

CV-550SPKv3& CM-550SKv3 USER MANUAL

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1 Overview

1.1 Introduction

This series of products are using the new 32-bit microcontroller ARM core design with powerful functions. They are very stable and reliable. It's a new generation of multi-function access controller, include Reader mode, Single-door mode, Double-doors mode, Interlock mode, Demo mode etc. All of them could be widely used in office buildings, homes, schools, condominium, apartments, flats, single houses, banks, prisons and other places.

1.2 Function features

- Option for 125 KHz's EM& HID card.
- Option for 13.56MHz's IC&CPU card.
- Optional for metal backlit keypad or infrared keypad.
- Option for single-door or double-door.
- Single-door controller can be set to Reader mode, Interlock mode and demo mode.
- Specific reader mode that customer can set output format.
- Support Card and PIN, Multi-cards to open the door.
- Support Super-open-card and Super-open-password to open door.
- Support Add-card, Delete-card, Anti-duress-card, Authorization-card, and Normal-open card operation.
- Support admin password card operation, for quick access to the management menu.
- The user card capacity up to 20,000, the admin card capacity up to 21.
- Support Set-card operation, for quick access to the management menu.
- The “#” key can be used as doorbell button.
- In Reader mode, the red and green LED indicator can be controlled externally.
- Self-adaption infrared Anti-demolition detection technology. Controller can alarm 24/7 and it will not be affected by visible light interference.
- Unlocking signal output by NO, NC, COM relay.
- Alarm and doorbell signal output by MOS and it can be the driver of the alarm or the doorbell.

1.3 Functional unit




B6K-EH Plus, B6K-IC Plus
B6K2-EH Plus, B6K2-IC Plus

1.4 Technical parameters

- Working Voltage: AC/DC10-28V
- Standby current: ≤35mA(Input DC12V)
- Operating current: ≤100mA(Input DC12V)
- Working temperature: -40~60℃
- Working humidity: 0~95%
- Lock signal relay contact current: ≤1A
- Alarm (or doorbell) signal MOS tube output current: ≤1A
- Distance of reading EM card:≤5cm
- Distance of reading HID card:≤5cm
- Distance of reading IC card:≤5cm

1.5 Applicable models

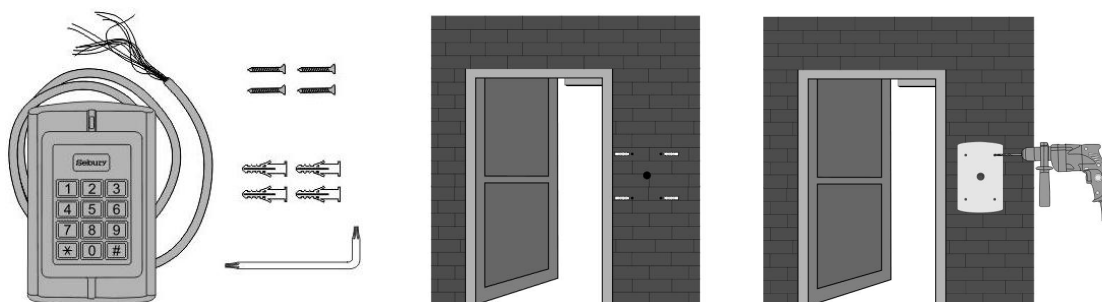
This user manual applies to the following models:

Thumbnails	Product name	Product model	Card type	Keypad	Lead wire
	Single-door Standalone Access	B6K-EH Plus	EM/HID	Own	12
	Controller	B6K-IC Plus	IC/CPU	Own	12
	Double-doors Standalone Access	B6K2-EH Plus	EM/HID	Own	16
	Controller	B6K2-IC Plus	IC/CPU	Own	16

2 Installation, wiring and debugging

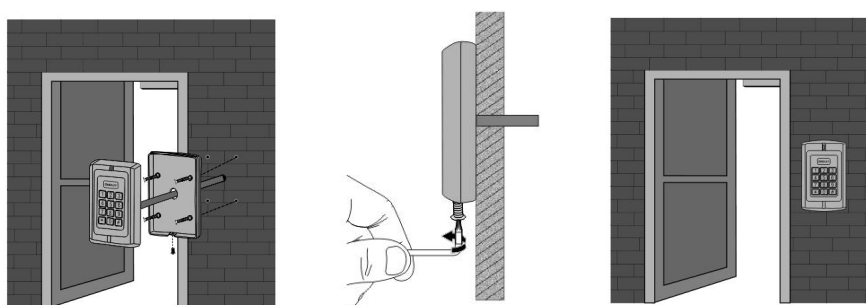
2.1 Installation

With the special anti-demolition screw-driver remove the anti-demolition screw at the bottom of the device. Take off the bottom case, and contrast the opening position of the bottom case and use the impact drilling to open the corresponding hole on the wall. It includes an outlet hole with a diameter greater than 8mm and four plastic screw holes with a diameter of 6mm. Then insert four matching plastic expansion screws, fix the bottom case on the wall with four matching self-tapping screws.



2.2 Wiring

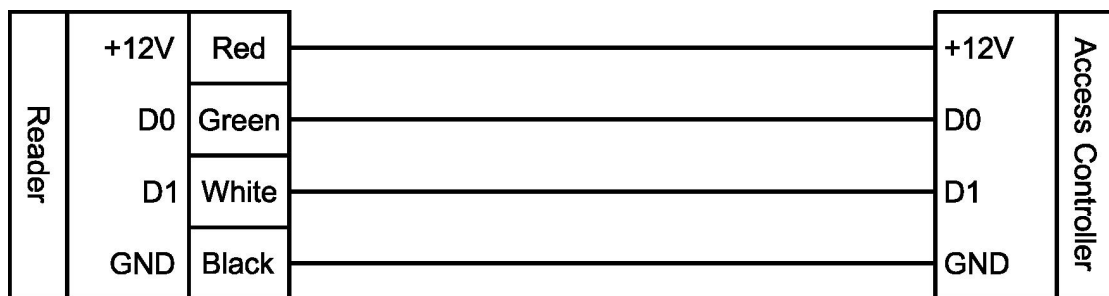
According to the selected wiring diagram, cut the lead wire to the right length and cut off the excess thread, through the wall or in the embedded box, connect the system line with the wiring diagram. Be careful not to connect the wrong or short circuit, otherwise it may burn the machine. After checking, power on for a short time, test if the indicator light is normal and if the buzzer ring one time beep. Otherwise, power off immediately and recheck the wiring properly. After check again and if all is well, install the front case of the product onto the bottom case on the wall and fix it with the anti-demolition screw as below:



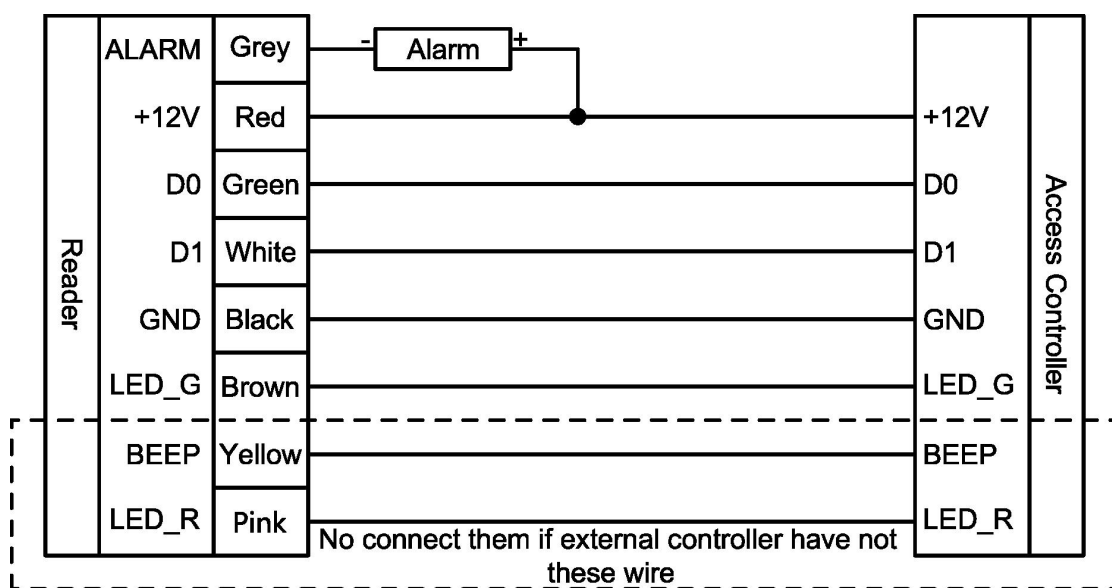
The product wiring colors and functions are shown in the following table:

Color	Symbol	Functions
Light green	AC2	One port of the AC power supply
Blue	NO	Normal open port of Relay
Purple	COM	Common port of Relay
Orange	NC	Normal close port of Relay
Grey	ALARM(BELL)	Alarm (or doorbell) signal MOS drain output
Yellow	OPEN(BEEP)	Exit button input(or external control input of buzzer)
Brown	D_IN(LED_G)	Door contact input (or external control input of green LED)

