opening entrance & exit passing mode	0-- Disable 1- Enable
P21- Closing position selection	0- Middle infrared closing 1- Rear infrared closing
P22- Reverse passing closing setting	0-- Open 1- Closed
P23- Device No.	1-99
P24- If there is a clutch	0- NO 1- YES

Table 1 Parameter Items of Main Control Board

(3) Display setting description

Set the display by pressing P00. After the setting mode is quit, the content is displayed digitally.

(1) Default display

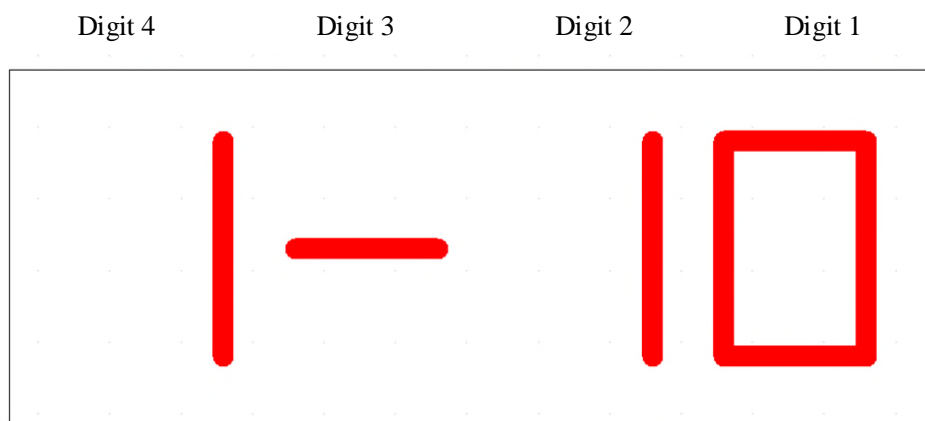


Figure 5

	Description
Digit 1	Passing mode
Digit 2	Master and slave machines
Digit 3	Keep flashing, indicating operation
Digit 4	Gate type 1- Z2358GB-H 2- Half-height gate 3- Z1116B-H 4- Z2318-H/Z2318L-H/Z2528-H

