EX8

User Manual

Ver 1.0

EX8 manual
ver1.0

2

Power supply important issue!

Use separate power supply when ever is possible, one for EX8 and Reader and another for door lock. This way electrical isolation between lock and EX8 protect the EX8 from any electrical noise generated by lock or damages caused by improper or damaged cabling of the lock.

Single power supply for EX8 and lock can be used if it has been made for this purpose. If single power supply is to be used it must be tested by installer along with door lock before installation. All locks do not have same electrical characteristics so the test must be done with lock that will be mounted at user site.

Keep power supply unit as close as possible to EX8. If longer distances are unavoidable, use screened cables for 12V supply line.

Product concept

The EX8 is used in a combination with fingerprint reader making standalone biometric access system.
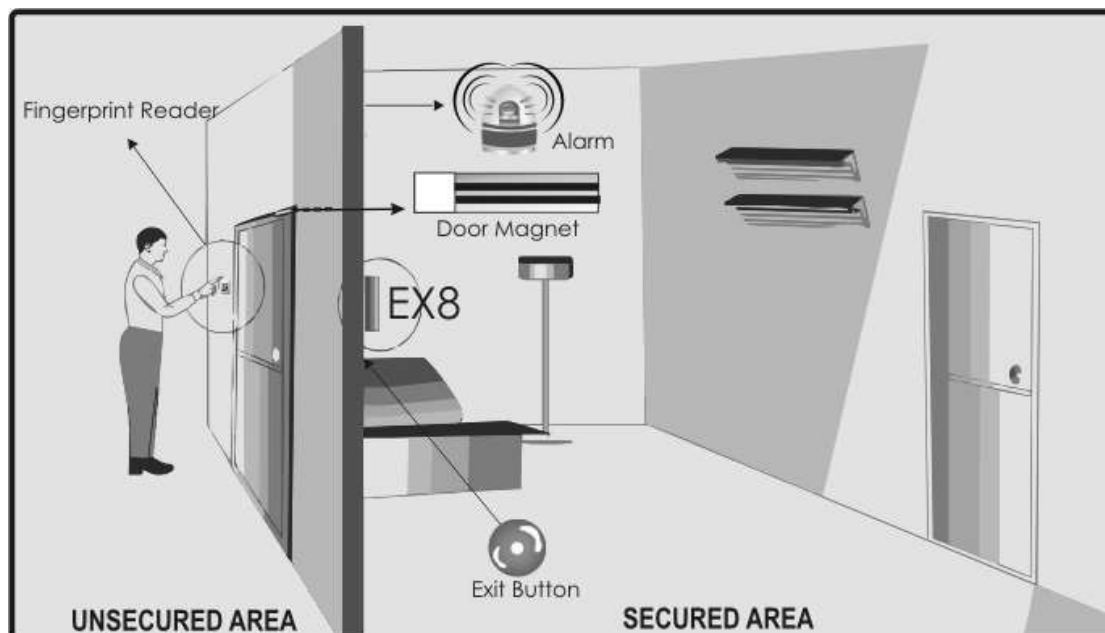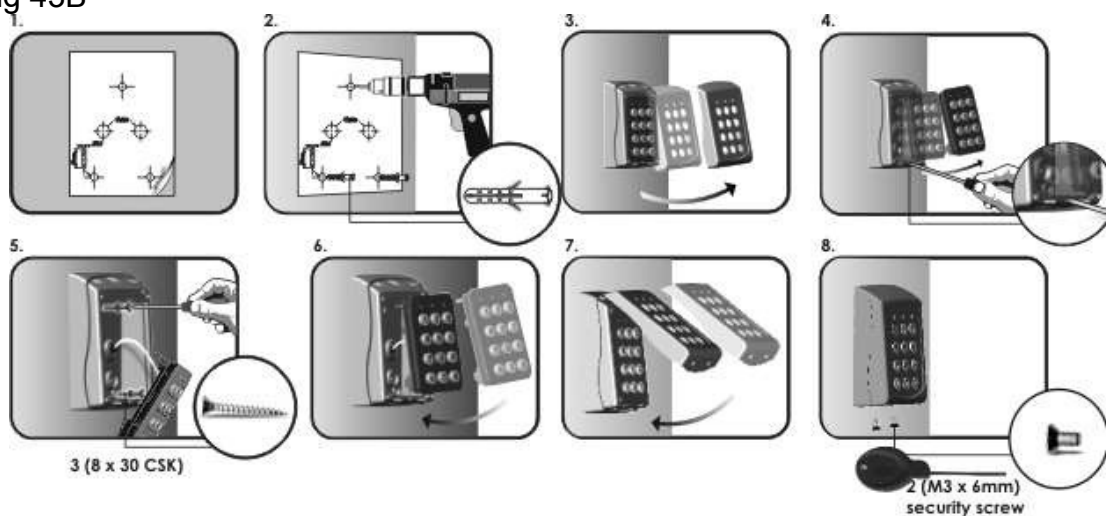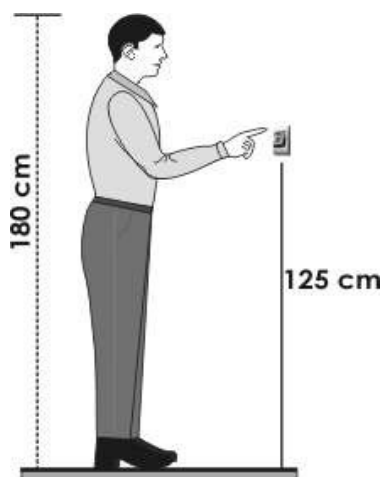