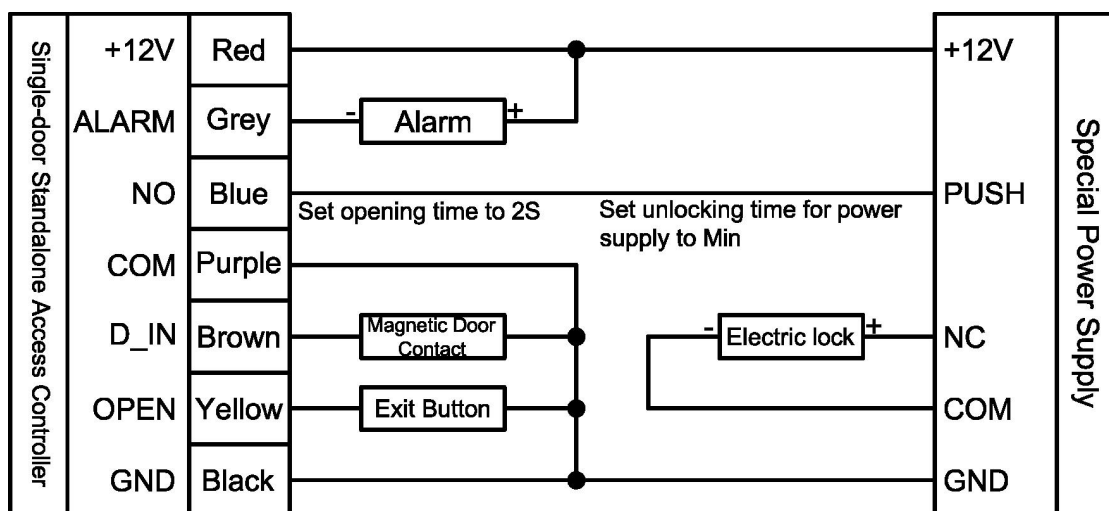
Red	+12V(AC1)	Positive DC power(or another port of AC power supply)
Black	GND	Ground
Green	D0	Wiegand signal, D0 input or output(or RS232-TTL signal output: Tx)
White	D1	Wiegand signal, D1 input or output(or RS232-TTL signal input : Rx)
Pink	D_IN2(LED_R)	Door contact input of zone 2 (or external control input of red LED)
Yellow & Black	OPEN2	Exit button input of zone 2
White & Black	NO2	Normal open port of Relay 2
Green & Black	COM2	Common port of Relay 2
Red & Black	NC2	Normal close port of Relay 2



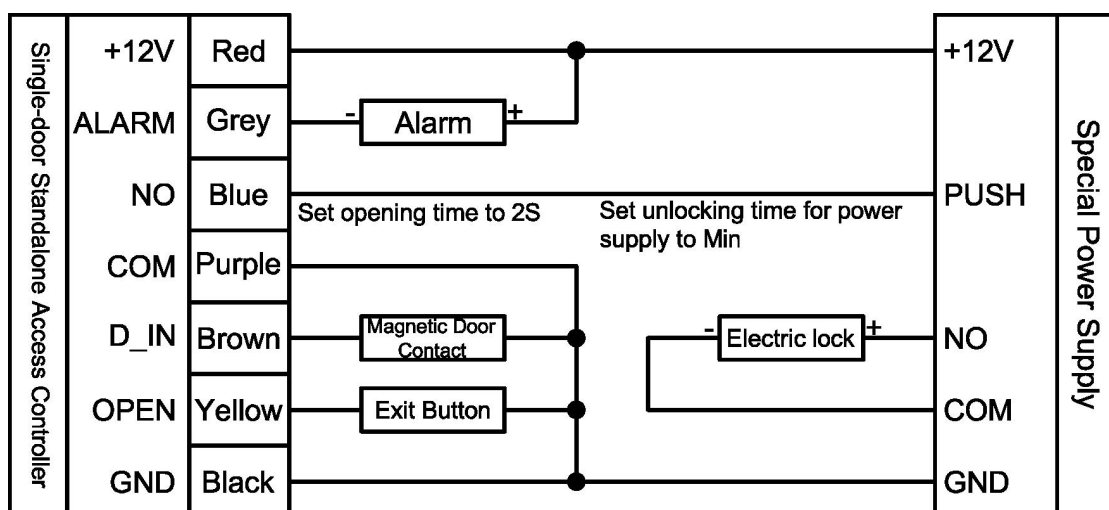
Reader mode Wiring diagram



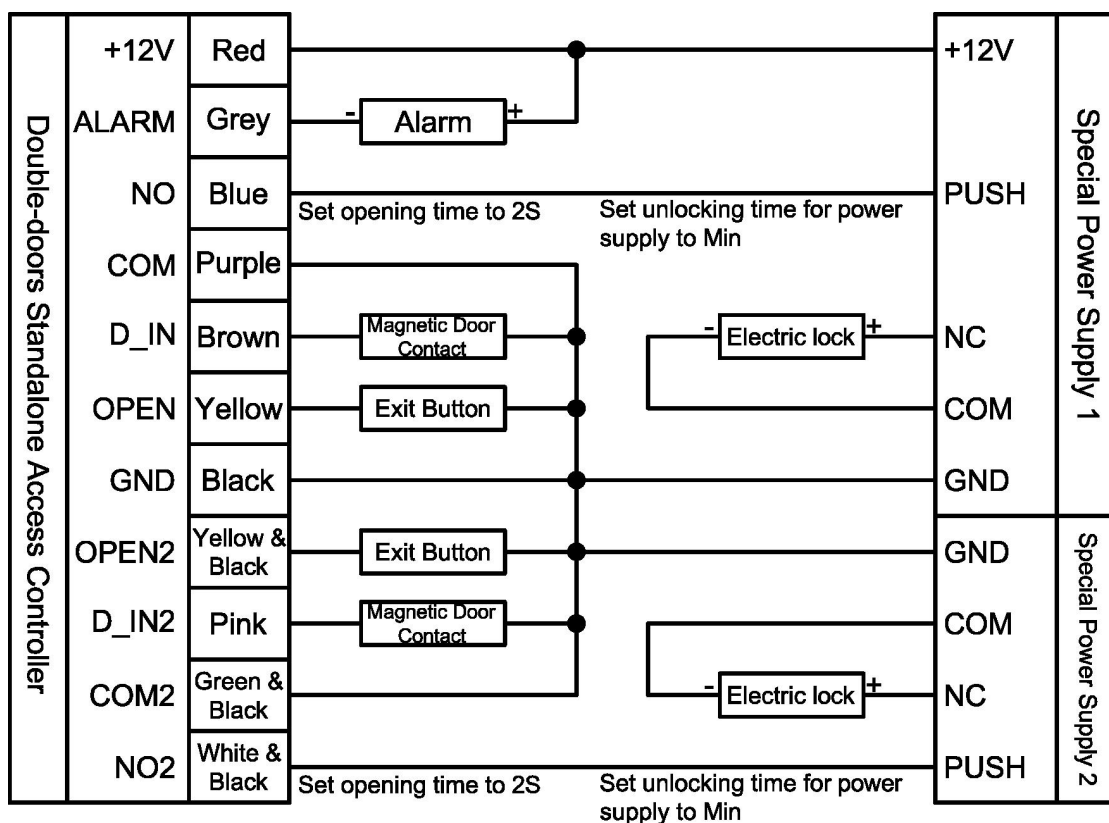
Reader mode full function wiring diagram



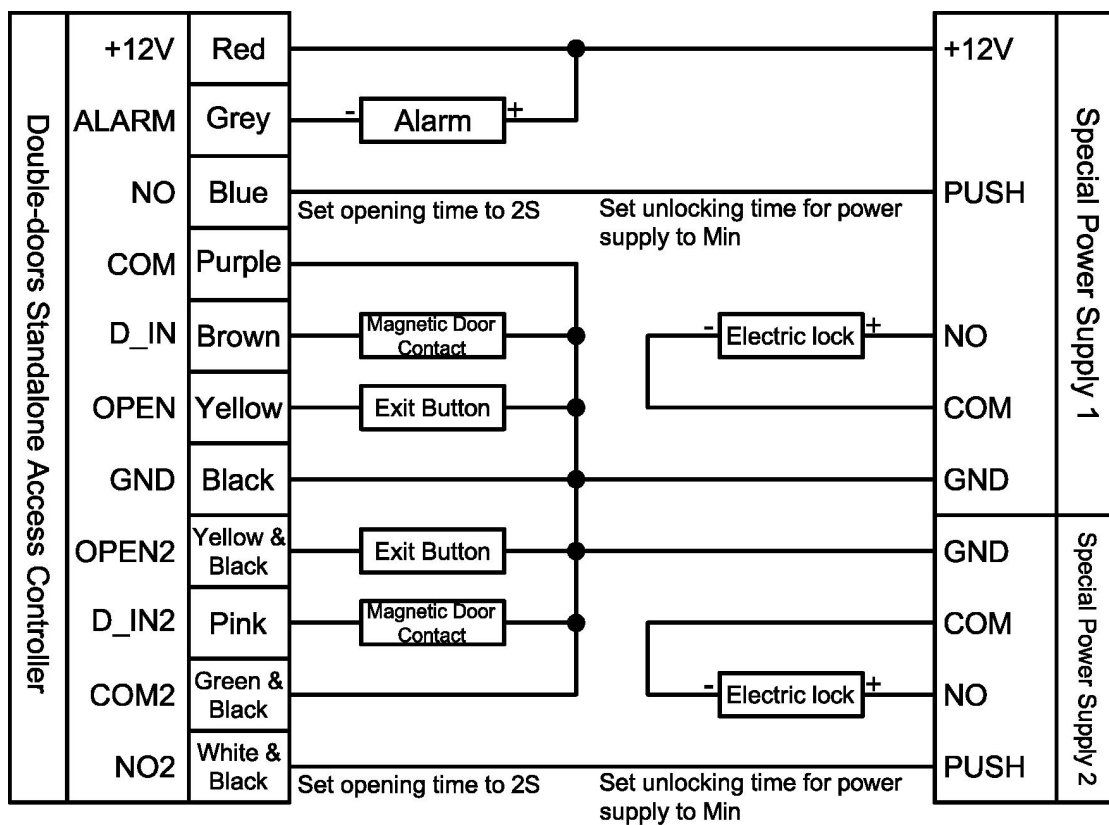
Single-door mode wiring diagram(Power off unlock)



