

ARK manager

• USER MANUAL •



PACKAGE CONTENTS

- » EXTERIOR UNIT (flush mount with decorative frame)
- » Bluetooth connection for comfortable administration
- » Free application for portable device available on www.arx.si
- » Three colour LED communication
- » Buzzer for voice signals
- » Thermal swipe sensor
- » INTERIOR UNIT (CONTROLLER) (DIN rail mount)
- » 3 relay outputs (up to 40 VDC, max. 3 A)
- » USER MANUAL

Technical data:

- » Capacity: 1000 templates (fingerprints)
- » 256 bit encryption
- » Bluetooth connection
- » 3 relay outputs (up to 40 V DC or AC, max. 3 A)
- » Max. Distance between external unit and internal unit 150 m
- » Hi speed identification
- » Operating temperature range: - 30 °C to +60 °C (-22 °F to +140 °F)
- » Operating humidity range: to 90 %
- » Templates remain in memory even after a power failure
- » Latest generation thermal sensor
- » Resolution of 500 dpi
- » CE certified

Three color LEDs



Thermal sensor

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1. FIRST START UP

Communication between the interior and exterior unit is protected by a unique code, which is pre-set for each device individually. When both units are connected to the power supply and the communication link is established, the orange and red LED will flash and the buzzer will buzz simultaneously for a short period. After this period, the orange LED will start to shine continuously which indicates that ARX-manager is ready to be used. This also indicates that the device is in freescan mode (is waiting for a fingerprint). After performing any of the functions it also returns to the freescan mode.

When fingerprint data base is empty, anyone can enrol fingers, so it is recommended that first administrator is enrolled immediately!

Application download

ARX-manager is managed by a mobile phone of a newer generation or a laptop computer, hereinafter referred to as a portable device. Portable device should have Bluetooth device installed and turned on.

Before the first use, it is necessary to upload the application "ARX-manager SW" on the portable device. It can be downloaded from web page: www.arx.si. Portable device should be connected to internet, adequate application should be downloaded. User should know which platform his portable device is using. There are several applications available. Java application for Java phones including Windows mobile 6.5 and 7., Android application, Windows PC application, MAC OS application and Linux. **Detail user manual**

for each application in PDF is also available on web page www.arx.si and it is located beside each application download.

2. PROPER USE

The thermal sensor used in the ARX-manager enables excellent fingerprint scanning in any conditions and simultaneously minimizes chances of misuse. Nevertheless, every technology needs to be used according to its specifications, so the correct usage of the thermal sensor is described in the following section. With a little practice, user will quickly learn to swipe finger correctly.

If finger is not swiped correctly and image is too small, red LED flashes once. If any of the functions is not following the right path, it will be stopped after time out, red LED flash and buzzer will buzz 3 times.

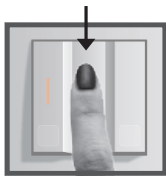
Vertical position of finger while swiping

In order to get a high quality fingerprint image, the finger must be swiped over a sensor in a straight vertical line.

The ARX-manager is designed with a concaved central part to actually force a finger into vertically straight swipe. The ridge that runs in the middle of the concaved part helps too, especially for blind or poor-sighted people.

Fingerprint area on scanning:

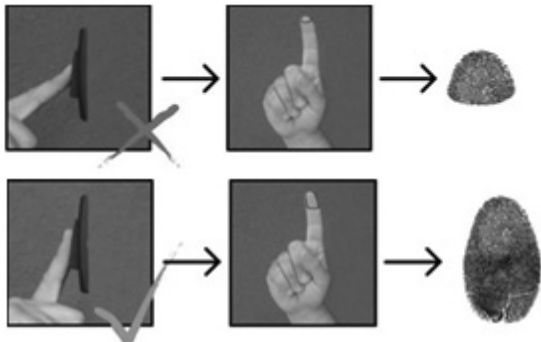
It is essential to swipe the largest possible area of the fingerprint over the sensor. A bigger fingerprint area prevents identification and enrolment failure. This is especially important in the enrolment phase. With a high quality enrolled image, excellent identification is assured.



Swiping speed

The maximum swiping speed over the sensor is 15 cm/s. If the finger is swiped too fast or too slow, the ARX-manager will not react. Successful fingerprint enrolment is audibly indicated by a buzz, so it is good to pay attention to it.

It is recommended to enrol at least 2 fingers from each hand, so that in case of injury user can still open the door with the finger which is not injured.



