

REX
indoor

Navkom



USER MANUAL

TECHNICAL DATA

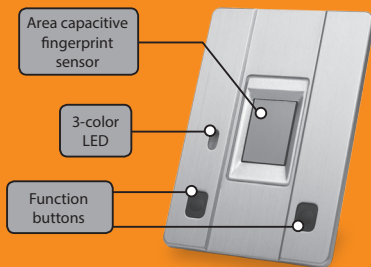
- Robust capacitive Area sensor of newest generation, excellent image quality, high resolution 500dpi
- Algorithms/ recognition modules of MB fingerMetrica GmbH
- Easy wiring – kit with connectors is enclosed
- Storage capacity: 1000 fingerprints
- High data security: 256-bit-encryption of stored bio data
- Input power 8-30 VDC or VAC
- 2 relay outputs(max. 40 V 3A), both outputs are active in case of positive match (for 2 sec.)
- Fast identification time (< 1,2s) und high recognition accuracy
- DC distance max. 40m (between power supply, lock and reader)
- Operating temperature: - 30 to +80 Grad Celsius, -22F to +176F).
- Operating humidity up to 90%.
- Bio-data and all settings remain stored in case of power loss
- CE compliant
- User Interface: 2 capacitive buttons, three colour LED, Beeper
- Configurable Power Down Mode; in Power Down (0,24W) or 1,2 W (constant power).
- Current consumption with/without activation : max: 150/70mA; max. 20mA in power save mode. Max. current consumption of the lock depends on the power supply and lock type which is installed.
- Standard mechanical dimensions: 75 x 53 x 19 mm (L x W x H); mechanical installation area: 65,20 x 46,40 x 20 mm (L x W x H). Internal unit dimensions: 60 x 19 x 15 mm (L x W x H).
- relay control output is active for 2sec.
- Material and colour of housing: anodized aluminium in high grade steel colour.
- IP55 waterproof housing (in case that sealing between reader and surface is done according to instructions).
- ESD (electrostatic discharge) is made in two ways. Through door wing via screws and through – 0 V connection.
- Device is tested up to 9000 V discharge. In case of direct shock to the electronics, automatic restart is made.

INTERNAL UNIT



Factory reset button

EXTERNAL UNIT



Package content:

- Fingerprint reader REX-indoor with 25 cm cable and Molex connector.
- Cable kit for connection between reader and internal unit, 2 m cable with Molex connectors.
- Internal unit with 2 relays and reset button and Molex connector.
- Selfadhesive sealing.
- User manual and packaging.

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1. FIRST START UP

When the device is connected to power, the blue and red LED will flash and the buzzer will buzz simultaneously for a short period. After this period, the blue LED will shine continuously, which indicates that REX indoor is ready to be used. If power save mode is on, blue LED shines only 15 s after pressing any button and 15 s after each operation is completed. 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. If device is in sleep mode (power save mode), all functions and LEDs are switched off. Device can be activated by pressing any button for 1 s.

When fingerprint data base is empty, anyone can perform enrol function, so it is recommended that first three administrative fingers are enrolled immediately!

2. PROPER USE

The capacitive area sensor used in the REX indoor 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 capacitive area sensor is described in the following section. With a little practice, one will quickly learn to use it correctly. Most of competitive products are using swipe capacitive sensors. Big advantage of capacitive area sensor is that users don't need to learn how to swipe. Finger should be simply touched to the sensor. The only thing that needs to be taken in account is, that a finger is not pressed too hard or too gently, and the area of a finger touching the sensor should be large enough and centered, like shown on the picture. While finger is being scanned it should not move. It is recommended to enrol at least 2 fingers from each hand to have more options in case of finger injury.

During enrolment procedure a finger must be pressed 3 times on the sensor in order to get 3 different images. Each time finger should be pressed for approximately 2 s. After each successful image capture, a short beep will be heard. Wait for the beep before placing the finger on the sensor again. Small variations in finger position will decrease the possibility of recognition failure. Use the same finger for all 3 attempts. Fingerprint core should be placed at the centre of the sensor (because it has max. Bio-data info). If finger enrolment doesn't succeed (finger was pressed too hard/too gently or sensor area coverage was too small) red LED will flash one time for 1 s. It is very important to make a good enrolment and store a high quality fingerprint template.

The same finger can be enrolled more than once. This is an advantage for the people with damaged fingerprints. To store the finger more than once decreases the possibility of recognition failure.



Finger enrolment sometimes won't be successful. This can happen for various reasons: The fingerprint image was too small, the finger was wet or dirty (REX indoor can usually identify even a wet or greasy fingerprint but in the enrolment phase it is best to have clean hands).

