



Swing turnstile manual book OT-TORABA1P / OT-TORABA2P



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1.product description

Series intelligent swing turnstile adopts modern and simple style; the chassis is made of 304 stainless steel, which is durable. The movement part adopts DC brushless motor and brushless servo control technology to realize fast, precise and stable door swing rotation, low power consumption, energy saving and environmental protection.

The OT-TORABA1P/OT-TORABA2P movement and its control system have passed 10 million life time. The swing turnstile can integrate access control, face, QR code scanning and other systems to more efficiently achieve standardized management of pedestrian passages.

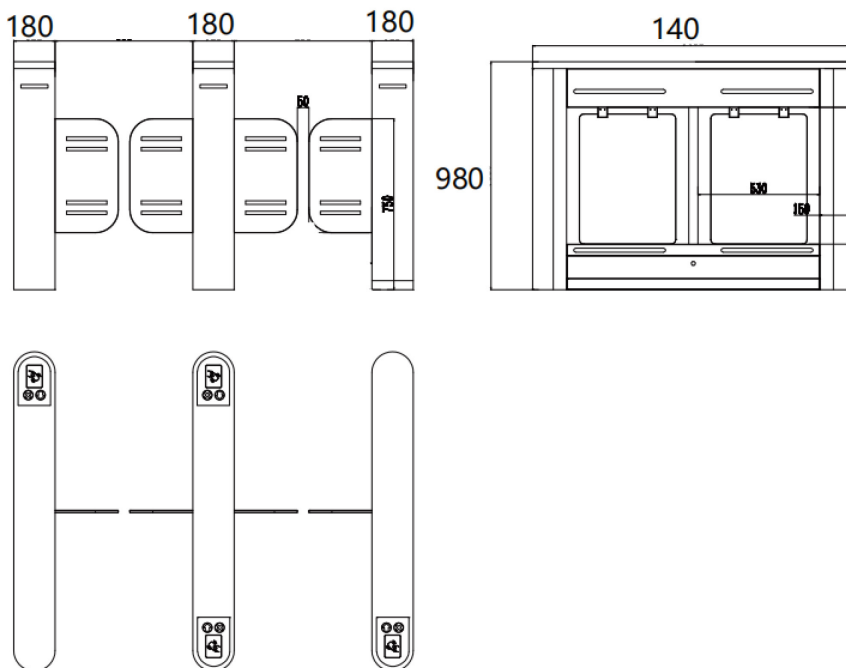
Feature

- ✧ Using 6 pairs of infrared detectors, it can detect the passing position of pedestrians in the channel, and realize anti-tailing + anti-reverse traffic, anti-pinch and other functions.
- ✧ The width of the aisle can be widened, which is convenient for people with luggage and wheelchairs to pass.
- ✧ Configure dry contact signal input interface, RS232 interface, RS485 / TCP/IP interface (customizable), compatible with various access control controllers.

Applications

Suitable for commercial office buildings, schools, subways, airports, customs, exhibition halls, government buildings, senior clubs and other indoor occasions.

2.Product Size (unit:mm)



3.Product parameters

Box material	304 stainless steel
surface treatment	Brushed / Snowflake
Door material	Acrylic/stainless steel swing door (optional)
MCBF	10 million
Normal pass	30 ~ 45 persons/minute (Depends on pedestrian traffic)
emergency pass	60 persons/minute (Depends on pedestrian traffic)
Open/close door speed	0.5-2s
Open/close door angle	±90° (50°~90°set)
Operating temperature	30°C~70°C
working voltage	100-240VAC, 50/60Hz
Controller working voltage	Controller input power working range 20V-30VDC
rated power	60W (Switching power supply requires 24V/5A)
input/output signal	11 input signals (active high), 8 output signals (active low)
Communication Interface	RS232 ; RS485 / TCP/IP (customizable)
motor	DC brushless motor
Targeting	Precise positioning with linear Hall (4096 pulses per motor revolution, 62760 pulses for door panel 90° stroke)
Motor control method	Adopt high-performance ARM chip (servo control algorithm of position loop + speed loop + current loop)