Explanations and remarks

It is necessary to swipe the finger successfully over the sensor four times when a new fingerprint template is being enrolled. This enables the device to get the best image possible and, in so doing, drastically reduces the possibility of subsequent unsuccessful identification. Sometimes more than four swipes will be required for successful

enrolment. This can happen for various reasons: The fingerprint image was too small, the finger was wet or dirty (ARX-manager can usually identify a fingerprint even with wet and greasy fingers but in the enrolment phase it is best to have clean hands). Every function is limited by a time out of 2 minutes. Even if the function wasn't concluded for some reason, there is no fear of misuse. The same fingerprint template cannot be enrolled more than once.

3. DEVICE MANAGEMENT

Once ARX-manager SW application has been downloaded to the portable device, it can be connected with ARX-manager by starting the application on the portable device and run the function "search for device" in the menu. This process can take several minutes.

When portable device has found the device ARX-

manager, the pairing process has to be started to allow the automatic connection. At first connection a Bluetooth PIN code will be required. Default PIN code is 0000 (four times zero). This code won't be requested at further connections. The mobile device maintains the paired fingerprint reader in its Bluetooth device list.

Any subsequent connection process will be faster because the phone remembers the paired device. If there is no fingerprint data stored in the reader, the connection will be established immediately and an administrator will have to be enrolled first. For further connections, reader will request the administrator to swipe his/her finger in order to establish the connection. For security reasons, Bluetooth connection is only enabled with a positive match of administrator finger.

Once the portable device is connected to ARX-manager, the application will open a list of users and administrators already enrolled. Detailed application user manual is available on web page: www.arx.si beside each application download.

4. ADMINISTRATOR'S ROLE

An administrator is a person who has the exclusive right to add and delete users. The number of administrators in the ARX-manager is not limited. The existing administrator/s can determine who will have administrator status or user status. Each administrator has access to all settings in the device and can add new users and administrators or delete them.

Important:

There should always be at least one administrator fingerprint in the device, unless the whole database is reset. If there is only one administrator enrolled it cannot be deleted, the current administrator must add a new administrator in order to delete himself. If the administrator is no longer accessible, factory reset can be performed on internal unit. Push black button (beside orange LED) for 30 s. After this period, database will be deleted and communication keys erased. Pairing procedure will need to be repeated !

5. GENERAL FUNCTIONS

Administrator and user enrollment

ARX-manager has capacity for 1000 templates. The number of administrators and users depends on how many fingers are enrolled for each person. For example if each administrator and user has only 2 fingers enrolled, there is a space for 500 administrators and users.

During enrolment of administrators and users, name of administrator or user is typed in and under each name, 10 fingerprints can be enrolled. Each fingerprint has its ID typed in. Names of administrators and users as well as finger IDs are displayed in the portable device display. It is not possible to erase only one finger, whole user or administrator must be erased.

Schedule

For users it is possible to set a time frame when he/she can enter the room or building. Schedule can be set only for users, administrators have

unlimited access. It is possible to set when users have access, days in week can be chosen in which access is allowed and also date, when this user will be automatically deleted from archive, can be set. Schedule can be set for each user individually.

Time and date

ARX-manager has its internal clock with battery which enables clock to run several hours after power loss. This clock must be set with the portable device, to ensure that schedule gets its starting time/date and history will be recorded correctly. It is important that the clock is checked from time to time and it is reset at season clock change.

History of events

ARX-manager is constantly recording the history of all executed functions. There is a memory capacity for approximately 2000 events. If capacity is reached, older events will automatically be deleted. If administrator wants to see only names of users who entered the building, there is a possibility to switch on filter "Only names". The history will then show only names and not other recorded history. It is possible to export the history database to portable device in txt format.

Relays

ARX-manager has 3 relay outputs, to open up to 3 doors or trigger other devices, lights, machines, house alarm... It is possible to trigger a silent alarm with one of the relays if house alarm has this option. In this case the administrator or user should enrol special finger and assign to open 2 relay outputs with this finger. One for the door and one for silent

alarm. Administrator or user must remember well which finger was assigned to alarm function. For each relay, the time how long it is triggered can be set. It can be set on 0,5 s, 3 s, 5 s, 10 s and 30s.