Every function has a time limit. When a new finger is being enrolled one has 2 minutes to complete the process. Even if the function wasn't completed for some reason, there is no fear of misuse.

Individuals with heavily damaged fingerprints or very dry skin can considerably alleviate this problem by taking into account the following advice:

- Carefully enrol your fingerprint; choose the finger with the least damaged fingertip and the most prominent ridges.
- When enrolling your fingerprint, the fingerprint reader should be entirely or min. 70% covered by your fingertip, and the centre of the fingerprint should be in the middle of the reader.
- Enrol the same fingerprint several times, 5 times or more, if the skin on your fingers is very dry (this usually happens on cold days), and take care of normal dampness of fingertip skin.

- Frequently use moisturizing hand cream or damp your fingers before you use the fingerprint reader.

Fingerprint enrol can fail due to several reasons: the fingerprint is too small, the finger is wet, extremely dry or dirty (REX can read slightly wet or dirty fingers, though; only extremely dry fingers can cause problems).

The time for each function is limited. When enrolling a new fingerprint, you have two minutes to conclude the operation. Even if the function was not concluded for some reason, there is no fear of misuse: when time limit expires, the operation will be automatically deactivated.

It is recommended that you add each stored finger to the list of administrators and users. If the same finger of one user is stored more than once, each time it should be enrolled separately, because the device records these as different entries. When deleting a user, you need to delete each finger as many times as it was saved. On the list you add the user's/administrator's name, the date of enrolment, which finger is enrolled and how many times.

3. POWER MODE

One can choose between two power modes. When power save mode is active, the device turns off 15 s after each operation is completed. REX indoor will wake up immediately after pressing any of the buttons. After wake up, the device will be in free-scan mode (will be waiting for a fingerprint) for 15 s and will also be ready to perform any other function. If constant power mode is chosen, REX indoor is always switched on and ready to use. By default constant power mode is activated.

Power mode can be chosen any time by anyone, also by a person which is not enrolled. When REX indoor is in constant power mode it is using approximately 1,8 W, while in power save mode only 0,012 W. 15 kWh annually can be saved by the power save mode and will increase device lifetime.

Power mode switching procedure:

- Press the left button and hold it for 20 s, (blue LED will start flashing after 3 s. Ignore that and keep holding the button) the green LED will start flashing after 20 s.
- Press both buttons for 2 s to choose power save mode or only right button for 2 s to choose constant power mode.
- If the power save mode was chosen, green LED will flash and

together with 3 short beeps. If constant power has been chosen, green LED will flash and one short beep will be heard

4. CHOOSING THE RELAY

The device has 2 in-built output relays, so with one fingerprint reader you can open two doors or a door and another device of your choice (e.g. an alarm). When you store a fingerprint you should also choose a relay which will be triggered by this fingerprint. You do that when you add a fingerprint to the database, so that you press an adequate button for 2s. If you press the left button, relay #1 will be chosen and if you press the right button, relay #2 will be chosen. By pressing both buttons together, both relays will trigger simultaneously.

5. ADMINISTRATOR'S ROLE AND ADMINISTRATOR ENROLLMENT

Only an administrator has the right to enrol or delete users. Function buttons are found on the REX indoor unit which is accessible to anybody. It is therefore extremely important that only an authorised person can execute enrol and delete functions. REX indoor has capacity for three administrator templates (either three from a single person or one each from three different people). Administrator enrolment is simple. When REX indoor is installed, the first three fingerprints enrolled have administrative rights. Administrator finger can also unlock the door.

Administrative fingerprint templates can be erased only with »delete all« function which also erases all other templates in the memory. That's why the administrator must be chosen carefully, especially if the REX indoor is used by more than a few people.

Administrator enrolment procedure:

- Press the left button and hold it for 3 seconds. The blue LED will start flashing fast.
- Choose the relay (left button: relay 1, right button: relay 2, both buttons: both relays). Green LED will flash together with a short beep. Blue LED starts blinking slowly.
- Administrator then has to place his/her finger on the sensor three times. After each successful reading, short beep will be heard. If sensor reading is not successful, red LED will flash three times accompanied by 3 beeps. In this case the procedure needs to be repeated.
- When the finger is successfully enrolled, green LED will flash together with a short beep. Repeat the same procedure with remaining two administrator fingers.

6. USER ENROLLMENT

After the administrative templates are enrolled, pressing the left button for 3 s will trigger the »enrol user finger« function. User

fingerprint can only unlock the door but can't perform any of the functions except the power mode selection.