4.Product features

basic feature

- **pass mode switching function:** Nine pass modes can be set independently of each other in the direction of entry and exit.
- **Automatic homing function:** The turnstile receives a legal door opening signal in the standby state, and the turnstile opens the door; the door swing will automatically return to the blocking zero position under the following conditions:
 - (1) Within the allowable passage time, it is detected that the person has passed through the passage in the designated direction;
 - (2) When the allowable passage time is exceeded, it is detected that there is no person passing through the passage.
- **Automatic reset function:** The door swing is at the non-blocking zero position due to human interference, and the door swing automatically returns to the blocking zero position after the human intervention is cancelled.
- **Auto-adjustment function:** When the turnstile has mechanical wear and needs to be re-adjusted, the control board can be used for automatic adjustment, which is accurate and convenient.

- **Pass request memory function:** When more than 2 legal pass signals are given at the same time (including the same direction and reverse direction), the system will memorize all pass requests and complete each pass action in turn. The number of memories can be up to 255.
- **Passage indication function:**
 - (1) Direction of passage indication: Installed on the top of the chassis to indicate the legal passage direction of the turnstile. When the indicator light is green, this direction is the traffic direction, otherwise the indicator light is red.
 - (2) Channel status indication: Installed on the outside of the chassis, indicating whether the gate can open the door for passage after receiving the legal door opening signal. When the indicator light is green, this direction can pass normally after receiving the legal door opening signal.
- **Compatibility:** Equipped with dry contact signal input interface, RS232 interface, RS485 / TCP/IP interface (customized), compatible with various access control controllers.