Fig.1 Typical application
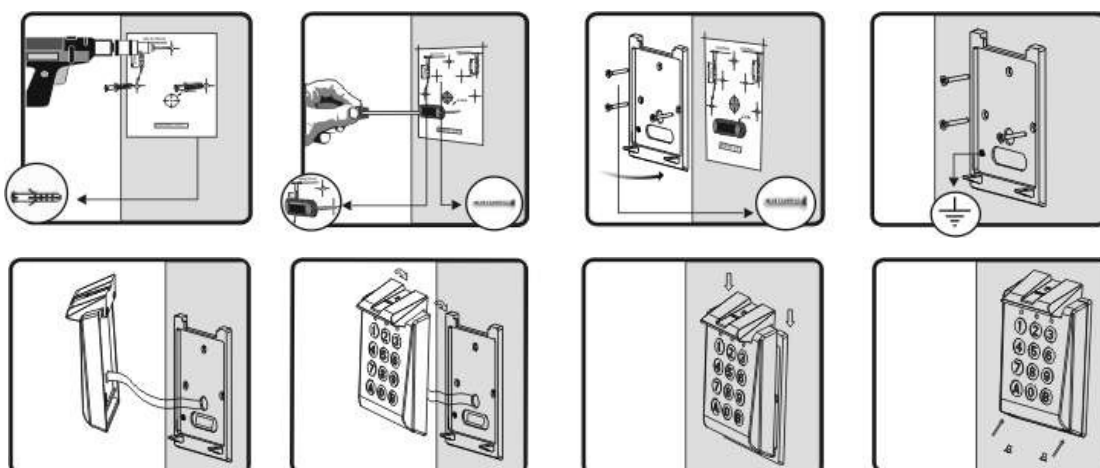
Mounting

EX8 – Controller

Housing 43B

3 (8 x 30 CSK)

2 (M3 x 6mm) security screw

Readers

Recommended position

180 cm

125 cm

BioXr

BioC
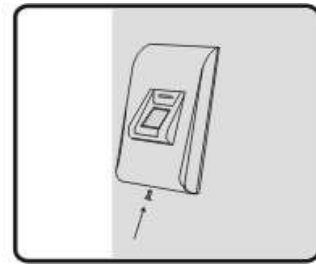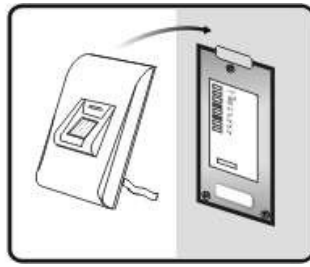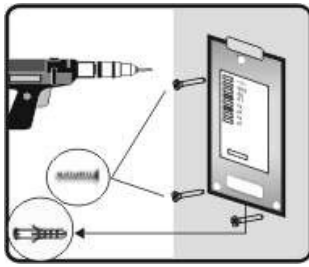
BioIn
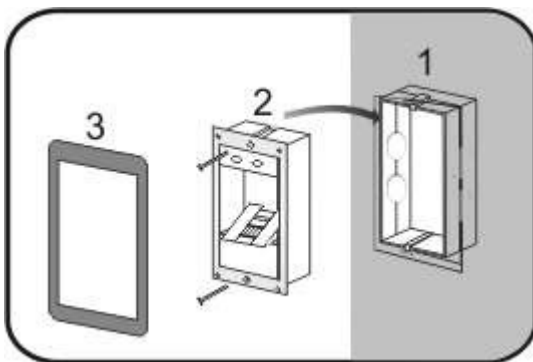
Wiring