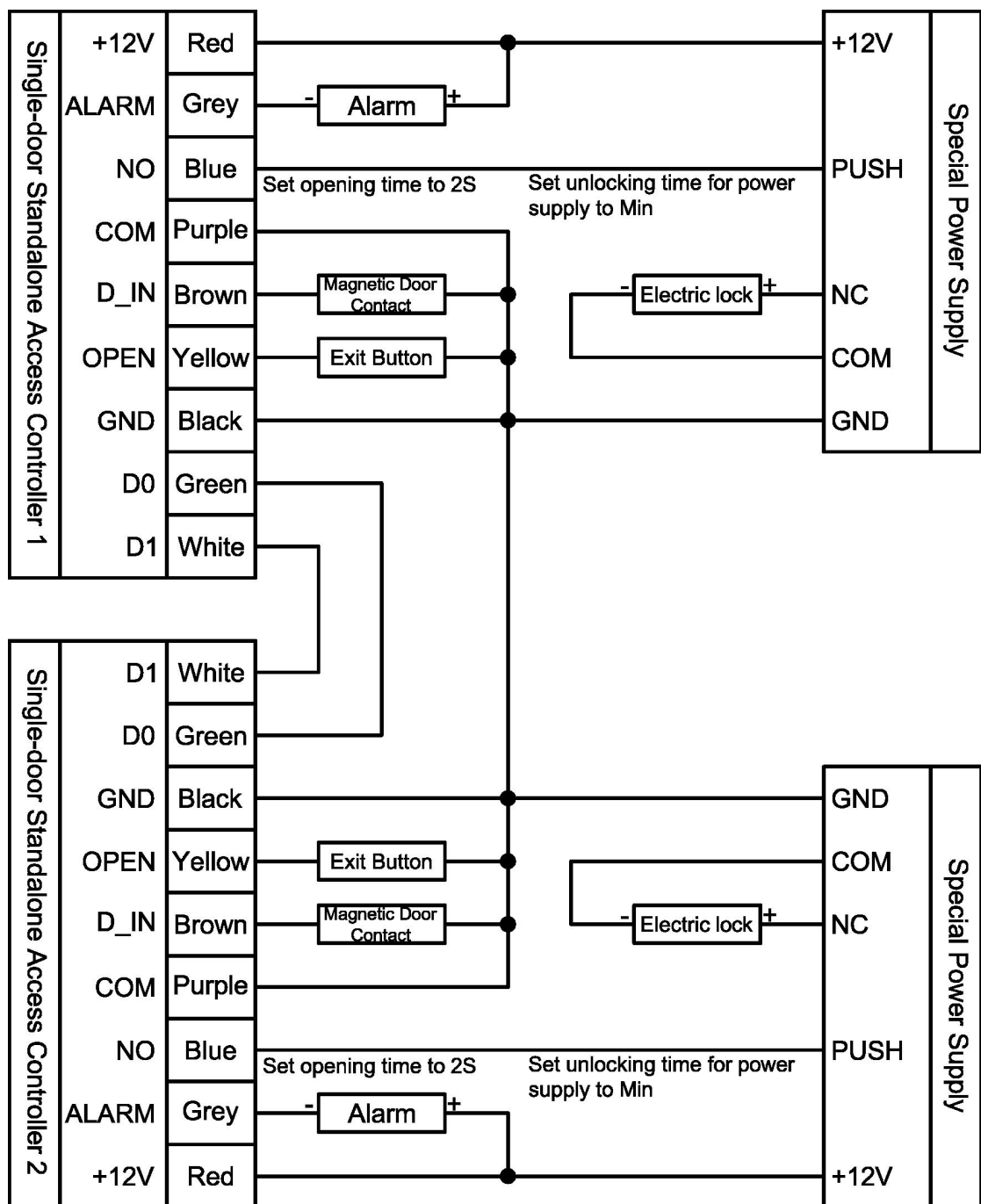
Single-door mode wiring diagram(Electrify unlock)



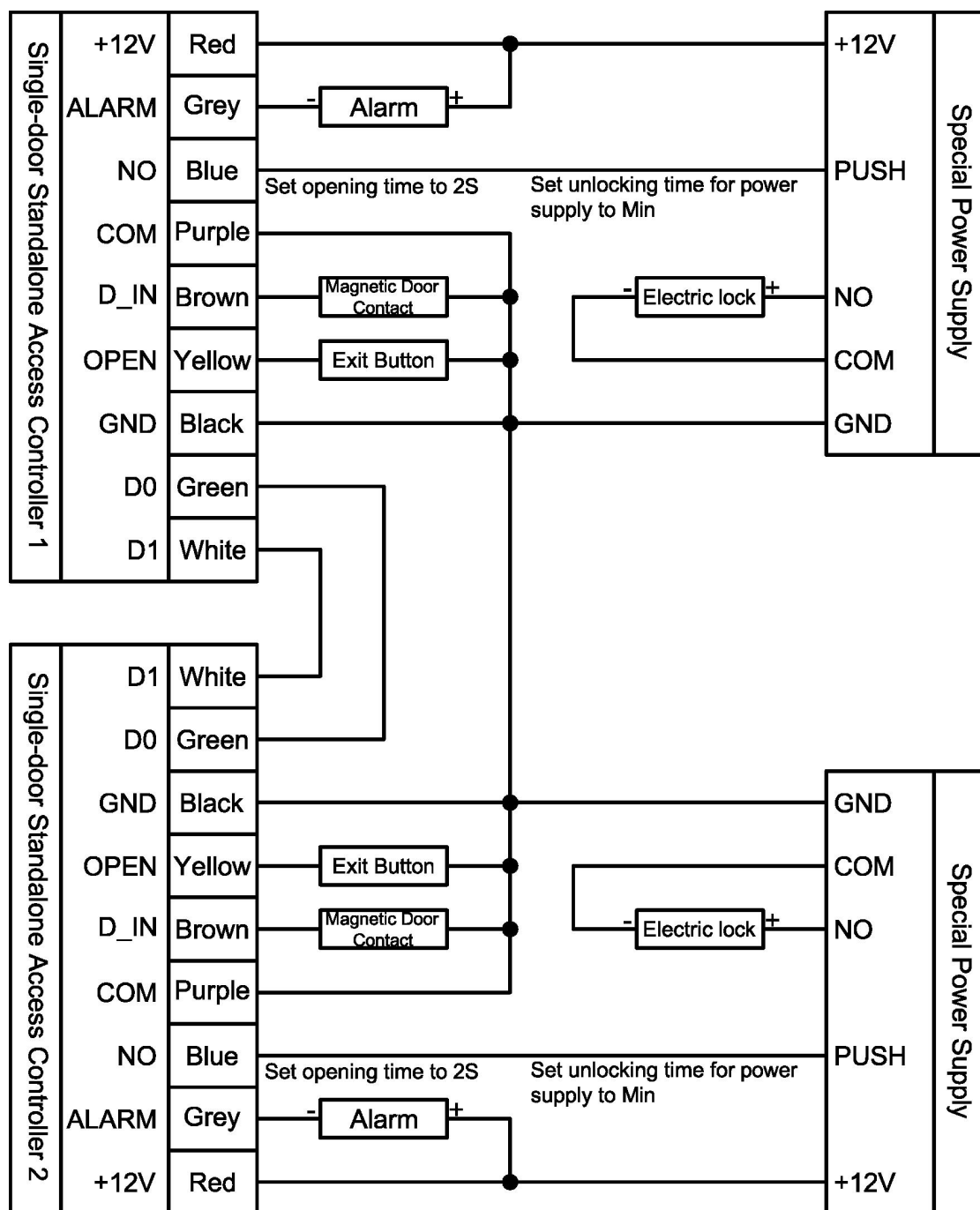
Double-doors mode wiring diagram(Power off unlock)



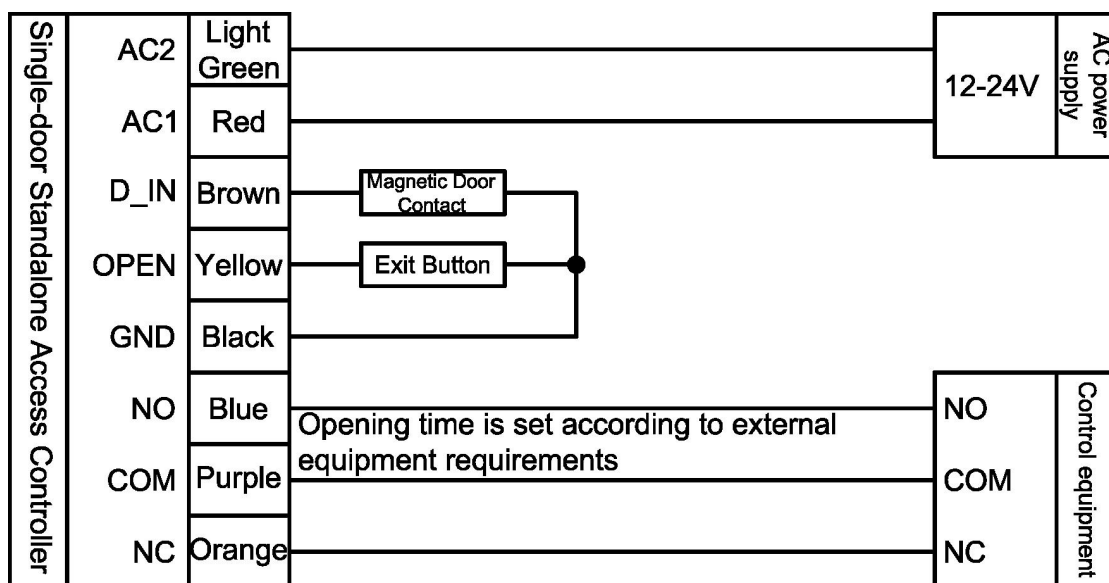
Double-doors mode wiring diagram(Electrify unlock)