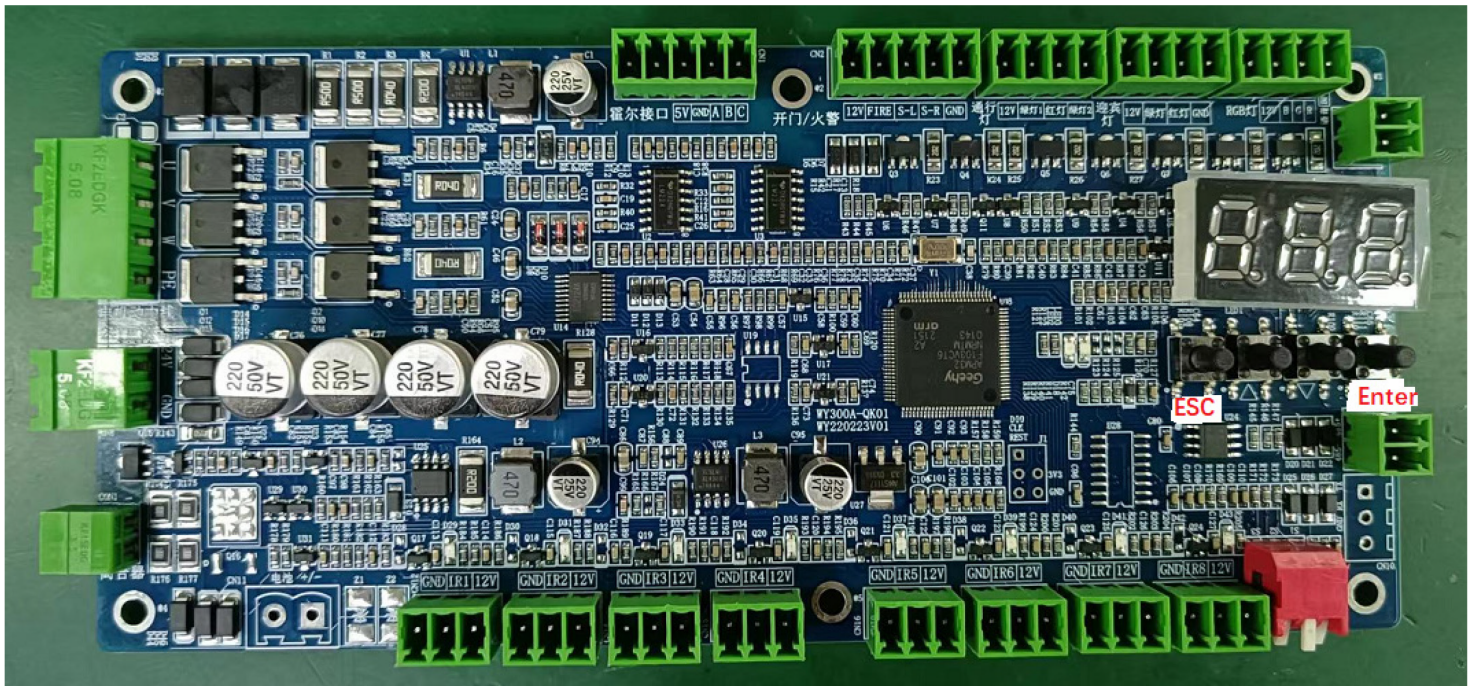
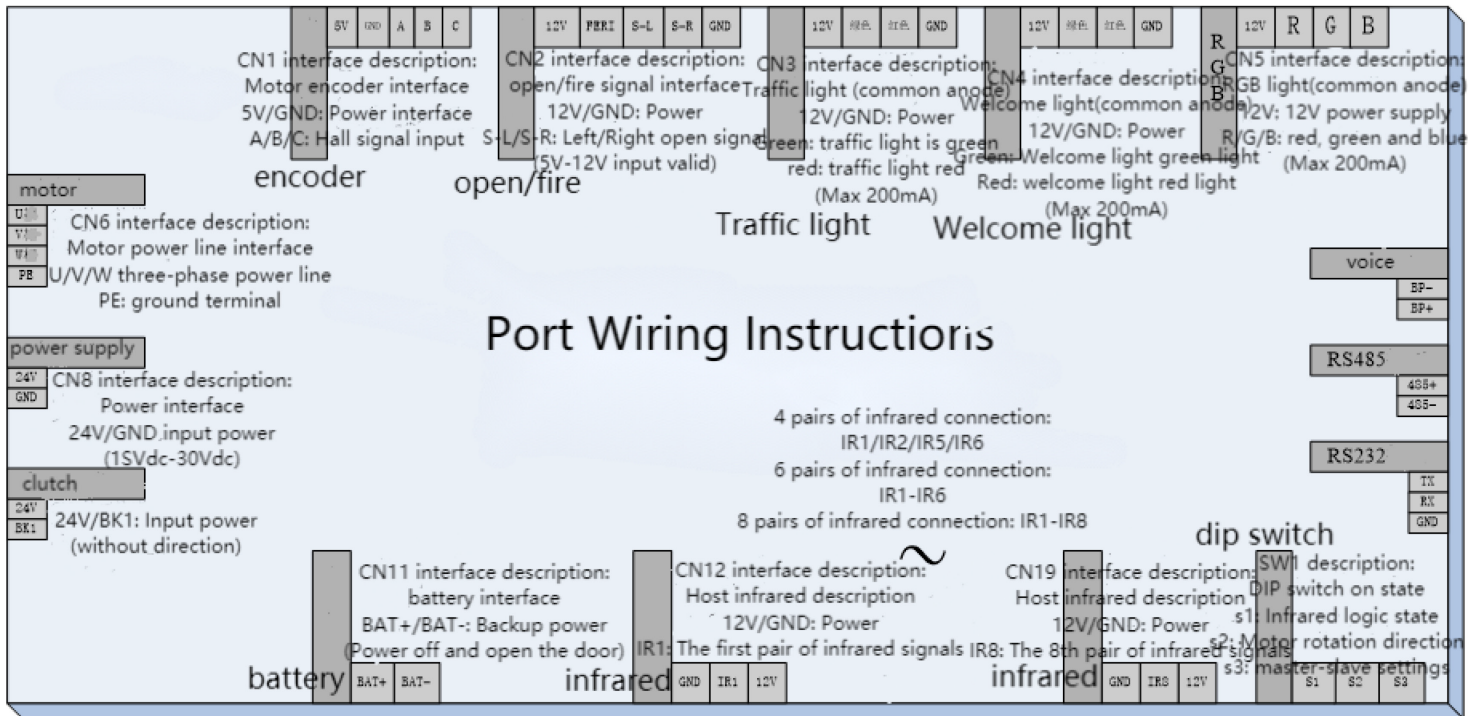
☒ Security design

