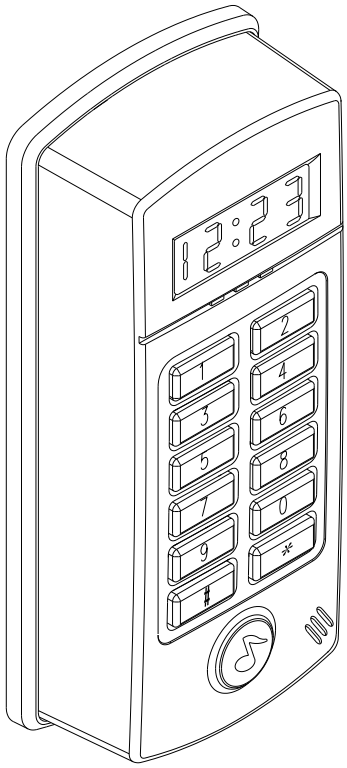
ST-780 Series

NETWORK PROXIMITY ACCESS CONTROL OPERATION AND INSTALLATION MANUAL



VER 15.09.01

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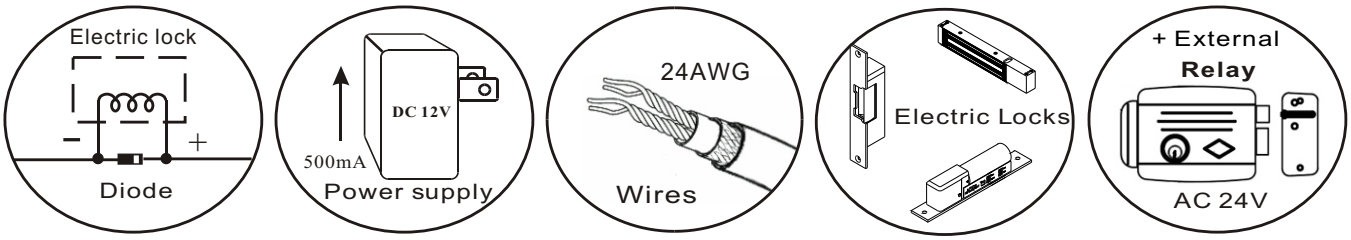
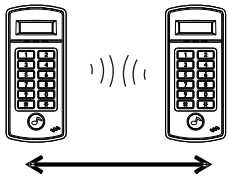
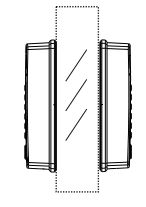
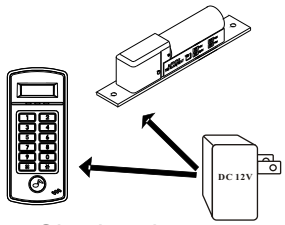
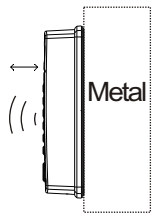
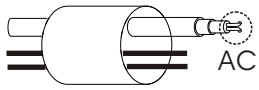
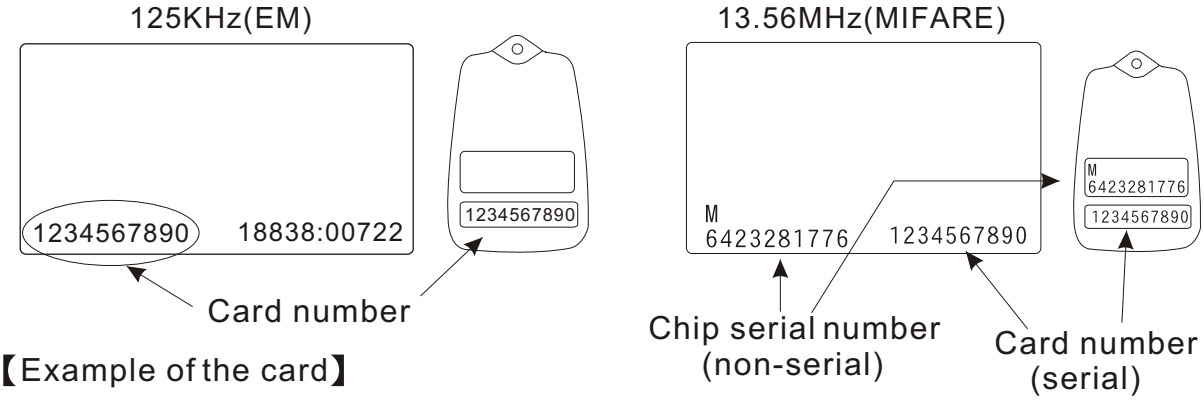
ATTENTIONS



1.Power Supply requirement: DC 12V 500mA or above.
2.Door opening or alarm connector output: Maximum load of 1A@12VDC.
※Connect with external RELAY to control higher voltage or current .
3.Electric Lock: Fail-safe or Fail-secure type (Refer to p13).
※Please note: In order to protect the proximity unit, please connect one Diode between two power supply connectors of electric lock to absorb surge.
4.Please use 24AWG and above of double shieled twisted pair wire for communication wires.
5.Avoid installing the unit at the following environment:
A. Machines with the same frequency as the proximity unit around the neighborhood.
B. In the area of a base station with radio or wireless transmission.
C. On metal wall (proximity distance will be shorten).
6.It is suggested to separate the power supply of electric lock and proximity unit in order to stabilize the power supply.
7.It is IP54 waterproof and its surface is completely waterproof. Please apply waterproof silicone on its base if it is mounted on rough surface to make sure its base is waterproof.
8.Do not place communication and power supply wires at the same route in order to prevent interference which might cause abnormal communication.
9.Communication methods: Use of RS-485, TCP/IP, USB interfaces to connect with computer.

 Too close	 Too close	 Sharing the same power supply	Proximity distance becomes short 	Communication wire 
X	X	X	X	X

- Card number in the back of the card



【Example of the card】
The last 8-digit number of 1234567890 is 34567890.

1.Features introductions

★Multiple waterproof design with built-in door bell button. It is suitable for both indoor or outdoor use.

★LED indicator to display time and card number. It displays setting modes when it is used for standalone setting.

★When connecting with computer, it can be used for data inquiry and function setting simultaneously. (Door open/close, activate alarm system, etc). It can also operate solely to manage access control.

★Function setting can be done by computer or reader itself. (Single registration or deletion, door open time, etc).

★The historical data can reach up to 9,000 by single reader operation. When linking with computer, its data input/output capacity is unlimited.

★Main reader has 4,500 card registrations capability. Each card is able to do self-setting for personal password and effective in/out time.

★Main reader has 48 units of time zone. Each time zone unit also has 5 time ranges for user to set.

Example: It can be set from"G" hour "H" minute to "I" hour "J" minute on Mondays, Wednesdays, Saturdays in periodical of "A" year "B" month "C" day to "D" year "E" month "F" day as effective in/out time range.

★Equipped with hardware self-testing function.

★Internal batteries will provide power supply when power cut occurred to prevent any data from being erased and system time can operate as normal.

★Main reader access control's range:

- Card number - It must be registered before use.
- Password - Personal password has to key in to open the door.
- Time zone - Setting the effective year, month, day, time range, Monday-Sunday.
- Special holidays- User could set any holidays as to prevent any unauthorized access.
- Error control - Alarm will activate when"N" times of consecutive error password entering occurred.

★Main reader's sensing range:

- Anti-tamper - When the reader is tampered , alarm will be activated.
- Anti-duress - It will operate when password and duress code are entered to send help signal to the nearest police station. It must be done manually to disable anti-duress function.
- Door open button sensing - Door will open immediately when the button is pushed.
- Anti-theft - Alarm will be activated when sensing any abnormal operations.
- Exceed door shut time - Alarm will be activated, when door is not closed exceeding initial time setting control.

★External sub-reader available to connect.

★Frequency:125KHz or 13.56MHz

★Proximity range: 1.5-7cm according to the types of card and frequency use.

★Dimensions: 140L X 60W X 30H(mm)

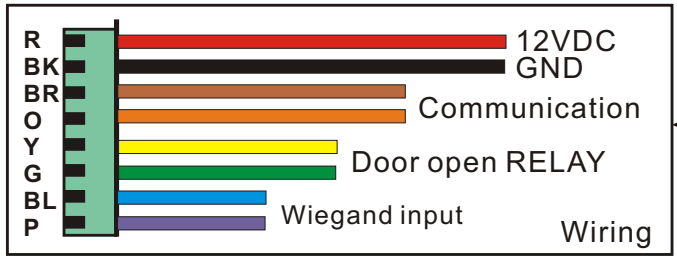
★Power supply : DC12V, Power consumption: 110mA (standby); 150mA (operation).

★Operation temperature : 0-70 ℃, Humidity: 85%Rh Max.

2.Installation procedures

Mount the unit (Page 17)

Wiring (Page 13-1 6)



Door open Relay output jump (Page 13)

Door Open Relay output as N.O.(default)

Power supply to the reader

Check if power (RED)indicator is on. Then, the screen will show time

NO

If not, disconnect the power supply immediately.

Ensure the adapter's voltage and polarity are correct.

YES

Enter setting mode

Enter system password (＊＃5678 ＃), then a beep sound and yellow indicator light to enter into setting mode.
If there isn't any activation, this system will automatically escape from the setting mode.

Reader number or change reader number(Page 8)

Default reader number is 001. Enter 10 and then 3-digit reader number to change reader number(each reader has its own reader number for software to recognise).

Operation with computer online

NO

Standalone mode

Adding new cards(standalone)(Page 6)

Enter 01 and proximity card or enter card number. One beep sound to complete registration.
Press ＊ button to escape.

Deleting cards (standalone) (Page 6)

YES

Press ＊ button to exit setting mode

Enter 02 and proximity card or enter card number.
One beep sound to complete deletion.
Press ＊ button to escape.

Completion of setting

Activate the software
(default account:USER,password:0000)

1.Default reader number is 1 and communication interface is Com1 when entering into the software.
2.Reader number 1 will respond when both interface and time are correct. Please check the wiring and its interface and reader number when there is no response from the reader.
3.Click Basic Information setting ->User->Add new user Information / Data.
4.Click Basic Information Setting ->Reader->Add New Reader.

Add new user and reader

Send all settings to the reader

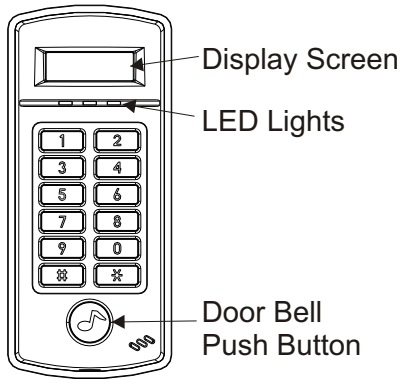
Send all data to the reader when all settings are completed in order to operate.
Data which need to be sent are:1. Time 2. User's data 3. Time Zone 4. Parameter
Please refer to the software manual for detailed operation.

