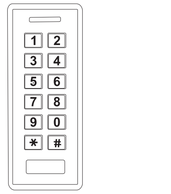
SK2-X
Access Controller / Reader



User Manual

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INTRODUCTION

The SK2-X 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 SK2-X supports 600 users (598 common users + 2 panic users), multi access modes in either card access, PIN access, Card + PIN access, or multi cards/PINs access, card interface: 125KHz EM & HID card, and 13.56MHz Mifare card. It has extra features including block enrollment, interlock, Wiegand 26~37 bits interface…etc.

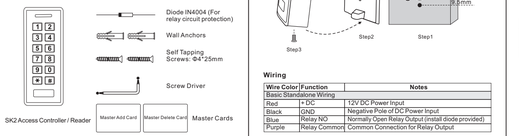
Features

- Waterproof, conforms to IP66
- One relay, keyboard programmer
- 600 users
- PIN length: 4~6 digits
  Card type: 125KHz EM card, 125KHz HID card, and 13.56Mhz Mifare Card
- Wiegand 26~37 bits input & output
- Can be used as Wiegand reader with LED & buzzer output
- Card block enrollment
- Tri-mode LED status display
- Integrated alarm & buzzer output
- Pulse mode, Toggle mode
- 2 devices can be interlocked for 2 doors
- Built in light dependent resistor (LDR) for anti tamper
- Backlit keypad
- Low temperature resistance(-40℃)

User Capacity	**600**
Common User	598
Panic User	2
Operating Voltage	**12V DC**
Idle Current	<35mA
Proximity Card Reader	**HID & EM & Mifare**
Radio Technology	125KHz & 13.56Mhz
Read Range	2~6 cm

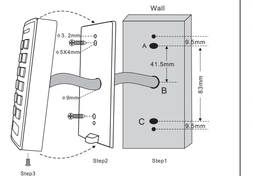
Wiring Connections	Relay output, exit button, alarm, door contact, Wiegand input, Wiegand output
Relay	**One (NO, NC, Common)**
Adjustable Relay Output Time	1~99 Seconds (5 seconds default)
Lock Output Load	2 Amp Maximum
Wiegand Interface	**Wiegand 26-37 bits**
Wiegand Input	26-37 bits
Wiegand Output	26-37 bits
PIN Output	4 bits, 8 bits(ASCII), 10 digits Virtual Number
Environment	**Meets IP66**
Operating Temperature	-40℃~ 60℃ (-40˚F ~ 140˚F)
Operating Humidity	0%RH~98%RH
Physical	**ABS Shell**
Colour	Black
Dimensions	12.2L × 5.0W × 21H(cm)
Unit Weight	165g
Shipping Weight	225g

Carton Inventory



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	12V 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	GP(EN)	Request to Exit(REX) Input
Wiegand Wiring (Wiegand Reader or Controller)		
Green	Data 0	Wiegand Input & Out put Data 0
White	Data 1	Wiegand Input & Out put Data 1
Advanced Input and Output Features		
Grey	Alarm Output	Negative contact for Alarm
Brown	Contact Input	Door/Gate Contact Input (Normally Closed)

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) #** *(Factory default is 123456)*
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) #** *(Master code is any 6 digits)*
3. Exit Program Mode	＊

Set the Working Mode

Notes: the SK2-X has 3 working modes: Standalone Mode, Controller Mode, Wiegand Reader Mode, choose the mode you use.
(Factory default is Standalone Mode / Controller Mode)

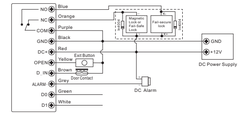
Programming Step	Keystroke Combination
1. Enter Program Mode	**＊ (Master Code) #**
2. Standalone/Controller Mode **OR** 2. Wiegand Reader Mode	**8 0 #** *(Factory default)* **8 1 #**
3. Exit	＊

STANDALONE MODE

In this mode unit works as standalone controller. This is factory default mode (command 8 0 #). To change unit for Wiegand reader mode please use command: 8 1 # (this mode is describe on next pages).

Connection Diagram

DC 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)

Programming

Programming will vary depending on access configuration. Follow the instructions according to your access configuration.

Notes:

- **User ID number:** Assign a user ID to the access card / PIN in order to track it. The common user ID number can be any number from 1~598, the panic user ID is from 599~600. 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:** Any 125KHz industry standard 26 bits HID and EM cards and 13.56MHz mifare card
- **PIN:** Can be any 4~6 digits except 8888 which is reserved.

