REX
handle

Navkom

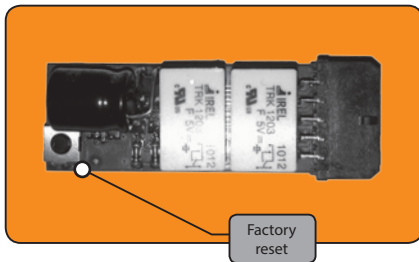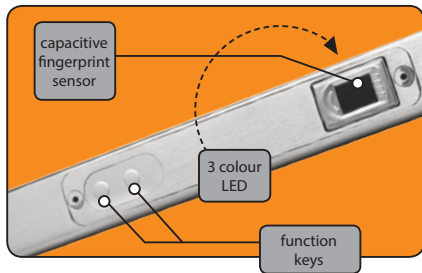# USER MANUAL

TECHNICAL DATA

- Robust capacitive Area sensor of newest generation, excellent image quality, high resolution 500dpi
- Storage capacity: 1000 fingerprints.
- High data security: 256-bit-encryption of stored bio data.
- Input power 8-30 VDC or VAC)
- 2 relay outputs.
- Fast identification time (< 1,2s) and high recognition accuracy.
- DC distance max. 40m (between power supply, lock and reader).
- Operating temperature: -30 ºC to +80 ºC, -22 F to +176 F.
- Operating humidity up to 100%.
- Bio-data and all settings remain stored in case of power loss .
- CE qualification.
- User Interface: 2 membrane buttons, 1 three colour LED, Buzzer.
- 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. REX handle will normally use PS of the lock.
- Enrol/Delete via master finger/ 2 buttons – 3 master fingers – no access time limits - if finger is recognised single relaycontrol output is active for 2sec.
- IP55 waterproof housing.
- 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.

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1. FIRST START UP

After 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 start to shine continuously which indicates that REX handle 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 with pressing on any button for 1 s.

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

2. PROPER USE

The capacitive area sensor used in the REX handle 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, users 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 a user should take care of, is that finger is not pressed too hard or too soft, so the area of finger touching the sensor is big enough and centered, like it is shown on the picture. Also when finger is being scanned it should not move. 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.

During enrolment procedure, finger must be pressed for 7-10 seconds (pic. 1).

Fingerprint core should be placed at the centre of the sensor (fingerprint core has max. Biodata info, pic. 2). If image enrol is not successful (finger was pressed too hard/too soft or sensor area coverage is too small) red LED will flash one time for 1 s.

> **It is very important to make a good enrolment and to store the finger in high quality!**

CORE
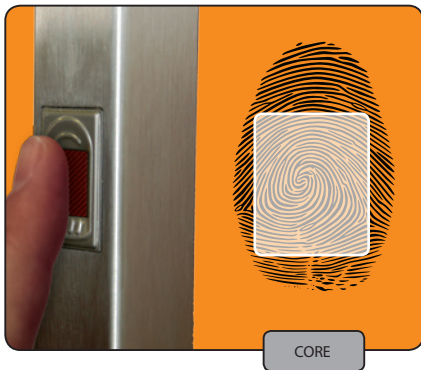
IMPORTANT:
It is necessary to perform a good scan when finger is being enrolled. This enables the device to get the best image possible and, in doing so, drastically reduces the possibility of subsequent unsuccessful identification. It can happen that finger enrolment won't be successful. This can happen for various reasons: The fingerprint image was too small, the finger was wet or dirty (REX handle 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. When a new finger is being enrolled one has 2 minutes to complete the enrolment. Even if the function wasn't concluded for some reason, there is no fear of misuse. 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. It is recommended that administrator fills the Administrator and user list, which is enclosed to this manual, so that there is a complete overview who is administrator, who are users, when they were enrolled or deleted and which fingers are enrolled.

3. POWER MODE

REX handle has two kind of power modes. When power save mode is active, the device turns off 15 s after each operation is completed. Wake up can be performed by pressing on any button for 1 s, device will be ready to use in 0,4 s. After wake up, device is in freescan mode (is waiting for a fingerprint) for 15

s, also all other operations can be performed after wake up. If device is in constant power mode, it is always switched on and ready to use. Default power mode is constant power mode.

Power mode switching procedure:
• The upper button on the REX handle should be pressed for 20 s, (blue LED will start flashing after 3 s. Ignore that and keep pushing the button) the green LED will start flashing after 20 s.
• Press both buttons for 2 s to choose power save mode or only lower button for 2 s to choose constant power mode.
• When power mode is chosen, green LED will flash and buzzer will buzz 3 times if power save mode is chosen or green LED will flash and buzzer will buzz one time if constant power is chosen.

