

REX
bioreader

Navkom

USER MANUAL

TECHNICAL DATA

- Storage capacity: 1000 fingerprints - 3 administrator's, 997 user's
- Input power: 8-30 (VDC OR VAC)
- Two relay outputs, max. current on a relay 3A. Encrypted connection between the fingerprint reader and the relay unit.
- Remote control: 433 MhZ rolling code. 4 buttons.
- Time of triggering a relay: 2s.
- Max. power: 1,8 W
- Quick recognition of a fingerprint <1,2 s
- Operating temperature: -30 °C to +85 °C
- Max. operating humidity: 100 %
- Fingerprints remain stored in case of power loss.
- The latest generation of the capacitive fingerprint reader, 3D fingerprinting.
- User interface: a 3 colour LED, a beeper, a remote control.
- Attached is a 2m cable to connect the fingerprint reader and the relay unit.

EXTERNAL UNIT

Capacitive fingerprint reader

3 colour LED

INTERNAL UNIT

Factory reset button

REMOTE CONTROL

A - Button to add fingerprints

B - Button to delete individual user's fingerprint

C - Button to delete the entire database

D - Button to unlock

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1. THE FIRST STARTUP

After the device is connected to power, the white LED flashes and the beeper beeps for 1s. When the device is in the standby mode, the white LED is on (waiting for finger identification). After each performed operation, the device returns to standby mode.

When the fingerprint database is empty, anybody can enrol the first three administrator fingerprints. It is recommended that you enrol the first three fingerprints immediately, so that it is protected from unauthorized persons.

2. PROPER USE

With the capacitive fingerprint reader of the latest generation of REX bioreader we provided excellent reading of fingerprints in all conditions and minimized the possibility of misuse. However, every technology needs to be used according to its specifications, and the proper use of the capacitive fingerprint reader is described in the following section. With a little practice and by following instructions, users will quickly learn to use it correctly. The majority of competitors' products use in-built capacitive fingerprint readers over which a finger needs to be swiped. REX bioreader, on the other hand, has an in-built fingerprint reader on which one's finger is laid/pressed. A great advantage of such reader is that one does not need to learn and take care how to swipe the finger: one simply lays/presses the finger on the reader's surface. The only thing the user needs to be careful about is that the finger is not laid/pressed on the reader with too much or too little force, and that finger surface is large enough. When you press a finger on the reader, the latter should be covered by min. 70% fingertip surface. During identification, the finger should not move. It is recommended to enrol min. two fingers of each hand, so that in case of injury the user can still open the door with a non-injured finger. During enrolment procedure a finger should be pressed on the fingerprint reader for 7-10 seconds. After successful enrolment, the device beeps and the green LED flashes for 1 second.

It is recommended that you enrol the same finger several times, so that different positions of a finger are stored in the device, thus enabling more successful identification. If enrolment is not successful (the finger is not correctly pressed against the reader or the finger surface is too small), the red LED flashes for 1second. The centre of a fingerprint should be in the middle of the reader. On this area of a fingertip the number of ridges is the highest (top right figure). When using the fingerprint reader, fingers should be normally damp. When fingers are extremely dry, the reader will not sense the finger, because

it also measures electrical conductivity, and with very dry skin conductivity is low. Persons with very dry skin can have problems with finger identification; in this case, frequent use of hand cream is recommended.

Quality fingerprint enrolment is very important: enrol your fingerprints with great care!



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. REMOTE CONTROL

Enclosed to REX bioreader is 1 remote control operating on 433 MHz frequency and communicating with the fingerprint reader over encrypted connection with the so called 'rolling code', which changes every time when a remote button is pressed. Several million different codes are stored in the remote control and the reader, and when all are used, they are reused again. The codes are interchanged according to a key known only to the manufacturer.

The remote control range is only about 10cm, because the fingerprint reader is in metal casing which impedes the signal. Remote control has 4 buttons: A, B, C and D. Every button has its function; they are described in the following section.

Remote control and fingerprint reader must be paired. This is done in the manufacturing process.. If an additional remote control is needed, this can be done according to the procedure described below.

