

PM Door Drive User Manual



Model : BG221-BS21E

Version: A10E.2020

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1. Statement

Before using it please note below:

- Handling with care to decrease risk of damaging equipment.
- Preventing screws, washers and other metal objects from falling into the drive. Or, damage or fire may occur.
- Bare metal of cable end must be wrapped with insulating tape.
- Make sure correct earthing to avoid electric shock !
- Voltage input should accord to the drive's rated voltage level. For high or low voltage, please add a voltage adaptor.
- During running, non-professional should not do the inspection detect in case of personal injury or equipment damage.
- Do not insert or pull out any connectors before power off.
Do not repair and maintain equipment when it's power-on. Otherwise, electric shock may occur.

When scrap the controller, please note:

- Electrolytic capacitor on the PCB may cause fire;
- PCB may produce toxic gases when incinerated;
- Please treat it as industrial waste.

2. Introduce

2.1 Application Scope

Environmental requirements	Application environment	Free from direct sunlight, no dust, corrosive gas, flammable gas, oil mist, etc.
	Altitude	Less than 1000 meters (derating is required above 1000 meters area, because of thin air make the cooling effect of controller be worse, so please cool it.)
	Operation	-20℃ ~ +50℃ (cooling required when temperature above +40)
	Humidity	<90% RH, No condensation, no freezing
	Vibration	<5.9m/s ² (0.6g)
	Storage	-40℃ ~ +70℃
	Protection	IP21 (with the mounting plate); when special needs, require additional protective measures.
	Cooling	Natural air cooling

Caution: Long-term storage will lead to performance degradation on filter electrolytic capacitor. Regular electrical maintenance is required (It's better to power on every six months for more than half an hour in no-load condition)

2.2 Model Definition

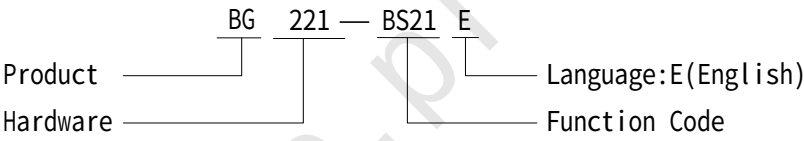


Fig 2-2-1 model definition

2.3 Outer Dimension

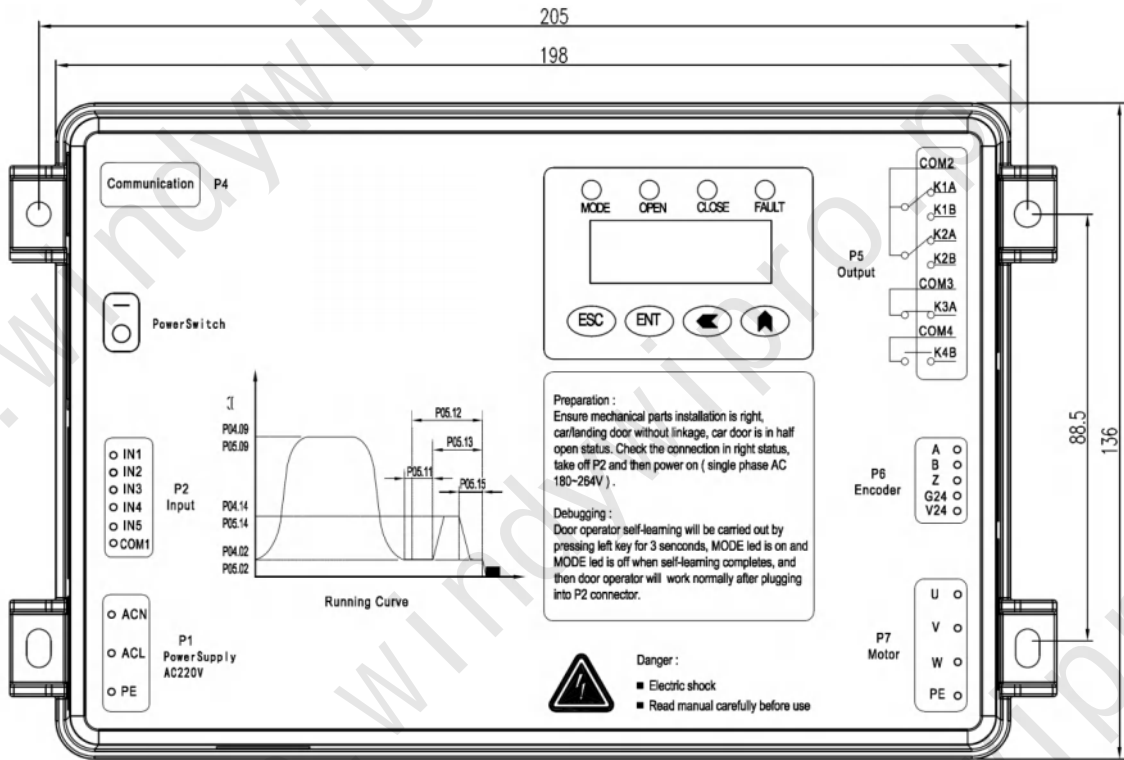
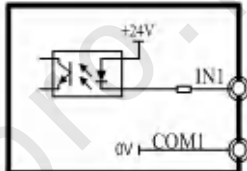


Fig 2-3-1 Dimension

2.4 Technical Specification

Table 1.3.1 main specification

Item		Description
Power Input	Voltage	Single phrase, AC180V ~ 264V, 50 Hz / 60Hz
	Frequency	50 Hz ±5% , 60Hz ±5%
	Fuse	5A/250VAC, time delay type
Status LED	MODE	Four LEDs lying in the debugger panel show the drive status. MODE: When the light is on, it shows that the motor is
	OPEN	