Add Common Users

Programming Step	Keystroke Combination
1. Enter Program Mode	**＊ (Master Code) #**
Add Card User	
2. Add Card: Using Auto ID (Allows SK2-X to assign Card to next available User ID number) **OR** 2. Add Card: Select Specific ID (Allows Master to define a specific User ID to associate the card to) **OR** 2. Add Card: by Card Number **OR** 2. Add Card: Block Enrolment (Allows Master to add up to 998 cards to the Reader in a single step) Takes 2 minutes to program.	**1 (Read Card) #** The cards can be added continuously. **1 (User ID) # (Read Card) #** *(User ID is any number from 1~598)* **1 (Input 8/10 digits Card number) #** **1 (User ID) # (Card quantity) #** **(The first card number) #** Cards' number must be consecutive; Card quantity = number of cards to be enrolled.
Add PIN User	
2. Add PIN: Using Auto ID (Allows SK2-X to assign PIN to next available User ID number)	**1 (PIN) #** The PINs can be added continuously. *(PIN: 4~6 digits)*

Add Panic Users

Programming Step	Keystroke Combination
1. Enter Program Mode	**＊ (Master Code) #**
2. Add Card: **OR** 2. Add PIN:	**1 (User ID) # (Read Card / Input 8/10 digits Card number) #** **1 (User ID) # (PIN) #** *(User ID is any number from599~600)*
3. Exit	＊

Change PIN Users

Programming Step	Keystroke Combination
Note: Below is done outside programming mode, users can undertake this themselves	
2. Change PIN: By Card (There will auto allocate PIN (8888) to cards when adding)	**＊ (Read Card) (Old PIN) # (New PIN) # (Repeat New PIN) #**
2. Change PIN: By PIN	**＊ (User ID) # (Old PIN) # (New PIN) # (Repeat New PIN) #**
3. Exit	＊

Delete Users

Programming Step	Keystroke Combination
1. Enter Program Mode	**＊ (Master Code) #**
Delete Card User - Common	
2. Delete Card – By Card **OR** 2. Delete Card – By ID number **OR** 2. Delete User – By Card number	**2 (Read Card) #** The cards can be deleted continuously. **2 (User ID) #** **2 (Input 8/10 digits Card number) #**
Delete PIN User - Common	

2. Add PIN: Select Specific ID (Allows manager to define a specific User ID to associate the PIN to)	**1 (User ID) # (PIN) #** The user ID is any number from 1~598.
3. Exit	＊

Delete All Users

Programming Step	Keystroke Combination
Delete All User	**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)* The relay time is 1-99 seconds. *(1 is 50mS) (Default is 5 seconds)*
OR 2. Toggle Mode	**3 0 #** Sets the relay to ON/OFF Toggle mode
3. Exit	＊

Set Access Mode

For Multi cards/ PINs access mode, the interval time of reading cards/inputting PINs can not exceed 5 seconds, or else, the SK2-X will exit to standby automatically.

Programming Step	Keystroke Combination
1. Enter Program Mode	**＊ (Master Code) #**
2. Card access **OR** 2. Card + PIN access **OR** 2. Card or PIN access **OR** 2. Multi cards/PINs access	**4 0 #** **4 1 #** **4 2 #** **4 3 (2~9) #** (Only after reading 2~9 cards or inputting 2~9 PINs, the door can be opened)
3. Exit	＊

2. Delete PIN – by PIN **OR** 2. Delete PIN – By ID number	**2 (Input PIN) #** **2 (User ID) #**
Delete Panic User	
2. Delete Panic Card User **OR** 2. Delete Panic PIN User	**2 (User ID) #** **2 (User ID) #**
Delete All Users	
Delete All User	**2 (Master Code) #**
3. Exit	＊

Set Strike-out Alarm

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

Programming Step	Keystroke Combination
1. Enter Program Mode	**＊ (Master Code) #**
2. Strike-Out OFF **OR** 2. Strike-Out ON **OR** 2. Strike-Out ON (Alarm)	**6 0 #** *(factory default)* **6 1 #** Access will be denied for 10 minutes **6 2 #** Enter Master code # or valid user card / PIN to silence
3. Exit	＊

Door Detecting

Door Open Too Long (DOTL) warning. When used 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 and continue for 1 minute before switching off automatically.

Door Forced Open warning. When used with an optional magnetic contact or built-in magnetic contact of the lock, if the door is opened by force, or if the door is opened after 60 seconds of the electro-mechanical lock not closed properly, the inside buzzer and alarm output will both operate. Enter Master code # or valid user card /PIN to silence.

Programming Step	Keystroke Combination
1. Enter Program Mode	**＊ (Master Code) #**
2. To disable door open detection OR 2. To enable door open detection	**5 0 #** *(factory default)* **5 1 #**
3. Exit	＊

Set Audible and Visual Response

Programming Step	Keystroke Combination
1. Enter Program Mode	**＊ (Master Code) #**
2. Control Sounds **OR** 2. Control LED **OR** 2. Control Keypad Backlit	**OFF = 7 0 #** **ON = 7 1 #** **OFF = 7 2 #** **ON = 7 3 #** **OFF = 7 4 #** **ON = 7 5 #** *(factory defaults are ON)*
3. Exit	＊