User finger enrolment procedure:

- Press the left button and hold it for 3 s. Blue LED will start flashing slowly.
- Administrator has to place his/her finger on the sensor to confirm the start of the procedure. After positive identification a green LED will flash together with a short beep. Blue LED will start flashing fast.
- Choose the relay (left button: relay 1, right button: relay 2, both buttons: both relays). Green LED will flash together with a short beep.
- Blue and green LEDs will start flashing alternately. User has to place his/her finger on the sensor three times. After each successful reading, short beep will be heard. If sensor reading is not successful, red LED will flash three times accompanied by 3 beeps. In this case the procedure needs to be repeated.
- When the finger is successfully enrolled, green LED will flash together with a short beep.

IMPORTANT:

If the enrolment procedure is interrupted by an unsuccessful identification or a function time out, the whole procedure needs to be repeated. When a user is enrolling a fingerprint, the pause between each placement of the finger should be at least two seconds. Sometimes, more than three readings will be required to successfully enrol a user.

7. DELETING A USER FINGER

REX indoor provides a »delete user finger« function without employing a visual database (a fingerprint template can not be associated with the user's name, surname or other personal data). User's identity is protected but this also means that the user who has to be deleted must be present. Individual fingerprint is deleted after positive identification. Only one finger of a user can be deleted at a time. If the same finger was enrolled more than once, the procedure has to be repeated with the same finger as many times as it was enrolled. Please check Administrators and users list.

How to delete a user?

- Press the right button and hold it for 5 s. Blue LED will start flashing slowly.
- Administrator has to place his/her finger on the sensor to confirm the start of the procedure. After positive identification a green LED will flash together with a short beep.
- Red and green LEDs will start flashing alternately. The user places his/her finger on the sensor once. When the user is

identified, red and green LEDs will flash three times accompanied by beeps. The user finger has been successfully deleted.

8. DELETE ALL (USERS AND ADMINISTRATORS)

By performing this function all existing templates in the database will be deleted. After finishing this procedure the device database will be empty and the next three fingerprints enrolled will have administrator rights. This function is used when the REX indoor or the place where it is installed should get a new owner or when there is a need to change the administrator. To prevent performing delete all function by mistake, 2 authentications by administrator are required in order to execute it.

How to delete all?

- Press both buttons together and hold them for 10 seconds until blue and red LEDs will start flashing alternately.
- The administrator has to place his/her finger on the sensor once. Identification is confirmed by a green LED flash accompanied by a beep.
- Blue and red LEDs will start flashing alternately again. Administrator has to place his/her finger on the sensor one more time. Identification is confirmed by a green LED flash accompanied by a beep.
- Red and blue LEDs will flash simultaneously five times, accompanied by five beeps. All fingerprint templates will then have been deleted.

IMPORTANT:

When performing this function, double authorization by the administrator is necessary, because all enrolments in the database are deleted. If in the middle of the execution of the function you decide that you do not want to execute it, simply stop and wait for the function time out (2 minutes). REX indoor will return in freescan mode

FACTORY RESET

How to delete all if administrator is not available anymore? There is a black pushbutton on the internal unit (which is usually located inside the door leaf, close to the motor lock). Hold the button for 30 s and after this time fingerprint data base will be deleted. After performing the factory reset, all fingerprints in the database will be erased.

9. LIGHT SIGNALS TABLE

LED	BEEP	STATUS	FREQUENCY	EXPLANATION
blue+red	yes	on	1 s	REX indoor has been connected to power and initialises.
blue	no	on	---	REX indoor is in freescan mode and waiting for the fingerprint or execution of any of the functions.
all LED	no	off		REX indoor is in sleep mode (power save mode). You can wake it up by pressing any of the buttons for 1 s.
blue	no	flashing quickly	---	Choose the relay (left button: relay 1, right button: relay 2, both buttons: both relays).
blue	no	flashing	until timeout	REX indoor is waiting for an administrator's finger (administrator enrolment, user enrolment or delete user function)
green	yes	flashing	1 x 1 s	<ul style="list-style-type: none"> Administrator or user has been successfully identified. Administrator or user has been successfully soled. Constant power has been switched on.
green	yes	flashing	3 x 1 s	Power save has been switched on.
red	no	flashing	continuously	Device malfunction.
red	yes	flashing	3 x	<ul style="list-style-type: none"> Administrator or user hasn't been identified. Fingerprint hasn't been stored in the database. Time out of a function.
red	yes	on	1 x 3 s	Fingerprint database is full.
green+blue	no	flashing alternately	until timeout	REX indoor is waiting for the user fingerprint (user enrollment).
green+red	yes	flashing together	3 x	REX indoor successfully deleted user fingerprint
green+red	no	flashing alternately	until timeout	REX indoor is waiting for the user fingerprint (deleting a user fingerprint).
blue+red	no	flashing alternately	until timeout	REX indoor is waiting for the administrator fingerprint (delete all).
blue+red	yes	flashing together	5 x	REX indoor has successfully deleted entire database.