Table 2

(2) Pulse display

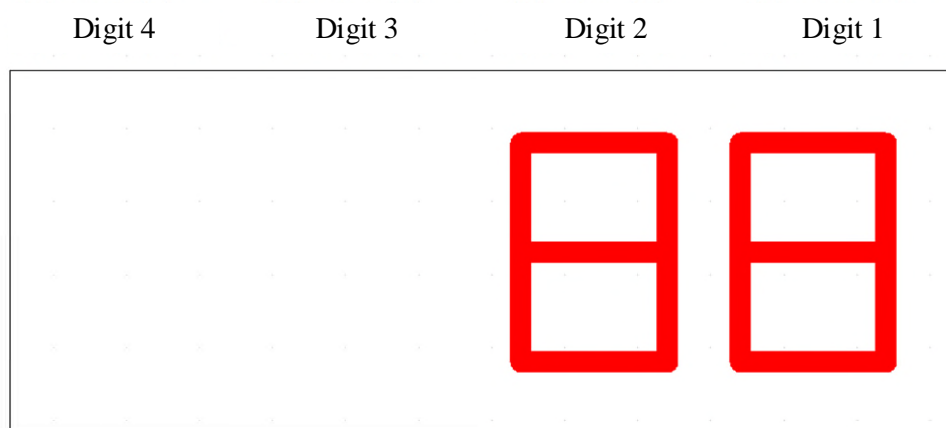


Figure 6 indicates the motor's current position

(3) Version display

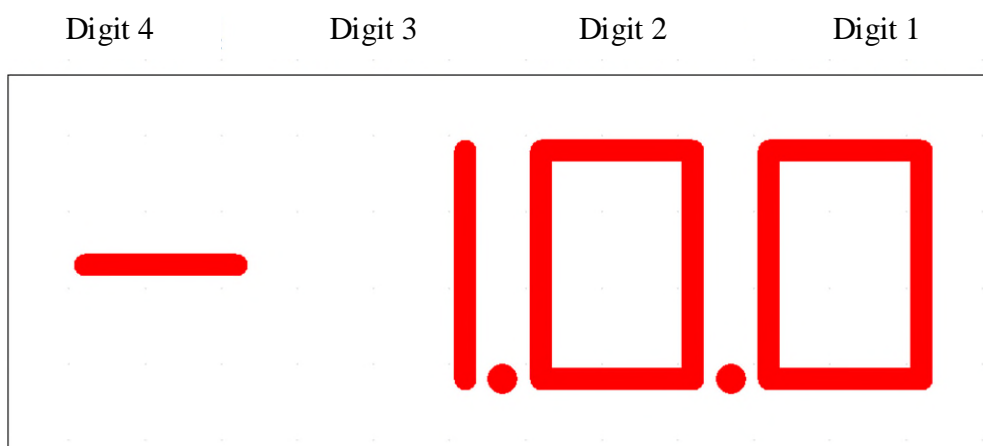


Figure 7 indicates that the current program version is V1.0.0

(4) Detection display

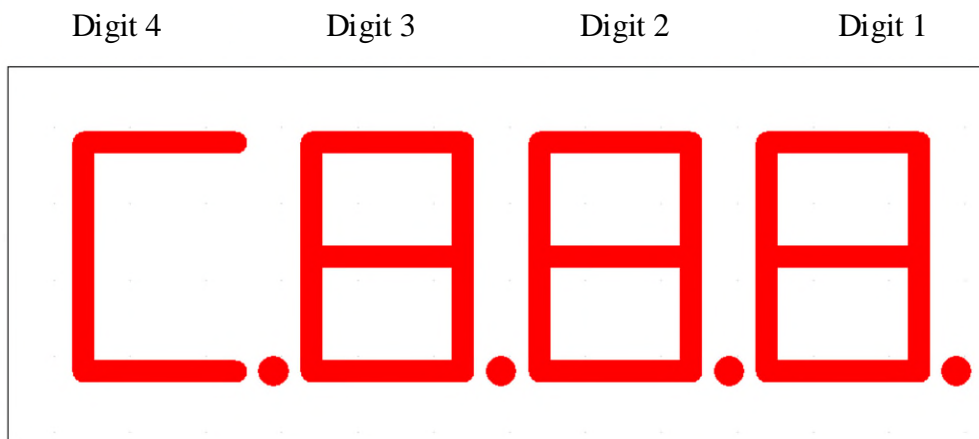


Figure 8

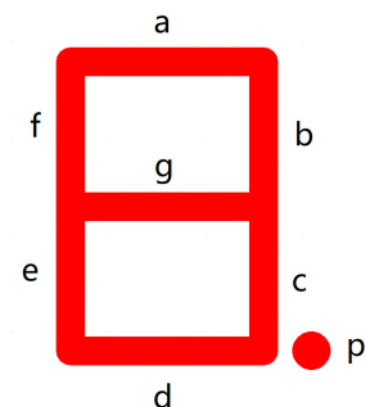


Figure 9

	Digital segment	Description
Digit 1	a	OPL input
	b	OPR input
	c	CLO input
	d	FIRE input
	e	Reserved signal (IN1) input
	f	Reserved signal (IN2) input
	g	Reserved
	p	Reserved
Digit 2	a	Infrared Signal 1 input/Grating Board 1 signal input
	b	Infrared Signal 2 input/Grating Board 2 signal input
	c	Infrared Signal 3 input/Grating Board 3 signal input

	Digital segment	Description
	d	Infrared Signal 4 input/Grating Board 4 signal input
	e	Infrared Signal 5 input/Grating Board 5 signal input
	f	Infrared Signal 6 input/Grating Board 6 signal input
	g	Grating Board 7 signal input
	p	Grating Board 8 signal input
Digit 3	a	Reserved
	b	Reserved
	c	Reserved
	d	Reserved
	e	Motor HallA signal input
	f	Motor HallB signal input
	g	Motor HallC signal input
	p	Reserved
Digit 4		Display "C."