Pairing additional readers

Up to 3 ARX-manager readers can be paired to a single ARX-manager controller. This can be done with master reader which is supplied in the package together with controller. Pairing must be allowed with master reader, then additional reader can be paired. **If factory reset is triggered, any reader can be paired to internal unit. It is important to pair the reader immediately after factory reset!**

Database export/import

It is possible to export the fingerprint data base to a portable device and import it to an additional reader, so that it is not necessary to enrol all administrators and users to each reader.

Firmware update

When ARX-manager is purchased it has the latest firmware installed. If later a FW updates or upgrades will be available, it is possible to update ARX-manager via portable device. Portable device must be connected to the internet, function "FW update" should be chosen and application on portable device will automatically download latest FW from internet and install it on the ARX-manager reader. Fingerprints and settings won't be lost or changed.

6. LIGHT SIGNALS TABLE

LED	BUZZ	STATUS	FREQUENCY	EXPLANATION
Orange + red	Yes	flashes	App. 3 s	ARX-manager has been connected to the power supply and is initialising. ARX-manager was reset.
Orange	No	shines		ARX-manager is in free scan mode. When a finger is swiped it will be compared to the templates stored in database. ARX-manager is available for connection via Bluetooth.
Orange	Yes	flashes	continuous	ARX-manager is connected to the portable device via Bluetooth and is waiting for the administrator's fingerprint, to enable the connection.
Orange	No	flashes	continuous	ARX-manager is connected to the portable device and ready to be administrated.
Green	Yes	flashes 1 x	1 x 1 s	Administrator or user has been successfully identified. The fingerprint template has been successfully stored in the database.
Red	No	flashes	continuous	Device malfunction
Red	Yes	flashes	3 x	Administrator or user has not been successfully identified.
Red	Yes, low tone	flashes	1 x 1 s	User has no access at this time or day.
Red	Yes	flashes 1 x	1 x 3 s	Fingerprint database is full.

7. TROUBLESHOOTING

ERROR	CAUSE	TROUBLESHOOTING
Fingerprint enrolment did not succeed.	The finger was swiped over the sensor too fast or too slow.	The finger should be swiped at normal speed. The maximum speed is 15 cm/s.
	Too small an area of a fingerprint was swiped over the sensor.	The finger should be swiped over the sensor with the largest possible area.
	The fingerprint template is already stored in the database.	Try to identify the finger (in freescan mode).
	The database is full.	A new fingerprint can be enrolled when some of the existing fingerprints in the database are deleted.
The fingerprint stored in the database can not be identified.	The finger was swiped over the sensor too fast or too slow.	The finger should be swiped at normal speed. The maximum speed is 15 cm/s.
	Too small an area of a fingerprint was swiped over the sensor.	The finger should be swiped over the sensor with the largest possible area.
Orange LED is not shining after power up.	The device is not connected to a power supply.	Check if the wires are damaged.
		Check the fuse to which ARX-one is connected.
		Call the authorised repairman.
Red LED is flashing.	Device error.	Call the authorised repairman.
Finger is recognised and green LED flashes, but the relay is not triggered.	<ol style="list-style-type: none"> The external unit (external device) is not paired with internal unit (internal device) Relay or electric lock malfunction 	<ol style="list-style-type: none"> Pair the external unit Call the authorised repairman.

8. MAINTENANCE

ARX-manager device does not require any special maintenance. The sensor is cleaned by every swipe of the finger but in extreme cases (when the ARX-manager is used with greasy hands) it can be cleaned with a moist or dry soft cloth. Even mild cleaners can be used.

Aggressive cleaners, solvents or acids must not be used for cleaning purposes. Rubbing the sensor with hard or sharp objects can result in device malfunction and loss of warranty entitlement.

9. INSTALLATION MANUAL

ARX-manager has 3 relay outputs, to open up to 3 doors or to trigger other devices, like silent alarm. The basic package includes one external unit (reader) and one internal unit. Up to 2 external units can be paired additionally (3 in total). ARX-manager has its own internal power supply, which can supply the power for up to 3 external units, or 1 external unit and 1 low power electric lock, consuming less than 500 mA. In case that multiple external units are used with a single internal unit or an electric lock with higher consumption than 500 mA, an additional external power supply must be purchased and connected like it is shown in the diagrams 4 and 5. If intercom is installed in the house, connected with the existing electric lock. Power supply of the intercom can be used for triggering the lock.