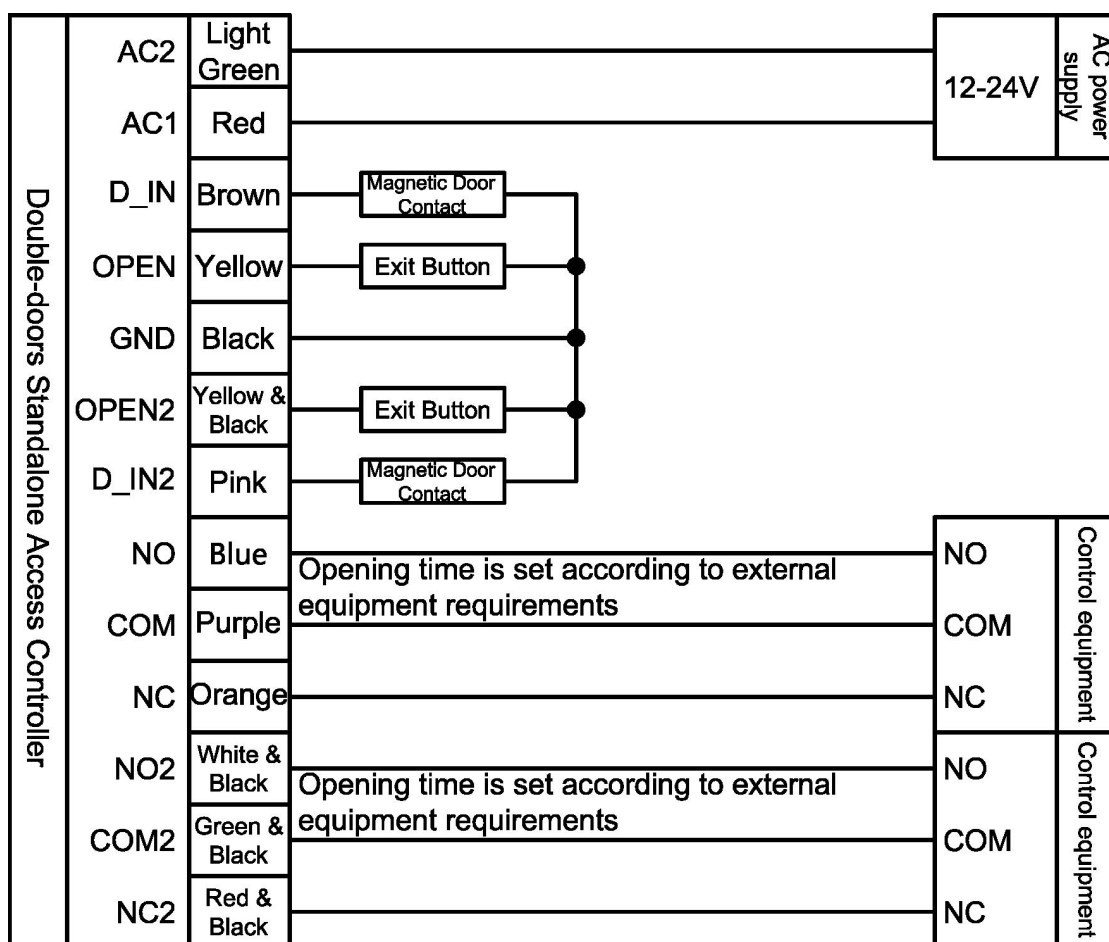
Interlock mode wiring diagram(Power off unlock)



Interlock mode wiring diagram(Electrify unlock)



Single-door mode wiring diagram for AC power supply



Double-doors mode wiring diagram for AC power supply

2.3 Debugging

After power on, conduct the test according to Getting Started till you can open door by reading card, input PIN or exit button.

3 Getting Started

Writing Conventions:

- Keypad operation only can be used between "0123456789*#" these 12 buttons
- "..." means continue similar operation as indicated from previous operations.
- " ," is not an actual operation, it's just punctuation.
- "(" means the serials of digital numbers which will be type into the controller, like PIN code, ID number ,card number etc.

Operation Conventions:

- "Beep-"one long beep means the operation was correct. "beep-beep-beep" three short beeps mean operation was incorrect. LED light turn to green means operation was successful.
- "#" means previous operation was received by system, it normally uses at the end of the digital numbers of PIN code, ID number, card number or parameter, when you type this key it means input is finished.
- " * " means cancel current operation or back to previous menu
- Management menu fix to 2 digits, from 00~99, Don't press "#" on the menu behind, after into menu, LED light turn to orange(or purple),if operation failed will hear"beep-beep-beep"3 short beeps.
- Under the management menu operation mode, if system detected without any operation over 30 seconds, it will back to standby mode automatically.

Indicator light and buzzer prompt:

Operation Status	Indicator light	Buzzer
Standby mode	Red	
Successful operation	Green	A long beep
Operation incorrect		3 short beeps
When admin card enter		2 short beeps
When admin card exit		A long beep
Press digit key		A short beep
Press * key		A long beep
Inputting opening door PIN	Red slow flash	
Both read card and input PIN Mode, after read the card	Red slow flash	
Multi-card reading open the door, when the card reading is not over yet	Red slow flash	
Enter the first zone admin main menu	Red slow flash	
Enter the second zone admin main menu	Blue slow flash	
Enter the first zone setting status	Orange	
Enter the second zone setting status	Purple	

The first unlock zone	Green	
The second unlock zone	Blue	
Alarm	Red quick flash	Alarm Sound

3.1 Enter management menu operation mode

* (Hold on for more than 2 seconds), (Input admin password) #

Note: Admin password is a 6 digits number, 888888 is the factory default admin password. The user should change the admin password when use the device for the first time, otherwise user cannot continue other operations. After input correct admin password, the LED light will flash green for one time and then back to red flash status, all of the rest operations must under this status.

3.2 Change admin password

00, (New admin password) #, (Repeat new admin password)#

Note: New admin password is a 6 digits number.

3.3 Set controller to Single-door mode

Factory default setting is single door mode, if user does not sure about the mode, please set it again, the steps please follow:

03, 1#

3.4 Set door opening time to 2S

The factory default door opening time is 2S, so if user request factory default time then no need to adjust the door opening time just set the unlocking time of Access controller's Special power supply to minimum time period. If user is not sure about the time, please set it again as follow steps:

34, 2 #

3.5 Add User Card

10, read card, read card ...repeat the operation till the last user card.

Note: the controller can read multi-cards continuously. When you hear a long "beep- "and indicator light turn to green it means the new card added successfully. After user finish the last card, please press the * key to exit the add user card status.

3.6 Add User PIN

11(ID) #, (User PIN) #, (ID) #,(User PIN) #, ...repeat the operation till the last user PIN.

Note: The user ID range is from 1 to 20,000 and must not be added before. User PIN is a 4~6 digits number and this number must not be 1234. Controller can add more users continuously, after the last user PIN please press the * key to exit the add User PIN status.

3.7 Exit Management menu operation mode

In Management menu operation mode, press * more than once until the indicator light turn to red and always bright means exit Management menu operation mode.

3.8 User open door

When the indicator light is red and always bright, read card, or (input user PIN) #, or press exit button.

Note: When the door opens, there is a long "beep" sound and the indicator light turns to green when the door is unlocked.

4. Basic Functions

4.1 Management menu operations

In all modes, enter the first zone management menu, the management system settings and the first zone related settings' steps are:

* key (Hold on for more than 2 seconds), (Admin Password)#
or to read zone 1 Set-card

Note: Admin Password is 6 digits, 888888 is the factory default admin password. User should change the Admin Password when use the device for first time, otherwise user cannot continue other operation. If the Admin Password is correct, the indicator light will turn to green once and then back to red flash status. Other operations must be performed in this status. If the user forget the admin password or user need to use the management menu for many times can use this method by read the first zone Set-card operation instead.

In double door mode, enter the second zone management menu to manage the settings only related to the second zone, the steps are:

* key (Hold on for more than 2 seconds), (Admin Password)#
or to read zone 2 Set-card

Note: Add number "2" in front of 6 digit of zone 1 Admin Password, it will leads user into zone 2 management menu, if the Admin Password is correct, the indicator light will turn to blue and then back to blue flashing status. Other operations must be operated under this status. If the user forget the admin password or user need to use the management menu for many times can use this read the zone 2 Set-card operation instead. There are only below menu numbers are effective in the zone 2 management menu: 00, 01, 02, 10-12, 21, 22, 30-36.

4.1.1 Change Admin Password

00,(New Admin Password)#,(Repeat Admin Password)#

Note: New Admin Password must be 6 digits

4.1.2 Set or delete Super-open-password

00,(8 digits) #, set Super-open-password

00,0000 #, delete Super-open-password

Note: these functions are available under the First and second zone management menu. First and second zone Super-open-password must not be the same, otherwise only open the door of first zone. Super-open-password has the highest permission to open the door and it can use to open the door anytime.

4.1.3 Set admin card

01, 0#, read card, read card, ..., Set 1-3 Set-cards.

01, 1#, read card, read card, ..., Set 1-3 Add-cards.

01, 2#, read card, read card, ..., Set 1-3 Delete-cards.

01, 3#, read card, read card, ..., Set 1-3 Super-open-cards.

01, 4#, read card, read card, ..., Set 1-3 Anti-duress-cards.

01, 5#, read card, read card, ..., Set 1-3 Authorization-cards.

01, 6#, read card, read card, ..., Set 1-3 Normal-open-cards.

Note: Each type of admin card can be divided several times to set till to 3pcs.

4.1.4 Delete admin card

02, 0000#, delete all 21 admin cards in this zone.