Table 3

(4) Recommended speed for opening or closing configuration

Model	Lane width (mm)	Gate material	Recommended opening or closing speed level
Z2689/Z2358GB-H	600	Acrylic plate\tempered glass	9\9
	700	Acrylic plate\tempered glass	7\7
	800	Acrylic plate\tempered glass	6\5
	900	Acrylic plate\tempered glass	5\3
	1,000	Acrylic plate	2
	1,100 and above	Acrylic plate	0
	1,000	Acrylic plate\stainless steel	3\3
	1,100	Acrylic plate\stainless steel	2\2
	1,200	Acrylic plate\stainless steel	0\0

Appendix 3: Machine Function Detection

(1) Self-check function

After being powered on, the gate conducts a self-check. In case of any error, the motherboard will buzz. See Table 4 for error information and solutions. The system self-check must be passed before the next operation.

Error code	Error description	Solution
F-01	Memory chip fault	Replace the main control board
F-02	Input power overvoltage (>26V)	Check the input power voltage of the motherboard
F-03	+24V undervoltage/power outage	Check the input power voltage of the motherboard without power outage
F-04	+12V undervoltage/short circuit	Check if there is a short circuit in the input power voltage or external power supply of the motherboard
F-05	Motor Hall sensor fault	Check if the motor wires are well-connected
F-06	Infrared sensor fault	Check if the infrared ray is blocked
F-07	Motor stuck/drive fault	Check if the structure is stuck
F-08	Overcurrent detection fault	Slow down opening or closing/replace the main control board
F-09	Communication fault of master and slave machines	Check if parameters of the master and slave machine are set properly or if the communication wire is connected well.

Table 4 Error Code Description Table

(2) Digital tube detection

When being powered on, digital tubes of the motherboard will be on and off for three times. Observe if the digital tubes are intact.

