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INTRODUCTION

The device is a single door multifunction standalone access controller or a Wiegand output reader. It uses ARM7 MCU assuring stable performance. The operation is very user-friendly, and low-power circuit makes it long service life.

The device supports 1,000 users (988 common users + 2 panic users + 10 visitor users), all user data can be transferred from one to another (except fingerprint users). It supports multi access modes in card access, PIN access, fingerprint access, card + PIN access, or multi cards /PINs/ fingerprints access. It has extra features including block enrollment, interlock, Wiegand input & output interface...etc.

Two Versions Optional:
The device with Bluetooth function is optional
The device with big user capacity is optional

Features

- > Capacitive fingerprint sensor, Touch key
- > Metal case, anti-vandal
- > Waterproof, conforms to IP66
- > One relay, 1,000 users (988 common + 2 panic + 10 visitor)
- > PIN length: 4-6 digits
- > EM card, EM+ Mifare cards optional
- > EM card: Wiegand 26-44 bits input & output
- > Mifare card: Wiegand 26-44bits, 56bits, 58bits input & output
- > Can be used as Wiegand reader with LED & buzzer output
- > Card block enrollment
- > Tri-color LED status display
- > Integrated alarm & buzzer output
- > Pulse mode, Toggle mode
- > User data can be transferred (except fingerprint users)
- > 2 devices can be interlocked for 2 doors
- > Built-in light dependent resistor (LDR) for anti tamper
- > Backlit keypad, can set automatic OFF after 20 seconds

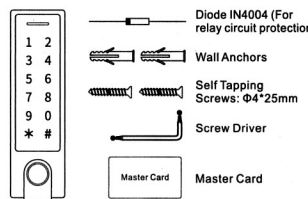
Specifications

User Capacity	1000
Common User	988 (100 Fingerprint + 888 Card/PIN Users)
Panic User	2
Visitor User	10
Operating Voltage	12~18V DC
Working Current	≤150mA
Idle Current	≤60mA

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Proximity Card Reader	EM / EM+ Mifare 125KHz / 125KHz + 13.56MHz 2-6 cm
PIN Length	4-6 digits
Wiring Connections	Relay Output, Exit Button, Alarm, Door Contact, Wiegand Input, Wiegand Output
Relay	One (NO, NC, Common) 0-99 Seconds (5 seconds default) 2 Amp Maximum
Wiegand Interface	EM card: Wiegand 26-44 bits input & output. Mifare card: Wiegand 26-44bits 56bits, 58bits input & output. (Factory default: Wiegand 26bits for EM card, Wiegand 34bits for Mifare card)
PIN Output	4 bits, 8 bits(ASCII), 10 digits Virtual Number (Factory Default: 4 bits)
Environment	Meets IP66 -30°C ~ 60°C (-22°F ~ 140°F) 0%RH~98%RH
Physical	Zinc-Alloy Colour Black Dimensions L:148 x W:43.5 x D:22 (mm) Unit Weight 330g Shipping Weight 405g

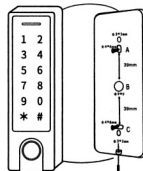
Carton Inventory



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INSTALLATION

- > Remove the back cover from the unit
- > Drill 2 holes(A,C) on the wall for the screws and one hole for the cable
- > Knock the supplied rubber bungs to the screw holes(A,C)
- > Fix the back cover firmly on the wall with 4 flat head screws
- > Thread the cable through the cable hole(B)
- > Attach the unit to the back cover



Wiring

Wire Color	Function	Notes
Basic Standalone Wiring		
Red	DC +	12-18V DC Power Input
Black	GND	Negative Pole of DC Power Input
Blue	Relay NO	Normally Open Relay Output (Install diode provided)
Purple	Relay Common	Common Connection for Relay Output
Orange	Relay NC	Normally Closed Relay Output (Install diode provided)
Yellow	OPEN	Request to Exit(REX) Input
Pass-Through Wiring (Wiegand Reader or Controller)		
Green	Data 0	Wiegand Output (Pass-through) Data 0
White	Data 1	Wiegand Output (Pass-through) Data 1
Advanced Input and Output Features		
Grey	Alarm Output	Negative contact for Alarm
Brown	Contact Input	Door/Gate Contact Input (Normally Closed)