- **Power-on self-check function:** After the power is turned on, the system performs routine self-check and alarm prompts, intelligently detects key hardware and functions, and finds hidden dangers in the shortest time!
- **Power off open door function:** When the power is off, the system will automatically unlock the door, which can be manually pushed and swing into an open state, which is convenient for crowd evacuation and meets fire protection requirements.
- **Anti-pinch function:**
 - (1) Infrared anti-pinch: Install multiple pairs of infrared detectors in the channel. Once a person or object is detected in the channel, the door stops automatically; the door will not continue to move until the person or object leaves the channel.
 - (2) Mechanical anti-pinch: the door will automatically stop when it encounters obstacles during its movement; the impact force during the movement of the door is within a safe range.
- **Emergency escape function:** Equipped with an emergency escape control device, so that the system automatically opens the door to facilitate crowd evacuation.
- **Intelligent linkage alarm:** illegal pass events can be linked with other alarm monitoring equipment: such as access control system, video management system

● Lane width

- The channel width can be customized to other wider dimensions. When the channel length is unchanged, the channel width is 60 100cm; when the channel length changes, the maximum channel width can be 120cm.

1.2 Single machine wiring port diagram



1.3 DIP switch setting

dial	definition	ON	OFF
S3	Infrared logic state	Infrared logic mode	single machine mode
S2	Motor rotation direction	forward rotation	reverse rotation
S1	Master and slave settings	Master	slave

2. Terminal Interface Definition

2.1 Power and motor terminal interface

Encoder Interface Definition	Note
24V	Controller main power input,
GND	
U	Motor drive power line
V	
W	
PE	Motor shell ground wire

Description: 1. The voltage range is 18Vdc-30Vdc, the acrylic 300/400 door panel is equipped with 24V/5A power supply.

2. Motor drive power line, U/V/W has phase sequence requirements, please connect the corresponding port according to the phase sequence provided by the motor manufacturer; non-manufacturer standard motors, please communicate with the manufacturer before wiring, the phase sequence is reversed, it may be It will cause the controller to become hot, and even burn the controller and motor.
3. The ground wire of the motor shell can be reliably connected to the turnstile iron shell through the controller according to the requirements of the national standard.

2.2 Encoder port

Encoder Interface Definition	Note
5V	Encoder interface power supply, the controller supplies power to the encoder, the voltage range is 5V±0.5V
GND	
A	The position signal output by the motor encoder is a sinusoidal signal with a difference of 120 degrees.
B	
C	

- Note: 1. If the controller drives the motor with the factory configuration motor, it can be directly connected to the encoder terminal.
2. If the controller drives the motor is not the factory configuration motor, please contact the manufacturer for wiring diagrams and debugging methods.
 3. For the line sequence of A/B/C encoder, please connect the corresponding port according to the line sequence provided by the motor manufacturer. Wrong connection will cause the control to become hot, and even burn the controller and motor.

2.3 Backup power interface

Definition of battery interface	Note
BAT+	Power off open door power supply, voltage range 15Vdc-24Vdc
BAT-	

Note: 1. The backup power supply can be a battery or a super capacitor board. The voltage range of the battery and the super capacitor board needs to be combined with the voltage range of the power supply.