02, 0#, delete 3 Set-cards.

02, 1#, delete 3 Add-cards.

02, 2#, delete 3 Delete-cards.

02, 3#, delete 3 Super-open-cards.

02, 4#, delete 3 Anti-duress-cards.

02, 5#, delete 3 Authorization-cards.

02, 6#, delete 3 Normal-open-cards.

4.1.5 Set Machine Mode

03, 0#, Set to Reader mode.

03, 1#, Set to Single-door mode.

03, 2#, Set to Double-doors mode.

03, 3#, Set to Interlock mode.

03, 9#, Set to Demo mode.

Note: Factory default mode are Single-door mode, menu effect will different in different mode.

The valid menus for Reader mode are:00-04,09,40-42,50-57,60-64, among them, menu 01 and 02 only can adding and deleting admin password card.

The valid menus for Single-door and interlock mode are: 00-04,09,10-12,20-22,30-36,40-45,50-57.

The zone 1 valid menus for Double-doors mode are: 00-04,09,10-12,20-22,30-36,40-45,50-57.

The zone 2 valid menus for Double-doors mode are: 00,01,02,10-12,21,22,30-36.

The valid menus for Demo mode are: 03,09,32,34,51-53,55.

4.1.6 Limits types of reading card

04, 0#, cannot read any card.

04, 1#, can read EM card only.

04, 2#, can read HID card only.

04, 3#, can read IC card only.

04, 4#, can read EM+HID card.

04, 5#, can read EM+IC card.

04, 6#, can read HID+IC card.

04, 7#, can read EM+HID+IC card.

Note: Whether you can read a card is determined by the specific model and the codes above.

4.1.7 Restore to default settings

09, 0000#

Note: After Restore to default settings, Admin Password is unchanged, Machine mode is unchanged, admin cards and user card information are not deleted, and the specific default values are shown in the appendix.

4.1.8 Add User

4.1.8.1 Automatically generates ID numbers to add user card

Read card continuously to add user:

10, read card, read card, ...

Input 8-digit format card number to add user

10, 8# (8-digit format card number) #, 8# (8-digit format card number) #, ...

Input 10-digit format card number to add user:

10, 10# (10-digit format card number) #, 10# (10-digit format card number) #, ...

Note: For example, card number is: 0004301875, 065,42035, front numbers are 10-digit format card number, the following numbers are 8-digit card number, 00 in front of number can be omitted, you can input 4301875 or 65,42035. The card number not separated by commas or other symbols is considered as 10-digit format card number. The following sections are dealt with according to this rule.

4.1.8.2 Specify ID number to add user card or PIN

Specify ID number and read card to add user:

11, (ID) #, read card, (ID) #, read card, ...

Specify ID number and input 8-digit card number to add user:

11, (ID) # 8# (8-digit format card number) #, (ID) # 8# (8-digit format card number) #, ...

Specify ID number and input 10-digit format card number to add user:

11, (ID) # 10# (10-digit format card number) #, (ID) # 10# (10-digit format card number) #, ...

Specified ID number and input 4-6 digits PIN to add user:

11, (ID) # (User PIN) #, (ID) # (User PIN) #, ...

Note: ID number are 1~5 digits between 1~20000, User PIN in zone 1 are any 4~6 digits, except 1234, User PIN in zone 2 are any 7 digits.

4.1.8.3 Specify first ID number to add serial number card users

Add 8-digit format serial number card users:

12, (ID) #, 8# (8-digit format card number) #, (card quantity) #

Add 10-digit format serial number card users:

12, (ID) #, 10# (10-digit format card number) #, (card quantity) #

Note: ID number are 1~5 digits, the range is 1-20000, ID number plus card quantity must be less or equal to 20001. After add serial number cards, the first card will be based on ID number and card number, each time add one card, ID number and card number will add 1 at the same time till to all card is added. In order to prevent duplication of card numbers, please delete all user cards and admin cards before add serial number cards.

4.1.9 Delete user

Delete all users in Zone 1 and Zone 2:

20, 0000#

Delete user card by read card:

21, read card, read card, ...

Delete user by input 8-digit format card number:

21, 8# (8-digit format number) #, 8# (8-digit format number) #, ...

Delete user by input 10-digit format card number:

21, 10# (10-digit format number) #, 10# (10-digit format number) #, ...

Delete user by input ID number

22, (ID) #, (ID number) #, ...

4.1.10 Set open door methods

30, 0#, open door by card, you can open door by user card, but cannot open door by user PIN.

30, 1#, open door by card + PIN, read user card first, then input user PIN to open door.

30, 2#, default value, open door by cards or PIN, read user card or input user PIN to open door.

Note: Super-open-card or Super-open-password is not affected by any open door method; you can open door at any time.

4.1.11 Set Multi-card to open door

31, 1#, default value, read 1 card to open door.

31, (2-10)#, read 2~10 cards in turn to open door(The open door method must set to: open door by card).

4.1.12 Set lock working mode

32, 0#, default value, set lock to Delay mode. After an unlock operation, the lock is opened, then the lock will be closed automatically after a few moment of delay. Apply to normal open.

32, 1#, set lock to Switch mode. After an unlock operation, the lock will keep opening until another unlock operation again, the lock will keep locking, and so on.

32, 2#, set lock to Normal-open mode. Under this mode, the lock will keep opening, not controlled by other unlocking action. If the user don't want to use the Normal-open mode, please set the mode to the other two modes.

Note: A better way to implement the Normal-open mode is operation by Normal-open card in the first mode, it can switch to Normal-open mode and normal status quickly. The operation of Normal-open card, see relevant chapter of admin cards operation.

4.1.13 Set Limits User Mode

33, 0#, disable users to use.

33, 1#, default value, enable users to use.

Notes: A better way to implement the limits of user mode is operation by Authorization-card, it can switch to disable and enable users to operate quickly. The operation of Authorization-card, see relevant chapter of admin cards operation.

4.1.14 Set Open-time

34, 0#, set Open-time to 50mS, apply to electrically controlled lock for external instantaneous large current

34, (1-999) #, the default value is 2, set Open-time from 1 to 999S.

Note: Unlock-time of Access Controller's special power supply should set to min time to ensure the actual Unlock-time match with user's settings.

4.1.15 Set notification to close door

35, (0-99) #, the default value is 10, set the time that notify when user not close the door after opened it. It can be set to after more than (how many) second the buzzer begin to beep for notification.

36, (0-99) #, the default value is 10, set the time for beeping.

Note: If you don't need notification, can set the time for warning to 0.

4.1.16 Set Alarm-time

40, 0#, default value, if set Alarm-time to 0 means no alarm.

40, (0-99) #, Alarm-time is set from 1 to 99 minutes.

4.1.17 Set Anti-dismantle alarm function

41, 0#, default value, disable Anti-dismantle alarm function.

41, 1#, enable Anti-dismantle alarm function.

Note: When the machine is illegally dismantled, it alarms and an alarm signal will be send out at the same time. The alarm can be canceled by inputting Admin Password, read admin card or user card.

4.1.18 Set alarm or doorbell output function

42, 0#, default value, alarm wire output alarm signal voltage.

42, 1#, alarm wire output doorbell signal voltage.

Note: The Alarm wire is internally connected with the drain of the NMOS tube, and the output is active low, which can drive the current below 1A.

4.1.19 Set Anti-crack function

43, 0#, default value, normal working mode.

43, 1#, alarm working mode, when error operation times more than allowed times, the machine alarm will beeps and it send out alarm signal.

43, 2#, locked working mode, when error operation times more than allowed times, the machine will lock up for some time. User cannot press any key or read card during that time.

44, (1-10)#, default value is 10, set maximum times for the error operation from 1 to 10 .

45, (1-99)#, default value is 10, set time locked after the error operation indicate maximum times, from 1 to 99 minutes.

Note: Anti-crack function refers to prevent illegal and unlimited password or card crack to open the door in a short period of time, the basic method is within 10 minutes of invalid password or invalid card number read error exceeds the default setting, the controller will alarm or lock up for some time.

4.1.20 Set LED indicator light mode

50, 0#, standby, LED indicator light is off.

50, 1#, default value, standby, LED indicator light always red.

50, 2#, standby, LED turns green in reader mode, LED turns red in other modes.

4.1.21 Adjust the brightness of the normally bright red indicator

51, 1, 1, ... ,decrease brightness

51, 2, 2, ..., increase brightness

Note: The brightness of the indicator light can be adjusted total 21 different levels. Each time you press the "1" key, it decrease 1 level of brightness. Press and hold on the "1" key, the brightness will continuously decrease. When it reaches to minimum level of brightness, the controller will beep twice. Each time you press the "2" key, it increase the level of brightness. Press and hold on the "2" key, the brightness will continuously increase. When it reaches to the maximum brightness the controller will beep twice.

4.1.22 Set key backlit mode

52, 0#, Normal-off mode for key backlit.

52, 1#, default value, Normal-on mode for key backlit.

52, (2-99) #, Automatic mode for key backlit, turn to micro light over 2-99s.

4.1.23 Adjust brightness of key backlit

53, 1, 1, ... , decrease brightness

53, 2, 2, ... , increase brightness

Note: The brightness of the key backlight can be adjusted at 21 levels. Each time you press the 1 key, decrease 1 level of brightness, press the 1 keys do not move quickly and automatically decrease the brightness, when it has been adjusted to a minimum brightness, "beep" two tips, each time you press the 2 key, increase 1 level of brightness, press the 2 keys do not move quickly and automatically increase the brightness, when it have been adjusted to the maximum brightness, "beep" two tips.

4.1.24 Set buzzer mode

54, 0#, disable buzzer.

54, 1#, default value, enable buzzer.