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Sound and Light Indication

Operation Status	LED	Buzzer
Stand by	Red light bright	—
Enter into programming mode	Red light shines	One beep
In the programming mode	Orange light bright	One beep
Operation error	—	Three beeps
Exit from the Programming mode	Red light bright	One beep
Open lock	Green light bright	One beep
Alarm	Red light Shines quickly	Beeps

Basic Configure

Enter and Exit Program Mode

Programming Step	Keystroke Combination
Enter Program Mode	* (Master Code) #
Exit Program Mode	*

Set Master Code

Programming Step	Keystroke Combination
1. Enter Program Mode	* (Master Code) #
2. Update Master Code	0 (New Master Code) # (Repeat New Master Code) #
3. Exit Program Mode	*

Set the Working Mode

Notes: The device has 3 working modes: Standalone Mode, Controller Mode, Wiegand Reader Mode, choose the mode you use. (Factory default is Standalone Mode / Controller Mode)

Programming Step	Keystroke Combination
1. Enter Program Mode	* (Master Code) #
2. Standalone/Controller Mode	7 7 # (Factory default)
OR	
2. Wiegand Reader Mode	7 8 #
3. Exit	*

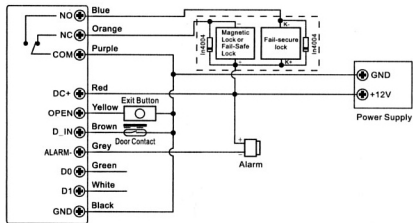
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STANDALONE MODE

The device can work as Standalone Access Control for single door. (Factory default mode) --- 7 7 #

Connection Diagram

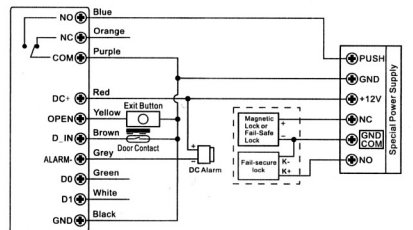
Common Power Supply



Attention:

Install a 1N4004 or equivalent diode is needed when use a common power supply, or the keypad might be damaged. (1N4004 is included in the packing)

Access Control Power Supply



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Programming

The device will be vary depending on access configuration. Follow the instructions according to your access configuration.

Notes:

> **User ID number:** Assign a user ID to the access. fingerprint/ card/ PIN in order to track it.

The Common User ID:

- Fingerprint user ID: 0 ~ 98
- PIN/ Card user ID: 100 ~ 987
- Master Fingerprint User ID: 99
- Panic User ID: 988~989
- Visitor User ID: 990~999

IMPORTANT: User IDs do not have to be proceeded with any leading zeros. Recording of User ID is critical. Modifications to the user require the User ID be available.

> Proximity Card:

Proximity Card: EM card/ EM+ Mifare cards

> **PIN:** Can be any 4-6 digits except 8888 which is reserved.

Add Common Users

(Fingerprint user ID: 0 ~ 98, PIN/ Card user ID: 100 ~ 987; PIN length: 4-6 digits except 8888)

Programming Step	Keystroke Combination
1. Enter Program Mode	* (Master Code) #
Add Fingerprint User	
2. Using Auto ID	1 (Fingerprint) (Repeat Fingerprint again)
(Allows the device to assign Fingerprint to next available User ID number)	The Fingerprint can be added continuously.
OR	
2. Select Specified ID	1 (User ID) # (Fingerprint) (Repeat Fingerprint) (Repeat Fingerprint again)
(Allows Master to define a specific User ID to associate the fingerprint to)	Fingerprints can be added continuously.