	CLOSE	running.When the light is off, it shows that the motor is not at work. OPEN: When the light is on and “MODE” light is on, it shows that the door operator is running in opening direction. CLOSE: When the light is on and “MODE” light is on, it shows that the door operator is running in closing direction. FAULT: When the light is twinkling, it means Fault happens	
	FAULT		
Self-learning	Motor self-learning , Door-width self-learning		
Fault resetting	Some fault reset automatically, some faults need resetting.		
Operation Mode	DODC Mode, Keypad Debug Mode, Demo Debug Mode		
Communication	CAN,RS485		
Input signal	IN1	Door Open	 Refer to Fig 3-1-1.
	IN2	Door Close	
	IN3	Door slow closing	
	IN4	Inspection	
	IN5	Reserved	
	COM1	COM1	
Output signal	COM2	COM2	K1/K2 Relay output(NC,NO) (DC30V/1A or 125VAC/0.5A) K3 Relay output(NC, Default) (DC30V/5A or 250VAC/10A) K4 Relay output(NO, Default) (DC30V/5A or 250VAC/10A) Refer to Fig 3-1-1.
	K1A	Door fully opened (NC)	
	K1B	Door fully opened (NO)	
	K2A	Door fully closed (NC)	
	K2B	Door fully closed (NO)	
	COM3	COM3	
	K3A	Obstruction Output	
	COM4	COM4	
	K4B	Fault Output	
	Protection Function Over-voltage warning, under-voltage warning, over temperature warning, overload warning, over-torque warning, self-learning fault, EEPROM error, ADC detection error, ADC offset error, belt slip warning, encoder fault , communication error, temperature sensor error, the DC bus voltage detection error, SPM fault, obstruction warning, open door timerout warning, close door timeout warning, over-speed protection.		

3. Debug

3.1 Wiring Illustration

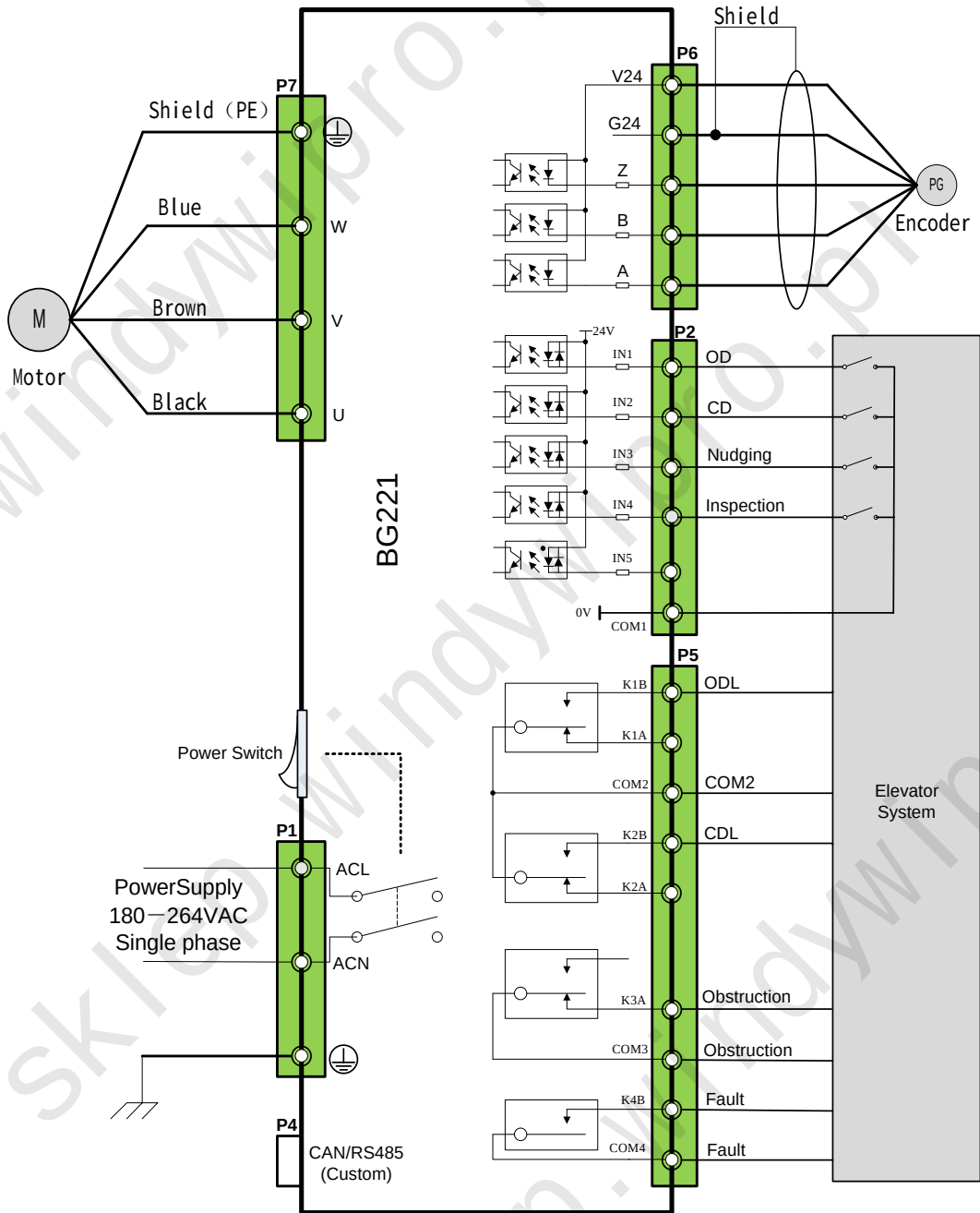


Fig 3-1-1 Wiring illustration

⚠ After completing wire connection, be sure to check whether the wiring is correct.

3.2 Keypad

3.2.1 Outline Drawing

Outline drawing of Keypad is shown as below. It consists of four status LED, a five-digit display, and four keys. Four status LEDs are MODE indicator (run indicator), OPEN indicator, CLOSE indicator, FAULT indicator. 4 keys are left key, up key, ESC key (cancel), ENT key (confirm)

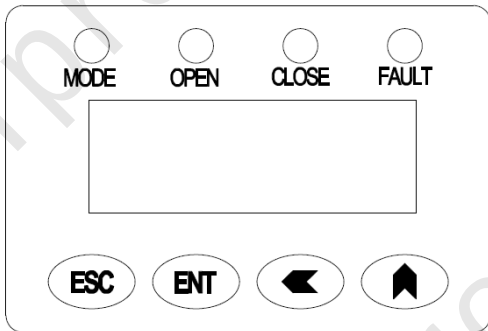


Fig 3-2-1 Outline

The Keypad has function as following:

- Real- timemonitor status parameter (P00 group), browse and change system parameter (group P01-P09).
- Password login and change: After logging in by correct password, the user can browse or change system parameters, history record and change the initial password (0).
- Real-time display of fault information: if sudden fault occurs, the information will be displayed and can be removed by pressing cancel key.
- Under P01.00=1, press ESC and ← to open the door and release them to stop opening .
- Under P01.00=1, Press ESC and ↑ to close the door and release them to stop closing .