External unit mounting:

External unit is designed to be installed in \varnothing 60 mm in-wall switch box. \varnothing 60 mm in wall switch box is standard for most of standard electrical house installations and fits to the mechanical dimensions of market known wall switch box suppliers. Also an on-wall mounting box for ARX-manager is available on request. It is recommended to install external unit (reader) at the minimum height of 150 cm or higher. At this height, average user can easily swipe the finger.

External unit should not be exposed to direct rain, except if IP55 (water proofed) on wall mount box for ARX-manager is used (available on request). It also should not be exposed to direct sunshine, at least not whole day. Direct sunshine can shorten the lifetime of the thermal sensor.

Internal unit mounting:

Internal unit is designed to be installed on a DIN rail in the fuse box. It takes 4 spaces for automatic fuses.

(Also optional power supply can be mounted on the DIN rail.)

Connection instructions:

For connection between external and internal unit 3, minimum 0,5 mm², knitted (not solid) copper wires should be used and it is recommended that the cable has a grounded envelop if this cable is installed near to the other high power cables.

The maximum length of the cable (the distance) between external and internal unit is 150 m.

External unit (reader) has 3 connection wires with black envelop. Each wire has a number printed on

the envelope (1, 2 and 3):

- 1 = +12V – positive pole
- 2 = LIN – encrypted connection
- 3 = GND – negative pole

Numbers 1, 2, and 3 are printed also on the housing of internal unit and those contacts are used for connection between external unit and internal unit. Up to 3 external units can be connected to a single internal unit. Connection must be wired like shown in the diagram 5.

Internal unit should be connected to the power (85 – 265 VAC and frequency 47 – 63 Hz) with solid copper wires, minimum surface of wire 1,5 mm². Connector for power is marked on the housing of internal unit with the signs:

- L = phase (line)
- N = zero (negative line)
- G = ground

WARNING!

Because of high voltage supply of internal unit, installation must be done by educated electrical installer.

Electric lock:

Electric lock can be connected to one of 3 relays, like shown in the diagrams. Relays can switch also other devices. House alarm (alarm must have possibility of switching with relay), light, machine etc. Also silent alarm function can be triggered with one of the relays. In this case user should

use specific finger, which will trigger two relays at the same time, one for the door and another for silent alarm. House alarm should have possibility of triggering the silent alarm by relay (consult with house alarm installer).

There are two kinds of relays used in internal unit. Relay no. 1 has 3 contacts: NO (normally open), C (center) and NC (normally closed). This relay can be used also for triggering the magnet locks which needs constant power while closed and power should be switched off for opening. Relay no. 2 and 3 have two contacts, which are normally disconnected.

Wiring: 1,0 mm² knitted (not solid) copper wires should be used for connection between internal unit and lock. If DC power supply is used, maximum length of the wiring should not be more than 20 m. If the distance between internal unit and lock is more than 20 m, AC power is recommended (as it has less power loss per meter). It is recommended not to use more than 100 m long wiring between internal unit and lock.

For electric lock the power supply of ARX-manager can be used, if consumption is less than 500 mA. If electric lock has higher consumption than 500 mA, it is necessary to use an additional power supply. Also if 2 or 3 external units are connected to one internal unit it is necessary to use an additional power supply for the locks, because external units demand all available power of ARX-manager internal power supply.

Push button on internal device:

Push button on ARX-manager internal device has factory reset function if it is pushed for 30 s, data base and communication keys will be erased.

But if this button is pressed for only 10 s, only communication keys on internal device will be erased and all readers will have to be paired again! Factory reset won't be triggered.

Additional power supply:

12 V and 24 V additional power supply is available on request. If electrical lock requires 24 V power supply, additional 24 V power supply must be installed. Both relays can switch up to 40 V DC or AC power, maximum 3 A.

List of contacts on internal unit:

L	Phase (line) 110-230 V~	Power connection
N	Zero (negative line)	Power connection
G	Ground	
1	+ 12 V	Connection with exterior unit , pin no. 1
2	LIN encrypted signal	Connection with exterior unit , pin no. 2
3	- 12 V	Connection with exterior unit , pin no. 3
4	+ 12 V	Can be used for el. Lock or pushbutton
5	Connection for pushbutton	With this pushbutton we trigger relay number 1. Relay is on as long as we hold the button. (Diagrams 3 and 4)
6	Contact of relay no. 3	Diagram 5
7	Contact of relay no. 3	Diagram 5
8	Contact of relay no. 2	Diagrams 3 and 5
9	Contact of relay no. 2	Diagrams 3 and 5
10	Contact of relay no. 1 (normally open)	See different usage in diagrams 2, 3, 4, 5
11	Contact of relay no. 1 (center)	See different usage in diagrams 2, 3, 4, 5
12	Contact of relay no. 1 (normally closed)	See different usage in diagrams 2, 3, 4, 5