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Add Card User

2. Using Auto ID	1 (Read Card) / (Input 8/10/17 Digits Card Number) #
(Allows the device to assign Card to next available User ID number)	The cards can be added continuously.
OR	
2. Select Specific ID	1 (User ID) # (Read Card) / (Input 8/10/17 Digits Card Number) #
(Allows Master to define a specific User ID to associate the card to)	The Cards' number must be consecutive; Card quantity = number of cards to be enrolled.

Add PIN User

2. Using Auto ID	1 (PIN) #
(Allows the device to assign PIN to next available User ID number)	The PINs can be added continuously
OR	
2. Select Specific ID	1 (User ID) # (PIN) #
(Allows manager to define a specific User ID to associate the PIN to)	
3. Exit	*

Tips for PIN Security (Only valid for 6 digits PIN):

For higher security we allow you to hide your correct PIN with other numbers up to a max of 10 digits.

Example PIN: 123434

You could use ** (123434) ** or ** (123434)

(** can be any numbers from 0-9)

Add Master Fingerprint (By Specified ID: 99)

Programming Step	Keystroke Combination
1. Enter Program Mode	* (Master Code) #
1. Add Master Fingerprint	1 (99) # (Fingerprint) (Repeat Fingerprint) (Repeat Fingerprint again)
3. Exit	*

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Add Panic Users (Valid for Card/ PIN Users)

(User ID number is 988, 989; PIN length: 4-6 digits except 8888)

Programming Step	Keystroke Combination
1. Enter Program Mode	* (Master Code) #
2. Add Card	1 (User ID) # (Read Card) / (Input 8/10/17 Digits Card number) #
OR	
2. Add PIN	1 (User ID) # (PIN) #
3. Exit	*

Add Visitor Users (Valid for Card/ PIN Users)

(User ID number is 990~999; PIN length: 4-6 digits except 8888)

There are 10 groups Visitor PIN/card available, the users can be specified up to 10 times of usage, after a certain number of times, i.e. 5 times, the PIN/card become invalid automatically.

Programming Step	Keystroke Combination
1. Enter Program Mode	* (Master Code) #
2. Add Card	1 (User ID) # (0-9) # (Read Card) / (Input 8/10/17 Digits Card Number) #
OR	
2. Add PIN	1 (User ID) # (0-9) # (PIN) #
3. Exit	*

Change PIN Users (PIN length: 4-6 digits except 8888)

Programming Step	Keystroke Combination
Change PIN	* (User ID) # (Old PIN) # (New PIN) # (Repeat New PIN) #
Change PIN of Card + PIN access mode (There will auto allocate PIN (8888) to cards when adding)	* (Read Card) (Old PIN) # (New PIN) # (Repeat New PIN) #

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Delete Users

Programming Step	Keystroke Combination
1. Enter Program Mode	* (Master Code) #
2. Delete User- By Fingerprint/ Card/ PIN	2 (Input Fingerprint) / (Read Card) / (Input PIN) #
OR	
2. Delete User - By ID number	2 (User ID) #
OR	
2. Delete User - By Card number	2 (Input 8/10/17 Digits Card Number) #
OR	
2. Delete ALL Users	2 (Master Code) #
3. Exit	*

Set Relay Configuration

The relay configuration sets the behaviour of the output relay on activation.

Programming Step	Keystroke Combination
1. Enter Program Mode	* (Master Code) #
2. Pulse Mode	3 (1-99) # (factory default)
OR	
2. Toggle Mode	3 0 #
3. Exit	*

Set Access Mode

For Multi user access mode, the interval time of reading can not exceed 5 seconds, or else, the device will exit to standby automatically.