Note: Enable or disable buzzer only concern normal users operation, such as the sound of opening door by PINs or read cards. When you press the * key for 2 seconds, the buzzer is forced to enable, such as entering the management menu or change the user PIN state. In addition, the alarm tone is not controlled by the setting, and the buzzer can still send an alarm tone when the buzzer disable.

4.1.25 Adjust key volume

55, 1, 1, ... , decrease volume.

55, 2, 2, ... , increase volume.

Note: The key volume can be adjusted at 15 levels. Each time you press the 1 key, decrease 1 level of volume, press the 1 keys do not move quickly and automatically decrease the volume, when it has been adjusted to a minimum volume, "beep" two tips, each time you press the 2 key, increase 1 level of volume, press the 2 keys do not move quickly and automatically increase the volume, when it have been adjusted to the maximum volume, "beep" two tips.

4.1.26 Set the # key whether it can be used doorbell key

56. 0#, default value, the # key can't be used as doorbell key.

56, 1#, the # key can be used as doorbell key

Note: When the # key is used as doorbell key, if the # key is the first key, then it is doorbell function, If the # key is after the digital key, then it is confirm function.

4.1.27 Set doorbell key mode

57, 0#, default value, the doorbell key is invalid.

57, 1#, the doorbell key is valid, but without volume.

57, 2#, the doorbell key is valid, with “ding dong” tone

Note: When the doorbell key is valid, if a special doorbell decoder for our company be used with it, then the relay will connect after press the doorbell key, the relay will release after loosen the doorbell key. If the Alarm is set to lead the doorbell signal output, then press the doorbell key that the output low, loosen the doorbell key output high level. The Alarm wire is internally connected with the drain of the NMOS tube, and the output is active low, which can drive the current below 1A.

4.2.28 Set reader output format

4.2.28.1 Set facility code

60, (0-255)#, default value is 0, set facility code.

Note: The key output format is multi key buffer output, the facility code will be used, See the following sections for specific use.

4.1.28.2 Set D0 & D1 output format

61, 0#, D0 & D1 output wiegand format.

61, 1#, D0 output RS232-TTL-HEX format.

61, 2#, D0 output RS232-TTL-ASCII-8 format

61, 3#, D0 output RS232-TTL-ASCII-10 format.

Note: The wiegand format is an international protocol for access control products. But the width of pulse and interval time are different. Our standard: Pulse's high level is 5V and low level is 0V. Width is 40uS, interval time is 2mS.

RS232-TTL-HEX format refers to the standard RS232 communication protocol data output, TTL level 0-5V, the output data is output by the card byte HEX format.

The output RS232-TTL-ASCII-8 format is the output data is ASCII character format, card number data is 8 bit format, and same as the ordinary EM card marked on the 8 bit card number, but omit the 0 in front of it.

The output RS232-TTL-ASCII-10 format is the output data is ASCII character format, card number data is 10 bit format, and same as the ordinary EM card marked on the 10 bit card number, but omit the 0 in front of it.

For example, a 3 byte number of RS232-TTL-HEX format is A83EF6, the actual output is A83EF6, the RS232-TTL-ASCII-8 format is 168,16118, the actual output is 16816118, the RS232-TTL-ASCII-10 format is 0011026166, the actual output is 11026166.

4.1.28.3 Set wiegand output format for reading card

62, (26-66)#, default value is 26, the Wiegand output format for reading card can be set from 26-66.

4.1.28.4 Set wiegand output parity format for reading card

63, 0# wiegand output without parity check.

63, 1# default value, wiegand output with parity check (EO format)

Note: EO format is standard wiegand format. Even check data add in front and Odd check data add in the end.

4.1.28.5 Set wiegand output format for pressing key

64, 0#, default value, single key output, 4 bits wiegand data(no check bit).

64, 1#, single key output, 6 bits wiegand data(with parity bit).

64, 2#, single key output, 8bits wiegand data(with complement check bit).

64, 3#, 4 digit key buffered output, facility code + binary PIN, wiegand 26-66 bit.

64. 4#, 1-5 digit key + # key buffered output, facility code + binary PIN, wiegand 26-66 bit.

64. 5#, 6 digit key buffered output, BCD code, wiegand 26-66 bit .

Note: The keys are output in the form of Wiegand signals, and the keys correspond to the outputs as follows:

Single key output, 4 bits wiegand data(no check bit). Every key output a 4 bit data, Corresponding relation is:

1(0001), 2(0010), 3(0011)

4(0100), 5(0101), 6(0110)

7(0111), 8(1000), 9(1001)

*(1010), 0(0000), #(1011)

Single key output, 6 bits wiegand data(with parity bit) . Every key output a 6 bit data, Corresponding relation is:

1(000010), 2(000100), 3(000111)

4(101001), 5(101010), 6(101100)

7(101111), 8(110001), 9(110010)

*(110100), 0(000001), #(110111)

Single key output, 8bits wiegand data(with complement check bit) . Every key output a 8 bit data, Corresponding relation is:

1(11100001), 2(11010010), 3(11000011)

4(10110100), 5(10100101), 6(10010110)

7(10000111), 8(01111000), 9(01101001)

*(01011010), 0(11110000), #(01001011)

4 digit key buffered output, facility code + binary PIN, wiegand 26-66 bit. Press any 4 digits, output a wiegand 26-66 card number. If facility code is 255, press 1234, then the output binary PIN will be:

0 11111111 0000010011010010 0.

1-5 digit key + # key buffered output, facility code + binary PIN, wiegand 26-66 bit. Press any 1-5 digits less than 65535, then press #, if facility code is 255, press 65535#, then the output binary number will be:

0 11111111 1111111111111111 1.

6 digit key buffered output, BCD code, wiegand 26-66 bit . Press any 6 digits, if press 123456, then the output binary number will be:

0 0001 0010 0011 0100 0101 0110 0.

4.2 Admin card or PIN operation

Admin card is divided into zone 1 and zone 2, admin card in different zone operate in different zone, the following description

only admin card operation in the zone 1, admin card operation in the zone 2 is same.

4.2.1 Set-card operation

The main function of Set-card is to replace the input Admin Password into the management menu operation. It is suitable for forgetting the Admin Password or frequently entering the management menu operation. Its operation is:

Read Set-card, equivalent to operation: * (Hold down for more than 2 seconds), (Admin password) #.

Note: After reading Set-card, the indicator lights are red flashing, indicating that the management menu operation mode has been entered and other operations can be performed.

4.2.2 Add-card operation

Read Add-card, read user card, read user card, read Add-card.

Note: Add-card is mainly used for rapid continuously to add the user card, first read Add-card, sound “beep” two short sound, light is orange, indicate entering the add user card state, second read Add-card, sound “beep” a long sound, light turns red, indicate exiting add user card state.

4.2.3 Delete-card operation

Read Delete-card, read user card, read user card, read Delete-card.

Note: Delete-card is mainly used for rapid continuously to delete the user card, first read Delete-card, sound “beep” two short sound, light is orange, indicate entering the delete user card state, second read Delete-card, sound “beep” a long sound, light turns red, indicate exiting delete user card state.

4.2.4 Super-open-card operation

Read Super-open-card.

Note: Super-open-card has the highest open authority, in a variety of way to open the door, or restrict the user to open the door, the Super-open-card can open the door.

4.2.5 Super-open-password operation

(8 digit Super-open-password) #.

Note: Super-open-password is 8 digits. The Super-open-password must be different in two zones or it can only open the door in Zone 1. Super-open-password has the highest open authority, in a variety of way to open the door, or restrict the user to open the door, the Super-open-password can open the door.

4.2.6 Anti-duress-card operation

Read Anti-duress-card.

Note: Anti-duress-card have the same authority with Super-open-password. The only difference is after reading Anti-duress-card, the door will open while outputting alarm signal.

4.2.7 Authorization-card operation

Read Authorization-card once, two short beeps, limit users.

Read Authorization-card again, one long beep, release limit.

Note: Authorization-card is also called header card, it authorizes users. By default, users can operate properly, you can use an Authorization-card when you need to restrict user access.

4.2.8 Normal-open-card operation

Read Normal-open-card once, two short beeps, lock keep open, not controlled by other unlocking action.

Read Normal-open-card again, one long beep, release normal open state.

4.3 Users operation

4.3.1 Get user card or PIN

Users must obtain the user card or user PIN from the administrator for the first time. Among them, the user PIN can be obtained separately from the administrator, and can also be changed by the user card. The user card and the user PIN are divided into first zones and second zones, they operate the door of the corresponding zone respectively. The number of user PIN is specified, zone 1 is 4-6 digits, and zone 2 is fixed 7 digits. We take Zone1 as sample, it is the same in zone 2. Only PIN digits and LED color difference, see indicator light and buzzer prompt.

4.3.2 Change user PIN

Change user PIN by card:

* (Hold down for more than 2 seconds), read card, (Old PIN)#, (New PIN)#, (Repeat new PIN)#

Note: Every card's default PIN is 1234 which can't be use to open door unless you change it.

Change user PIN by ID number:

*(Hold down for more than 2 seconds), (ID number), (Old PIN)#, (New PIN)#, (Repeat new PIN)#

Note: You need to know ID when you change PIN through this method. ID number needs to be obtained from the administrator. The old PIN cannot be the initial PIN 1234.

4.3.3 User Open door

Open door by Single card:

read user card

Open door by multi-card:

Read user card, read user card, ...

Open door by User card or PIN:

Read user card or (User PIN)#

Open door by User card and PIN:

Read user card, (User PIN)#

Exit operation:

Press exit button

Note: In addition to the exit operation, make sure that the machine is not in a disable user state. You must first set up good way to open the door, open the door by multi-card also needs to set a good quantity of card. If card or PIN is valid, a long “beep”, the lock will be opened. During the opening time, LED turns green. After that, LED turns red and keep. In card & PIN open mode or multi-card open door mode, the interval time of reading card or inputting PIN cannot be more than 5 seconds.

