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<b>INTRODUCTION</b>	
The device is a single door multifunction standalone access controller or a Wiegand output reader. It uses Atmel 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 (PIN+ fingerprints access. It has extra features including block enrollment, interlock, Wiegand input & output interface, etc.	
Three Versions Optional: The device with Bluetooth function is optional The device with big user capacity is optional The device with WIFI function is optional	
<b>Features</b> > 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, 56bits 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	
<b>Specifications</b>	
User Capacity	1000 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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<b>INSTALLATION</b>	
Proximity Card Reader Radio Technology Read Range	
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) Lock-Output/Lead
Wiegand Interface	EM card: Wiegand 26~44 bits input & output. Mifare card: Wiegand 26~44bits 56bits, 56bits input & output. (Factory default: Wiegand 26bits for EM card, Wiegand 34bits for Mifare card) 4 bits, 8 bits(ASCII), 10 digits Virtual Number (factory default 4 bits)
PIN Output	
Environment	Meets IP66 Operating Temperature -30°C ~ 60°C (-22°F ~ 140°F) Operating Humidity 0%RH~98%RH
Physical Dimensions	Zinc-Alloy (A/B) ABS(C) L146 x W45.5 x D22 (mm) → A/C L165 x W44 x D22 (mm) → B
Unit Weight	330g → A 415g → B 190g → C
Shipping Weight	405g → A 500g → B 280g → C
PIN Output	
Carton Inventory	
Diode 1N4004 (For relay circuit protection)	
Self Tapping Screws: Φ4*25mm	
Screw Driver	
Master Card	
Master Card	
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<b>INSTALLATION</b>	
> 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	
A B C	
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<b>INSTALLATION</b>	
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)
3. Exit	★
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<b>INSTALLATION</b>	
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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<b>INSTALLATION</b>	
Programming	
Programming will be very 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: 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	
Using Auto ID (Allows the device to assign Fingerprint to next available User ID number)	1 (Fingerprint) (Repeat Fingerprint) (Repeat Fingerprint again)
2. Select Specified ID (Allows Master to define a specific User ID to associate the fingerprint to)	1 (User ID) # (Fingerprint) (Repeat Fingerprint again)
3. Exit	★
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<b>INSTALLATION</b>	
Add Card User	
Using Auto ID (Allows the device to assign Card to next available User ID number)	1 (Read Card) / (Input 8/10/17 Digits Card Number) #
2. Select Specified ID (Allows Master to define a specific User ID to associate the card to)	1 (User ID) # (Read Card) / (Input 8/10/17 Digits Card Number) #
OR	1 (User ID) # (Card Quantity) # (The First Card 8/10/17 Digits Number) #
2. Add Card: Block Enrollment (Allows Master to add up to 888 cards to the Reader in a single step) Takes 2 minutes to program.	1 (User ID) # (PIN) #
3. Exit	★
Add PIN User	
Using Auto ID (Allows the device to assign PIN to next available User ID number)	1 (PIN) #
2. Select Specified ID (Allows Master to define a specific User ID to associate the PIN to)	1 (User ID) # (PIN) #
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	★
Change PIN Users(PIN length: 4-6 digits except 8888) (Note: WIFI versions don't support change PIN)	
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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<b>INSTALLATION</b>	
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 (User ID) #
2. Delete User- By ID number	2 (Input 8/10/17 Digits Card Number) #
OR	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	The relay time is 1-99 seconds. (Default is 5 seconds)
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	4 1 #
2. Card Access	4 2 #
OR	4 3 #
2. PIN Access	4 3 # (WIFI versions don't support this function)
2. Card + PIN Access	4 3 #
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<b>INSTALLATION</b>	
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	6 1 # Access will be denied for 10 minutes (Exit button is still workable)
2. Strike-Out ON	6 2 #
OR	6 3 # (factory default is 1 minute)
2. Strike-Out ON (Alarm)	6 2 #
Set Alarm Time	5 (0~3) # (factory default is 1 minute)
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 dosing 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.	