Completion of setting

3. Reader front panel & types of proximity card

(1) Front Panel Indicator Lights

- POWER (Red) : Power indicator(On).
  Operation error (Flashing).
- OK (Green) : Door open indicator.
- STATUS (Yellow) : Enter system setting mode.



(2) 10 entry (button), two function keys : "＃" & "＊".

- [#] key:
  A. Enter data confirmation button (ENTER)
  B. Card number will be displayed on the screen when the card is proximity and # button is pressed. (The function is available when "Display Card Number Door Open Mode" function is set as ON; please refer to P9 for setting Function 28).
- [＊] key: clear or escape button (CLR/ESC)

(3) Model series

ST-780 :125KHz EM-Marin format

ST-780M :13.56MHz Mifare format

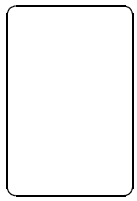
ST-780MF:13.56MHz Mifare SOCA format

ST-780MH:13.56MHz Mifare SOCA V.2 format

(4) Types of proximity card

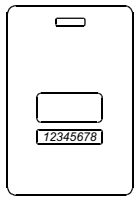
SC-10

Thin card, thickness of 0.8 mm, ISO standard card dimensions. It can be printed directly from card printer. Read range :
EM 125KHz： 5- 7cm
Mifare 13.56MHz:3-5cm



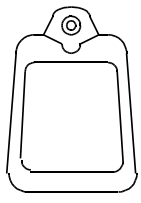
SC-20

Thick card, thickness of 1.78 mm, ISO standard card dimensions. Read range :
EM 125KHz : 5～7cm



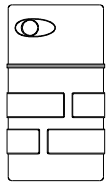
SC-30

Key tag, dimensions: 51L X 32W X 7.8H (mm). Ultrasonic connection, waterproof, shock- proof. Read range :
EM 125KHz：2-3.5cm
Mifare 13.56MHz:1.5-2.5cm



SC-50

Key tag, dimensions: 46L X 25W X 7H (mm). Ultrasonic connection, waterproof, shock- proof. Read range :
Mifare 13.56MHz:1.5-2.5cm



★ The above read range stated is for reference and it is varied according to the different environment it is used.

4.Operation instructions

- **Start reader** : It begins self-testing function when power is on. Display current time on the screen when it is completed.

- **Proximity :** Sense the card near the unit. The following states are shown below.
  A. Green light (OK) is on to display card number and open the door.
  It is a valid card.
  B. Continuous beep sound (DENY). It shows invalid or unregistered card or invalid time or under access control.

- **Anti-duress** : When under duress, presses ∗ button before entering password to activate alarm. (Default value of duress code is ∗, it can be changed by user)
  Example : Anti-duress code is 1, password is 1 2 3 4. In order to activate anti-duress alarm, user should key in ∗ 1 2 3 4 .
  Note:This function is only available for Door Open Mode 3-proximity and password mode.

- **Setup mode:**

User must enter into setting mode first before changing any system functions.
User must enter ∗ # system password # for system function selection. Default system password as 5 6 7 8 .
(Example: User can enter into the set up mode by entering ∗ # **5 6 7 8** #).

5.Quick setting

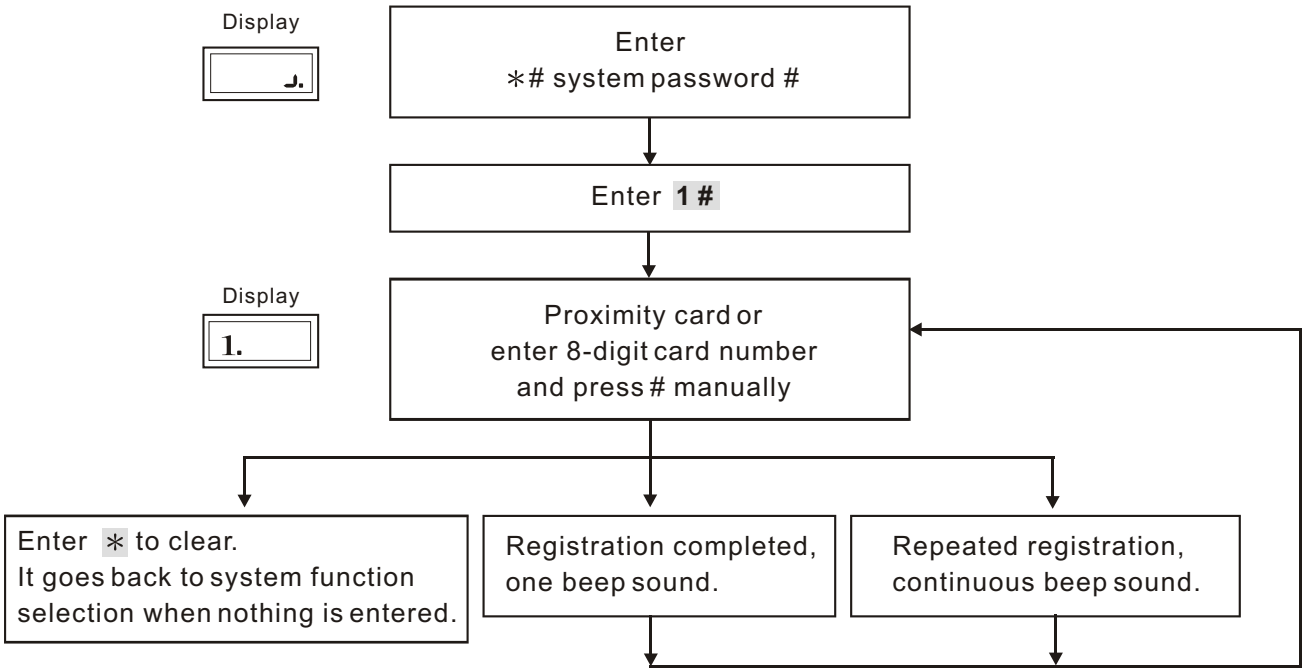
※User must enter into the setup mode as the right diagram shown for any settings to be set.

- Add new card , enter 0 1 and then enter 0 0 0 0 0 0 0 1 or proximity card.
  (8-digit card number)
- Delete card , enter 0 2 and then enter 0 0 0 0 0 0 0 1 #
  (8-digit card number)
- Door open time , enter 0 4 and then enter the seconds 0 0 3 #
  (Seconds)
- Change reader number , enter 1 0 and then enter the reader number 0 0 2 #
  (Reader number)
- Door open mode , enter 0 5 and then enter the mode code 2 #
  (Door open mode)
- Time setting , enter 1 5 # and then enter the time 1 3 # 0 0 # 1 5 #
  (13:00:15)
- Date setting , enter 1 6 # and then enter 0 0 # 0 1 # 0 1 # 6 #
  (2000/01/01 (6))

6.Setting modes & functions

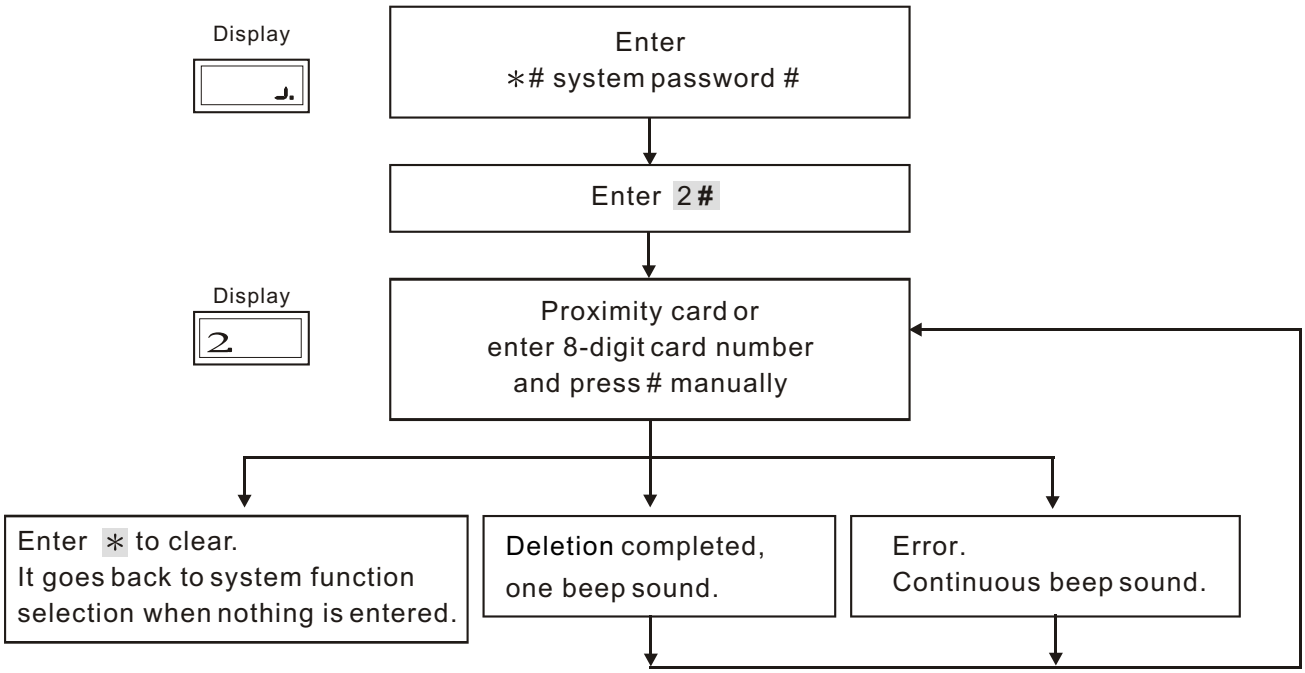
Function(01) Add New Card

Either enter 8-digit card number or use proximity card to register, both can be accepted but should be registered prior use.