EX8 overview

Terminals side
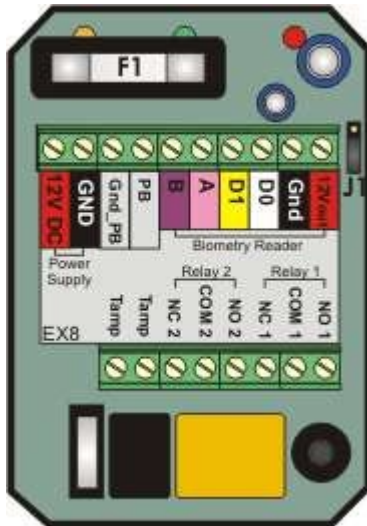
Front side

Terminal side	
Terminal	**Description**
12V DC	Power supply, +12V
GND	Power supply, 0V
Gnd_PB	Exit button
PB	Exit button
B	Reader input RS485 B
A	Reader input RS485 A
D1	Reader input D1
D0	Reader input D0
Gnd	Reader supply, 0V
12Vout	Reader supply, 12V
Tamp	Tamper out
Tamp	Tamper out
NC 2	Relay 2, Normally closed terminal
Com 2	Relay 2, common
NO 2	Relay 2, Normally open terminal
NC 1	Relay 1, Normally closed terminal
Com 1	Relay 1, common
NO 1	Relay 1, Normally open terminal
Item	**Description**
F1	Fuse 1A
J1	Master PIN reset jumper
Front side	
L1	Red LED Blinking – Error ON – Reader not found
L2	Green LED ON – Relay 1 activated
L3	Orange red ON – Relay 2 activated

Connections

Readers

<table>
<tr><th colspan="3">EX8 + BioXr</th></tr>
<tr><td></td><td colspan="2"></td></tr>
<tr><td>Terminal</td><td>Terminal</td><td>Name</td></tr>
<tr><td>12Vout</td><td>1</td><td>+12V</td></tr>
<tr><td>Gnd</td><td>2</td><td>0V</td></tr>
<tr><td>D0</td><td>5</td><td>D0</td></tr>
<tr><td>D1</td><td>6</td><td>D1</td></tr>
<tr><td>A</td><td>7</td><td>A</td></tr>
<tr><td>B</td><td>8</td><td>B</td></tr>
</table>