10. MAINTENANCE

From time to time, a fingerprint reader should be wiped clean with a dry or slightly damp cloth; apart from that it does not need special maintenance. **A dirty fingerprint reader can cause problems with the recognition of fingerprints!**

Never clean with aggressive cleaners, polishing pastes or acids! Cleaning or scrubbing of fingerprint reader's surface with hard and sharp objects can result in damaged reader or device malfunction and, consequently, the loss of warranty entitlement.

11. TROUBLESHOOTING

DESCRIPTION	CAUSE	STATUS
Fingerprint enrolment did not succeed.	The finger was pressed on the reader too hard or too softly.	The finger should be pressed with normal force.
	The area of a fingerprint pressed on the reader was too small.	The finger should be pressed on the reader with the largest possible area.
	The database is full.	A new fingerprint can be enrolled when an existing fingerprints in the database is deleted.
The fingerprint stored in the database cannot be identified.	The skin on the finger is very dry.	The finger's skin should be damp enough.
	The area of a fingerprint pressed on the reader was too small.	The finger should be pressed on the reader with the largest possible area.
The blue LED is not visible.	The device is not connected to a power supply.	Check if the wires are damaged.
		Check the fuse to which REX bioreader is connected.
		Call the authorized repairman.
	REX indoor is turned off (power saving mode)	Hold one of the buttons for 1 s and the device will wake up.
The red LED is flashing.	Device error.	Call the authorized repairman.
The finger is identified and the green LED is on but the lock is not triggered.	Reader or electric lock malfunction.	Call the authorized repairman.

12. MANUFACTURER'S WARRANTY

Warranty conditions:

The warranty period is 24 months from the day of hand on 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 REX indoor (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 li-

censed 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 li-

censed 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, lightning, 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:

Buyer's name:

Buyer's address:

Stamp and signature of the seller:

REX indoor was manufactured by:

Navkom d. o. o., Prijateljjeva 24, 1000 Ljubljana, Slovenija
info@navkom.si, www.navkom.si

Product type:

Biometry based access control device

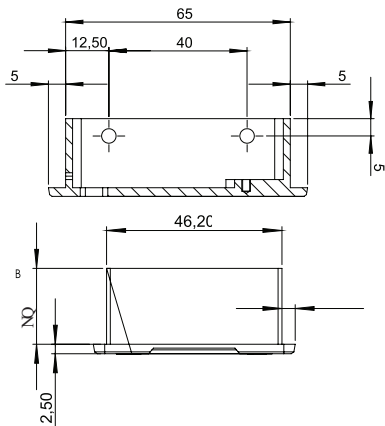
REX indoor was designed primarily for installation in the door leaf. It consists of two units: external unit (fingerprint reader) and internal unit (power supply with relay outputs). External unit should be mounted on the external side of the door leaf. Suggested position of the fingerprint reader is 150 cm from the ground. This is an optimum height for placing any of the fingers on the sensor. Internal unit is usually placed inside the door profile, next to the electric motor. Cables, required for the connection between the units are included in the package as well as the male and female connector. REX indoor can be connected to either alternating or direct 8V current and has two relay outputs. Usually relay 1 is used for unlocking the door and relay 2 for triggering another device or another door.

MOUNTING

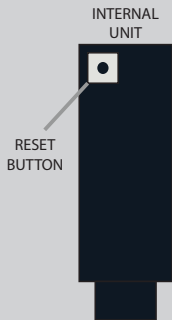
External unit has to be glued on the door leaf. Therefore an exact opening has to be cut in which the external unit is then inserted. Exact dimensions of the needed opening are 65 x 46,2 mm. Use a silicone glue or a double sided adhesive band for gluing. It is also possible to attach the external unit by the use of screws. The safe area where the frame can be drilled is marked on the cross section. The screws penetrate the housing from the side, so they're not accessible when the door is closed. There's no need to attach the internal unit. It is simply tucked in the door profile together with the wires.

WIRING

Cables are included in the product package. They are long enough to fit in virtually any door. Internal and external unit simply have to be connected to a corresponding connector, while the relay outputs and power supply connect to colored wires. You can find the connection diagram on page 10.



CONNECTION DIAGRAM



SPISEK KONTAKTOV (ŽIC)

Gray wire	Power input 8-30 VAC/VDC
Gray wire	Power input 8-30 VAC/VDC
White wire (output)	Relay open contact 1 (max. 40 V 3 A)
Yellow wire (output)	Relay open contact 1 (max. 40 V 3 A)
Brown wire (output)	Relay open contact 1 (max. 40 V 3 A)
Green wire (output)	Relay open contact 1 (max. 40 V 3 A)

