S-X Series

Convertible Access Controller / Reader

User Manual

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INTRODUCTION

The S-X Series is a single door multifunction standalone access controller or a Wiegand output reader. It uses Atmel MCU assuring stable performance, packed with small Infrared Remote Control, the operation is very user-friendly. Low-power circuit makes it long service life.

The device supports 1,000 users (987 common users + 2 panic users + 10 visitor users + 1 authorized user), all user data can be transferred from one to another, It supports multi access modes in either card access, PIN access (Use PIN on the Infrared Remote Control), Card + PIN access, or multi cards/PINs access. It has extra features including block enrollment, interlocked, Wiegand Input & output interface…etc.

Features

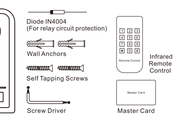
> Waterproof, conforms to IP67
> One relay, remote infrared programmer
> One relay, 1,000 users (987 common + 2 panic + 10 visitor + 1 authorized user)
> User data can be transferred
> 125KHz EM Cards + 13.56MHz Mifare Cards
> Wiegand 26~44 bits input & output
> Can be used as Wiegand reader with LED & Buzzer output
> Card block enrolment
> Tri-colour LED status display
> Integrated alarm & buzzer output
> Pulse mode, Toggle mode
> Can add and use 4~6 digits PIN on Infrared Remote Control
> 2 devices can be interlocked for 2 doors
> Built in light dependent resistor (LDR) for anti tamper
> Low temperature resistance(-40˚C)

Specifications

Common User Panic User Visitor User Authorized User	**987** 2 10 1
Operating Voltage Idle Current	**12~18V DC** <35mA
Proximity Card Reader Radio Technology Read Range	**EM + Mifare** 125KHz & 13.56MHz 2~6 cm

Wiring Connections	**Relay Outputm Exit Button, Alarm, Door Contact, Wiegand Input, Wiegand Output**
Relay Adjustable Relay Output Time Lock Output Load	**One (NO, NC, Common)** 0~99 Seconds (5 seconds default) 2 Amp Maximum
Wiegand Interface PIN Output	**Wiegand 26~44bits Input & Output** (Factory Default: Wiegand 26bits) **4 bits, 8 bits(ASCII), 10 digits Virtual Number** (Factory Default: 4 bits)
Environment Operating Temperature Operating Humidity	**Meets IP67** -40˚C ~ 60˚C (-40˚F ~ 140˚F) 0~98%RH
Physical Colour Dimensions Unit Weight Shipping Weight	**ABS Shell or Metal** Black / White / Silver L103 x W48 x D20(mm) Plastic & Metal 125g (Plastic) / 260g (Metal) 185g (Plastic) / 320g (Metal)

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
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 or Controller)		
Green	Data 0	1.Wiegand Output (Pass-through) Data 0
White	Data 1	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)

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

Please use the Infrared Remote Control to program the Reader. The infrared receiver head is near LED, so when program the reader, it is suggested to direct the Remote Control to the LED.

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

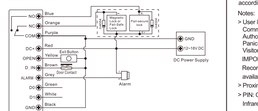
Notes: the device has 3 working modes: Standalone Mode, Controller Mode, Wiegand Reader Mode, choose the mode you use. (Factory default is Standalone Mode / Controller Mode)

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

STANDALONE MODE

The device can be worked as Standalone Reader for single door. (Factory default mode)—7 7 #

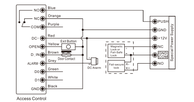
Connection Diagram



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)

Access Control Power Supply:



Programming by Infrared Remote Control

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 in order to track it.
Common User ID: 0~986
Authorized User ID: 987
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: Any 125KHz EM and 13.56MHz Mifare Card or Tag
> PIN: Can be any 4~6 digits except 8888 which is reserved. Press PIN on the Infrared Remote Control.

Add Common Users

Programming Step	Keystroke Combination
1. Enter Program Mode	* (Master Code) #
2.Add PIN	* (Master Code) #
Add Card User	

2. Add Card: Using Auto ID (Allows the device 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 987 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 0-986) **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 the device to assign PIN to next available User ID number) 2. Add PIN: Select Specific ID (Allows manager to define a specific User ID to associate the PIN to)	**1 (PIN) #** The PINs can be added continuously. (PIN: 4~6 digits) **1 (User ID) # (PIN) #** The user ID is any number from 0-986.
3. Exit	*

Add Authorized User

(User ID number is 987; PIN length: 4~6 digits)

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

Remark:

Authorized user can be card or PIN, read the Authorized Card or input Authorized PIN, then all valid users can't access; read the Authorized Card or input Authorized PIN again, then all valid users can access again.

Add Panic 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: **OR** 2. Add PIN:	**1 (User ID) # (Read Card / Input 8/10 digits Card number) #** **1 (User ID) # (PIN) #** (0~9 means times of usage, 0=10 times)
3. Exit	*

Add Visitor 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 **OR** 2. Add PIN	**1 (User ID) # (0~9) # (Read Card) / (Input 8/10 Digits Card Number) #** **1 (User ID) # (0~9) # (PIN) #** (0~9 means times of usage, 0=10 times)
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) #
2. Delete User- By Card/ PIN **OR** 2. Delete User - By ID number **OR** 2. Delete User - By Card number **OR** 2. Delete ALL Users	2 (Read Card)/(Input PIN) # The users can be deleted continuously. **2 (User ID) #** **2 (Input 8/10 Digits Card Number) #** **4 3 (2~9) #** (Only after 2~9 valid users, the door can be opened)
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 **OR** 2.Toggle Mode	**5 (1~99) #** (factory default) The relay time is 1~99 seconds. (Default is 5 seconds) **5 0 #** Sets the relay to ON/OFF Toggle mode
3. Enter Program Mode	*

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. Card Access **OR** 2. PIN Access **OR** 2. Card + PIN Access **OR** 2. Card or PIN Access **OR** 2. Multi User Access	**4 0 #** **4 1 #** **4 2 #** **4 3 #** (factory default) **4 3 (2~9) #** (Only after 2~9 valid users, the door can be opened)
3. Exit	*

Set Strike-out Alarm

The strike-out 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/Card.