10. ACCESSORIES

ADDITIONAL ACCESSORIES ON REQUEST (not included in the package)

Non flush mount (on wall) housing in white or silver colour



On-wall box silver:
NNTEMES

on-wall box white:
NNTEMPW

Non flush mount (on wall) IP55 housing in white colour



on-wall box IP55:
NNTEMIP55

External DIN rail power supply (needed if electric lock is using more than 500 mA or if multiple locks are connected to internal unit)

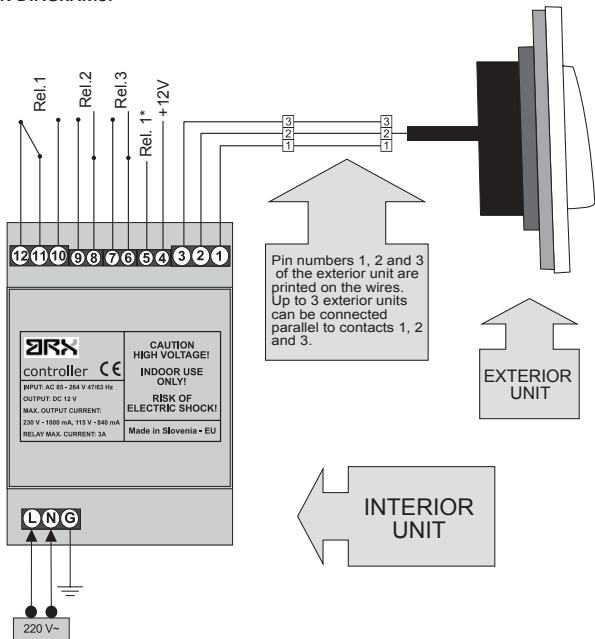
Available power: 12 VDC/4,5 A or 24 VDC/2,5 A



DIN rail power supply:
DNP21DIN

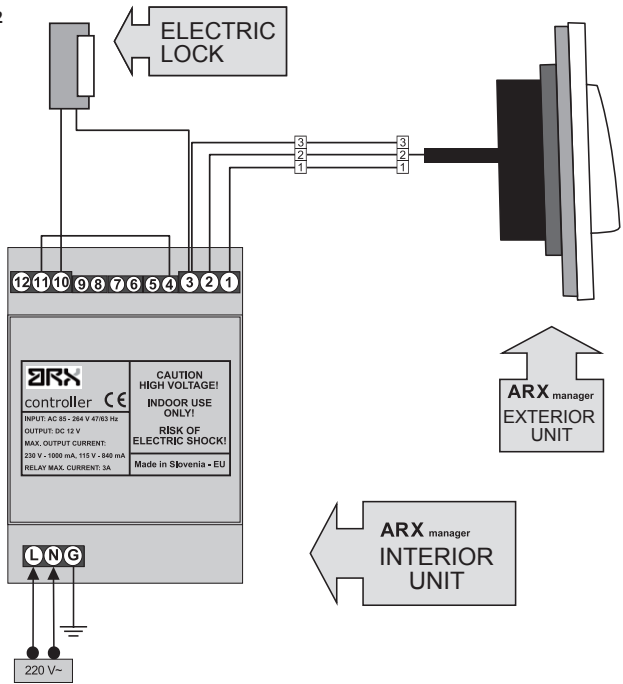
11. CONNECTION DIAGRAMS:

DIAGRAM 1

**Rel.1* explanation:**

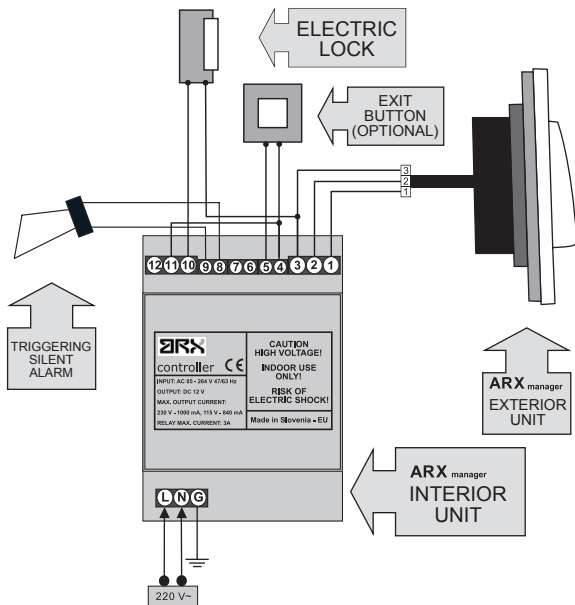
Relay no. 1 is triggered by connecting contact no. 5 to + 12 V. Exit button can be connected to contacts 4 and 5. As long as contact no. 5 is connected to + 12 V, the relay no. 1 is on.