3.2.2 Display Function

The Keypad has several display interfaces including software version, status function Code, status parameter, password login, system function Code, system parameter, revision, real-time warning.

	Display	Description
Software version	A 1.00	Software version(P00.13 value)
Statusfunction code	P00.01	Status function Code P00.01
Status Parameter value	PL	Parameter value 0.001

Password Login			Password Login
System Function code			System function Code P01.00
System parameter value			Parameter value 1
Fault or Warning			Fault or warning code
IO Status Interface	Input status		P00.10 indicating five inputs: 1. Opening input 2. Closing input 3. Nudging input 4. Inspection input 5. Reserved If the decimal point in the right bottom illuminesthe signal input are valid(opening signal is valid in this example)
	Output status		P00.11 indicating four outputs: 1. Fully opened(DOL) 2. Fully closed(DCL) 3. Obstruction 4. Fault If the decimal point in the right bottom illuminesthe signal input is valid(closing signal is valid in this example)

3.2.3 Key Function

Functions of keys are as below:

	Left	◆ Function code switch ◆ Shift parameter value bit ◆ Under parameter value interface, press 2s to delete the present bit. ◆ Under P00.00 interface (MODE led is off), press this key 3 seconds, door operator self-learning starts. ◆ Under P00.00 interface(together with P01.00=1), press ESC and this key to manually open the door and release them to stop.
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	UP	◆ Function code switch ◆ Increasing the present parameter bitvalue ◆ Under P00.00 interface(together with P01.00=1), press ESC and this key to manually close the door and release them to stop.
ENT	Confirm	◆ Enter to nextdisplay interface ◆ Confirm the data input
ESC	Cancel	◆ Return to the last display interface ◆ Cancel the data input

3.2.4 Operation illustration

P00.00 is the first display interface after powerup.

1) Status parameter browse

For example, Check the parameter value of status function Code P00.03.

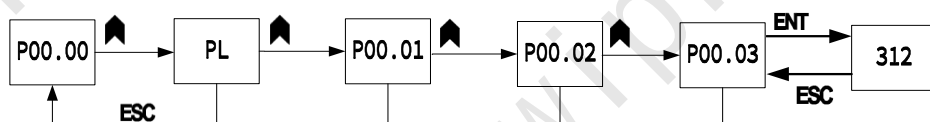


Fig3-2-4-1 Status parameter browse

2) Password Login (default 0)

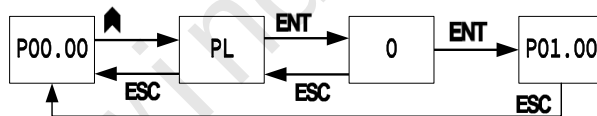


Fig3-2-4-2 Password Login

3) System parameter browse and revision

After password login, select system function Code by pressing "←" or "↑" key, and then press ENT key to check parameter value or revise it. For example, check P01.00 parameter value and change it to 1:

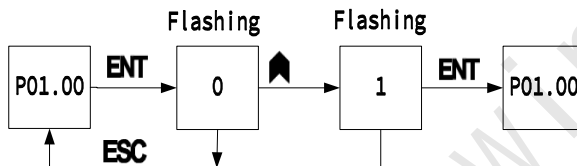


Fig 3-2-4-3 System parameter browse and revision

4) operation illusion

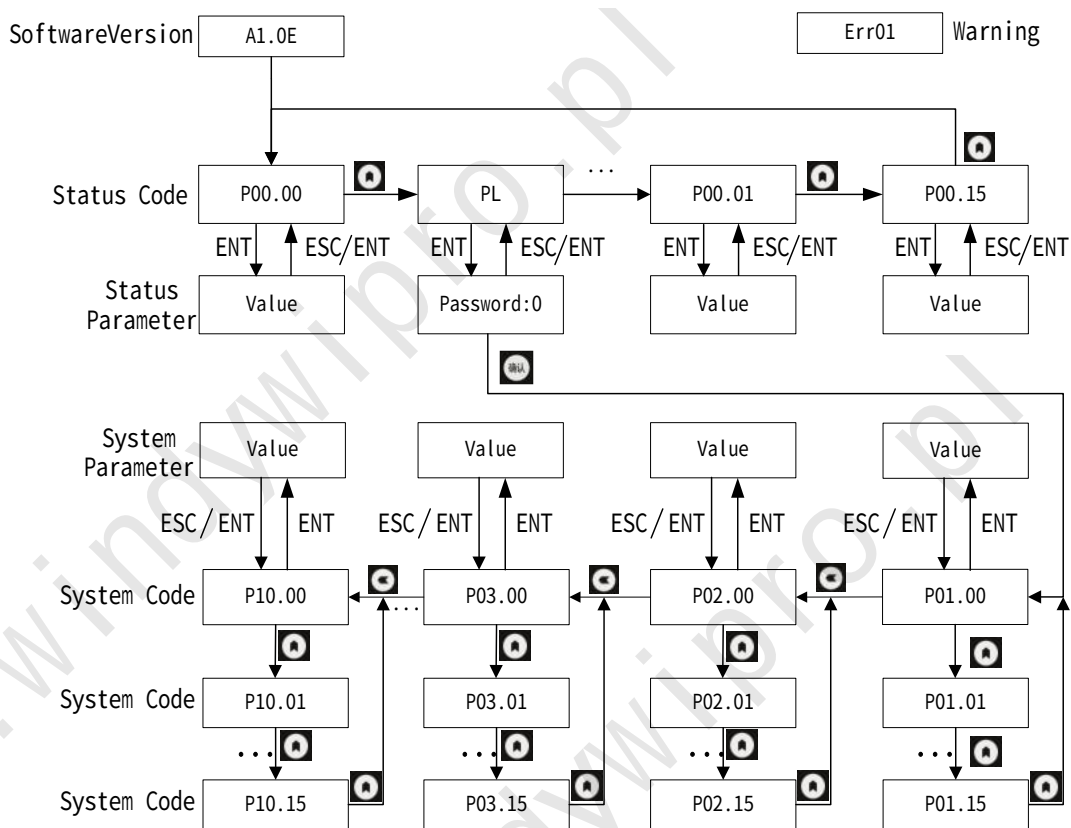


Fig 3-2-4-4 Operation illusion

3.3 Debug Steps

Step 1: Prepare

- ◆ Confirm the wiring is correct and reliable and Make sure the door operator without hall door is in half open. Disconnect command signal cable(P4 and P6).
- ◆ Confirm power supply (AC180V~264V, single phase) and then power on.