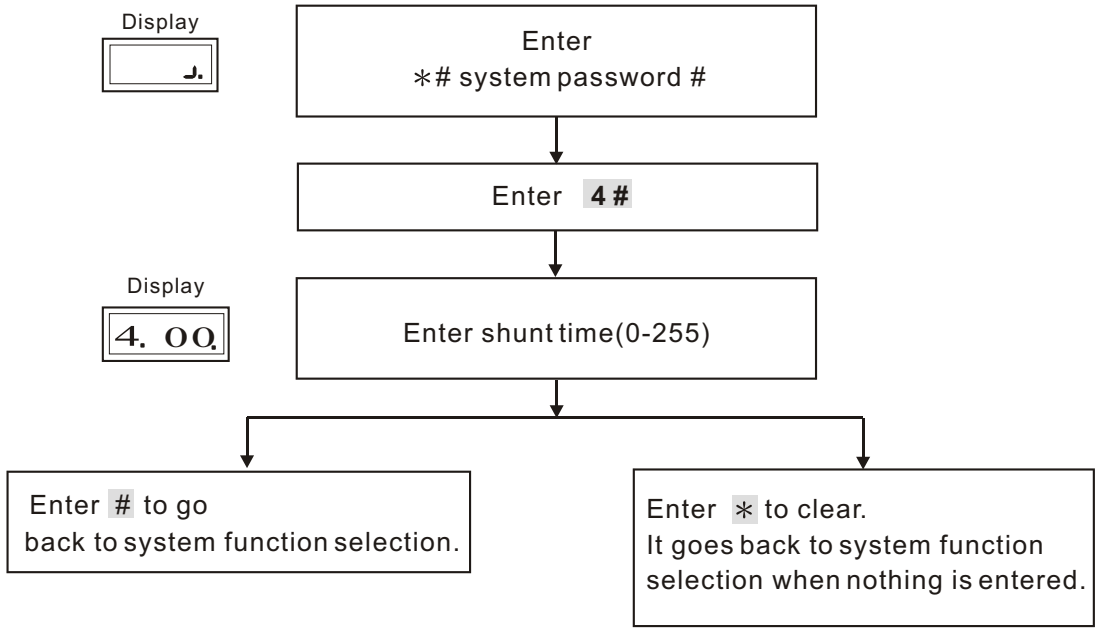
Function (02) Delete Card

Deletion of user's card (such as loss of card or to prevent specific user to gain access) can be achieved by entering 8-digit card number indicated on the proximity card.



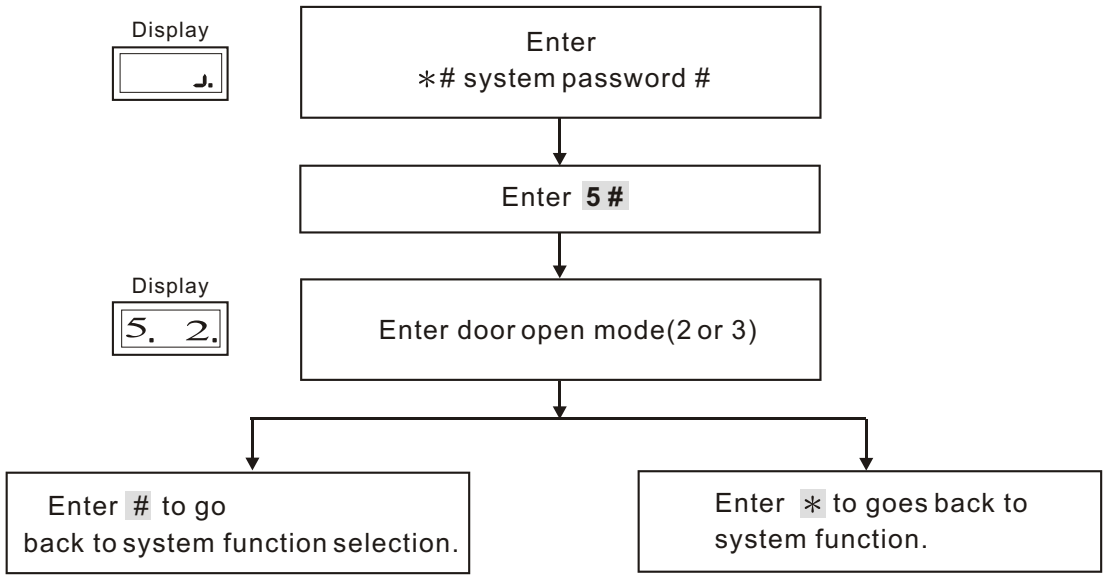
Function (04) Shunt Time

Setting of relay's ON/OFF time in the proximity reader can be set from 0-255 seconds.
Set 000 as toggle function as the door is always open until the next proximity.
(default value as 003)



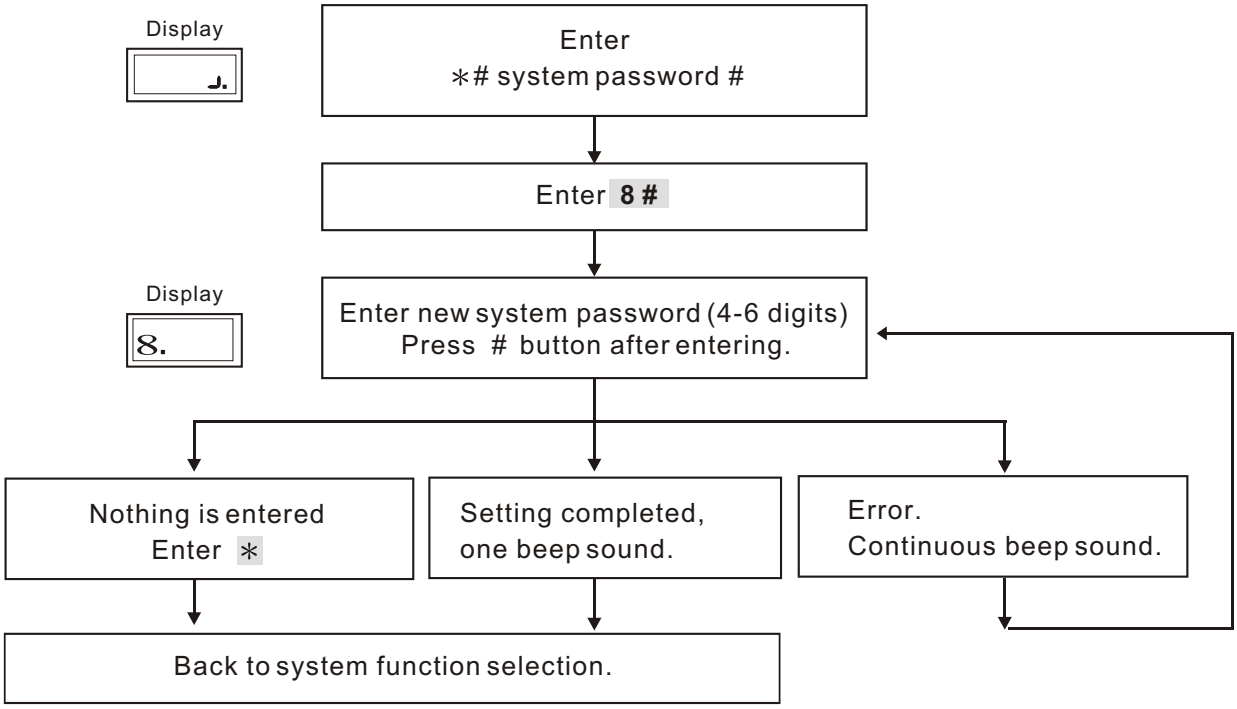
Function (05) Door Open Mode

Reader has 2 types of identification modes. (default value as 2)
Mode (2). Card proximity door open: The door opens, when the card is sensed.
Mode (3). Door open by proximity card and password: The door opens by entering additional 4-digit password after sensing the registered card.



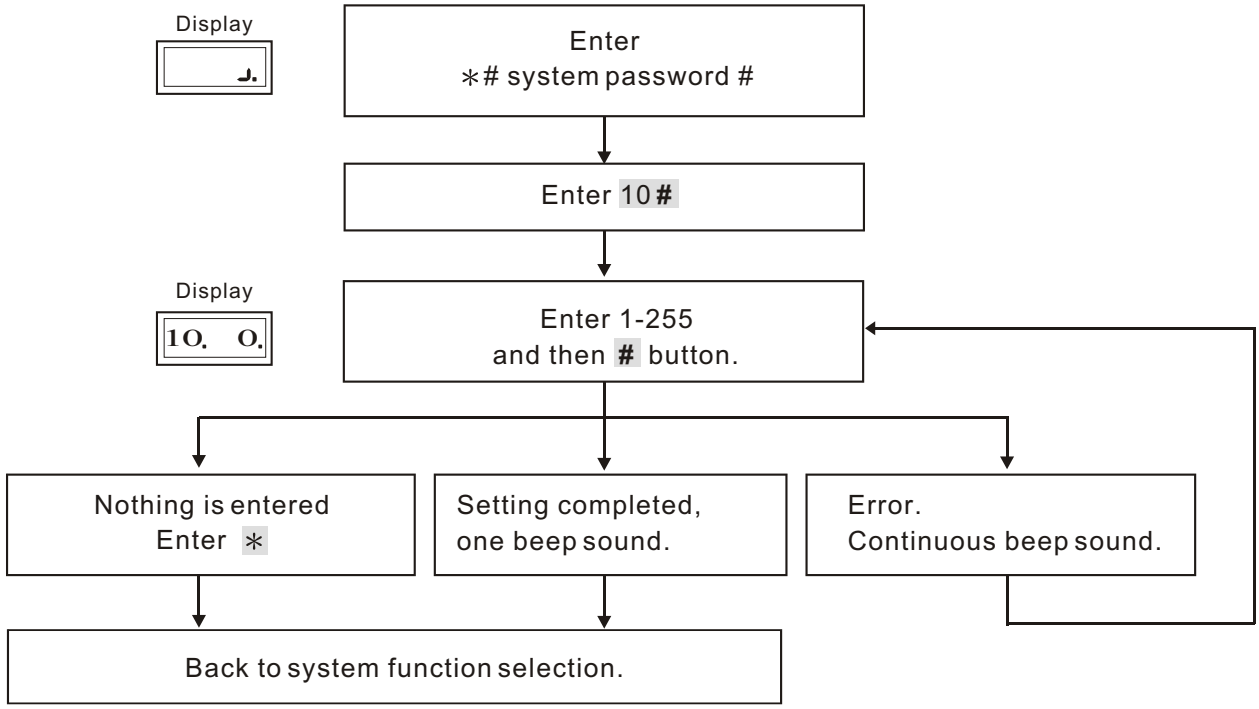
Function (08) Change System Password

Default system password as **5 6 7 8** .
In order to enter into system setting mode for the first time, user must enter the default system password **5 6 7 8**. User may change the system password after entering into system setting mode.(4-6-digit password to set)



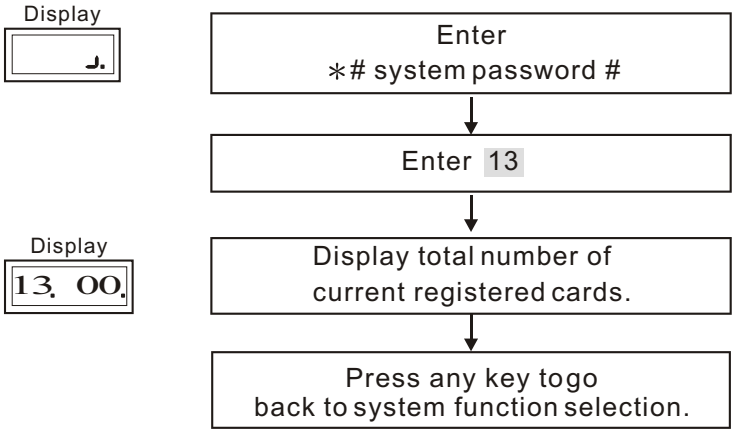
Function (10) Reader ID Number

Each reader has a reader ID number for computer identification and the number should not be repeated. Setting range 1-255, default value as 001.