(3) LED indicator detection

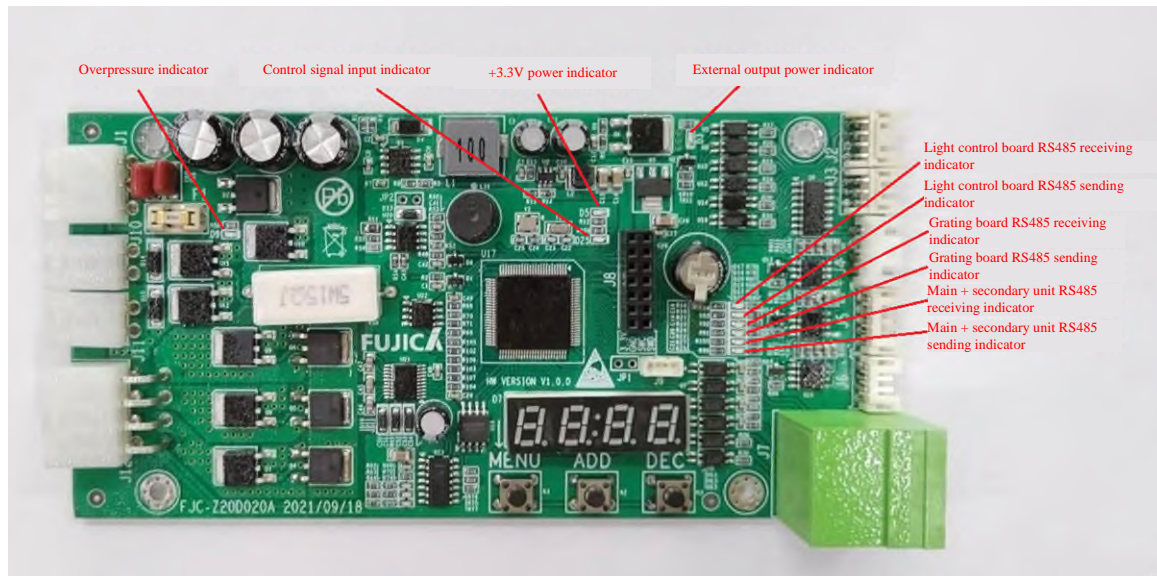


Figure 10

LED position	Description
D3	External output power (+12V) indicator light
D5	+3.3V power indicator light
D9	Overpressure relief indicator light. (Shot connect Test Point JP2 quickly and observe if D9 is on)
D16	Light control board RS485 sending indicator light
D17	Light control board RS485 receiving indicator light
D19	Grating board RS485 sending indicator light
D20	Grating board RS485 receiving indicator light
D22	Master and slave machines RS485 sending indicator light
D23	Master and slave machines RS485 receiving indicator light
D25	Control signal input indicator light

Table 5 LED Indicator Table

(4) Control signal detection

Operation	Reflection	Remarks
Completely closed, and provide the "LOP" port with high-level pulse signal	Gate plates are opened	Do after the lane gate self-check is passed, and it is not in setting mode.
Completely closed, and provide the "ROP" port with high-level pulse signal	Gate plates are opened	
Completely open, and provide the "CLO" port with high-level pulse signal	Gate plates close	

Provide the "FIRE" port with high-level pulse signal when a fire alarm is not given	Gate plates are opened towards the exit direction	
Provide the "FIRE" port with high-level pulse signal when a fire alarm is given	Gate plates close	

Table 6 Control Signal Detection Operation Table

(5) Indicator board detection

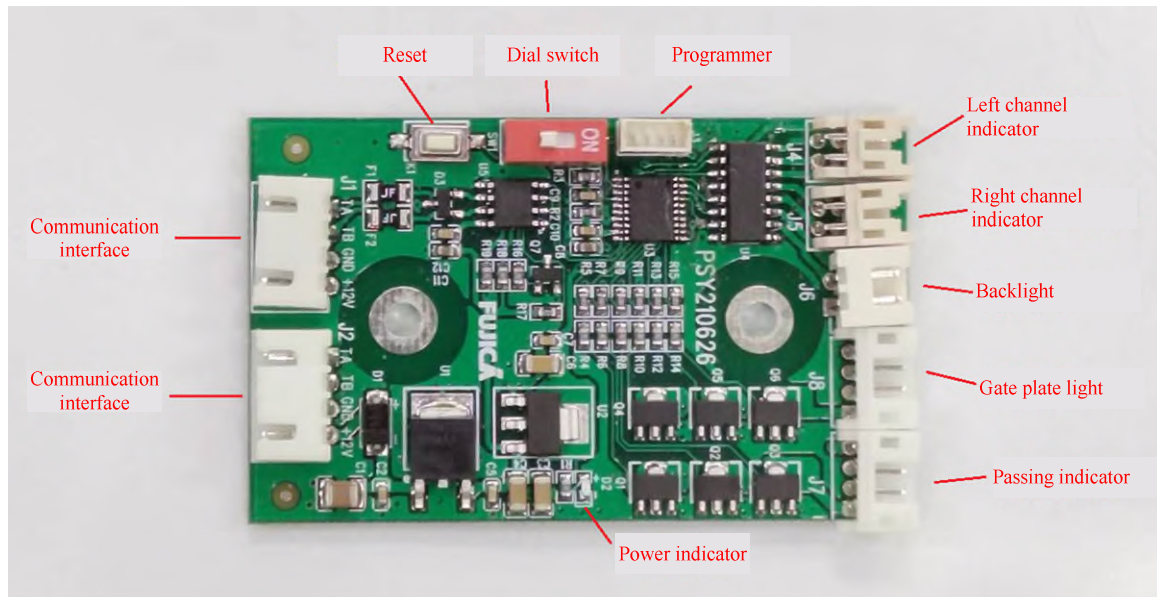


Figure 11

The indicator boards are all connected to the interfaces of the lighting control board for power-on testing. In the modes of power-on self-check, parameter setting and entrance & exit prohibited, all indicator lights are red, and other items should be detected according to Table 7.