Step 2: Motor self-learning

Set P03.02=2 and BG221 will start motor self-learning. The MODElight is on, self-learning completes when the MODE light is off.

If self-learning failed, BG221 will send an alarm(Err07), then check the motor and encoder wiring and move the door panel away a little distance, then restudy.

Step 3: Door-width self-study

Set P03.02=1 after accomplishing motor self-learning , the door-width self-learning will start . The MODE light is on, the door closes first, opens and finally closes. When the MODE light is off, self-learning completes. Check door-width data through P03.03 and P03.04. If self-learning failed, the drive will send an alarm (Err07), check and restudy are required.

Attention:

- During the self-learning, if after powering on, comes ERR12, Z wire of encoder is not well connected; if motor rotates, and Err12 comes out, usually A/B wire is wrong.
- Reconnect P2 and P5 after self-learning finish.

Step 4: opening and closing effect fine-tuning

After door operator and landing installed and well linked, setting P01.00 = 1, adjust the door running performance by pressing ESC and ← to open the door or ESC and ↑ to close the door. Set P01.00 = 4, the door will run automatically, and adjust the performance by changing parameters in P04 / P05 / P06.

Attention:

- **Closing speed adjustment**

1. P05.09 (closing high speed percentage) affects the closing speed. Increase the value to shorten the closing time. If there is door panels impact, increase the value of P05.11 (closing creeping distance).
2. If door skate(knife) cannot tighten, increase value of P05.13(skate creeping distance), and P05.14(skate creeping speed)
3. If creeping distance or landing door cannot fully close, need to reduce value of P05.11(closing creeping distance)

- **Opening speed adjustment**

1. P04.09 (opening high speed percentage) affects the opening speed. Increase the value to shorten the opening time. If increase value of P04.09, also need to adjust P04.11 (opening creeping distance).
2. If creeping distance or landing door cannot fully close, need to reduce value of P04.11(opening creeping distance)
3. If there is door skate(knife) impact, need increase P04.00(opening start distance)

- **Torque adjustment**

1. If door cannot fully opening or closing, change value of P06.01 (opening holding torque) and P06.06 (closing holding torque) to adjust the performance.
2. Change value of P06.02 (biggest opening force), P06.07(biggest closing force) to adjust the force.
 1. After self-learning, set P01.00=0, then, door can work normally.
 2. Set P01.00=1, door drive will not receive the command from controller.
 3. Set P01.00=4(demo mode) to achieve the best performance by adjusting.
 4. Set P04.14=21 to initial setting.
5. Car operator should first fully opening than landing, if not, please adjust the mechanical parts, or running curve may be abnormal.

4. Parameter

P00——Status parameter

P01——Basic parameter

P02——Motor parameter

P03——Encoder parameter

P04——door open parameter

P05——door close parameter

P06——Auxiliary parameter

P07——Terminal setting

P08——Performance parameter

P09——Enhanced parameter

P10——History record

4.2 Parameter Table

“●”: Means the parameter shall not be changed regardless of the motor is running or not.

“★”: Means the parameter can be changed regardless of the motor is running or not.

“☆”: Means the parameter shall only be changed during the motor stops.

Group	Code	Name	scope	Min unit	Default	R/W
P00	P00.03	DC bus voltage	——	1V	——	●
	P00.04	Output Current	——	0.01A	——	●
	P00.07	Door position low	——	0.1mm	——	●
	P00.10	Input signal	——	——	——	●
	P00.11	Output signal	——	——	——	●
	P00.12	Temperature	——	1℃	——	●
	P00.13	Software version	——	——	——	●
	P00.14	Maximum input voltage	——	1V	——	●
P01	P01.00	Running mode	0:DODC mode 1:Keypad mode 3:CAN mode 4:Demo mode	1	0	☆
	P01.03	Low-speed	0~0.200m/s	0.001	0.100	★
	P01.04	Running direction	0: default 1: opposite direction0	1	0	☆
	P01.14	Factory restoration	0: No operation 21: factory restoration	1	0	☆
	P01.15	Force stop	0:None 1000:Force stop 2000:Resume	1000	0	★

Group	Code	Name	scope	Min unit	Default	R/W
P03	P03.02	Self-learning	2.Motor self-learning 1:Door-width self-learning	1	0	☆
	P03.03	Door-width	0~6000.0mm	0.1	——	☆
	P03.10	Power delay	0~15000ms	1	5000	☆
	P03.11	Motor Type	0: 125ST-13 1: 140TAST 2:140ST-13 4: BPM23E 5: user-defined	1	0	☆
	P03.15	Motor angle	0~360.0	0.1	220.0	☆
P04	P04.00	OD start-up distance	0~100.0mm	0.1	53.0	★
	P04.01	OD start-up ACC time	0~20.0s	0.1	0.2	★
	P04.02	OD start-up speed	0~1.000m/s	0.001	0.020	★
	P04.03	OD ACC time	0~10.0s	0.1	2.0	★
	P04.04	Max running speed	0~1.00m/s	0.01	0.650	★
	P04.06	OD DEC time	0~10.0s	0.1	2.0	★
	P04.07	Active distance for OD limit output	0~100.0mm	0.1	20.0	★
	P04.08	Inactive distance for OD limit output	0~100.0mm	0.1	20.0	★
	P04.09	OD high-speed percentage	0~100%	1	50	★
	P04.11	OD crawl distance	0~100.0mm	0.1	1.0	★
	P04.12	OD limit point distance	0~ 100.0mm	0.1	40.0	★
	P04.13	Skate DEC point for OD	0~ 100.0mm	0.1	40.0	★
	P04.14	Skate max speed for OD	0~1.000m/s	0.001	0.100	★
	P04.15	Skate ACC point for OD	0~ 100.0mm	0.1	1.0	★
P05	P05.00	Belt slack value	0~20.0mm	0.1	4.5	★
	P05.01	CD start-up time	0~20.0s	0.1	0.2	★
	P05.02	CD start-up speed	0~1.000m/s	0.001	0.015	★
	P05.03	CD Acceleration time	0~10.0s	0.1	2.0	★
	P05.06	CD Deceleration time	0~10.0s	0.1	2.0	★
	P05.07	Distance for CD limit output enable	0~100.0mm	0.1	10.0	★
	P05.08	Distance for CD limit output disable	0~100.0mm	0.1	15.0	★
	P05.09	CD high-speed percentage	0~100%	1	40	★