4.4 Other operations

4.4.1 Cancel alarming

Read admin or the user card, or (Admin Password)#, or 2(Admin Password)#

Note: Add 2 in front of Admin Password, that is the 7 digits Admin Password of zone 2. When the alarm has happened, the buzzer will ring "Wu, Wu" alarm sound. User can cancel the alarm with reading the valid user card and inputting Admin Password. But the alarm output signal of the anti-duress card can't be canceled.

4.4.2 Admin Password initialization

When you forget the Admin Password, you can restore it to the initial password by special operation. Operation as follows: Power off, press the # keys do not move, and power on. Release the # key after two “beep”. Admin password has restored to 888888. But the other parameters, the info of the card and pin will be still kept.

4.4.3 Restore factory settings

When you forget the Admin Password, or when the user randomly confused various parameters, you can return to the normal situation by restoring the factory settings, as follows:

Power off, press the * keys do not move, and power on. Release the * key after two “beep”. Admin Password has restored to 888888, while the machine parameters revert to factory settings, the specific default values are shown in the schedule, other cards and PIN information will not be deleted.

4.5 Operation characteristics in different machine modes

4.5.1 Operation characteristics in reader mode

In the reader mode, you can only operate menus: 00-04, 09, 40-42, 50-57, 60-64. Among them, the 01 and 02 menus can only be added and deleted Set-card.

Reading Set-card, the machine does not output wiegand signal, reading the other card or inputting user PIN, the machine output wiegand signal.

The three control wires, LED_R, LED_G and BEEP, their functions are as follows:

LED_G: Green LED control wire, LED turns to green when low level.

LED_R: Red LED control wire, LED turns to red when low level.

BEEP: Buzzer control wire, Buzzer keep sounds when low level.

When LED_G & LED_R turns to low level together, the LED indicator light will turn to orange(LED indicator light mode is 0),Green(LED indicator light mode is 1) or red (LED indicator light mode is 2) .

4.5.2 Operation characteristics in Single-door mode

The default mode is Single-door mode, most applications work in this mode, in this mode, cannot operate the menu 60-64, also cannot enter the second operation zone.

4.5.3 Operation characteristics in Double-doors mode

Double-doors mode means one machine can control two doors. It will choose different door according to the user card number or the PIN digits. Double-doors mode not only support all the functions of Single-door mode but also support separate setting of the second door. After add 2 in front of the 6-digit Admin Password, it turns a 7-digit Admin Password, you can enter the zone 2 to set. The admin card setting is the same with the zone 1. With 7-digit Admin Password into management mode, only menus 00, 01, 02, 10-12, 21, 22, 30-36 are valid.

4.5.4 Operation characteristics in Interlock mode

Interlock mode is refers to interlocking between two door, installing a machine and a Magnetic Door Contact on each door, and they are set to Interlocked mode. One door can be opened only when the two doors are closed. If a door has been opened but not closed, another door cannot be opened. In addition, the operation of the interlock mode is the same as that of the Single-mode mode.

4.5.5 Operation characteristics in Demo mode

Demo mode is a mode for Single-door mode, primarily for display purposes or without safety, as a tool to use any card to open the door. In this mode, any card or 6-digit PIN can be opened without authorization. When entering management mode, only menus 03, 09, 32, 34, 51-53 and 55 are valid.

5 Management menu summary table

5.1 Reader mode management menu summary table

Way to enter menu : * (Hold down for more than 2 seconds), (Admin password) #			
Menu	Parameter or operation step	Function	Default value
00	(New admin password) #, (Repeat new admin password)	Change admin password	888888
01	0# ,read card, read card, ...	Set 1-3 Set-cards	
02	0#	Delete 3 Set-cards	

Way to enter menu : * (Hold down for more than 2 seconds), (Admin password) #			
Menu	Parameter or operation step	Function	Default value
03	0#	Reader mode	1
	1#	Single-door mode	
	2#	Double-doors mode	
	3#	Interlock mode	
	9#	Demo mode	
04	0#	Cannot read card	7
	1#	Only read EM card	
	2#	Only read HID card	
	3#	Only read IC card	
	4#	Read EM and HID card	
	5#	Read EM and IC card	
	6#	Read HID+IC card	
	7#	Read EM, HID and IC card	
09	0000#	Restore default settings, admin password and user information unchanged	
40	0, #	Set Alarm time to 0, means no alarm	0
	(1-99)#	Set the alarm time to 1-99 minutes	
41	0#	Disable Anti-dismantle alarm	0
	1#	Enable Anti-dismantle alarm	
42	0#	Alarm lead output alarm signal voltage	0
	1#	Alarm lead output doorbell signal voltage	
50	0#	Indicator light is always off	1
	1#	Red indicator light is always on	
	2#	Green indicator light is always on(reader mode)	
51	1,1,...,#	Decrease the brightness of the normally bright red indicator	18
	2,2,...,#	Increase the brightness of the normally bright red indicator	
52	0#	Key backlit is always off	1
	1#	Key backlit is always on	
	(2-99)#	After delay 2-99 seconds, Key backlit turn to micro light	
53	1,1,...,#	Decrease the brightness of the backlit	14
	2,2,...,#	Increase the brightness of the backlit	
54	0#	Disable the buzzer	1
	1#	Enable the buzzer	
55	1,1,...,#	Decrease the keypad tone	10
	2,2,...,#	Increase the keypad tone	
56	0#	The # key can't be used as doorbell key	0
	1#	The # key can be used as doorbell key	

Way to enter menu : * (Hold down for more than 2 seconds), (Admin password) #			
Menu	Parameter or operation step	Function	Default value
57	0#	The doorbell key is invalid.	0
	1#	The doorbell key is valid, but without volume.	
	2#	The doorbell key is valid, with “ding dong” tone.	
60	(0-255)#	Set facility code	0
61	0#	D0&D1 output wiegand format.	0
	1#	D0 output RS232-TTL-HEX format.	
	2#	D0 output RS232-TTL-ASCII-8 format.	
	3#	D0 output RS232-TTL-ASCII-10 format.	
62	(26-66)#	The wiegand output format for reading card can be set from 26-66 bits.	26
63	0#	Wiegand output without parity check.	1
	1#	wiegand output with parity check(EO format).	
64	0#	Single key output, 4 bits wiegand data(no check bit).	0
	1#	Single key output, 6 bits wiegand data(with parity bit).	
	2#	Single key output, 8bits wiegand data(with complement check bit).	
	3#	4 digit key buffered output	
	4#	1-5 digit key + # key buffered output	
	5#	6 digit key buffered output	

5.2 Single-door mode management menu summary table

Way to enter menu : * (Hold down for more than 2 seconds), (Admin password) #			
Menu	Parameter or operation step	Function	Default value
00	(New Admin Password) #, (Repeat new Admin Password)	Change admin password	888888
	(8 digits) #	Set Super-open-password	
	0000#	Delete Super-open-password	
01	0#, read card, read card, ...	Set 1-3 Set-cards.	
	1#, read card, read card, ...	Set 1-3 Add-cards.	
	2#, read card, read card, ...	Set 1-3 Delete-cards.	
	3#, read card, read card, ...	Set 1-3 Super-open-cards.	
	4#, read card, read card, ...	Set 1-3 Anti-duress-cards.	
	5#, read card, read card, ...	Set 1-3 Authorization-cards.	
	6#, read card, read card, ...	Set 1-3 Normal-open-cards.	
02	0000, #	Delete 21 admin cards	
	0#	Delete 3 Set-cards.	

Way to enter menu : * (Hold down for more than 2 seconds), (Admin password) #			
Menu	Parameter or operation step	Function	Default value
	1#	Delete 3 Add-cards.	
	2#	Delete 3 Delete-cards.	
	3#	Delete 3 Super-open-cards.	
	4#	Delete 3 Anti-duress-cards.	
	5#	Delete 3 Authorization-cards.	
	6#	Delete 3 Normal-open-cards.	
03	0#	Reader mode	1
	1#	Single-door mode	
	2#	Double-doors mode	
	3#	Interlocked mode	
	9#	Demo mode	
04	0#	Cannot read card	7
	1#	Only read EM card	
	2#	Only read HID card	
	3#	Only read IC card	
	4#	Read EM and HID card	
	5#	Read EM and IC card	
	6#	Read HID+IC card	
	7#	Read EM, HID and IC card	
09	0000#	Restore default settings, admin password and user information unchanged.	
10	Read card, read card, ...	Read card continuously to add users.	
	8#(8-digit format card number)#, 8#(8-digit format card number)#, ...	Input 8-digit format card number to add users.	
	10#(10-digit format card number)#, 10#(10-digit format card number)#, ...	Input 10-digit format card number to add users.	
11	(ID)#, read card, (ID)#, read card, ...	Specify ID number and read card to add user.	
	(ID)#8#(8-digit format card number)#, ID#8#(8-digit format card number)#, ...	Specify ID number and input 8-digit card number to add user.	
	(ID)#10#(10-digit format card number)#, (ID)#10#(10-digit format card number)#, ...	Specify ID number and input 10-digit format card number to add user.	
	(ID)#(user PIN)#, (ID)#(user PIN)#, ...	Specified ID number and input 4-6 digits PIN to add user.	
12	(ID)#, 8#(8-digit format card number)#, (card quantity)#	Add 8-digit format serial number card users.	
	(ID)#, 10#(10-digit format card number)#, (card quantity)#	Add 10-digit format serial number card users	
20	0000#	Delete all users in Zone 1 and Zone 2.	
21	Read card, read card, ...	Delete card user by reading card	
	8#(8-digit format number)#, 8#(8-digit format number)#, ...	Specified ID number and input 8-digit format card number to delete user.	
	10#(10-digit format number)#, 10#(10-digit format number)#, ...	Specified ID number and input 10-digit format card number to delete user.	
22	(ID)#, (ID)#, ...	Input ID number to delete user.	