Adding a new remote control:

On the internal unit, you press the reset button for 10 seconds. After 10 seconds, the fingerprint reader starts to emit audible signal every second. You have 10 seconds. In this time you have to press one of the buttons on remote control, which has to be within 10cm from the fingerprint reader. The fingerprint reader then emits a short beep and the green LED flashes for 1 second.

4. CHOOSING THE RELAY

The device has 2 in-built output relays, so that 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 on remote control for 2s. If you press button A, relay #1 will be triggered, if you press button B, relay #2 will be triggered, and if you press button C, both relays will trigger simultaneously.

5. ADMINISTRATOR'S ROLE AND ADMINISTRATOR ENROLLMENT

Only an administrator can enrol and delete other users. The first three stored fingerprints are entitled to administrator rights. These can be the fingerprints of one, two or three individuals.

Carefully consider which finger you will choose for the administrator finger. It should be without injuries and have a prominent fingerprint. Do not enrol this finger as a user finger later on, because this can result in problems with managing!

Administrator enrolment procedure:

- Press button A for 3s. The white LED will start to flash quickly.
- By pressing a button you choose which relay will be triggered by the finger you are adding (button A, B or C). The green LED flashes + a 1s beep is heard, the white LED starts to flash slowly.
- Administrator then presses the finger he/she is enrolling on the fingerprint reader for 7-10 seconds or until the green LED flashes + a 1s beep is heard.
- If enrolment is unsuccessful, the red LED flashes + three 1s beeps are heard and the procedure has to be repeated.
- When the administrator is correctly enrolled, the green LED flashes + a 1s beep is heard. Repeat the same process with the remaining two administrator fingerprints.

IMPORTANT:

Administrator fingers can be deleted only when the entire database is deleted. Therefore you should carefully consider who will be assigned with administrative rights, especially if the device will be used by several people.

6. USER FINGER ENROLMENT

After all administrators are enrolled, pressing button A for 3 seconds triggers the 'enrol user finger' function. The user's only right is unlocking the door; a user cannot trigger any other function.

User finger enrolment procedure

- Press button A for 3s. The white LED starts to flash slowly.
- The administrator presses his/her finger on the fingerprint reader to confirm the beginning of enrolment of a user. After positive identification of the administrator fingerprint, the green LED flashes + a 1s beep is heard, the white LED starts to flash quickly.
- By pressing a button you choose which relay will be triggered by the finger you are adding (button A, B or C). The green LED flashes + a 1s beep is heard, the white and green LED start to flash alternately.
- The user now lays the finger he/she enrolls on the fingerprint reader for 7-10 seconds or until the green LED flashes + a 1s

beep is heard. If enrolment is unsuccessful, the red LED flashes + three 1s beeps are heard and the procedure has to be repeated.

- When the user is correctly enrolled, the green LED flashes + a 1s beep is heard.

NOTE:

If the enrolment procedure is interrupted due to an unsuccessful enrolment or identification or timeout, the whole procedure needs to be repeated

7. DELETING A USER FINGERPRINT

REX bioreader enables deleting a user in a way that his/her other personal data (first and last name etc.) cannot be connected with his/her fingerprint. This means that the user who will be deleted must be present, and also that the user's (or administrator's) identity cannot be revealed to a third party. The delete function of a user fingerprint is performed with positive identification of the fingerprint. Only one fingerprint can be deleted at one time. If it has been enrolled several times, the procedure must be repeated with the same finger as many times as it was enrolled (see the list of administrators and users).

The procedure of deleting a user:

- Press button A for 3s. The white LED starts to flash slowly.
- The administrator presses his/her finger on the fingerprint reader to confirm the beginning of deleting a user fingerprint. After positive identification of the administrator fingerprint the green LED flashes + a 1s beep is heard. Then the red and the green LED flash alternately.
- The user now lays the finger he/she wants to delete on the fingerprint reader. After positive identification, the green and the red LED flash + three 1s beeps are heard. The user fingerprint is successfully deleted.