Group	Code	Name	scope	Min unit	Default	R/W
	P05.11	CD creep distance	0~100.0mm	0.1	6.0	★
	P05.12	CD limit point distance	0~100.0mm	0.1	53.0	★
	P05.13	Skate action creep distance	0~ 100.0mm	0.1	60.0	★
	P05.14	Skate action creep speed	0~1.000m/s	0.001	0.090	★
	P05.15	Skate decelerate point distance	0~ P05.13	0.1	5.0	★
P06	P06.01	OD holding torque	0.0%~100.0% (motor rated torque)	0.1	60.0	★
	P06.02	OD maximumtorque limit	0.0%~150.0% (motor rated torque)	0.1	70.0	★
	P06.03	Final holding torque for OD limit	0.0%~100.0% (motor rated torque)	0.1	45.0	★
	P06.04	Switch time from OD holding torque to final holding torque	0.0~360.0s	0.1	15.0	★
	P06.06	CD holding torque	0.0%~100.0% (motor rated torque)	0.1	60.0	★
	P06.07	CD max torque limit	0.0%~150.0% (motor rated torque)	0.1	80.0	★
	P06.08	CD obstruction torque	0.0%~150.0% (motor rated torque)	0.1	70.0	★
	P06.09	Final holding torque for CD limit	0.0%~100.0% (motor rated torque)	0.1	40.0	★
	P06.10	Switch time from CD holding torque to final holding torque	0.0~360.0s	0.1	15.0	★
	P06.11	CD obstruction torque check time	0~2000ms	1	300	★
	P06.13	CD limit holding torque switch point	0~150.0%	0.1	100.0	★
	P06.14	CD limit holding torque switch point	0~150.0%	0.1	80.0	★
P07	P07.00	Input signal filter time	0~250ms	1	50	★
	P07.01	OD limit mode	0: Delay mode 1: Block mode1 2: Block mode2	1	0	★

Group	Code	Name	scope	Min unit	Default	R/W
	P07.02	CD limit mode	0: Delay mode 1: Block mode1 2: Block mode2	1	0	★
	P07.03	Relay Out polarity setting	BIT0~BIT3 Bit=0: Default Bit=1: Opposite	1	0	★
	P07.04	Time delay for OD limit mode 0	0~10.0s	0.1s	0.2	★
	P07.05	Time delay for CD limit mode 0	0~10.0s	0.1s	0.4	★
	P07.07	OD obstruction output	0:No 1:Yes 2: Stop openning	1	0	★
	P07.08	Lock for OD limit position or CD limit position	0: Disable 1: Enable	1	0	★
	P07.09	Lock while obstruction	0: Disable 1: Enable	1	0	★
P08	P08.04	Operation mode for leaving limit position	0: not lock 1: Lock	1	0	★
	P08.05	Buzzer	0: Disable 1: Alarm when fault happens 2:Alarm when closing	1	1	★
P09	P09.00	OD timeout	0.1-3600.0s	0.1	15.0	★
	P09.01	CD timeout	0.1-3600.0s	0.1	15.0	★
	P09.02	Action mode when blocked during CD.	0: Follow elevator command. 1: Reopening the door.	1	0	★
	P09.03	Stop mode	0: DE-energized 1: Weak brake 2: Lock	1	2	★
	P09.05	Acation mode for powerup	0: only carrying out the elevator command; 1: closing the door to the limit with no elevator command; 2: closing the door to the limit regardless of elevator command	1	0	★

Group	Code	Name	scope	Min unit	Default	R/W
	P09.06	Holding time for OD limit in demo	0.1~10.0s	0.1	3.0	★
	P09.07	Holding time for CD limit in demo	0.1~10.0s	0.1	3.0	★
	P09.08	Abnormal deceleration time	0~20.0s	0.1	0.4	★
	P09.10	Command Priority	0~3	1	0	★
	P09.11	Extern OD command Valid time	0~1000.0s	0.1	1000.0	★
	P09.12	Extern CD command Valid time	0~1000.0s	0.1	1000.0	★
	P09.13	Password setting	0~9999	1	0	★
P10	P10.00	First fault	Refer to fault list	—	—	●
	P10.01	Second fault	Refer to fault list	—	—	●
	P10.02	Third fault	Refer to fault list	—	—	●
	P10.03	Forth fault	Refer to fault list	—	—	●
	P10.04	Fifth fault	Refer to fault list	—	—	●
	P10.05	DC BUS voltage in first fault	—	—	—	●
	P10.06	Current at First fault	—	—	—	●
	P10.07	Frequency at first fault	—	—	—	●
	P10.08	Door position at first fault	—	—	—	●
	P10.09	Running times high	—	—	—	●
	P10.10	Running times low	—	—	—	●
	P10.11	Max. DCBUS voltage	—	—	—	●
	P10.12	Min. DCBUS voltage	—	—	—	●
P11	P11.00	IN1 function setting	when P01.00=0, function setting as: 1: OD 2: CD 3: Nudging 4: Inspection	1	1	●
	P11.01	IN2 function setting		1	2	●
	P11.02	IN3 function setting		1	3	●
	P11.03	IN4 function setting		1	4	☆
	P11.04	IN5 function setting	5	1	5	●
	P11.06	SGS action distance	0~500.0mm	1	90.0	★

Group	Code	Name	scope	Min unit	Default	R/W
	P11.07	K4 Relay function redefine	0: Fault output 1: SGS output 2: MotorOverheat output(IN5 is mapped as MotorOverheat sensor input.	1	0	☆
	P11.08	K1 function setting	when P01.00=0, function setting as: 1: DOL 2: DCL 3: Obstruction 4: Fault	1	1	☆
	P11.09	K2 function setting		1	2	☆
	P11.10	K3 function setting		1	3	☆
	P11.11	K4 function setting		1	4	☆
	P11.12	Weak brake enable when power on.	0:Disable 1:Enable	1	1	★
	P11.13	External input voltage detect enable	0~1	1	1	★
	P11.14	Time for external input voltage detect.	0~1000ms	1	60	★

Fault Codes:

Code	Description	Code	Description
1	Under-voltage	13	Temperature sensor fault
2	Over-voltage	14	Abnormal DC Bus voltage detection
3	Over-heat	15	SPM fault
5	Obstruction	16	Over-load
6	EEPROM fault	17	OD timeout
7	Self-learning fault	18	CD timeout
8	AD inspection fault	20	Over-speed
9	AD bias fault	21	CAN Send failure
10	Belt slip	22	CAN Receive failure
11	Over-torque	23	Wrong motor wiring
12	Encoder fault	24	Power off or hardware damage

4.3 Parameter Description

P01.00 Running mode

Setting range: 0: DDOC mode

1: Keypad debug mode

4: demo debug mode

0: DDOC mode: when drive works at this mode, it will receive operating order from elevator system, such as OD, CD, or Nudging to drive the door.