<table>
<tr><th colspan="3">EX8 + BioC</th></tr>
<tr><td></td><td colspan="2"></td></tr>
<tr><td>Terminal</td><td>Wire color</td><td>Name</td></tr>
<tr><td>12Vout</td><td>Red</td><td>+12V</td></tr>
<tr><td>Gnd</td><td>Black</td><td>GND</td></tr>
<tr><td>D0</td><td>White</td><td>D0</td></tr>
<tr><td>D1</td><td>Yellow</td><td>D1</td></tr>
<tr><td>A</td><td>Pink</td><td>A</td></tr>
<tr><td>B</td><td>Violet</td><td>B</td></tr>
</table>
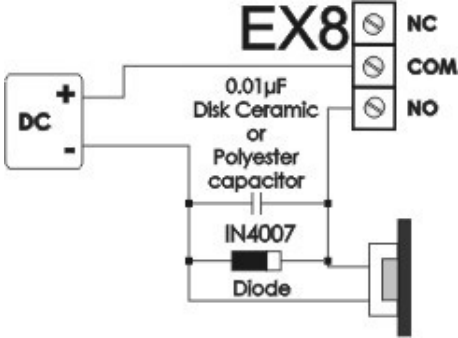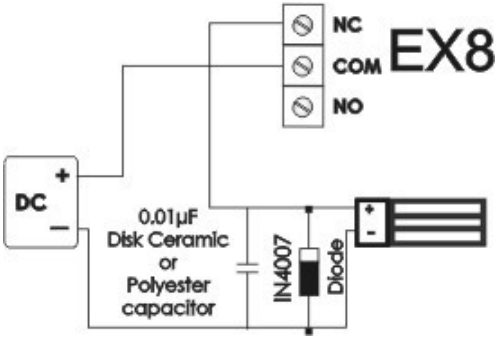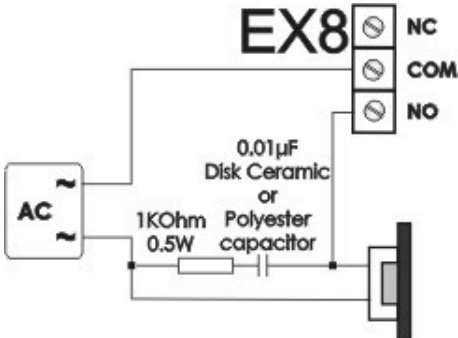
<table>
<tr><th colspan="3">EX8 + BioIn</th></tr>
<tr><td></td><td colspan="2"></td></tr>
<tr><td>Terminal</td><td>Terminal</td><td>Name</td></tr>
<tr><td>12Vout</td><td>8</td><td>+12V</td></tr>
<tr><td>Gnd</td><td>7</td><td>GND</td></tr>
<tr><td>D0</td><td>3</td><td>D0/DA</td></tr>
<tr><td>D1</td><td>4</td><td>D1/CL</td></tr>
<tr><td>A</td><td>1</td><td>A</td></tr>
<tr><td>B</td><td>2</td><td>B</td></tr>
</table>

Connecting reader with Cat5 network cable example	
Brown	+12V
Brown/White	D1
Blue	0V
Blue/White	D0
Orange	A
Orange/White	B
Green	Tamper
Green/White	Tamper

Maximum cable length

Max. 50m
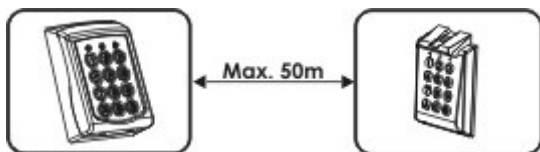
Door control

Power supply type	Door strike (fail safe)	Electromagnetic lock (fail open)
DC		
AC		

Exit button

Programming

Master PIN reset

Turn OFF the power supply
Close jumper J1
Turn ON the power supply. Yellow LED will blink and buzzer will sound.
Open jumper J1
Master password is reset to default **000**

Change master PIN code (change Master PIN XXX to YYY)

Input	Action	LED status
XXX	Enter master password XXX	○○○
B	Enter main menu	●●○
0	Enter submenu 0 (Enroll user)	○○○
000	Enter user number 000	●○○
YYY	Enter new password (YYY)	
A	Confirm entry	
B	Exit programming	○○○

To change master PIN from 000 to 123:
000 + B + 0 + 000 + 123 + A + B

Enroll a User (User number ZZZ, Finger F)

Input	Action	LED status
XXX	Enter master password XXX	○○○
B	Enter main menu	●●○
0	Enter submenu 0 (Enroll user)	○○○
ZZZ	Select user number (001 – 999)	○●○
1	Select finger 1	○●○
Present the finger 1 on the reader	Enroll	
Wait for OK beep	Enroll done	○●○
2	Select finger 2	○●○
Present the finger 2 on the reader	Enroll	
Wait for OK beep	Enroll done	○●○
B	Back to menu 0	○○○
B	Back to main menu	●●○
B	Exit programming	○○○

To enroll User 001 (with Master PIN = 000):
000 + B + 0 + 001 + 1 + present finger + wait for OK beep + 2 + wait for OK beep + B + B + B

Set user PIN (User number ZZZ, PIN PPPPP)