8. DELETING THE ENTIRE DATABASE (OF ADMINISTRATORS AND USERS)

By activating this function, all fingerprints stored in the database are deleted, including administrator fingerprints. When all fingerprints are deleted the device is empty, just as it was before the first start-up. This function is performed especially when REX bioreader or the space where it is installed changes the owner, or when we want to change the administrator.

The procedure of deleting all fingerprints from the database:

- Press button C for 3s. The white and red LED start to flash alternately.
- The administrator presses his/her finger on the fingerprint reader to confirm the beginning of deleting the whole data-

base. After positive identification of the administrator finger, the green LED flashes + a 1s beep is heard.

- The administrator has to lay his/her finger on the fingerprint reader again to confirm the deletion of the entire database. After positive identification of the administrator finger, the green LED flashes + a 1s beep is heard.
- The white and the red LED flash + five 1s beeps are heard. All fingerprints are successfully deleted from the database.

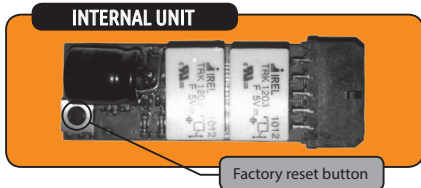
NOTE:

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 conclude it, the function can be stopped with time out and REX bioreader will return in standby mode

FACTORY RESET

In case the administrator is no more accessible (the apartment or house is sold and previous owner did not delete fingerprints), there is a way to delete the entire database of fingerprints without an administrator.

On the internal unit there is a button by means of which you can delete the entire database. The internal unit is usually situated near the electronic locking mechanism, therefore the entire locking mechanism should be unscrewed and pulled out of the profile. The device should be connected to power supply, and then the button situated on the internal unit should be pressed for 30 seconds. After this time, the device will delete all fingerprints and perform factory reset. All remote controls which are paired with this fingerprint reader, are also deleted; therefore after this function you need first add remote control and only then you can start adding fingerprints. You add remote control so that you press the button in the internal unit and then within 10 second you press any button on the remote control. During this process, the remote control should be within 10cm from the fingerprint reader.



9. LIGHT SIGNALS TABLE

LED	BEEP	STATUS	FREQUENCY	EXPLANATION
White+red	Yes	On	1 s	REX bioreader has been connected to power and initializes.
White	No	On	---	REX bioreader is in standby mode, waiting for a fingerprint or triggering of any function.
White	Yes	On	Continuously 10 s	The function of adding the remote control is on, press any button on the remote.
White	No	Flashing quickly	---	REX bioreader is waiting for choosing a relay; for the relay #1 press button A, for the relay #2 press button B, for both relays press button C.
White	No	Flashing slowly	Until timeout	REX bioreader is waiting for an administrator's finger (administrator enrol, add user, or delete the entire fingerprint database).
Green	Yes	Flashing	1 x 1 s	<ul style="list-style-type: none"> The administrator or user was identified. The administrator's or user's fingerprint was successfully stored in the database.
White	No	Off	---	<ul style="list-style-type: none"> In strong light the white LED is not visible. Device malfunction.
Red	Yes	Flashing	Continuously	Device malfunction.
Red	Yes	Flashing	3 x	<ul style="list-style-type: none"> The administrator or user was not identified. The fingerprint was not stored in the database. Timeout of a function.
Red	Yes	On	3 s	Fingerprint database is full.
Green+white	No	Flashing alternately	Until timeout	REX bioreader is waiting for a user's fingerprint (enrol user finger function).
Green+red	Yes	Flashing simultaneously	3 x	REX bioreader has successfully deleted user finger.
Green+red	No	Flashing alternately	Until timeout	REX bioreader is waiting for a user fingerprint (delete user finger function).
White+red	No	Flashing alternately	Until timeout	REX bioreader is waiting for an administrator fingerprint (to delete the entire database).
White+red	Yes	Flashing simultaneously	5 x	REX bioreader has successfully deleted the entire fingerprint 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 white 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.
	Surrounding light is too bright.	If surrounding light is very bright, white light cannot be seen. Shadow the reader with your hand.
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 bioreader (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, 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:

Name of the customer:

Address of the customer:

Stamp and signature of the seller:

REX bioreader was manufactured by:

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Product type:

access control device based on biometric identification