Simplified Instruction	
Function Description	Operation
Enter the Programming Mode	★ - Master Code - # (can add cards continuously)
Change the Master Code	0 - New Code - # - Repeat the New Code - # (code: 6 digits)
Add Card User	1 - Read Card - # (can add cards continuously)
Add Fingerprint User	1-Fingerprint-Repeat Fingerprint-Repeat Fingerprint Again-#
Add PIN User	1 - PIN - # (The PIN is any 4-6 digits except 8888 which is reserved)
Delete User	2-Fingerprint-# 2-Read Card-# 2-PIN-#
Exit from the Programming Mode	★
How to release the door	
Fingerprint User	Input Fingerprint
Card User	Read Card
PIN User	Input PIN #
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<b>INSTALLATION</b>	
Programming Step	
Keystroke Combination	
★ (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	
★ (Master Code) #	
1. Enter Program Mode	
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 # (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) or (Card) or (PIN) #	
2. Repeat step 2 for additional users	
3. Input (Master Fingerprint / Card) again	
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<b>INSTALLATION</b>	
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	
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.	
Remarks:	
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	
Special Power Supply	
The Device	
Reader	
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<b>INSTALLATION</b>	
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 only 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:	
Connect SF1 as the fingerprint reader to the device.	
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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<b>INSTALLATION</b>	
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 6 #	
Connection Diagram	
The Device	
Access Controller	
Notes:	
> When set into Wiegand Reader mode, nearly all settings in Controller Mode will become invalid, and Brown & Yellow wires will be redefined as below:	
- Brown wire: Green LED light control	
- Yellow wire: Buzzer control	
> If you need to connect Brown/Yellow wires:	
When the input voltage for LED is low, the LED will turn into Green; and when the input voltage for Buzzer is low, it will sound.	
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<b>INSTALLATION</b>	
Set Wiegand Output Formats	
Please set the Wiegand output formats of Reader according to the Wiegand input formats of the Controller.	
Programming Step	Keystroke Combination
1. Enter Program Mode	★ (Master Code) #
2. Wiegand output bits	For EM Card: 8 (26~44) # (factory default is 26bits) For Mifare Card: 8 0 (26~44, 56, 58) # (factory default is 34bits) 8 (4 or 8 or 10) # (factory default is 4 bits)
3. Disable Parity Bit	8 0 #
Enable Parity Bit	8 1 # (factory default)
4. Exit	★
Note: For connecting Wiegand controller with 32, 40, 56 bits input, need disable parity bits.	
ADVANCED APPLICATION	
Collection Card Mode	
After this mode is turned on, all cards can open the lock. At the same time, the card is added to the device.	
Programming Step	Keystroke Combination
1. Enter Program Mode	★ (Master Code) #
2. Collection Card Mode OFF	9 2 # (factory default)
OR	9 3 #
2. Collection Card Mode ON	★
3. Exit	★
User Information Transfer (Valid for Card / PIN Users)	
The device supports the User Information Transfer function, and the enrolled user (cards, PINs) can be transferred from one (let's name it Master Unit) to another (let's name it Accept Unit).	
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<b>INSTALLATION</b>	
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.	
> Program the transfer operation on Master Unit only.	
> If the Accept Unit is already with the users enrolled, it will be covered after transferring.	
> For full 900 users enrolled, the transfer takes about 30 seconds.	
Set Transferring on Master Unit:	
Programming Step	Keystroke Combination
1. Enter the programming mode	★ (Master Code) #
2. Set transferring	9 8 #
Within 30 seconds, Green LED shines, after one beep, the LED will turn into Red, which means the users' information has been transferred successfully.	
3. Exit	★
Interlock	
The device supports the Interlock Function. It is of two Devices for two doors, and mainly used for banks, prisons, and other places where a higher level security is required.	
Connection Diagram:	
The Device	
The Device	
Remarks: The Door Contact must be installed and connected as the diagram. Let's name the two Devices as "A" and "B" for two doors "1" and "2"	
Step 1:	
Enroll the users on Device A, then transfer the users' information to Device B by "User Information Transfer" function.	
Step 2:	
Set both of the two Devices (A and B) to Interlock function	
Programming Step	Keystroke Combination
1. Enter Program Mode	★ (Master Code) #
2. Disable Interlock	9 0 # (factory default)
OR	9 1 #
2. Enable Interlock	★
3. Exit	★
If enable interlock, when and only door 2 is closed, the user can read the valid fingerprintcard or input PIN on Reader A, door 1 will open; then when and only door 1 closed, read valid fingerprintcard or input PIN on Reader B, door 2 will open.	
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<b>INSTALLATION</b>	
Outdoor FingerKey & Reader	
User Manual	
A B C	
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