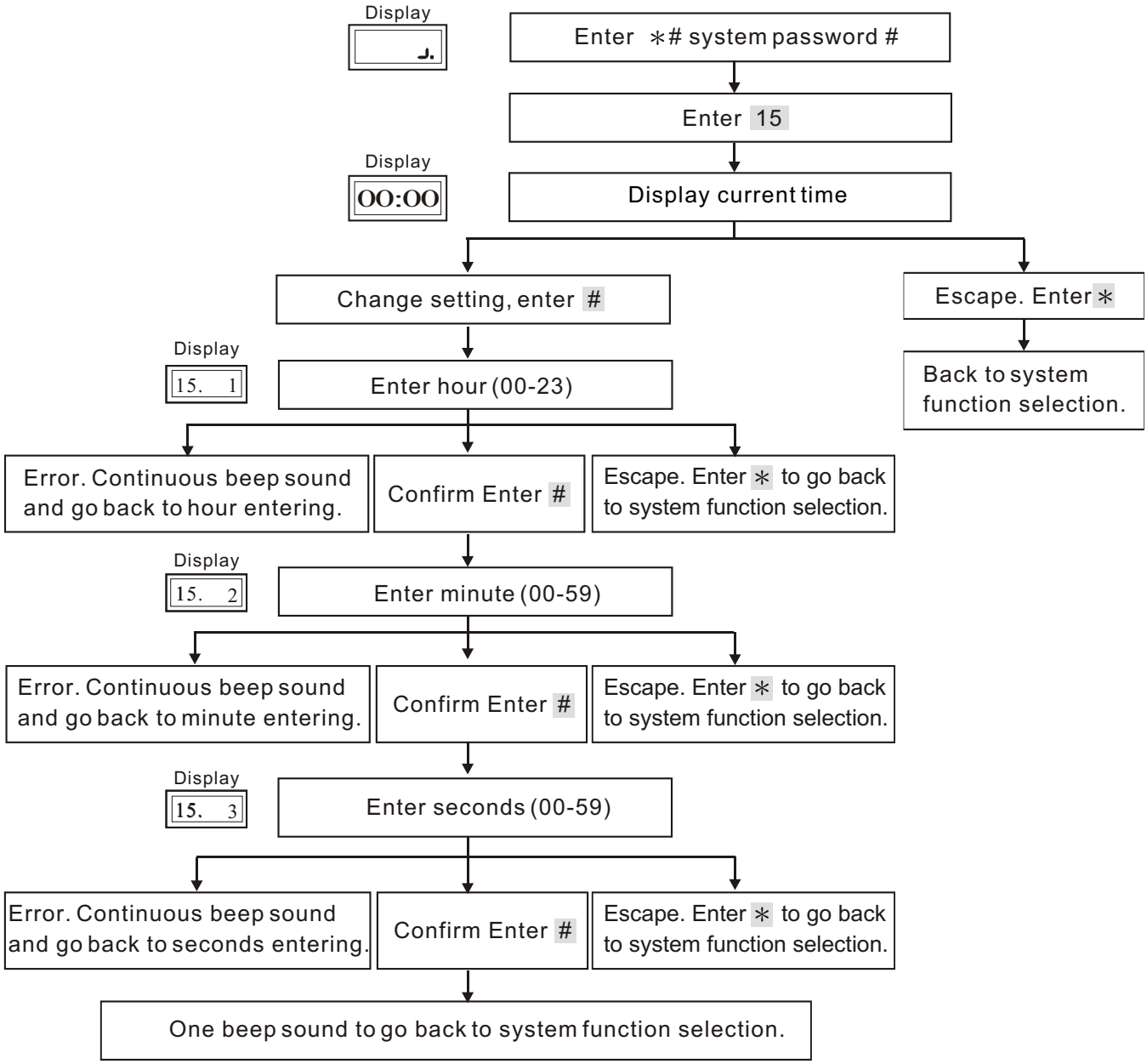
Function (13) Total Cards

Display total number of current registered cards.



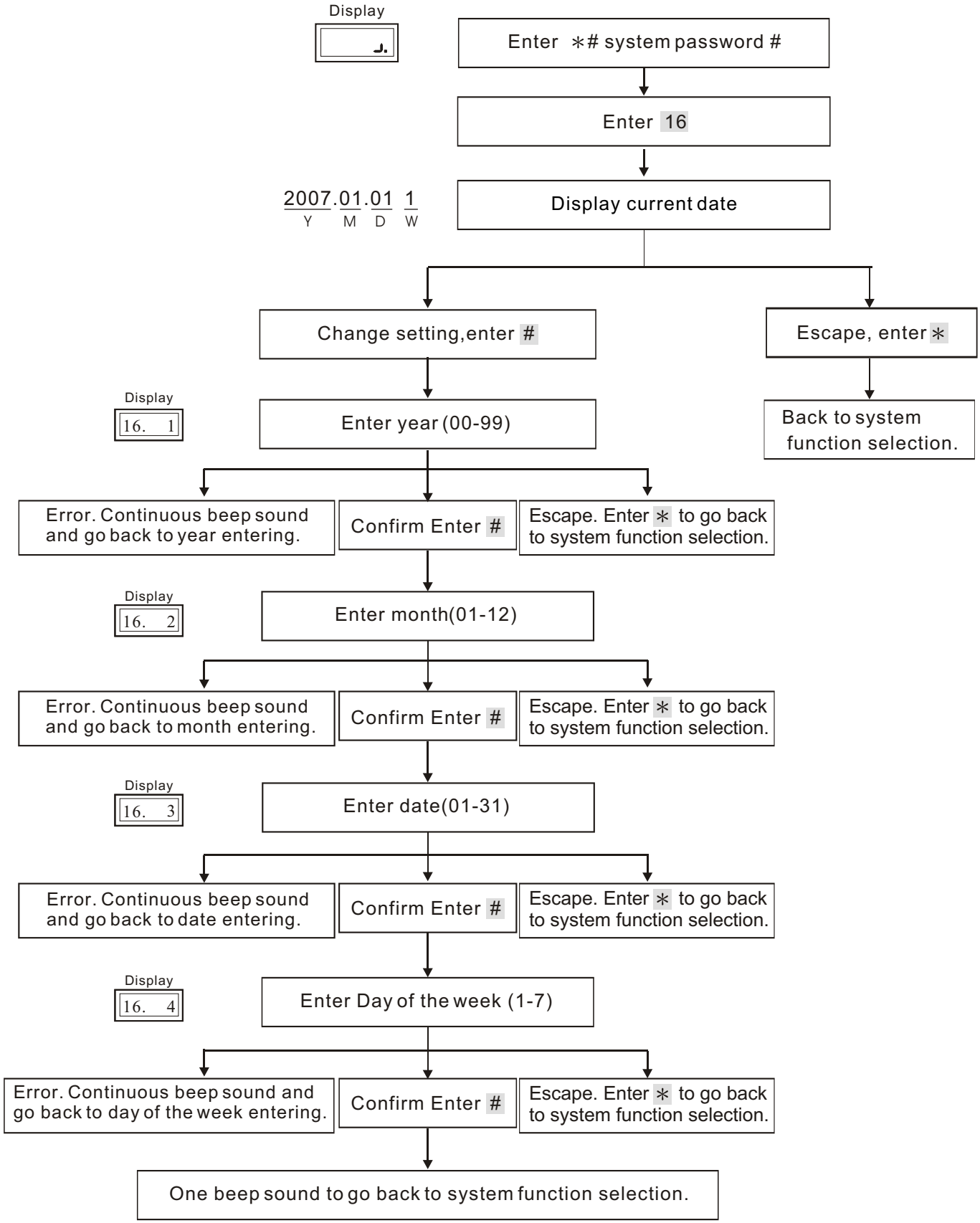
Function (15) Set Time

Example: 18 hour 00 minute 00 second => 18:00:00 (default value as 00:00:00)



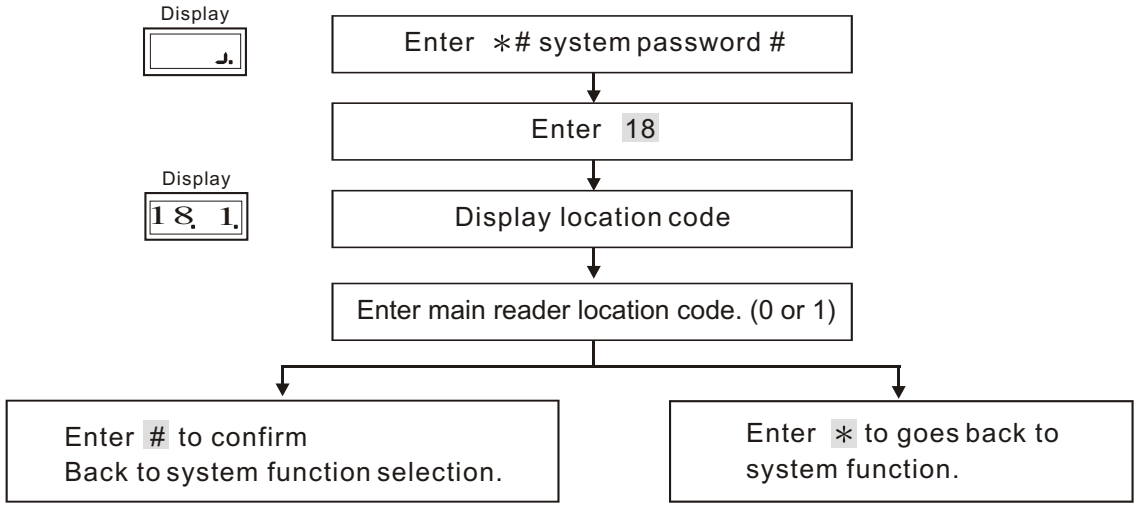
Function (16) Set Date

Example 2012/04/30 Monday => 2012/04/30 (1) (default value as 2007/01/01 (1))