Input	Action	LED status
XXX	Enter master password XXX	○○○
B	Enter main menu	●●○
0	Enter submenu 0 (Enroll user)	○○○
ZZZ	Select user number (001 – 999)	○●○
3	Select user PIN menu	○●○
PPPPP	Enter user PIN (must be 5 digits 00000-99999)	
A	Confirm entry	○●○
B	Back to menu 0	○○○
B	Back to main menu	●●○
B	Exit programming	○○○

To assign PIN 88888 to User 123(with Master PIN = 000):
000 + B + 0 + 123 + 3 + 88888 + A + B + B + B

Set Relay1 open time

Input	Action	LED status
XXX	Enter master password XXX	○○○
B	Enter main menu	●●●
1	Enter submenu 1 (Relay 1 time)	●○○
TT	Enter open time TT 0 = toggle mode 1-99 = timed, 1-99 seconds	
A	Confirm entry	●●●
B	Exit programming	○○○

To set Relay1 open time to 3 seconds (with Master PIN = 000):
    000 + B + 1 + 03 + A + B

Set Relay2 open time

Input	Action	LED status
XXX	Enter master password XXX	○○○
B	Enter main menu	●●●
2	Enter submenu 2 (Relay2 time)	○●○
TT	Enter open time TT 0 = toggle mode 1-99 = timed, 1-99 seconds	
A	Confirm entry	●●●
B	Exit programming	○○○

To set Relay2 open time to 3 seconds (with Master PIN = 000):
    000 + B + 2 + 03 + A + B

Delete user

Input	Action	LED status
XXX	Enter master password XXX	○○○
B	Enter main menu	●●●
9	Enter submenu 9 (Delete user)	●●○
ZZZ	Enter user number ZZZ (001 – 999)	
A	Confirm entry	●●●
B	Exit programming	○○○

To delete User 123 (with Master PIN = 000):
    000 + B + 9 + 123 + A + B

Delete all users

Input	Action	LED status
XXX	Enter master password XXX	○○○
B	Enter main menu	●●●
8	Enter submenu 8 (Delete all users)	●○●
999	Enter delete all command	
A	Confirm entry	●●●
B	Exit programming	○○○

To delete all users (with Master PIN = 000):
    000 + B +8 + 999 + A + B

Assign relays to a User

Input	Action	LED status
XXX	Enter master password XXX	○○○
B	Enter main menu	●●○
3	Enter submenu 3 (Assign relays)	○●○
ZZZ	Enter user number	○●○
R	Enter output combination R: 0 = Disable user (User is not deleted) 1 = Relay1 only 2 = Relay2 only 3 = Relay1 and Relay2	
A	Confirm entry	●●○
B	Exit programming	○○○

To assign Relay1 to User 123 (with Master PIN = 000):
000 + B + 3 + 123 + 1 + A + B

Fingerprint sensor sensitivity setup

Input	Action	LED status
XXX	Enter master password XXX	○○○
B	Enter main menu	●●○
7	Enter submenu 7 (Sensor setup)	●○○
1	Enter sensitivity setup menu	●○○
S	Enter sensitivity S (0-7, 7 = most sensitive)	
A	Confirm entry	●●○
B	Exit programming	○○○

To set sensor to most sensitive (with Master PIN = 000):
000 + B + 7 + 1 + 7 + A + B

Fingerprint sensor security setup

Input	Action	LED status
XXX	Enter master password XXX	○○○
B	Enter main menu	●●○
7	Enter submenu 7 (Sensor setup)	●○○
2	Enter security setup menu	●●○
S	Enter security level: 1 = normal 2 = secure 3 = more secure	
A	Confirm entry	●●○
B	Exit programming	○○○

To set sensor to normal security level (with Master PIN = 000):
000 + B + 7 + 2 + 1 + A + B

Programming flowchart

Enter Master PIN + B
(default: 000 + B)

Validation OK?

No → Three small beeps (Error Beep) + RED Led blinks

Yes

Short + Long beep (OK Beep)

Main Menu

Enroll User **0**	Change Master PIN **0**	Relay 1 Time **1**	Relay 2 Time **2**	Assign Relays **3**	Sensor Settings **7**	Delete All Users **8**	Delete User **9**

Enter User Number **001 - 999** | Press **000** | **01 – 99** seconds or "**00**" **ON/OFF** Mode (Latch mode) | Enter User Number **001 - 999** | Sensitivity **1** — Security **2** | Press **999** | Enter User Number **001 - 999**

| **1** Enroll Finger 1 | **2** Enroll Finger 2 | **3** Enter PIN (5digits) |

Enter **NEW PIN** (1 to 8 digits)

Orange LED on Biometry Reader is blinking. **Green** LED on EX8 is blinking. | Orange LED on Biometry Reader is blinking. **Orange** LED on EX8 is blinking.