2.4 Dedicated port for clutch

Definition of clutch interface	Note
24V	24V voltage clutch, pull-in response time is less than 100mS
BK1	

Instructions: 1. The clutch interface is not polarized, connect the clutch cable directly to 24V and BK1.

2.5 Infrared power interface

Definition of infrared input interface	Note
12V	12V is the positive pole of the infrared power supply, the output power range is $12V \pm 1V$
IR1~IR8	Infrared signal input pin
GND	GND is the negative pole of the infrared power supply,

Note: 1. The infrared receiver must be connected to the main controller, and the wiring should be performed in the order of receiving infrared wiring.

2. supports PNP type infrared input (NPN does not currently support).

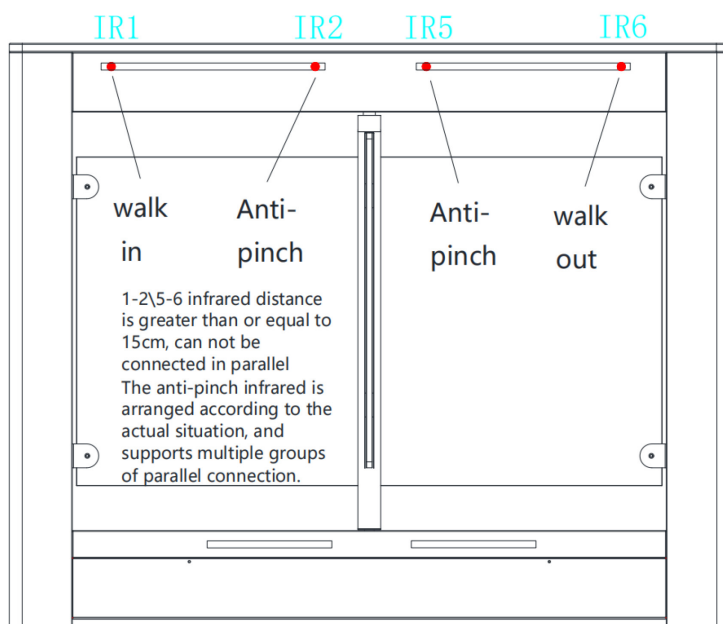
3. supports 4 pairs, 6 pairs, and 8 pairs of infrared input, see the figure below for details.

A. 4 pairs of infrared input, respectively connected to IR1/IR2 IR5/IR6, of which IR1 and IR6 are pass in and out infrared, IR2 and IR5 are anti-pinch infrared.

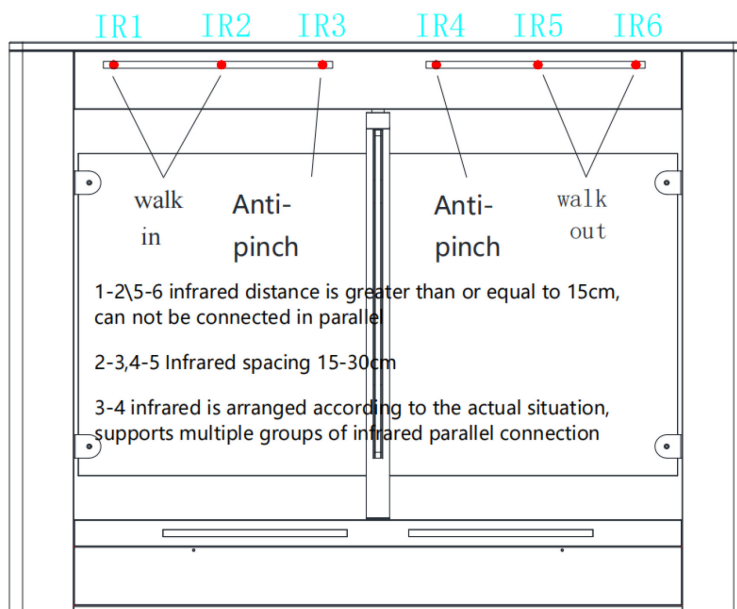
B. 6 pairs of infrared input, respectively connected to IR1/IR2/IR3 and IR4/IR5/IR6, of which IR1/IR2 and IR5/IR6 are pass in and out infrared, IR3 and IR4 are anti-pinch infrared.