DIAGRAM 2



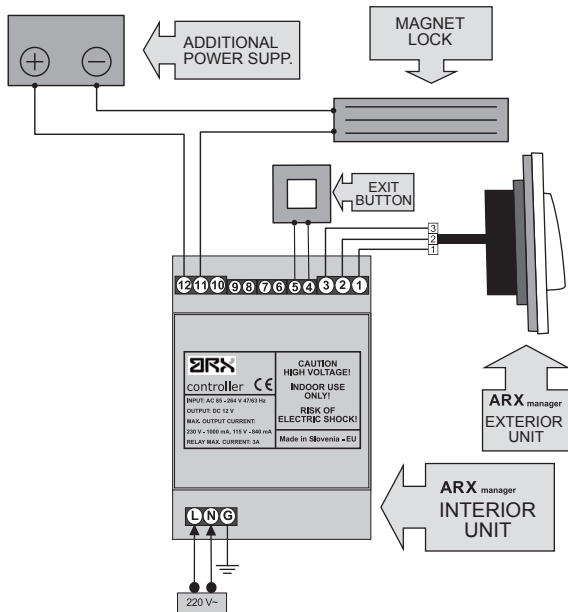
This diagram shows, how to connect 1 reader and 1 electric lock. In this case electric lock is supplied with power from interior unit. The power can be supplied to the lock from interior unit only if it's consumption is less than 500 mA! If electric lock has higher consumption than 500 mA, additional power supply must be connected (look diagram 4.).

DIAGRAM 3



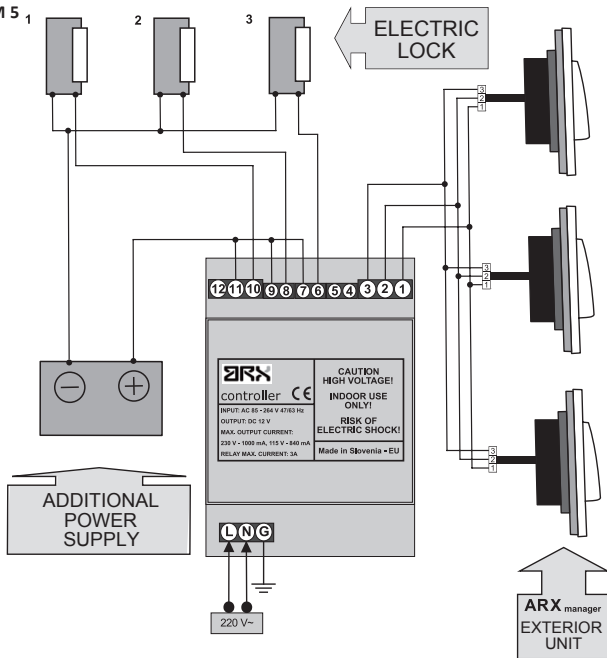
This diagram shows, how to connect 1 reader, 1 electric lock and triggering silent alarm. Electric lock is supplied with power from interior unit. The power can be connected to the lock from interior unit only if it's consumption is less than 500 mA! If electric lock has higher consumption than 500 mA, additional power supply must be connected (look diagram 4 and 5). As an option, the exit pushbutton can be connected to contacts 4 and 5. Optionally relay no. 2 output contacts 8 and 9 can be used, for triggering the silent alarm. House alarm must have this option.

DIAGRAM 4



This diagram shows, how to connect 1 reader and 1 magnet lock. Exit pushbutton must be connected to switch off the magnet while exiting. Only relay 1 is triggered with this button. Magnet locks are sometimes used for glass doors. Magnet lock needs constant power, when it is locked and the power on the lock must be switch off to open the door. Only relay no. 1 has this option, contacts 11 (center) and 12 (normally closed). Because magnet has higher consumption than 500 mA, additional power supply is required!