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) Set alarm time	**6 0 #** (Factory default) **6 1 #** Access will be denied for 10 minutes **6 2 #** **5 (0~3) #** (Factory default is 1 minute) Enter Master Code # or Master Card or valid user 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 **OR** 2. Enable Door Open Detection **Set Alarm Time**	**6 3 #** (factory default) **6 4 #** **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. Control Sounds **OR** 2. Control LED	**OFF = 7 0 #** **ON = 7 1 #** **OFF = 7 2 #** **ON = 7 3 #** (Factory defaults are ON)
3. Exit	*

Master Card Usage

Using Master Card to add and delete users

Add Card/ PIN Users	1. Input (**Master Card**) 2. Input (**Card**) or (**PIN #**) Repeat step 2 for additional users 3. Input (**Master Card**) again
Delete Card/ PIN Users	1. Input (**Master Card Twice within 1s**) 2. Input (**Card**) or (**PIN #**) Repeat step 2 for additional users 3. Input (**Master Card**) again

Users Operation & Reset to Factory Default

> **Open the door:** Read the valid user card/ Input the valid PIN on the Infrared Remote Control, the door will open.
> **Remove Alarm:** Read valid user card/ Input the valid PIN on the Infrared Remote Control, or Input Master Code #
> **To reset to Factory default,** power off, press the Exit Button, hold it and power on, there will be two beeps, and the LED light turns into orange, release the exit button, then read any 125KHz EM card or 13.56MHz Mifare card, the LED will turn into red, means reset to Factory default successfully. Of the card reading, it's the Master Card.

Remarks:

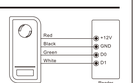
① If no Master Cards added, must press the Exit Button for at least 5 seconds before release (This will make the previous registered Master Card invalid)
② Reset to Factory default, the user's information is still retained.

CONTROLLER MODE

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

Connection Diagram

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	**EM Card Version: 8 (26~ 44) #** (factory default is 26bits) **Mifare Card Version: 8 0 (26~ 44) #** (factory default is 26 bits)

3. Disable Parity Bit Enable Parity Bit	**8 0 #** **8 1 #** (factory default)
4. Exit	*

Note: For connecting Wiegand readers with 32. 40 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:

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: *

The device Connected with Keystroke 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.

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) #

> Add PIN Users:

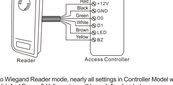
To add PIN users, after enter into programming mode on the device, PIN(s) can be input / added on either the device or the external Keypad Reader.

> 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



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 3. Disable Parity Bit Enable Parity Bit 4. Exit	**EM Card Version: 8 (26~ 44) #** (factory default is 26bits) **Mifare Card Version: 8 0 (26~ 44) #** (factory default is 26bits) **8 (4 or 8 or 10) #** (factory default is 4 bits) **8 0 #** **8 1 #** (factory default) *

Note: For connecting Wiegand controller with 32. 40 bits input, need disable parity bits.

ADVANCE APPLICATION

Collection Card Mode

After this mode is turned on, all the cards can open the lock, at the same time, all cards are added in the device.

Programming Step	Keystroke Combination
1. Enter Program Mode	* (Master Code) #
2.Collection Card Mode OFF **OR** 2.Collection Card Mode ON	**9 2 #** (factory default) **9 3 #**
3. Enter Program Mode	*

Encrypted Access Function (For Encrypted Access version only)

For Encrypted Access version, the reader will read Seculkey anti-copy 13.56MHz Mifare card only.

Programming Step	Keystroke Combination
1. Enter Program Mode	* (Master Code) #
2.Read Regular Card (All EM or Mifare card) **OR** 2. Read Encrypted Card (Factory default)	**9 4 #** **9 5 #**
3. Enter Program Mode	*

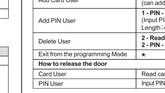
Interlock

The device supports the Interlock function. It is of two readers for two doors, and mainly used for banks, prisons, and other places where a higher level security is required.

User Information Transfer

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).

Connection Diagram:



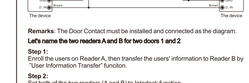
Remarks:

> The Master Units and Accept Units must be the same series.
> The Master Code of the Master Unit and the Accept Units(s) must be set to the same.
> Program the transfer operation on Master Unit only
> If the Accept Unit(s) are already with the users enrolled, it will be covered after transfer.
> For full 1000 users enrolled, the transfer takes 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	*

Connection Diagram:



Remarks: The Door Contact must be installed and connected as the diagram.

Let's name the two readers A and B for two doors 1 and 2

Step 1:

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

Step 2:

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

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

If enable interlock, when and only door 2 is closed, the user can read the valid card (or input PIN) on Reader A, door 1 will open; then when and only door 1 closed, read valid card (or input PIN) on Reader B, door 2 will open.

Simplified Instruction

Function Description	Operation
Enter the Programming Mode	* - 123456 - # then you can do the programming (123456 is the default factory 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 - #** (Input PIN on the Remote Control) PIN Length:,4~6 digits
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 # on the Infrared Remote Control

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