C. 8 pairs of infrared inputs, respectively connected to IR1/IR2/IR3/IR7 and IR4/IR5/IR6/IR8, of which IR1/IR2 and IR5/IR6 are pass in and out infrared, and IR3/IR7 and IR4/IR8 are anti-pinch infrared.

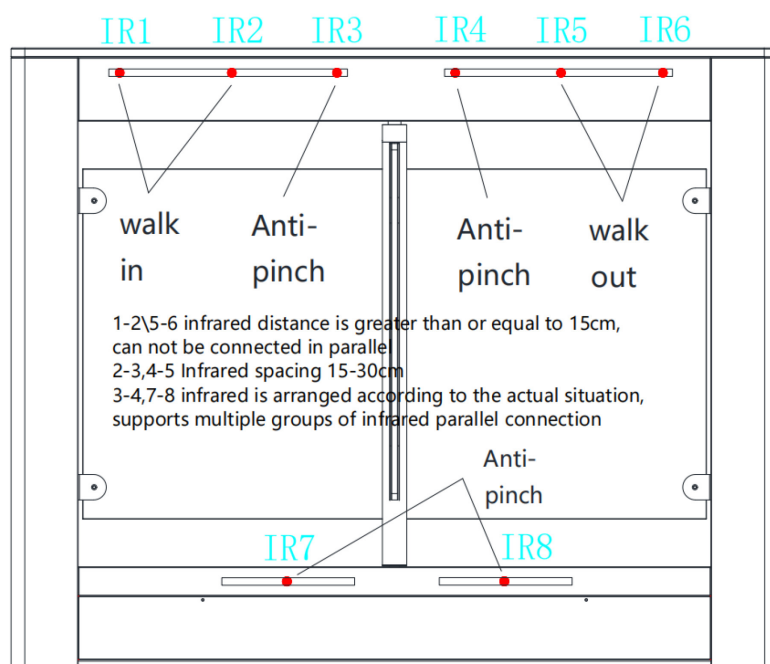
4 pairs of infrared installation positions



6 pairs of infrared installation positions



8 pairs of infrared installation positions



Definition of infrared emission interface	Note
12V	12V is the positive pole of the infrared power supply, the output power range is 12V±1V
IR1~IR8	No such signal when transmitting infrared
GND	GND is the negative pole of the infrared power supply,

Note: 1. The infrared transmitter is connected to the slave controller, and the wiring is carried out according to the order of transmitting infrared wiring.

2.6 RGB light interface

RGB light Interface definition	Note
12V	12V is the positive pole of the power supply for RGB lights, and the output power range is 12V±1V
B	blue light drive port
G	green light drive port
R	red light drive port

Note: 1. The driving capacity of the RGB light port is 200mA. The actual external light strip should not exceed this threshold, otherwise the port will be burned.

2. RGB lamps support common anode strips (common cathode strips cannot be driven).

3. Description of the light status, blue (B) represents the card-to-be-swiped state, green (G) represents the card-swiping active state, red (R) turnstile pass Logic abnormal state(anti-break, trigger, anti-pinch, block infrared, etc.).

2.7 Welcome light interface

Welcome light interface	Note
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definition	
12V	12V is the positive pole of the welcome light power supply, and the output power range is 12V±1V
green	The green/red light is complementary conduction mode, which can be wired according to the actual situation
red	
GND	Welcome light power supply negative pole

Note: 1. The driving capacity of the welcome light port is 200mA. The actual external light strip should not exceed this threshold, otherwise the port will be burned.