1: Keypad debug mode. Under P01.00=1 and status code display interface P00.00. Press ESC and ← key to close door, and press ESC and ↑ key to open door, release the key to stop the operation.

4: Demo debug mode. Set P01.00=4 to make the door operate automatically, OD/CD interval time can be set by function code P09.06 and P09.07.

P01.03 Low-speed

Setting range: 0~1.000m/s

This function Code sets the low-speed operation. When carrying out slow OD, slow CD, start-up or other abnormalities, the door will operate at this setting speed.

Note: if the operation time of OD or CD is right to the elevator system (otherwise, timeout fault of the elevator will occur), the value shall be as little as possible to avoid crashing during the low-speed operation

P01.04 Running direction

Setting range: 0: Default

1: Opposite to direction 0

Motor's running direction can be changed by setting this parameter. The right action sequence is like door-width self-learning.

P01.14 Factory default

Setting range: 0: None

21: Restore parameter to factory defaults

P03.02 Self-learning

Setting range: 0~2

- **Set P03.02=2**, motor self-learning. 'MODE' light is on, self-learning function is carrying out. When 'MODE' light is off, the self-learning function completes. if the self-learning failed, the drive will show Err07 warning.
- **Set P03.02=1**, door width self-learning. close the door first, then open the door, and then close the door finally, when "MODE" light is off, the self-learning completes. P03.03 records the door width data .if the self-learning failed, the drive will show Err07 warning.

Note:

- Confirm the motor and encoder wiring.
- Confirm there is no landing door and car door located together and car door open half in the middle position before motor pole self-learning.
- Be sure that motor self-learning starts before door width self-learning.
- Checking the action direction when door-width self-learning is right, if different, change P01.04 to change the running direction.
- Self-learning must be redo after the motor or inverter changed.

P03.03 Door-width

Setting range: 0~6000.0mm

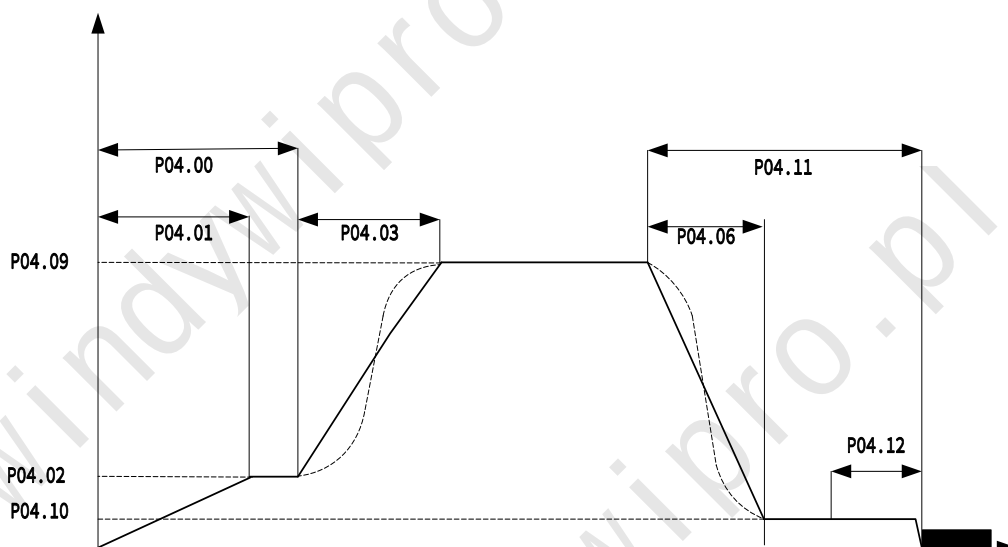
This parameter shows the door width low by door-width self-learning.

P03.15 Motor angle

Setting range: 0~360.0

The motor angle is achieved by motor self-learning.

P04 group



OD procedure:

When OD command is active, door operator opens skate set at OD start-up distance (P04.00) as shown in curve.

When door operator detects present door position is over than OD start distance (P04.00), operator increases speed to OD high speed percentage (P04.09) after OD accelerating time P04.03, and then open at constant speed.

When door arrives at open limit point distance (P04.12) and the motor is blocked, the drive will shift to OD final torque holding status.

P04.00 OD start-up distance

Setting range: 0~1000.0mm

Set the active range of start speed

P04.02 OD start-up speed

Setting range: 0~1.000m/s

Set minimum starting speed and crawling band of DO.

P04.03 OD acceleration time

Setting: 0~10.0s

Set time for OD from starting low speed to maximum running speed.

P04.04 Max Running speed

Setting range: 0~1.00m/s

Set maximum running speed of DO/CD curve

P04.06 OD deceleration time

Setting range: 0~10.0s

Set time for decelerating from high speed to OD completing low speed

P04.07 Active distance for OD limit output

Setting range: 0~100.0mm

Set the active range of OD limit output.

P04.08 Inactive distance for OD limit output

Setting range: 0~100.0mm

Set the inactive range of OD limit output.

P04.09 OD high speed percentage

Setting range: 0~100.0%

Set the percentage of high speed and max running speed during OD

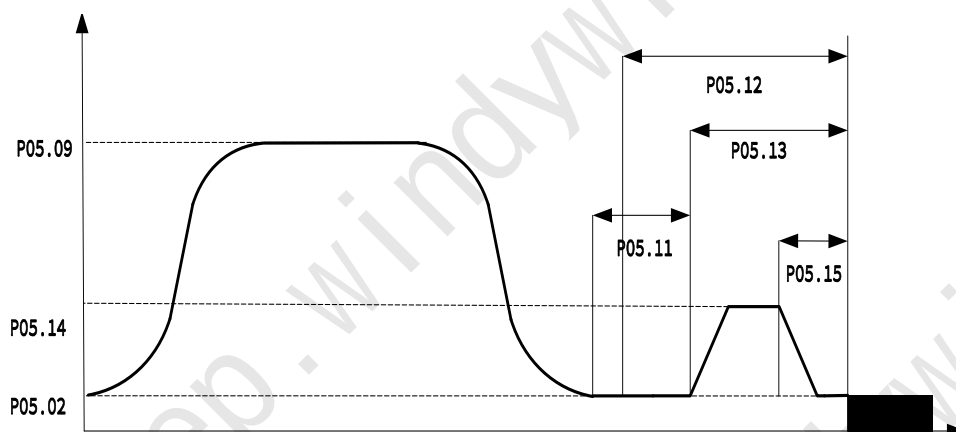
P04.11 OD crawl distance

Setting range: 0~100.0mm

P04.12 OD limit point distance

Setting range: 0~100.0mm

Set handle interval of sufficient OD.