Programming Step	Keystroke Combination
1. Enter Program Mode	* (Master Code) #
2. Fingerprint Access	4 0 #
OR	
2. Card Access	4 1 #
OR	
2. PIN Access	4 2 #
OR	
2. Card + PIN Access	4 3 #

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2. Multi User Access	4 3 (2-9) #
(Only after 2-9 valid users, the door be opened)	
OR	
2. Fingerprint or Card or PIN Access	4 4 # (factory default)
3. Exit	*

Set Strike-out Alarm

The strike-out alarm will engage after 10 failed entry attempts (Factory is OFF). It can be set to deny access for 10 minutes after engaging or disengage only after entering a valid Fingerprint/ card/ PIN or Master code/ fingerprint/ card.

Programming Step	Keystroke Combination
1. Enter Program Mode	* (Master Code) #
2. Strike-Out OFF	6 0 # (factory default)
OR	
2. Strike-Out ON	6 1 # Access will be denied for 10 minutes (Exit button is still workable)
OR	
2. Strike-Out ON (Alarm)	6 2 #
Set Alarm Time	5 (0 ~ 3) # (factory default is 1 minute)
Enter Master Code # or Master Fingerprint / Card or valid user fingerprint / card / PIN to silence	
3. Exit	*

Set Door Open Detection

Door Open Too Long (DOTL) Detection

When use with an optional magnetic contact or built-in magnetic contact of the lock, if the door is opened normally, but not closed after 1 minute, the inside buzzer will beep automatically to remind people to close the door. The beep can be stopped by closing the door, master users or valid users, or else, it will continue to beep the same time with the alarm time set.

Door Forced Open Detection

When use with an optional magnetic contact or built-in magnetic contact of the lock, if the door is opened by force, the inside buzzer and external alarm (if there is) will both operate, they can be stopped by master users or valid users, or else, it will continue to sound the same time with the alarm time set.

Programming Step	Keystroke Combination
1. Enter Program Mode	* (Master Code) #
2. Disable Door Open Detection	6 3 # (factory default)
OR	
2. Enable Door Open Detection	6 4 #
Set Alarm Time	5 (0 ~ 3) # (factory default is 1 minute)
3. Exit	*

The function of Set Alarm Time also apply for anti-tamper alarm

Set Audible and Visual Response

Programming Step	Keystroke Combination
1. Enter Program Mode	* (Master Code) #
2. Disable Sound	7 0 #
Enable Sound	7 1 # (factory default)
OR	
2. LED Always OFF	7 2 #
LED Always ON	7 3 # (factory default)
OR	
2. Keypad Backlit Always OFF	7 4 #
Keypad Backlit Always ON	7 5 #
Keypad Backlit Automatic OFF	7 6 # (factory default)
Automatic OFF after 20 seconds, it will go ON by pressing any key (this key isn't taken into consideration)	
3. Exit	*

Master Fingerprint/ Card Usage

Using Master Fingerprint/ Card to add and delete users

Add Fingerprint/ Card/ PIN Users	1. Input (Master Fingerprint / Card) 2. Input (Fingerprint three times) or (Card) or (PIN #) Repeat step 2 for additional users 3. Input (Master Fingerprint / Card) again
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Delete Fingerprint/ Card/ PIN Users	1. Input (Master Fingerprint/ Card Twice within 5s) 2. Input (Fingerprint) or (Card) or (PIN #) Repeat step 2 for additional users 3. Input (Master Fingerprint/ Card) again
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Users Operation & Reset to Factory Default

> **Open the door:** Read valid user fingerprint or user card or input valid user PIN #

> **Remove Alarm:** Enter Master Code # or Master Fingerprint/ Card or valid user fingerprint / card / PIN

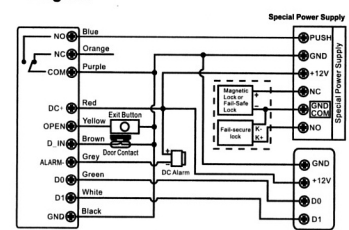
> **To reset to factory default & Add Master Card:** Power off, press the Exit Button, hold it and power on, there will be two beeps, then release the exit button, the LED light turns into yellow, then read any 125KHz EM card / 13.56MHz Mifare card, the LED will turn into red, means reset to factory default successfully. Of the card reading, it is the Master Card.