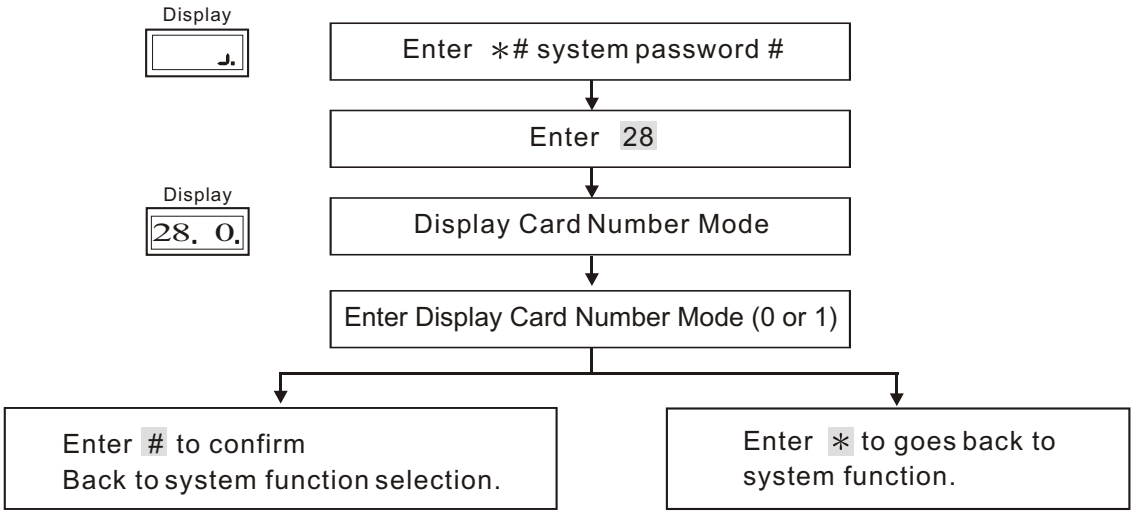
Function (18) Main Reader Location

To show the location of the reader: (0) Indoor, (1) Outdoor. (default value as 1)



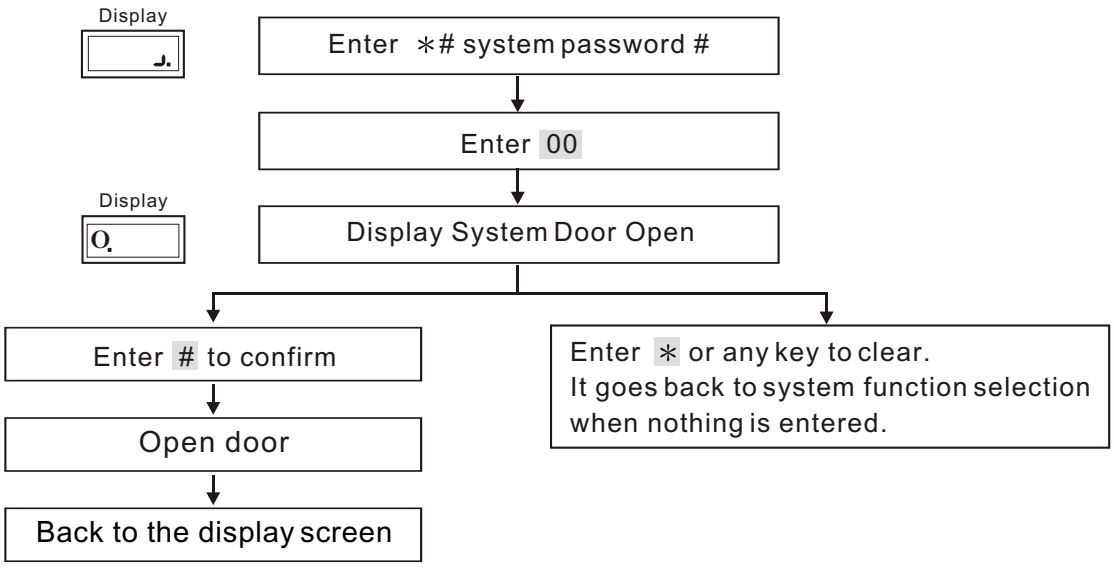
Function (28) Display Card Number Mode: (0)ON,(1)OFF. (default value as 0)

Card number is not displayed on the screen when it is set as OFF.

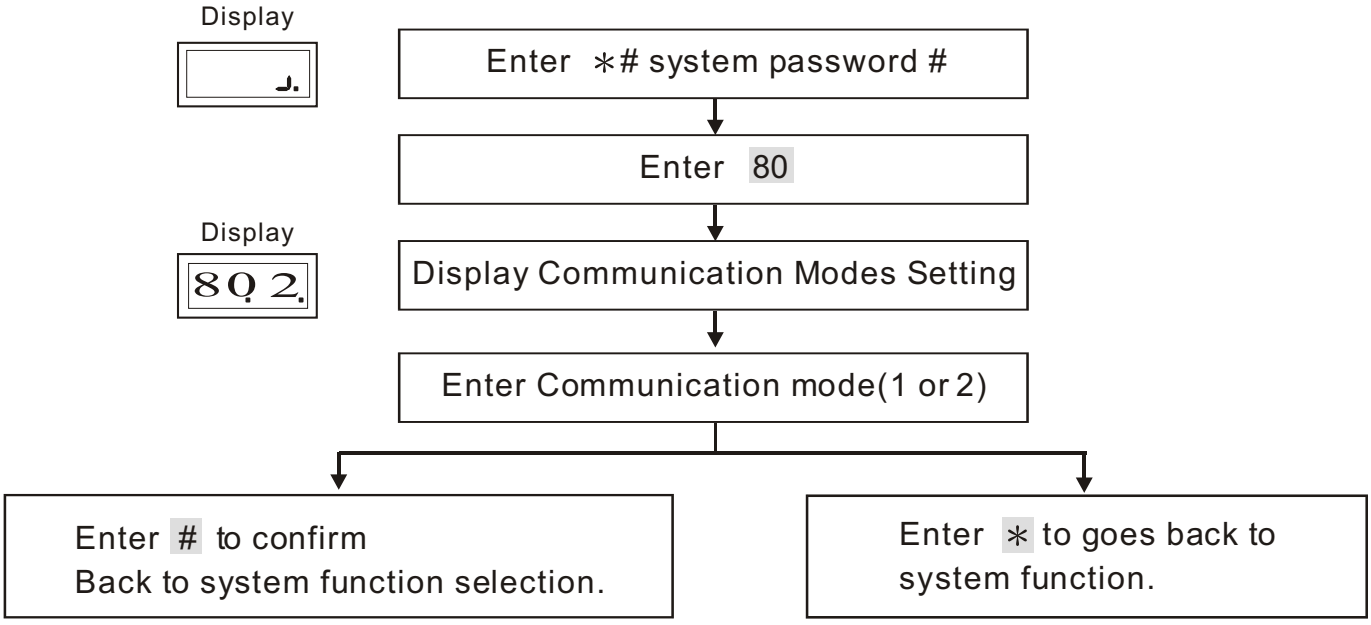


Function (00) Instant Door Open

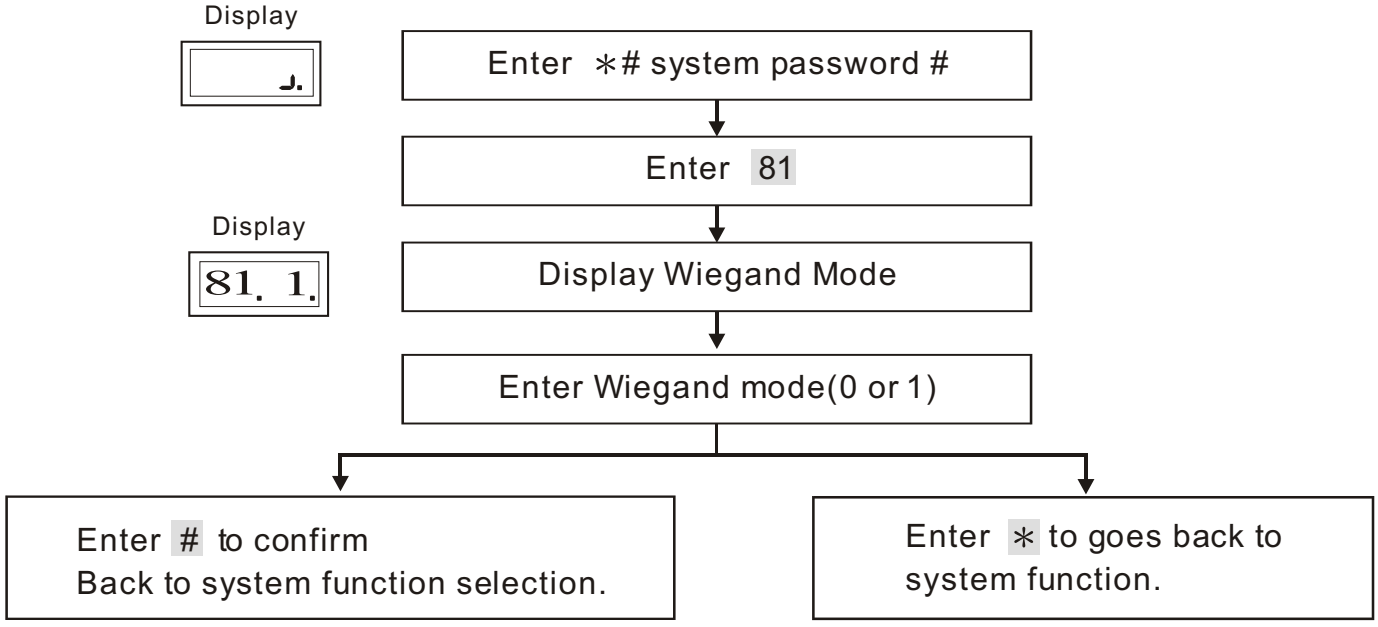
Authorized personnel could get into the setup mode to open the door for emergencies.



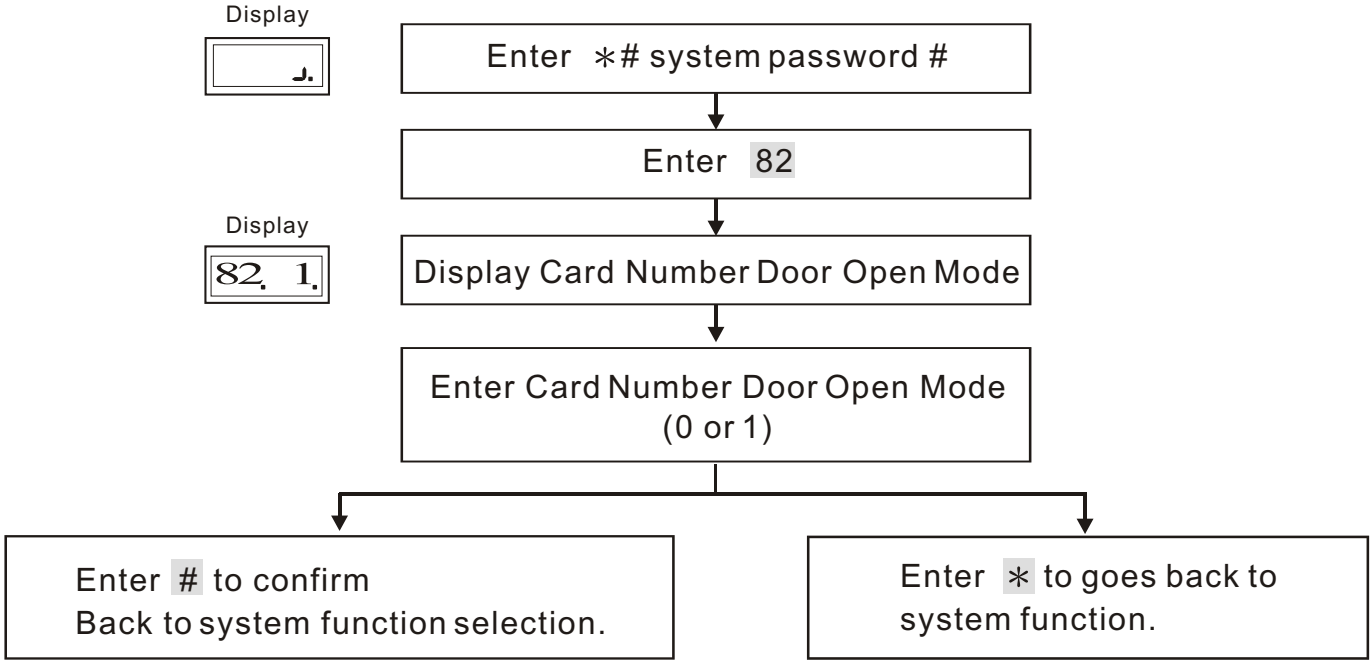
Function (80) Communication Mode : (1)N.8.1 , (2) N.8.2 .
Default value as 2 .