DIAGRAM 5 1



This diagram shows, how to connect 3 readers and 3 electric locks. Because in this case electric locks have in total higher consumption than 500 mA, additional power supply is required!
If 2 readers and 2 electric lock are connected, same way of connection can be used. This diagram is used also if 1 reader and 1 electric lock which has higher consumption than 500 mA is connected.

12. MANUFACTURER'S WARRANTY

WARRANTY CONDITIONS:

The warranty period is 24 months from the day of handover of the product to the final customer. With this statement, the manufacturer of the product, NAVKOM d.o.o., guarantees that in the warranty period the ARX-manager (hereinafter: the product) will operate faultlessly and that the materials it is made of are faultless and undamaged.

If the customer finds a fault in the functioning of the product, they can enforce the rights under the warranty on the seller or the manufacturer, who shall issue a claim receipt.

The manufacturer undertakes that in the event of a justified complaint they shall eliminate the malfunction no later than 45 days after the day of complaint. If the malfunction is impossible to repair, the customer will receive a new product from the seller or the manufacturer no later than 45 days after the day of complaint.

NOTES CONCERNING THE WARRANTY ENFORCEMENT:

The customer assumes all risks and expenses incurred during the transport of the product to the licensed seller or the licensed service.

The warranty is only valid if the warranty certificate is completely filled in by Navkom d.o.o. or a licensed seller of the product or if the circumstances of the purchase are satisfactorily evidenced from other documents. Therefore, please ensure that your name, the name of the seller, the serial number of the product, the year, month and day of the purchase are written in full in the original pro forma invoice or invoice; or see to it that your purchase receipt showing the name of the seller, the date of the purchase and type of product is attached to the original warranty certificate. Navkom d.o.o. reserves the right to refuse to provide repairs free of charge where the submitted warranty certificate is not completely filled in and the above mentioned document (invoice, bill) is not enclosed, or when the data on the warranty certificate are not completed or are illegible. Keep the warranty certificate in a safe place because we cannot issue a duplicate.

WARRANTY EXTENSION:

In the case that the customer enforced the warranty and the licensed service found the complaint to be justified, the warranty period is extended for the time the product was at service. If the respective product has undergone a major service intervention, or if the product was replaced, a new warranty is issued to the customer for a 24 month period.

THE WARRANTY CANNOT BE ENFORCED IN THE CASE OF:

1. Any defect caused by improper handling of the product (e.g. the use of the product with the intentions and in a manner not specified in the instructions for use, handling and maintenance etc.).
2. Any defect caused during repair, adaptation, cleaning or any other intervention in the product by any other party except the services licensed by Navkom d.o.o.
3. Any defect caused because of transport, fall, hit etc. after the purchase of the product.
4. Any defect caused by burning/fire, earthquake, flood, shinning, other natural disasters, polluted environment and improper voltage of the electrical supply.
5. Any defect caused by negligent handling or inappropriate storage of the product (e.g. keeping it at high temperatures or high humidity, in the vicinity of insecticides, e.g. naphthalene, or medicines, poisons or chemicals which can cause damage), inappropriate maintenance etc.
6. When the product which was sent to repair is not accompanied by the warranty certificate.
7. Any changes of the warranty certificate concerning the year, month and day of purchase, name of the customer or seller and serial number.
8. When the warranty certificate is not accompanied by the receipt for the item(s) purchased (invoice).

LIMITS OF LIABILITY:

Navkom d.o.o. does not either represent or guarantee, explicitly or implicitly, anything on behalf of the suppliers or in connection with the contents of written materials. It is in no way liable to warrant the purchased material or its suitability for certain purpose or any consequent injury, accidental damage or immediate damage (including but not limited to the damage or loss of business profits, the termination of business operations and the loss of business information), derived from the use or incapability of use of these printed materials or device.

Some countries do not allow limitations of liability concerning consequential or accidental damage; therefore, it is possible that the above mentioned provision does not apply. In the case that the customer sends the reclaimed product via mail, it is advised to secure the consignment. The seller and the manufacturer are not liable for damage caused during transportation.

Serial number:

Purchase date:

Installation date:

Name of the customer:

Adress of the customer:

Stamp and signature of the seller:

ARX-manager was manufactured by:

NAVKOM d.o.o.
Prijateljjeva 24
1000 Ljubljana
Slovenia – EU
info@navkom.si
www.navkom.si

Product type:

access control device based on biometric identification