Indicator board	Condition	Indicator light color
Lane indicator board	In "prohibited" mode	Red
	Not in "prohibited" mode, no one is passing (completely closed)	White
	Normal passing	Green
	Illegal passing	Red
Passing indicator board	No one is passing (completely closed)	White
	Normal passing	Green
	Illegal passing	Red
Gate plate light	No one is passing (completely closed)	White
	Normal passing	Green
	Illegal passing	Red

Table 7 Indicator Light Control Table

(6) Voice detection

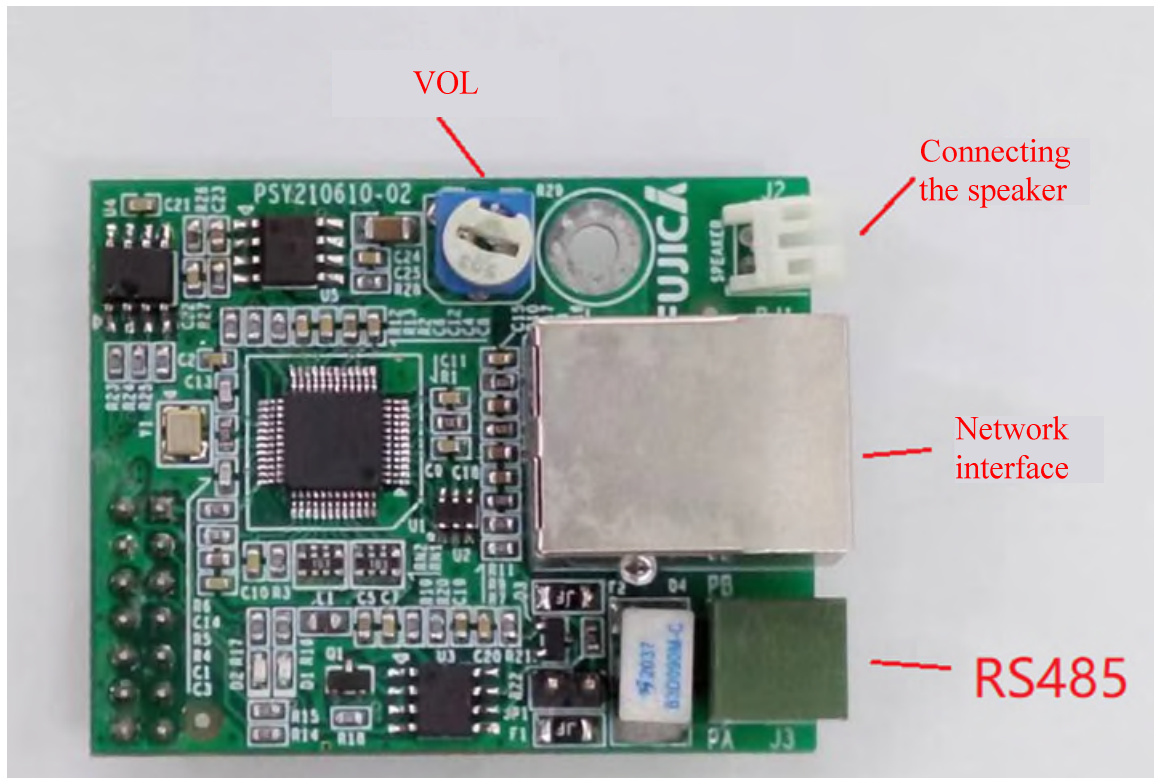


Figure 12

- ① Swipe the card or break in to test if the speaker sounds;
- ② Turn the adjustable resistor on figure 11 to test if there is any change in volume.
- (7) Detection of pedestrians going through the gate
Swipe the card or pass freely to check if the gate is closed immediately after the pedestrians pass.
- (8) Anti-smashing protection detection
Simulate the fact that infrared ray is blocked in the protection area at the time of opening or closing to check if the gate immediately stops working.
- (9) Clutch locking detection
When gate plates are completely closed, check if pushing gate plates locks the clutch.
- (10) Emergency unlock detection
Power off to check if the gate plates are opened towards the exit direction.