Master Cards Usage

Using Master Cards to add and delete card / PIN users	
Add a User	1. **(Read Master Add Card)** 2. **(Read User Card) / (Input User PIN #)** *Repeat Step 2 for additional user cards / PINs* 3. **(Read Master Add Card)**
Delete a User	1. **(Read Master Delete Card)** 2. **(Read User Card) / (Input User PIN #)** *Repeat Step 2 for additional user cards/ PINs* 3. **(Read Master Delete Card)**

Users Operation & Reset to Factory Default

- Open the door: Read valid user card or inputting valid user PIN
- Remove Alarm: Read valid user card or inputting valid user PIN, or input Master Code #
- **To reset to factory default & Add Master Cards**: power off, press the Exit Button, hold it and power on, there will be two beeps, and the LED light turns into yellow, release the exit button, then read any two 125KHz EM cards or HID cards, the LED will turn into red, means reset to factory default successfully. Of the two cards reading, the 1st one is Master Add Card, the 2nd one is the Master Delete Card.

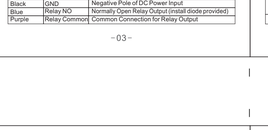
Remarks:

① If no Master Cards added, must press the Exit Button for at least 10 seconds before release.
② Reset to factory default, the user's information is still retained.

CONTROLLER MODE

SK2-X can work as Controller, connected with the external Wiegand reader. (Factory default mode)—8 0 #

Connection Diagram



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 bits	**8 (26~37) #** *(factory default is 26 bits)*
3. Exit	＊

Programming

- Basic Programming is the same as Standalone Mode
- There are some exceptions for your attention:

SK2-X Connected with External Card Reader:

- If EM card reader or HID card reader: users can be added/deleted on either SK2-X or external reader.
- If Mifare reader: users **can only be** added/deleted on external reader.

SK2-X Connected with Fingerprint Reader:

For example:
Connect F2 as the fingerprint reader to SK2-X, it is of two steps to enroll the valid fingerprint.
Step 1: Add the fingerprint (A) on F2
Step 2: Add the same Fingerprint(A) on SK2-X:

1	Enter Program Mode**＊ (Master Code) #**
2 or 2	**1 (Press Fingerprint A once on F2) #** (ID auto allocated) **1 (User ID) # (Press Fingerprint A on F2) #** (Select specific ID)
3	Exit: ＊

SK2-X 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. Wiegand 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.

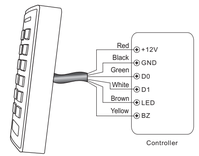
- Add PIN Users:
To add PIN users, after enter into programming mode on SK2-X, PIN(s) can be input/ added on either SK2-X controller or the external Keypad Reader.

- Delete PIN Users: the same way as add users.

WIEGAND READER MODE

SK2-X can work as Standard Wiegand Reader, connected to the third party Controller— 8 1 #

Connection Diagram



Notes:

- When set into Wiegand Reader mode, nearly all settings in Controller Model 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.

Set Wiegand Output Formats

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

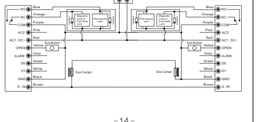
Programming Step	Keystroke Combination
1. Enter Program Mode	**＊ (Master Code) #**
2. Wiegand output bits PIN output bits	**8 (26~37) #** *(factory default is 26 bits)* **8 (4 or 8 or 10) #** *(factory default is 4 bits)*
3. Exit	＊

ADVANCE APPLICATION

Interlock

The SK2-X supports the Interlock funciton. It is of two keypads for two doors, and mainly used for banks, prisons, and other places where a higher level security is required.

Connection Diagram:



Remarks: The Door Contact must be installed and connected as the diagram.
Let's name the two SK2-X Keypads as "A "and "B " for two doors "1" and "2"

Step 1:

Enroll the users on Keypad A, then transfer the users' information to Keypad B by "User Information Transfer" funciton.

Step 2:

Set both of the two Keypads (A and B) to Interlock function

Programming Step	Keystroke Combination
1. Enter Program Mode	**＊ (Master Code) #**
2. Interlock-OFF **OR** 2. Interlock-ON	**9 0 #** *(factory default)* **9 1 #**
3. Exit	＊

The interlock operation is finished,
When and only door 2 is closed, the user can read the valid card or input PIN on Keypad A, door 1 will open; then when and only door 1 closed, read valid card or input PIN on Keypad B, door 2 will open.

SK2-X-Simplified Instruction	
Function Description	**Operation**
Enter the Programming Mode	**＊ - 123456 - #** *then you can do the programming (123456 is the factory default master code)*
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 PIN User	**1 - PIN - #**
Delete User	**2 - Read Card - #** for Card User **2 - PIN - #** for PIN user
Exit from the programming Mode	＊
How to release the door	
Card User	Read Card
PIN User	Input PIN #

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 PIN output bits	**8 (26~37) #** *(factory default is 26 bits)* **8 (4 or 8 or 10) #** *(factory default is 4 bits)*
3. Exit	＊

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