Way to enter menu : * (Hold down for more than 2 seconds), (Admin password) #			
Menu	Parameter or operation step	Function	Default value
30	0#	Open door way by card	2
	1#	Open door way by card and PIN	
	2#	Open door way by card or PIN	
31	1#	Set one card to open door	1
	(1-10)#	Set 2-10 cards together to open door	
32	0#	Set lock to Delay mode	0
	1#	Set lock to Switch mode	
	2#	Set the lock to Normal-open mode	
33	0#	Disable users to use.	1
	1#	Enable users to use.	
34	0#	Set Open-time to 50mS	2
	(1-999)#	Set Open-time from 1 to 999S	
35	(0-99)#	After opening the door, delay 0-99 seconds to start the tone	10
36	(0-99)#	Set the closing prompt tone for 0-99 seconds.	10
40	0,#	Set the alarm time to 0, means no alarm	0
	(1-99)#	Set the alarm time to 1-99 minutes	
41	0#	Disable anti-dismantle alarm function.	0
	1#	Enable anti-dismantle alarm function.	
42	0#	Alarm lead output alarm signal voltage	0
	1#	Alarm lead output doorbell signal voltage	
43	0#	Normal operate mode	0
	1#	Enable anti-crack alarm function	
	2#	Enable anti-crack locked function	
44	(1-10)#	Set anti-crack wrong time 1-10	10
45	(1-99)#	Set anti-crack locked time 1-99 minutes	10
50	0#	Indicator light is always off	1
	1#	Red indicator light is always on	
	2#	Green indicator light is always on(reader mode)	
51	1,1,...,#	Decrease the brightness of the normally bright red indicator	18
	2,2,...,#	Increase the brightness of the normally bright red indicator	
52	0#	Key backlit is always off	1
	1#	Key backlit is always on	
	(2-99)#	After delay 2-99 seconds, Key backlit turn to micro light	
53	1,1,...,#	Decrease the brightness of the backlit	14
	2,2,...,#	Increase the brightness of the backlit	
54	0#	Disable the buzzer	1

Way to enter menu : * (Hold down for more than 2 seconds), (Admin password) #			
Menu	Parameter or operation step	Function	Default value
	1#	Enable the buzzer	
55	1,1,...,#	Decrease the keypad tone	10
	2,2,...,#	Increase the keypad tone	
56	0#	The # key can't be used as doorbell key	0
	1#	The # key can be used as doorbell key	
57	0#	The doorbell key is invalid.	0
	1#	Doorbell button valid, no keypad sound	
	2#	Doorbell button valid & sound Dingdong	

5.3 Double-doors mode management menu summary table

Two ways to access the management menu:

* (Hold down for more than 2 seconds), (Admin password) #, the operation of see "single-door mode management menu summary table".

* (Hold down for more than 2 seconds), (Admin password) #, mainly used to operation second zone related content, as shown in the following table:

Way to enter menu : * (Hold down for more than 2 seconds), 2(Admin password) #			
Menu	Parameter or operation step	Function	Default value
00	(8-digit PIN)#	Set super PIN	
	0000#	Delete Super-open-PIN	
01	0#, read card, read card, ...	Set 1-3 Set-cards.	
	1#, read card, read card, ...	Set 1-3 Add-cards.	
	2#, read card, read card, ...	Set 1-3 Delete-cards.	
	3#, read card, read card, ...	Set 1-3 Super-open-cards.	
	4#, read card, read card, ...	Set 1-3 Anti-duress-cards.	
	5#, read card, read card, ...	Set 1-3 Authorization-cards.	
	6#, read card, read card, ...	Set 1-3 Normal-open-cards.	
02	0000, #	Delete 21 admin cards	
	0#	Delete 3 Set-cards.	
	1#	Delete 3 Add-cards.	
	2#	Delete 3 Delete-cards.	
	3#	Delete 3 Super-open-cards.	
	4#	Delete 3 Anti-duress-cards.	
	5#	Delete 3 Authorization-cards.	
	6#	Delete 3 Normal-open-cards.	
10	Read card, read card, ...	Read card continuously to add users.	
	8#(8-digit format card number)#,8#(8-digit format card number)#, ...	Input 8-digit format card number to add users.	
	10#(10-digit format card number)#,10#(10-digit format card number)#, ...	Input 10-digit format card number to add users.	

Way to enter menu : * (Hold down for more than 2 seconds), 2(Admin password) #			
Menu	Parameter or operation step	Function	Default value
11	(ID)#, read card, (ID)#, read card, ...	Specify ID number and read card to add user.	
	(ID)#8#(8-digit format card number)#, (ID)#8#(8-digit format card number)#, ...	Specify ID number and input 8-digit card number to add user.	
	(ID)#10#(10-digit format card number)#, (ID)#10#(10-digit format card number)#, ...	Specify ID number and input 10-digit format card number to add user.	
	(ID)#(user PIN)#, (ID)#(user PIN)#, ...	Specified ID number and input 4-6 digits PIN to add user.	
12	(ID)#, 8#(8-digit format card number)#, (card quantity)#	Add 8-digit format serial number card users.	
	(ID)#, 10#(10-digit format card number)#, (card quantity)#	Add 10-digit format serial number card users	
21	Read card, read card, ...	Delete card user by reading card	
	8#(8-digit format number)#, 8#(8-digit format number)#, ...	Specified ID number and input 8-digit format card number to delete user.	
	10#(10-digit format number)#, 10#(10-digit format number)#, ...	Specified ID number and input 10-digit format card number to delete user.	
22	(ID)#, (ID)#, ...	Input ID number to delete user.	
30	0#	Open door way by card	2
	1#	Open door way by card and PIN	
	2#	Open door way by card or PIN	
31	1#	Set one card to open door	1
	(1-10)#	Set 2-10 cards together to open door	
32	0#	Set lock to Delay mode	0
	1#	Set lock to Switch mode	
	2#	Set the lock to Normal-open mode	
33	0#	Disable users to use.	1
	1#	Enable users to use.	
34	0#	Set Open-time to 50mS	2
	(1-999)#	Set Open-time from 1 to 999S	
35	(0-99)#	After opening the door, delay 0-99 seconds to start the tone	10
36	(0-99)#	Set the closing prompt tone for 0-99 seconds.	10

5.4 Interlock mode management menu summary table

Please refer to "single-door mode management menu summary table".

5.5 Demo mode management menu summary table

Way to enter menu : * (Hold down for more than 2 seconds), (Admin password) #			
Menu	Parameter or operation step	Function	Default value
03	0#	Reader mode	1
	1#	Single-door mode	

Way to enter menu : * (Hold down for more than 2 seconds), (Admin password) #			
Menu	Parameter or operation step	Function	Default value
	2#	Double-doors mode	
	3#	Interlock mode	
	9#	Demo mode	
09	0000#	Restore default settings, admin password and user information unchanged.	
32	0#	Set lock to Delay mode	0
	1#	Set lock to Switch mode	
	2#	Set the lock to Normal-open mode	
34	0#	Set Open-time to 50mS	2
	(1-999)#	Set Open-time from 1 to 999S	
51	1,1,...,#	Decrease the brightness of the normally bright red indicator	18
	2,2,...,#	Increase the brightness of the normally bright red indicator	
52	0#	Key backlit is always off	1
	1#	Key backlit is always on	
	(2-99)#	After delay 2-99 seconds, Key backlit turn to micro light	
53	1,1,...,#	Decrease the brightness of the backlit	14
	2,2,...,#	Increase the brightness of the backlit	
55	1,1,...,#	Decrease the keypad tone	10
	2,2,...,#	Increase the keypad tone	

6 Precautions in use

- Lead line cannot be connected wrong, especially the power line, otherwise the machine may be burned or not work properly.
- Because the machine internal relay is used for signal output, cannot directly drive large power load, in order to ensure the long-term stable operation of the machine, the electric lock be not connected directly with NO, NC, COM of the machine, but driven by an access control special power supply.
- When you enter the management mode or change the user PIN, you must press and hold the * key for more than two seconds to be valid.
- Is for the sake of safety, the default admin initial password 888888 only support the menu 00, which forced users to change the 6-digit admin password, or cannot access other settings.
- The factory default mode is the single-door mode. If you need other mode functions, you must enter the appropriate mode to operate properly. In different modes, the management menu is also different.

7 Common troubleshooting

Fault phenomenon	Possible causes	Troubleshooting
Indicator light is not working properly	1. The power line is too thin, or the use of no pure copper wire, resulting in voltage is too low.	Replace thicker, qualified wire
	2. Wrong connection or bad contact of power line.	Wiring in the correct way.
	3. Set the indicator light normal off	Set to normal mode.
Fail to enter management mode.	1. Hold the * key in front of the password longer than 2 seconds.	Operate in the right way
	2. Input wrong admin password.	Enter the correct password
	3. Forget admin password.	Change by Setting card or press the # key to initialize.
Can enter management mode, but part of the menu is invalid.	1.can't setting some menu in default password, only can change admin password.	Change Admin password.
	2. The machine mode is incorrect, and some of the menus are blocked.	Set to right machine mode.
User card can't open the door	1. Ring three times if it is not the valid user card.	Add the user card again
	2. Ring three times if the user is disable.	Enable user.
	3. Ring one time if the lock connection is wrong.	Make sure the connection is correct.
Reading card distance is too close.	1. The use of substandard switching power supply.	Change to linear power supply or connect the housing to the ground.
	2. Part of the electrical lock interference is too large.	Choose the qualified lock or parallel connect a 470uF/25V electrolytic capacitor at the two ends of the lock

FCC Statement

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. Changes or modifications not explicitly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Note: 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 against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following 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.

The equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.