2. The welcome light supports common anode light strips (common cathode light strips cannot be driven).

2.8 Traffic light interface

Traffic light interface definition	Note
12V	12V is the positive pole of the traffic light power supply, and the output power range is 12V±1V
green1	The green/red light is complementary conduction mode, which can be wired according to the actual situation
red	
green2	Circular light connection expansion port, this port is ignored for bidirectional pass

Note: 1. The driving capacity of the traffic light port is 200mA. The actual external light strip should not exceed this threshold, otherwise the port will be burned.

2. Traffic lights support common anode strips (common cathode strips cannot be driven).

2.9 Door open/close signal interface

Door open/close signal Interface definition	Note
12V	12V is the positive pole of swipe card machine power supply , and the output power range is 12V±1V
FIRE	Fire alarm input signal, high level is valid, the signal is valid for normally open
S-L	Left door input signal, high level is valid
S-R	Right door input signal, high level is valid
GND	Negative pole of swipe card machine power supply

2.10 Communication port definition

RS485Interface definition	Note
485+	Standard RS485 MODbus communication protocol, please pay attention to the wiring sequence
485-	

RS232Interface definition	Note
TX	Standard RS232 communication protocol, only one external communication device can be connected at most.
RX	
GND	Wiring needs to pay attention to the line sequence, wrong connection may lead to communication failure.

Note: 1.adopts 3.81 plug-in plug-in terminal RS485 and RS232 communication ports. The turnstile equipment

manufacturer can make the cable according to the port definition. The cable definition is as above, please wire it correctly according to the requirements.

2. RS485 is the internal communication, the standard RS485 MODbus communication protocol, the internal communication between the master controller and the slave controller, which cannot be externally connected, otherwise the turnstile system can't work normally.

3. RS232 is the external communication, the standard RS232 communication protocol supports the communication of the manufacturer's host computer, which can connect the host computer to communicate with it.

4. The RS485 and RS232 module circuits have built-in clamping protection circuits. Do not connect the power supply to the communication interface, otherwise the port will be burned out.



3. Display and function description

3.1 Display description

power on show RUN Indicates: controller running status

power on show OFF Indicates: controller failure status

3.2 Key Description

icon	name	note
	increase	Click the Δ key to increase the function code serial number
	decrease	Click ∇ key to decrease the function code serial number

Note: facing the LED display

3.3 Function description

P00 Common Functions

LO : forward open door

CL : close door

RO : reverse open door

SH : look for zero

FH : set zero

LC : clutch lock

UL : clutch unlock

AE : Aging Mode

P01 door choose

- 0、300Acrylic
- 1、300tempered glass
- 2、400Acrylic
- 3、400tempered glass
- 4、500Acrylic
- 5、500tempered glass
- 6、600Acrylic
- 7、600tempered glass

Note 1: The door panel selection needs to be selected according to the motor power and reducer torque

Note 2: 300, 400 acrylic door panels are recommended for linear Hall motors

P02 speed range

default: speed range 2

parameter range: 1、2、3、4、5

P03 pass mode

Default: Two-way swipe mode

- 1. Two-way swiping mode
- 2. A-direction swipe card access/B-direction prohibited access mode
- 3. B-direction swipe card access/A-direction prohibited access mode
- 4. A-direction free passage/B-direction swipe card access mode
- 5. B-direction free passage/A-direction swipe card access mode
- 6. A/B to free passage mode (peak mode)
- 7. A-direction free/B-direction prohibited mode
- 8. B-direction free/A-direction prohibited mode
- 9. Two-way prohibited access mode

P04 Angle range

Default:850 (85degree)

parameter range: 500~900

P05 infrared pairs

Default 6 pairs infrared

parameter range: 4、6、8

P06 Motor Hall angle

Default:0 degree

parameter range: 0-360 degree

P07 Motor pole pairs

Default 4 pairs pole

parameter range: 1-20 pairs

P08 reducer gear ratio

Different specifications of turnstile reduction ratios are inconsistent, please contact the manufacturer before changing this parameter.