IMPORTANT:
Power mode can be chosen any time by anyone, also by person which is not enrolled. When power save mode is activated, device is using less power. When device is in constant power mode it is using in average 1,8 W power, when it is in sleep mode (power save), it is using in average 0,012 W power. By choosing power save mode app. 15 kWh annually can be saved and will increase device lifetime.

4. CHOOSING THE RELAY OUTPUT
REX handle has 2 relay outputs. When fingerprint is enroled, a relay output, which will be triggered by this finger, must be chosen. By pressing the adequate button, relay output will be chosen. Upper button relay 1, lower button relay 2, both buttons at the same time relay 1 and 2.

5. ADMINISTRATOR'S ROLE AND ADMINISTRATOR ENROLMENT
Only an administrator has the right to enrol or delete users. Function buttons are found on the REX handle unit which is accessible to anybody. It is therefore extremely important that only an authorised person can execute the REX handle enrol and delete functions. REX handle will save three administrator templates (either three from a single person or one each from three different people). Administration enrolment is simple. After REX handleis installed, the first three fingerprints enrolled are assigned with administrative rights. When the REX handle is in freescan mode and administrator finger is detected, lock will be triggered. Same as for normal user in case of positive match.

Administrator enrolment procedure:
• The upper button on the REX handle unit should be pressed for 3 seconds. The blue LED will start flashing fast. Choose the relay, green LED will follow.
• The administrator then presses his/her finger on the sensor for

7 - 10 seconds. After each successful sensor reading, short buzz will be heard. If sensor reading is not successful (sensor area coverage is too small), red LED will flash for 1 s. If sensor reading is not successful finger must be pressed once again.
• When the administrator is correctly enrolled, the green LED will flash and the buzzer will buzz one time.
• The same procedure is repeated with other two administrative fingerprints.

IMPORTANT:
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 handle fingerprint reader is used by more than a few people.
It's not advisable to enter the same finger both as administrator and user because this can cause problems with the management of the device. When you will be required to press the administrator finger for the management of the device, it might occur that the finger will be recognized as user's which will abort the operation.

6. USER FINGER ENROLMENT
After the administrative templates are enrolled, pressing the upper button for 3 s on the REX handle unit will trigger the »enrol user finger« function. The only right that a user has is triggering the lock in the event of positive fingerprint identification and power mode selection function.

User finger enrolment procedure:
• The upper button on the REX handle unit should be pressed for 3 seconds. The blue LED starts flashing.
• An administrator presses his/her finger on the sensor once. When he/she is identified, the green LED flashes and buzzer buzzes one time. Blue LED flashes fast. Choose the relay, green LED will follow.
• The blue and green LEDs will flash alternately. At this point the user presses his/her finger on the for 7 - 10 seconds. If sensor reading is not successful (sensor area coverage is too small), red LED will flash for 1 s.
• When the user is correctly enrolled, the green LED will flash and the buzzer will buzz one time.

IMPORTANT:
If the enrolment procedure is interrupted by an unsuccessful identification or a function time out, the whole procedure needs to be repeated.

7. DELETING A USER FINGER

REX handle provides a »delete user finger« function without employing a visual database (e.g. a fingerprint template can not be connected to the user's name, surname or other vital data). This means that the user who has to be deleted must be present, but also that the user's identity cannot be revealed to a third party. User finger delete selection is done via a positive match of swiped finger. Only one finger of a user can be deleted at one time, not all fingers of the user at the same time! If same finger was enrolled more than one time, procedure must be repeated with the same finger as many times as it was enrolled. Please check Administrators and users list to check how many fingers of the user, which should be deleted, are enrolled and how many times same finger was enrolled.

How to delete a user?
• Check the Administrators and users list to see which fingers of the user, which should be deleted, are enrolled and inform user which fingers he/she must press.
• The lower button on the REX handle unit should be pressed for 5 seconds whereupon the blue LED will start flashing.
• An administrator presses his/her finger on the sensor once. When he/she is identified, the green LED will flash and the buzzer will buzz one time.
• The red and green LEDs will flash alternately. Then the user presses his/her finger on the sensor once. When the user is identified, the red and green LEDs flash and the buzzer will buzz three times. The user finger has been successfully deleted from the system.

8. DELETE ALL (USERS AND ADMINISTRATORS)

By performing this function all existing templates in the database are deleted. After this procedure the device database will be empty and the next three fingerprints enrolled will have administrator rights again.