P05 Group

CD procedure:

1) When CD command is active, door operator runs at CD start-up speed (P05.02), then accelerates to CD high speed percentage (P05.09) according to S curve, then decelerating to P05.02.

2) when CD start-up speed (P5.02) over than CD crawl distance (P05.11), closing skate according to above curve.

3) When the door crawls to CD limit point distance (P05.12) and motor obstruction, the drive will shift to CD final torque holding status

P05.00 belts slack value

Setting range: 0~20.0mm

Set the operation range of start-up speed

P05.02 CD start-up speed

Setting range: 0~1.000m/s

Set the speed of start-up low-speed running

P05.03 CD acceleration time

Setting range: 0~10.0s

Set time from CD start low speed to closing high speed

P05.06 CD decelerating time

Setting range: 0~10.0s

Set time for closing decelerating from high speed to CD completing low speed

P05.07 Active distance for CD limit output

Setting range: 0~100.0mm

Set the active range of CD limit output.

P05.08 Inactive distance for CD limit output

Setting range: 0~100.0mm

Set the inactive range of CD limit output.

P05.09 CD high speed percentage

Setting range: 0~100%

Set frequency of high speed running

P05.11 CD crawl distance

Setting: 0~100.0mm

P05.12 CD limit point distance

Setting range: 0~100.0mm

Perform relevant processing of sufficient closing

P05.13 Skate action crawl distance

Setting range: 0~100.0mm

Define distance between skate set closing position and close limit position

P05.14 Skate action crawl speed

Setting range: 0~1.000m/s

P05.15 Skate action Decelerating point distance

Setting range: 0~P05.13

Define the closing deceleration distance of skate. it can reduce skate set closing time together with P05.13/P05.14.

P06.01 OD holding torque

Setting range: 0~100.0% (motor rated torque)

Define ending torque of OD to avoid impact.

P06.02 OD maximum torque limit

Setting range: 0~150.0% (motor rated torque)

Define max. Running torque during DO.

Attention: Set the value as small as possible if the operator can run smoothly to the door open limit.

P06.03 Final holding torque for OD limit

Setting range: 0~100.0% (motor rated torque)

To prevent overheat of motor which caused by long time open status of operator. Set this parameter as small as possible, but too small parameter may cause insufficient holding force.

P06.04 Switch time from OD holding torque to final holding torque

Setting range: 0~360.0s

Define the switching time from holding torque to final holding torque

P06.06 CD holding torque

Setting range: 0~100.0% (motor rated torque)

Define ending torque of CD to avoid impact.

P06.07 CD max torque limit

Setting range: 0~150.0% (motor rated torque)

Define max operation torque during CD procedure, to avoid clamping persons. Set this parameter as small as possible if it would not affect normal closing

P06.09 Final holding torque for CD limit

Setting range: 0~100.0% (motor rated torque)

To prevent overheat of motor which caused by long time close status of operator.

P06.10 Switch time from CD holding torque to final holding torque

Setting range: 0~360.0s

Define the switching time from holding torque to final holding torque

P06.13 OD limit holding torque switch point

Setting range: 0~150.0%

Define the switching torque for final holding torque.

P06.14 CD limit holding torque switch point

Setting range: 0~150.0%

Define the switching torque for final holding torque.

P07.00 Input signal filter time

Setting range: 0~250ms

Define valid minimum time of input signal, to prevent error action caused by interruption.

P07.01 OD limit mode

Setting range: 0~2

0: mode 0

Drive outputs OD limit signal after P07.03 time when the encoder pulses reaches the door width pulse in open direction.

1: mode 1

Drive outputs OD limit signal after the door obstruction when the encoder pulses reaches the door width pulse in open direction

2: mode 2

Drive outputs OD limit signal when the door is blocked and within the valid OD limit signal distance.

P07.02 CD limit mode

Setting range: 0~2

Drive outputs CD limit signal after P07.04 time when the encoder pulses reaches the door width pulse in close direction.

1: mode 1

Drive outputs CD limit signal after the door obstruction when the encoder pulses reaches the door width pulse in close direction.

2: mode 2

Drive outputs CD limit signal when the door is blocked and within the valid OD limit signal distance.

P07.03 Relay Output polarity setting

Setting range: 0~15

- Bit0: setting 1, K1 reverse. Such as OD output polarity reversal, set P07.03=1。
- Bit1: setting 1, K2 reverse. Such as CD output polarity reversal, set P07.03=2。
- Bit2: setting 1, K3 reverse. Such as obstruction output polarity reversal, set P07.03=4。
- Bit3: setting 1, K4 reverse. Such as safety panel close signal polarity reversal, set P07.03=8。Such as, DO, close polarity both reversal, set P07.03=1+2=3;

P07.04 Time delay for OD limit mode

Setting range: 0~10.0s

During door opening, after door drive receives enough impulse counts which is more for door open limit, the output of door open limit will be delayed.

P07.05 Time delay for CD limit mode

Setting range: 0~10.0s

During door closing, after door drive receives enough impulse counts which is more for door close limit, the output of door open limit will be delayed.

P07.08 Lock mode for OD limit position or CD limit position

Setting range: 0~1

0: No

1: Yes

P07.09 Lock while obstruction occurs

Setting range: 0~1

0: No

1: Yes

P07.11 Input signal logic mode

Setting range: 0~3, default 3

Mode 0:

DO	DC	Nudging	Door Action
1	1	x	STOP
1	0	1	STOP
1	0	0	DO

0	1	0	DC
0	X	1	Nudging
0	0	0	1)Motor deenergized (door not in the limit holding area) 2)Motor running(door in the limit holding area)

Mode 1:

DO	DC	Nudging	Door Action
1	x	x	DO
0	x	1	Nudging
0	1	0	DC
0	0	0	1)Motor deenergized(door not inthe limitholdingarea) 2)Motor running(door inthe limitholdingarea)

Mode 2:

DO	DC	Nudging	Door Action
1	1	x	STOP
0	0	1	DO
1	0	0	DO
0	1	0	DC
0	X	1	Nudging
0	0	0	1)Motor deenergized (door not in the limit holding area) 2)Motor running(door in the limit holding area)

Mode 3:

DO	DC	Nudging	Door Action
1	1	x	STOP
0	0	1	Nudging
1	0	0	DO
0	1	0	DC
0	X	1	Nudging
0	0	0	1)Motor deenergized (door not in the limit holding area) 2)Motor running(door in the limit holding area)

Note:

1: signal valid

0: signal invalid

X: signal valid or signal invalid

P07.13 power on times

Record range: 0~65535, for monitoring the power on times.