Parameter range: 1-100

P09 Manufacturer parameters

1. Gain parameter: Number Default: 50

Parameter range: 20-1000

2. Block current: Default: 20

Parameter range: 0—1000

3. Cumulative number of passes Default None

Parameter range actual cumulative times

Communication protocol

4. 1 Serial communication settings

Serial port type	RS232
baud rate	115200
Check Digit	none
stop bit	1

4. 2 Serial communication protocol format

1	2	3	4	5	6	7	8
ID	CMD	ADDR_H	ADDR_L	DATA_H	DATA_L	CRC_L	CRC_H
target ID	Order keyword s	function code high address	function code low address	data high	data low	CRC Check low bits	CRC Check high bits

4. 3 control commands

commands	Host computer sends data	state
close door	01 06 08 0C 00 01 8A 69	original data return
forward open door	01 06 08 0C 00 02 CA 68	
reverse open door	01 06 08 0C 00 03 0B A8	
emergency stop	01 06 08 0C 00 04 4A 6A	

Cancel emergency stop	01 06 08 0C 00 05 8B AA	
set zero	01 06 08 0C 00 06 CB AB	
turnstile reset	01 06 08 0C 00 07 0A 6B	
motor enable	01 06 08 0C 00 0B 0A 6E	
Motor disabled	01 06 08 0C 00 0C 4B AC	

4. 4 Status query command

command	Host computer sends data	Drive returns data
Read gate status	01 03 07 0C 00 01 45 7D	01 03 02 xx1 xx2 CRC_L CRC_H

Description: The 4th byte (xx1) and the 5th byte (xx2) of the turnstile return data represent the turnstile control state of the drive, where:

The 4th byte (xx1) is the master and the 5th byte (xx2) is the slave.

state	Turnstile state	state	Turnstile state
00	door disabled	09	run block
01	Drive look for zero point	10	Shutdown push
02	forward open door	12	emergency stop
03	reverse open door	13	The master waits for the slave to time out
04	forward close door	14	Axial run block
05	reverse close door	15	Axial Shutdown push
06	forward open door to position	17	Zero point identification
07	reverse open door to position	18	drive alarm

4. 5 Alarm query command

command			Host computer sends data		Drive returns data
Read alarm information (low)			01 03 07 0E 00 01 E4 BD		010302xx2xx1CrcLCrcH
Read alarm information (high)			01 03 07 0F 00 01 B5 7D		010302xx4xx3CrcLCrcH
xx4	xx3	xx2	xx1	alarm number	Fault type
0x00	0x00	0x00	0x01	Er001	HALL error when power on
0x00	0x00	0x00	0x02	Er002	EEPROM error
0x00	0x00	0x00	0x04	Er003	Rotation blocked
0x00	0x00	0x00	0x08	Er004	Position deviation is too large
0x00	0x00	0x00	0x10	Er005	Identify missing phases
0x00	0x00	0x00	0x20	Er006	Identify the reverse
0x00	0x00	0x00	0x40	Er007	Identify Z loss
0x00	0x00	0x00	0x80	Er008	Identify Hall Loss
0x00	0x00	0x01	0x00	Er009	Z loss
0x00	0x00	0x02	0x00	Er010	V-phase current zero calibration error
0x00	0x00	0x04	0x00	Er011	U-phase current zero calibration

					error
0x00	0x00	0x08	0x00	Er012	Under voltage
0x00	0x00	0x10	0x00	Er013	Over voltage
0x00	0x00	0x20	0x00	Er014	over temperature
0x00	0x00	0x40	0x00	Er015	overload
0x00	0x00	0x80	0x00	Er016	Over current
0x00	0x01	0x00	0x00	Er017	UVW error
0x00	0x02	0x00	0x00	Er018	look for zero failed