Present finger on the reader | Press **A** to validate

Wait for 3 sec and OK beep from EX8

1 for Out1 OR **2** for Out2 OR **12** for both OR **0** for neither

0 to **7** — 0 least sensitive to 7 most sensitive

1 normal — **2** secure — **3** more secure

Press "**A**" to validate

Validation OK?

No → Three beeps (Error Beep) → Back one level (see semaphore)

Yes

Short + Long beep (OK Beep)

To exit the menu Press **B** until the three LED's are OFF

Enrollment
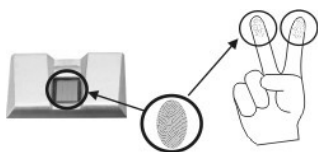
Enrollment area   Correct enrollment   Incorrect enrollment
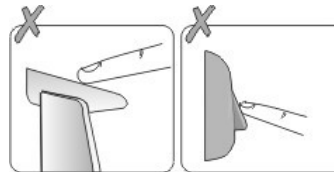
Troubleshooting

Symptom	Problem	Solution
EX8 and reader not operating at all.	No power supply	- Check main AC power - Power supply unit - Replace fuse F1
On powering the system, at the EX8, red LED stays ON while yellow LED blinks every 30 seconds	No communication between EX8 and reader	- Check cable, terminals A and B - Replace reader - Replace EX8
Reader authorize the finger but door do not open	If green LED at EX8 is ON (Relay1 is activated) it is lock problem	- Check lock power supply - Check lock
	If green LED at EX8 is OFF (Relay1 is not activated) it is EX8 problem	- Assign relays to user Check D0 and D1 connections
Bad fingerprint reading	Dirty or damaged sensor	Clean the sensor (do not use abrasive cleaning solutions)
	Finger too dry	Touch your forehead
	User have too smooth fingerprints	- Increase sensor sensitivity - Decrease security level
	Finger is damaged	Enroll other finger
EX8 reset when door lock is activated	Bad power supply	Replace power supply unit or use separate supply for lock

Safety precautions

Do not install the device in a place subject to direct sun light without protective cover.
Do not install the device and cabling close to a source of strong electro-magnetic fields like radio-transmitting antenna.
Do not place the device near or above heating equipments.
If cleaning, do not spray or splash water or other cleaning liquids but wipe it out with smooth cloth or towel.
Do not let children touch the device without supervision.
Note that if the sensor is cleaned by detergent, benzene or thinner, surface is damaged and fingerprint can't be entered.

Technical specification

	EX8 + BioXr	EX8 + BioC	EX8 + BioIn
Fingerprint sensor	Capacitive		
Authentication	Finger or PIN	Finger	Finger
Users capacity	999 Users, 2 templates per user, 1 PIN code per user	999 Users, 2 templates per user	
Reader dimensions (HxWxD in mm)	132 x 86 x 32	90 x 50 x 25	151 x 90 x 53
Reader weight (g)	950	200	500
Reader protection class	IP65 Indoor use	IP54 Indoor use	IP54 Indoor use
Power supply	12V DC (11 – 14 V DC)		
Relay outputs	2		
Exit button	1		
Current consumption	250mA max. (without door lock)		
Recommended Temperature Range	0 - 40°C		
Extended temperature range	-20 - 50°C Human contact with sensor at extreme temperatures not recommended.		
Storage temperature	-20 - 60°C		
Humidity	85% non-condensing		
Tamper protection	Yes, all readers and EX8		
Reader lockout	30sec lockout after 16 invalid fingers or PIN codes		

Models may vary.

Users register

Recommended fingers are A, B, E, F, G, J
Do not write in this page, make copy.

User (001-999)	Name	Finger 1 (A – J)	Finger 2 (A – J)	PIN (00000-99999)	Relays 1, 2 or 1&2