P08.04 Running mode for leaving limit position

Setting range: 0~1

0: de-energized

1: keep last status

P09.00 OD time

Setting range: 0.1~3600.0s

The max OD time, correctly setting this value can achieve protect of abnormal door operation. Normal running time will not exceed this setting, and when abnormal situation occurs, such as door cannot be opened for over this time, OD timeout protect will be triggered

P09.01 CD time

Setting range: 0.1~3600.0s

The max CD time, correctly setting this value can achieve protect of abnormal door running. Normal running time will not exceed this setting, and when abnormal situation occurs, such as door cannot be closed for over this time, CD timeout protect will be triggered.

P09.02 Action mode when blocked during CD

Setting range: 0~1

0: Follow the elevator system command. When the motor is blocked, the drive will continue to operate as the elevator system command.

1: Automatic anti-open. When obstruction happens, the drive will open the door automatically and act as the elevator system command after open limit.

P09.03 Stop mode

Setting range: 0~2

0: the motor is de-energized.

1: short U/V/W wire of motor by the drive

2: lock the door at the present position.

P09.04 Memory for blocked position

Setting range: 0~1

0: Disable

1: Enable

P09.05 CD mode when power on

Setting range: 0~2

0: When power on, the drive acts as elevator command.

1: when power on, the drive performs a low speed CDoperation as P01.03 if there is no DO/DC command; if there is DO/DC command after power on, the drive cancel automatic CD function and performs elevator command slowly first before CD limit or OD limit until the door width is confirmed, and then runs at normal curve speed, otherwise continue to perform DO/DC command slowly.

2: the drive Performs CDaction to CDlimit position regardless of any other command.

P09.06 Hold time for OD limit in demo

Setting range: 0.1~10.0s

When OD to limit position, door drive perform close action after continue to hold setting time

P09.07 Hold time for CD limit in demo

Setting range: 0.1~10.0s

When OD to limit position, door drive perform open action after continue to hold setting time

P09.08 Abnormal Deceleration time

Setting range: 0 ~20.0s

Decelerate the present running frequency to 0 speed time to ensure that the door will not have a large impact, the parameters to be set as small as possible in order to ensure rapid response on DO/DC/.

P09.11 Extern OD command valid time

Setting range: 0 ~10000s

The running status holding time while external DDOC command, holding time more than or same as this parameter will halt, it will be permanent retention if set 10000s

P09.12 Extern CD command valid time

Setting range: 0 ~10000s

The running status holding time of invalid command on external input signal setting, holding time more than or same as this parameter will halt, it will be permanent retention if set 10000s

P09.13 password setting

Set login password. Default value 1234.

OD remember the password after modified otherwise shall not browse and modify system parameter.

P09.14 Inspection mode

Setting range: 0~1

0: the drive carries out terminal command first and then panel command.

1: the drive only carries out panel command.

5. Trouble Shooting

Code	Name	Possible reason	Solution
Err01	Under-voltage warning	Power off	check power supply
		System power abnormal	check power supply
Err02	Over-voltage warning	Abnormal power supply	abnormal power supply
		Sensing circuit is abnormal	seek for service
Err03	Overheat warning	Temperature is too high	check working environment
		Load is too high(spring 、 resistance)	check spring、 door resistance
Err05	Obstruction warning	Door blocked	check door
		Unreasonable parameter setting	check parameter
Err06	E2PROM error	EEPROM R/W fault	seek for service
Err07	Self-learning fault	Wrong wiring of motor	check wiring
		Encoder fault	check encoder
		Motor angle offset	Move door panel away a little distance
		Wrong parameter	Check P03.11 according to motor type
			Set P01.14=21 to restore factory default.
Err08	AD fault	Abnormal wiring of motor	Check the wiring
		Drive abnormal	seek for service
Err09	AD offset fault	Drive abnormal	seek for service
Err10	Belt slip warning	Belt broken or loose	check belt condition
		Wrong door width data	check door width and real condition
		Belt seriously loosen	check belt condition
Err11	Over-torque warning	Motor or door is blocked	Check the motor or door
		Torque are set too little	check torque parameters
Err12	Encoder fault	1)Encoder wiring problem	1)check encoder wiring
		2)Encoder damaged	2)change encoder
Err14	DC voltage sensing abnormal	Short circuit or open circuit	seek for service
Err15	IPM fault	Over-current	check motor wiring
		IPM damage	seek for service

Err17	Door open timeout warning	Door operator blocked	check door operator
		Self-learning failure	Carrying out self-learning
		Wrong Parameter value	Set P01.14=21 to restore factory
Err18	Door close timeout warning	Door operator blocked	check door operator
		Self-learning failure	Carrying out self-learning
		Wrong Parameter value	Set P01.14=21 to restore factory
Err20	Overspeed warning	Wrong magnetic data	Motor self-learning again
		Wrong wiring of motor or encoder	Check the wiring
		Lack phase of motor	Change another motor
		More than 120% of OD/CD maximum speed	Check the parameters
Err21	CAN Send failure	CAN Send failure over 60s	Check wiring or parameter setting
Err22	CAN Receive failure	CAN Receive failure over 60s	Check wiring or parameter setting
Err23	Motor wiring error	Motor wiring problem	Check motor wiring

6. Maintenance

Lots of factors such as ambient temperature, humidity, acid/alkali substances, dust, and vibration, internal component aging and wearing may raise the chance of the occurrence of potential faults. Therefore, it is quite necessary to conduct monthly checking and periodical maintenance to the drive that are operated or stored.

User shall operate drive according to user manual, maintain drive at regular intervals (12 months as general), ensure reliable running of drive. Maintenance includes:

- Check if terminal wiring has been loosened
- clean dust inside drive at regular intervals
- Check the heat dissipation of controller is normal or not
- Do not change controller without authorization, otherwise there is a risk of damage on controller and personnel safety.