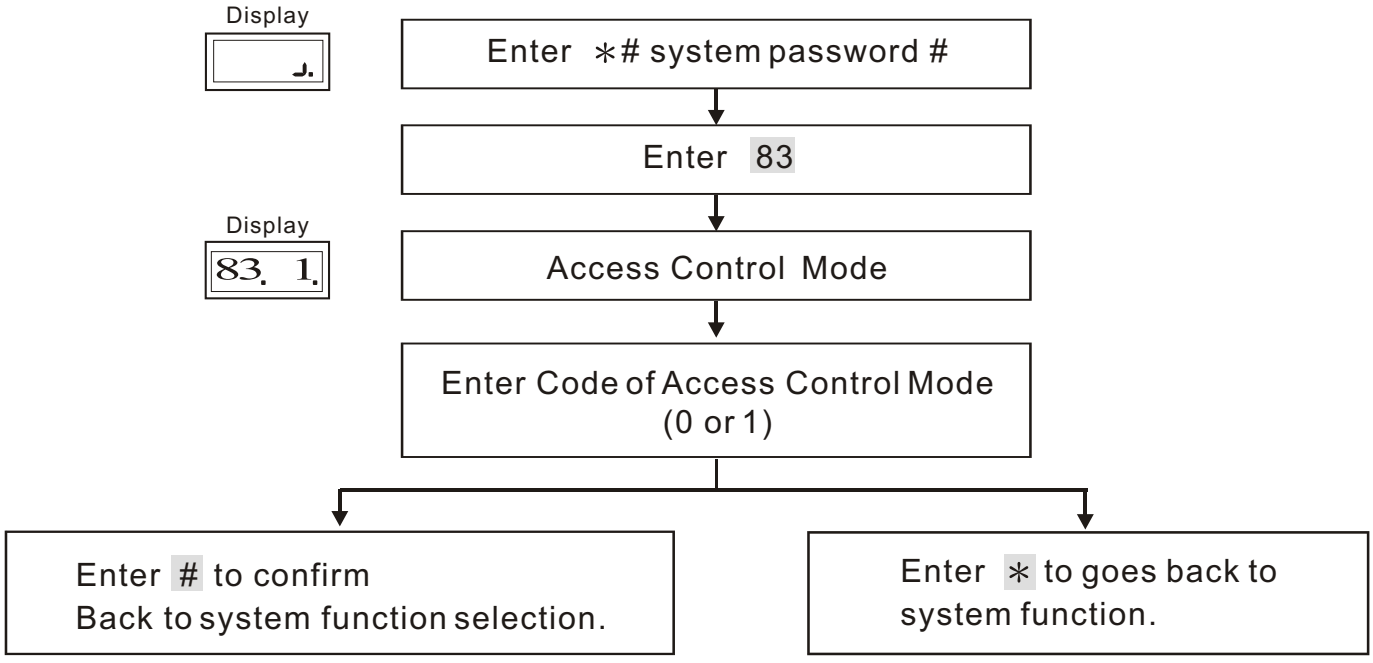
Function (81) Wiegand Mode : (0)Wiegand 26bit , (1) Wiegand 34bit.
Default value as 1 .



Function (82) Card Number Door Open Mode: (0)ON, (1)OFF. (default value as 1) Enter registered card's 8-digit card number to open door when the function is set as ON.



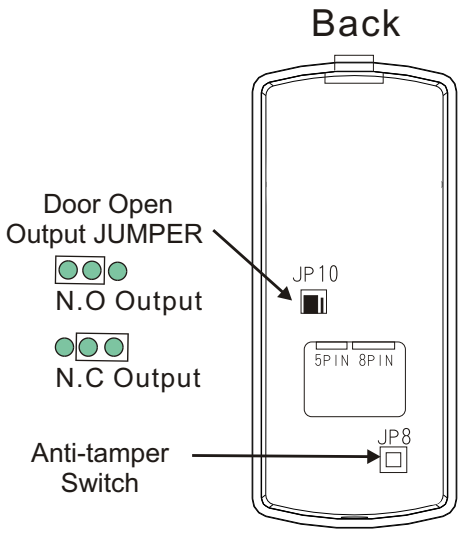
Function (83) Access Control Mode: All access for all card holders including unregistered card when it is set as 0 . Only valid or registered card to access when it is set as 1 .
(Default value as 1)



7.Installation instructions

(1) Reader connector

5-PIN CONNECTOR	Purple	■	Anti-duress output terminal
	Blue	■	Door Bell Button Output
	Green	■	Door sensing input
	Brown	■	Alarm output
	Red	■	Push button door open point
8-PIN CONNECTOR	Purple	■	Wiegand input (1)
	Blue	■	Wiegand input (0)
	Green	■	Door open relay (N.O or N.C) terminal
	Yellow	■	Door open relay (Common) terminal
	Orange	■	Signal (data-) receiver
	Brown	■	Signal (data+) transmitter
	Black	■	Input power,negative GND
	Red	■	Input power,positive 12V



Note:
(1)Current for Door Open RELAY point is 1A/12VDC.
Please connect to a relay if a device with 24 VDC or current is exceeding.
(Please refer to p16 for wiring)
(2)The current for Anti-tamper switch is 0.1A/12VDC.

(2) Wiring additional electric lock and push button

As of different types of electric lock, the wiring methods are also different .
Overall, there are two types of wiring instructions as below:

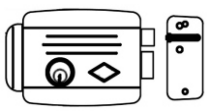
A. N.O.Connector (please use jump to adjust)
Suitable for : Fail-secure electric lock or electric lock requires N.O. point to trigger.

Jump Adjustment : JP10

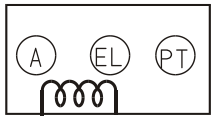
N.O Output

Rim lock

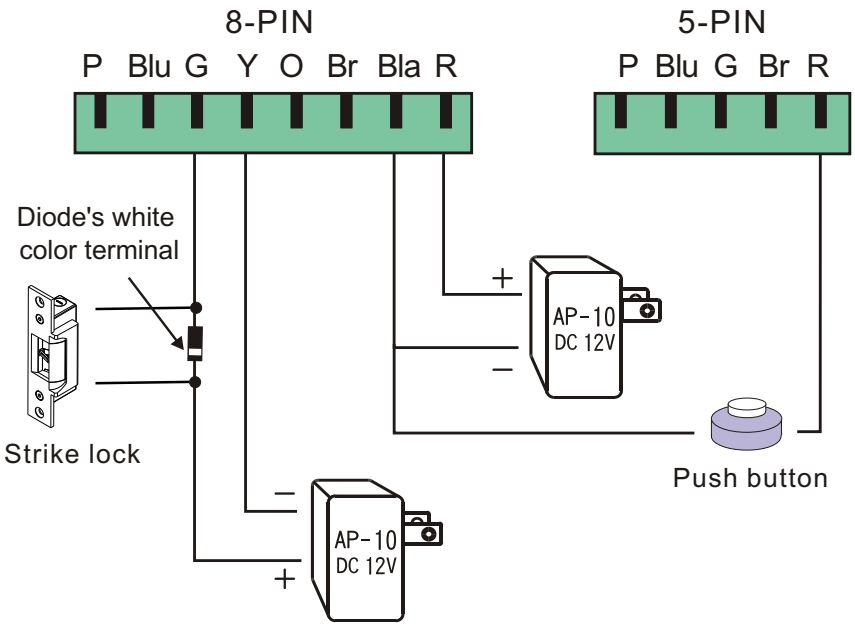
External



Internal

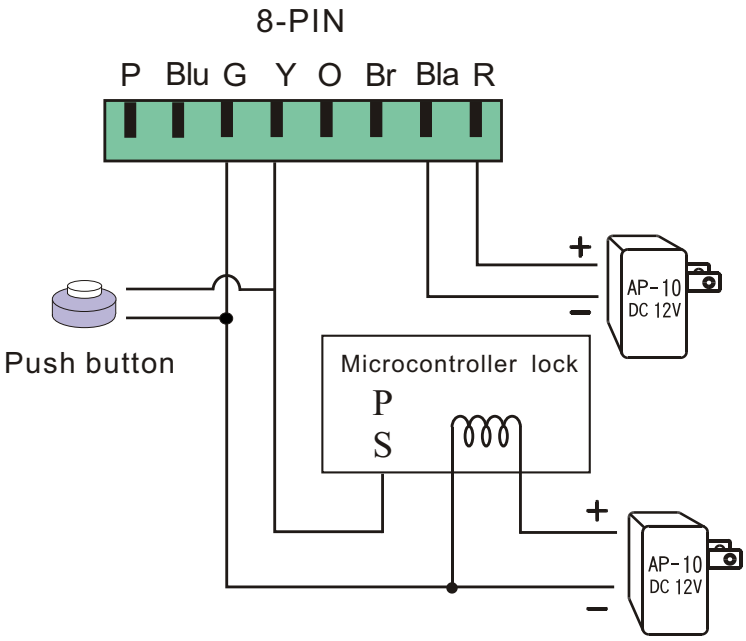


※ The current of rim lock is larger than 1A (please refer to p16) External RELAY is used and both points of A. EL of the electric lock.



※ Door Open Relay as dry contact with maximum load of 1A@12VDC.