This function is used when the REX handle or the place where it is installed should get a new owner or when there is a need to change the administrator.

To prevent that delete all function will be performed by mistake, 2 authentications by administrator are required.

How to delete all?
• Press the upper and lower button together for a period of 10 seconds whereupon the blue and red LEDs will flash alternately.
• The administrator then presses his/her finger once. Identification is confirmed when the green LED flashes and the buzzer buzzes one time.
• The blue and red LEDs will flash alternately again. The admin-istrator then presses his/her finger once again. Identification is confirmed when the green LED flashes and the buzzer buzzes at the same time.
• The red and blue LEDs will flash and the buzzer will buzz five times simultaneously. All fingerprint templates will then have been deleted.

IMPORTANT:
When performing the 'Delete all' function it is necessary that the administrator confirms it twice. At any time during the execution of the 'Delete all' function, the function can be stopped with time out.

FACTORY RESET

How to delete all if administrator is not available anymore? There is a black pushbutton on the internal unit, which is located inside the door, beside the motor lock. The lock must be dismounted to access the button. Press the button for 30 s and after this time fingerprint data base is deleted. After performing the factory reset, all fingerprints in the database are erased.

9. LIGHT SIGNALS TABLE

LED	BUZZ	STATUS	FREQUENCY	EXPLANATION
blue + red	yes	shines	1s	REX handle has been connected to power and initialises.
blue	no	shines	---	REX handle is in freescan mode. All functions: enrol, delete, delete all and open the door in case of positive match.
all LED	no	off	---	REX handle is in sleep mode (power save mode). Wake up is performed by pressing any button for 1 s.
blue	no	flashing fast	---	REX handle is waiting that relay output, which will be triggered by enrolled finger is chosen.
blue	no	flashing	until timeout	REX handle is waiting for an administrator's finger (administrator enrol, add user or delete user function)
green	yes	flashing	1 x 1s	* Administrator or user has been identified. * Fingerprint template was successfully stored in the database. * Constant power is switched on.
green	yes	flashing	3 x 1s	Power save is switched on.
red	no	flashing	ontinuously	Device malfunction.
red	yes	flashing	3 x	* Administrator or user hasn't been identified. * Fingerprint template wasn't stored in the database. * Time out of a function.
red	yes	shines	3s	Fingerprint database is full.
green + blue	no	flashing alternately	until timeout	REX handle is waiting for a new user to press the finger (Enrol user finger function).
green + red	yes	flashing together	3 x	REX handle has successfully deleted user fingerprint.
green + red	no	flashing alternately	until timeout	REX handle is waiting for a user to press the finger (delete user finger function).
blue + red	no	flashing alternately	until timeout	REX handle is waiting for an administrator's finger to be pressed (delete all function).
blue + red	yes	flashing together	5 x	REX handle has successfully deleted all fingerprint templates from the database.

10. MAINTENANCE

The REX handle fingerprint reader doesn't require any s pecial maintenance. But in special cases (e.g. if REX handle is used with extremely greasy or dirty fingers) it can be cleaned with a dry cloth.

Aggressive cleaners, solvents or acids must not be used to clean the REX handle! Rubbing the sensor with hard or sharp objects can result in device malfunction and loss of warranty entitlement.

LED	BUZZ	STATUS
Fingerprint enrolment did not succeed.	The finger was pressed on the sensor too hard or too softly.	The finger should be pressed with normal strength.
	Too small area of a fingerprint was pressed on the sensor.	The finger should be pressed on the sensor with the largest possible area.
	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 pressed on the sensor too hard or too softly.	The finger should be pressed with normal strength.
	Too small area of a fingerprint was pressed on the sensor.	The finger should be pressed on the sensor with the largest possible area.
Blue LED doesn't shine.	The device is not connected to a power supply.	Check if the wires are damaged.
		Check the fuse to which REX handle is connected.
		Call the authorised repairman.
	Device is in sleep mode.	Press one of the buttons for 1 s and the device will switch on.
Red LED is flashing.	Device error.	Call the authorised repairman.
Finger is recognised and green LED flashes, but the lock is not triggered.	Reader or electric lock malfunction.	Call the authorised 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 handle (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:

Name of the customer:

Adress of the customer:

Stamp and signature of the seller:

REX handle was manufactured by:
Navkom d.o.o., Prijateljeva 24, 1000 Ljubljana, Slovenija
info@navkom.si, www.navkom.si
Product type:
access control device based on biometric identification