- ① If no Master Card added, must press the Exit Button for at least 5 seconds before release. (this will make the previous registered Master Card invalid)
- ② Reset to factory default, the user's information is still retained.

CONTROLLER MODE

The device can work as Controller, connected with the external Wiegand reader. (Factory default mode) --- 7 7 #

Connection Diagram



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Attention: Install a 1N4004 or equivalent diode is needed when use a common power supply, or the reader might be damaged. (1N4004 is included in the packing)

Set Wiegand Input Formats

Please set the Wiegand input formats according to the Wiegand output format of the external Reader.

Programming Step	Keystroke Combination
1. Enter Program Mode	* (Master Code) #
2. Wiegand Input Bit	For EM Card: 8 (26-44) # (factory default is 26bits) For Mifare Card: 8 0 (26-44, 56, 58) # (factory default is 34bits)
3. Disable Parity Bit	8 0 #
Enable Parity Bit	8 1 # (factory default)
4. Exit	*

Note: For connecting Wiegand readers with 32, 40, 56 bits output, need disable parity bits.

Programming

> **Basic Programming is the same as Standalone Mode**

> **There are some exceptions for your attention:**

The device Connected with External Card Reader

- If EM/Mifare card reader: users can be added/deleted on either the device or external reader.

- If HID card reader: users can only be added/deleted on external reader.

The device Connected with Fingerprint Reader

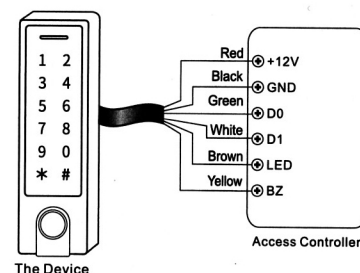
For example:

- Step 1: Add the Fingerprint (A) on SF1 (Please refer to SF1 manual)
- Step 2: Add the same Fingerprint(A) on the device:

1	Enter Program Mode: * (Master Code) #
2	1 (Press Fingerprint A once on SF1) # (ID auto allocated)
OR	
2	1 (User ID) # (Press Fingerprint A on SF1) # (Select specific ID)
3	Exit: *

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Connection Diagram



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The device Connected with Keypad Reader

The keypad reader can be 4 Bits, 8 Bits (ASCII), or 10 Bits output format. Choose the below operation according to the PIN output format of your reader.

Programming Step	Keystroke Combination
1. Enter Program Mode	* (Master Code) #
2. PIN input bits	8 (4 or 8 or 10) # (factory default is 4 bits)
3. Exit	*

Remarks: 4 means 4 bits, 8 means 8 bits, 10 means 10 digits virtual number.

> Add PIN Users:

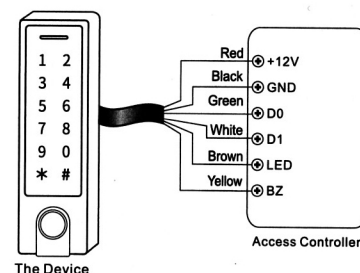
To add PIN users, after enter into programming mode on the device, PIN(s) can be input/ added on either the device or the external Keypad Reader.

> **Delete PIN Users:** the same way as add users.

WIEGAND READER MODE

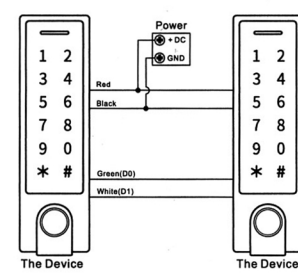
The device can work as Standard Wiegand Reader, connected to the third party Controller --- 7 8 #

Connection Diagram



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Connection Diagram:



Remarks:

- > The Master units and Accept units must be same series devices.
- > The Master Code of the Master Unit and the Accept Unit must be set to the same.</