【**Example:** Micro-computer Fail-safe electric lock (use of N.O point to trigger).】

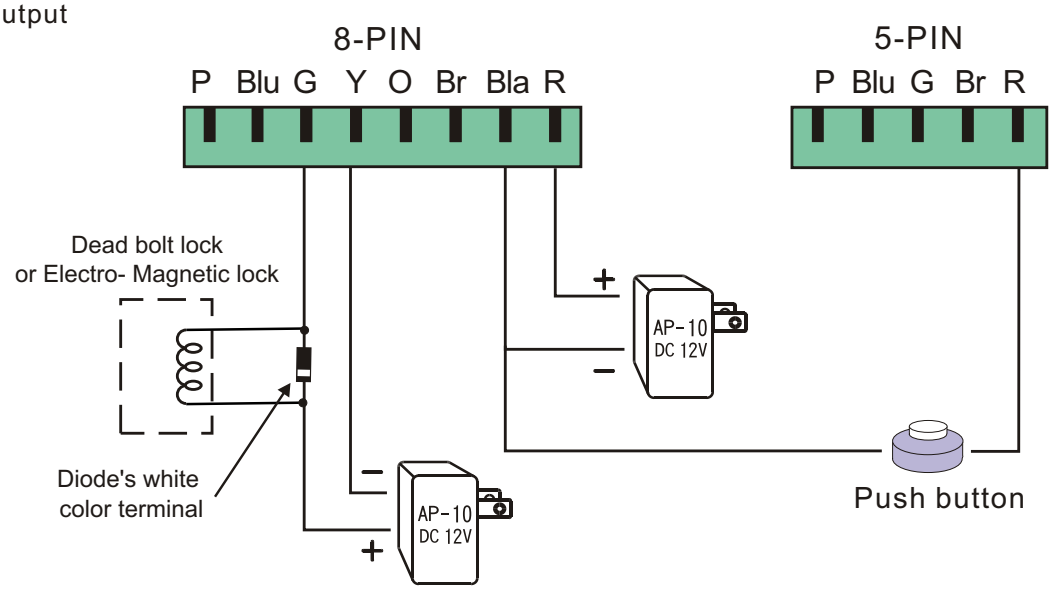


B. "N.C" Connector(Please use jump to adjust)

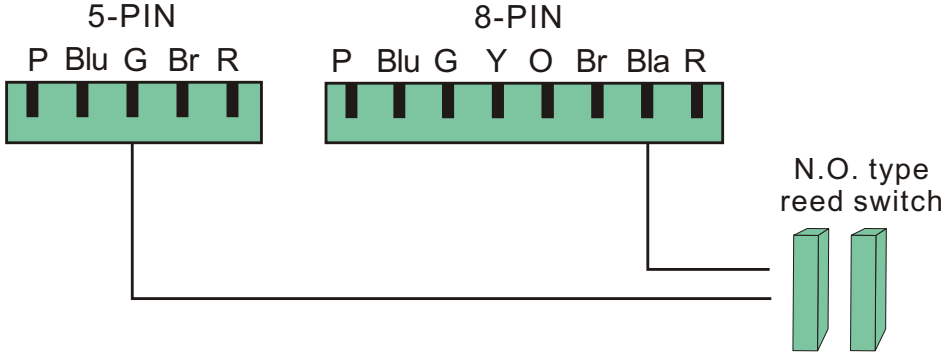
Suitable for: Fail-safe electric lock such as electromagnetic lock.

Jump Adjustment (Jp10)

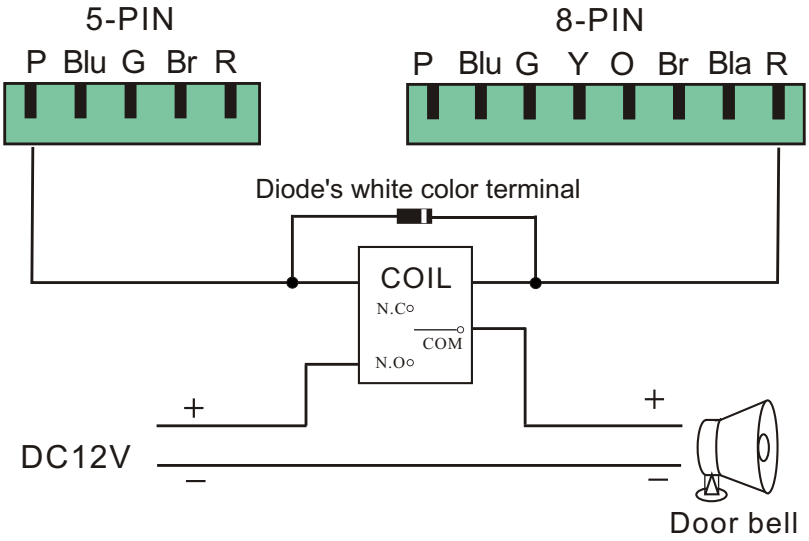
N.C Output



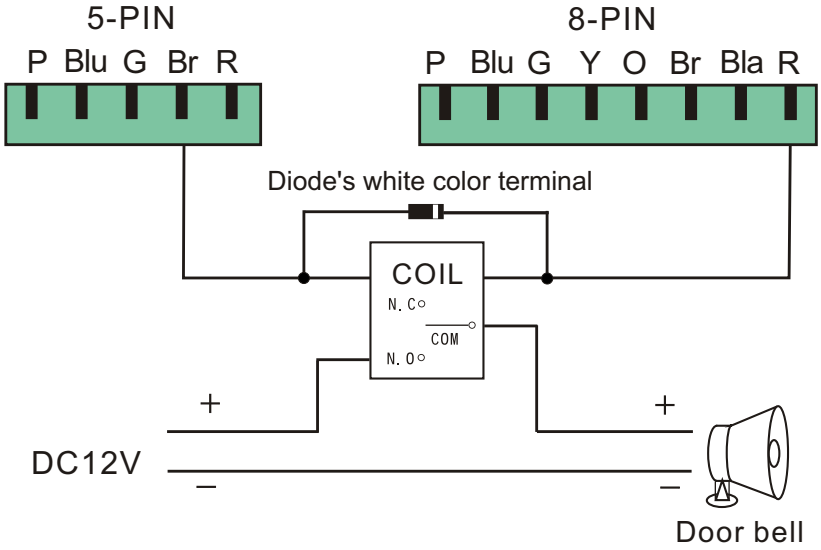
(3) Wiring for additional reed switch door sensing



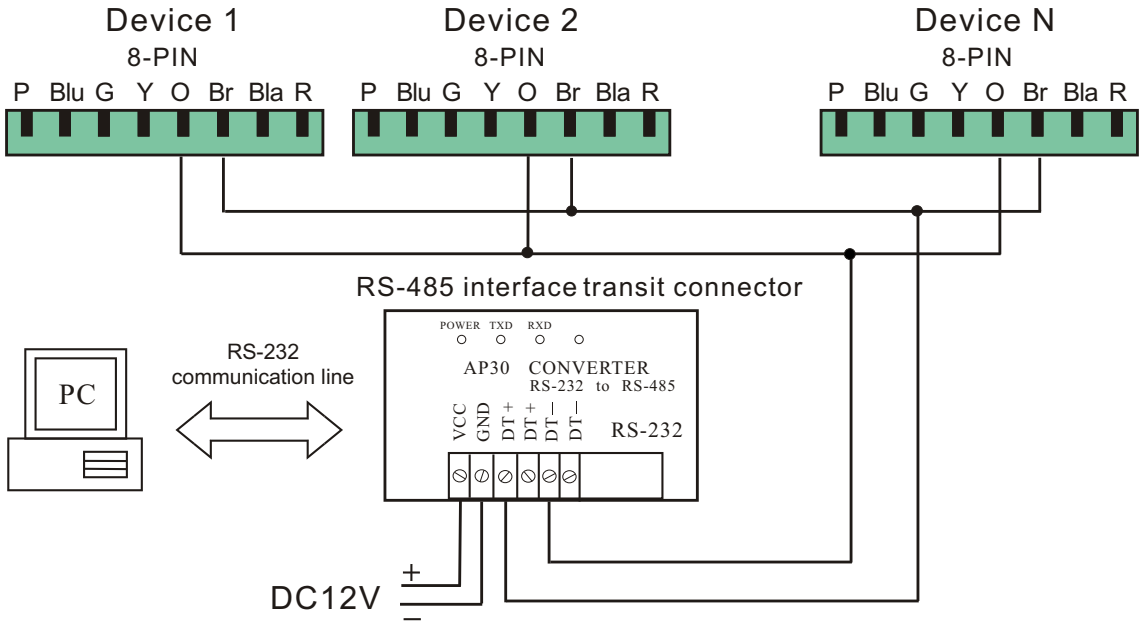
(4) Wiring for anti-duress alarm



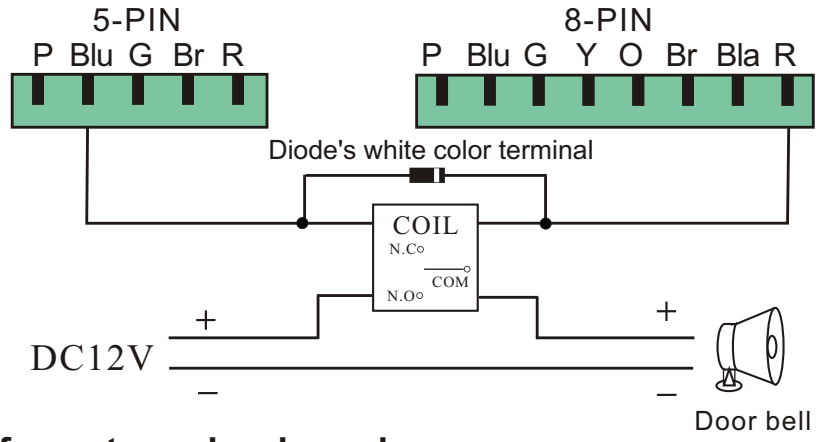
(5) Wiring for alarm



(6) Wiring for linking with computer

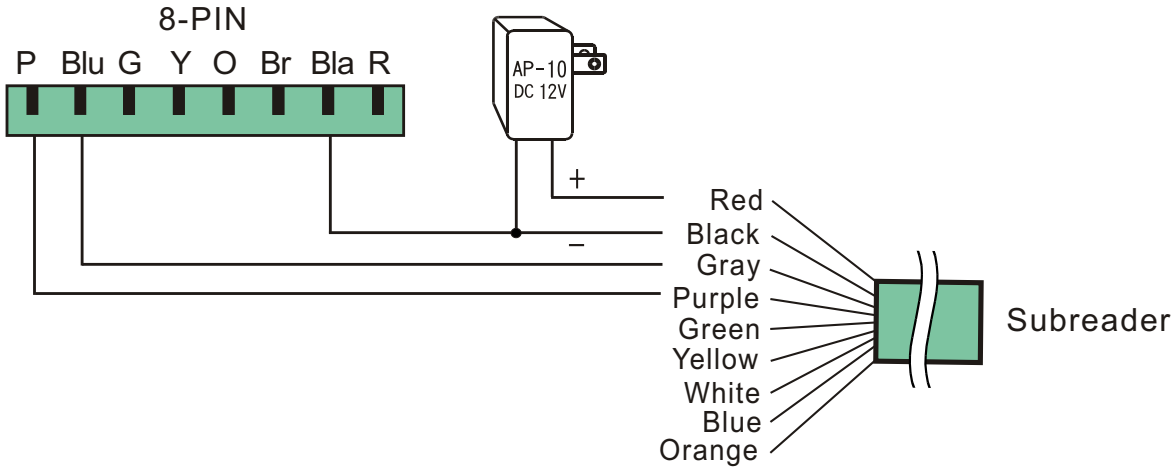


(7) Additional door bell wiring(External Relay is required)



(8) Wiring for external subreader

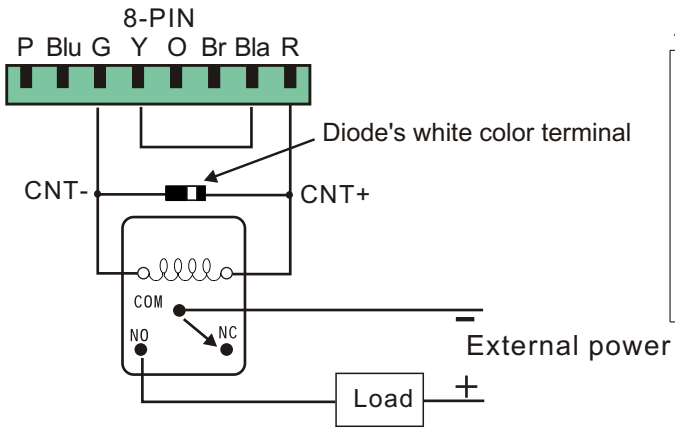
※ Suggested maximum length between the reader and the subreader as 50m and 24 AWG twisted pair wire is used.



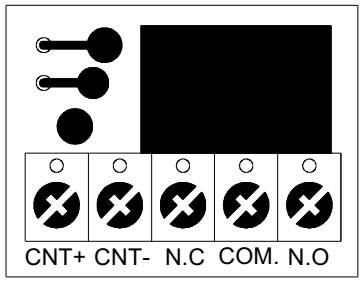
(9)Example: Door Open point with external RELAY

Jump Adjustment : JP10

N.O Output



AP-51(Optional)

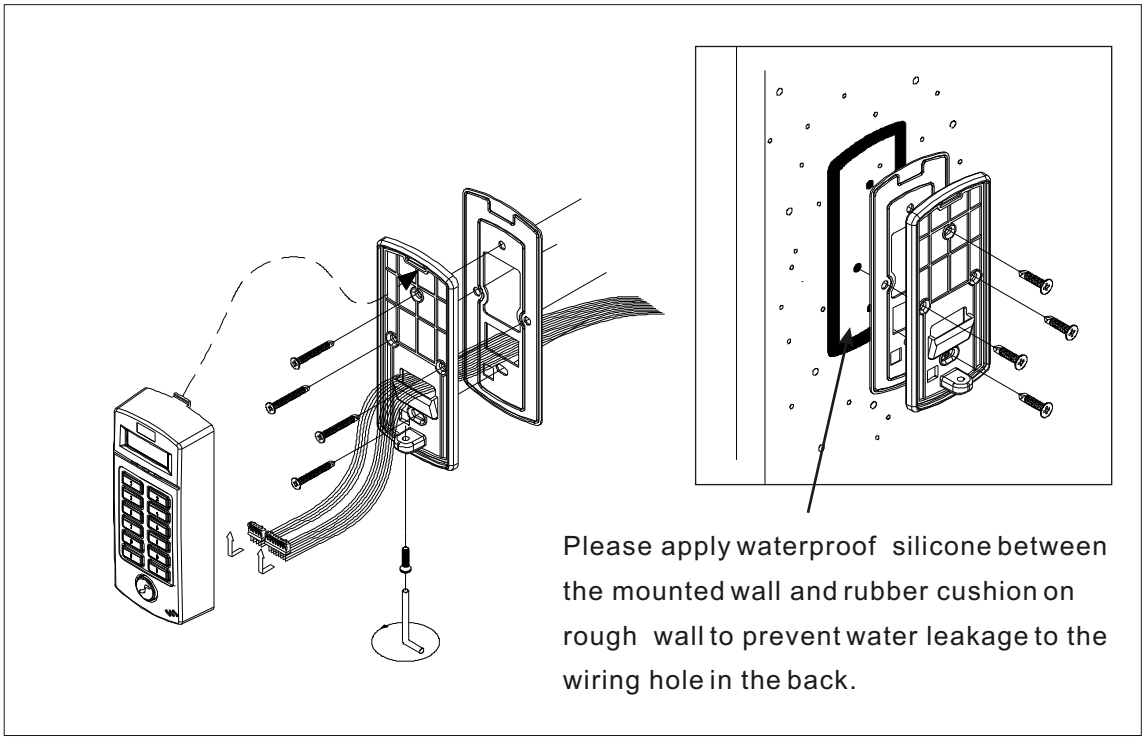


(Voltage > DC12V or Current > 1A)

Precautions

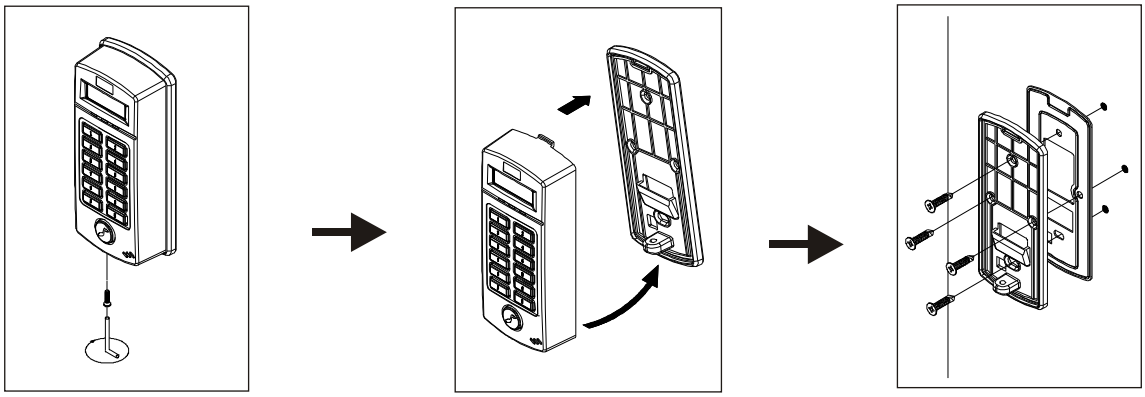
- Maximun load of the door open RELAY as DC 12V / 1A . Please connect an external RELAY for high voltage or current to prevent any damage to the internal parts(optional of AP-51 is available).
- Examples of the wiring in this manual are for reference. Please refer to the electric lock's manual for the actual wiring.
- If the loading of the door open RELAY is not being used by an electric lock but for lift, automatic door, please make sure its voltage loading range. If user is unable to specify its range, it is suggested to connect an external RELAY.
- Please connect a Diode for the external RELAY to absorb surge (please make sure its direction).

8. Installation of the unit



Please apply waterproof silicone between the mounted wall and rubber cushion on rough wall to prevent water leakage to the wiring hole in the back.

Step1:

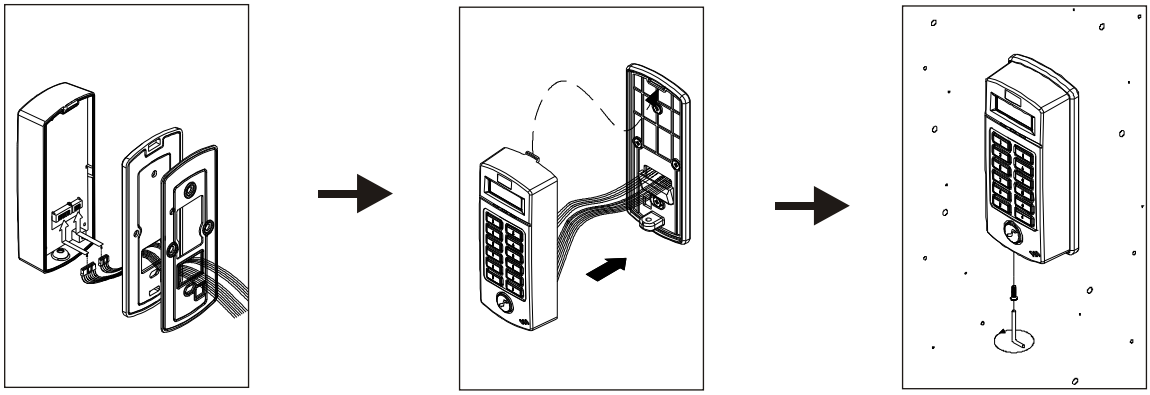


Use attached screwdriver to unscrew the screws.

Separate the panel base from the unit.

Screw the panel base and waterproof rubber cushion tight on the wall.

Step4:



Place the wires through the waterproof rubber cushion and panel base in order. Connect the wires with the unit.

Push the remaining wires in the case and place both panel base and the unit back together.

Use attached screwdriver to tighten the screws.

9.Attentions

(1) Confirm the power supply voltage and polarity before installation to prevent any wrong connection that may cause damage to the reader.
(2) Use separate power supply to the electric lock and the proximity reader.
(3) Do not install the reader near any metal equiments or detector area to prevent interference of read distance.
(4) Do not try to fix or modify the reader without authorized electrician.
The reader is guaranteed for one year.

10.Troubleshooting

(1) Reader has no reaction or door does not open with proximity card.
Solution:
(A) Please check if the red light is on. If not, please check the power supply to turn the reader on.
(B) Please check if the proximity card is defected. User may use another proximity card to test.
(C) Please check if personal password is entered incorrectly or the user is still in the setup mode.
(D) Continuous proximity. Please remove the card from the reader and try again.
(E) Check if the yellow light is on and continuous beep sound occurred.
This indicates the user's proximity card is not registered yet.
(F) Please check if green light is on and door-opening sound can be heard at the same time. If door is still not opened, please ensure that if the wiring or power supply of electric lock is installed properly or broken.

(2) System password is entered but user cannot enter into various function selection of the setting mode.

Solution:
(A) System password is entered incorrectly. Please check if the following step has been entered correctly. ∗# XXXX # .(XXXX represent system password),or press ∗ button first and then enter the correct system password ∗# 5678 # .
(B) Bad wiring arrangement may affect key enter data.
Please confirm that the power supply wire and the control wire have been arranged to the space at the back of the LCD (this is the wiring arrangement area of this unit). This is to prevent the wires pressing on the wiring on the PC board causing bad contact, short circuit and interference.