REX R – STANDALONE, ACCESS OR TIME AND ATTENDANCE CONTROLLER

The Rex is a controller with built-in proximity card reader, keypad and display. It is designed for residential and business buildings, offices, shops, etc. In various operation modes, the controller allows access for up to 500 users (1 master card + 500 user cards or codes). The controller can have 125kHz or 13.56MHz reading frequency.

As a standalone controller, the entire set-up procedure is carried out with master card or code. User cards and codes can either be registered or deleted.

As an access or time and attendance controller, the entire set-up procedure is carried out with the software.

The controller signals normal operation with lit red LED. It can also be used as a Wiegand 26-bit reader.

TECHNICAL DATA

REX R	
REX R-1-7 reading frequency	125kHz
REX R-1-7 reading distance	Up to 10cm
REX R-1-7 current consumption	80mA
REX R-3-7 reading frequency	13.56MHz
REX R-3-7 reading distance	Up to 7cm
REX R-3-7 current consumption	90mA
Dimensions (mm)	120x180x17 (WxHxD)
Protection	IP65
Communication	RS485
Operating voltage	From 9V to 14V DC
Operating temperature	From -20°C to 70°C
Cabel	Flat cable 20cm
Display	OLED - 4x20 characters
Memory	500 cards or codes 500 events
Inputs	Door status Push button
Outputs	Transistor output for el. strike 0.5A
Clock	Real time clock, battery backup (max. ten hours)
Keypad	Numeric, illuminated, with gold plated contacts

CONNECTION CABLE

Wire-Color	Description/Wiegand 26-bit	Specification
1 – red	9-14V DC	Power supply
2 – gray	GND	Ground
3 – gray	El. strike output / Data 0	Max. 0.5A Active = GND
4 – gray	Not connected/ Data 1	Active = GND
5 – gray	Door status switch input/ Buzzer input	Active = GND
6 – gray	Push button input / LED input	Active = GND
7 – gray	CA	RS485 A line
8 – gray	CB	RS485 B line

LED DIODES

Color	Description
Lit red	Normal mode
Lit green	El. strike is unlocked
Flashing red/green	Wiegand 26-bit mode

Power supply

The controller need's external power supply to operate. The Spider W40 power supply is sufficient to power two controllers and two 12V electric strikes or two 12V magnetic locks (0.5A). If you will use it as a standalone controller and low consumption electric strike (0.25A) you can use power supply Spider W5.

Voltage drops and cable signal interferences

When you connect the controller, use cable with a diameter of at least $0.22mm^2$. If the cable length exceeds 25m, use one twisted pair of UTP cables for the positive (+) pole and one for the negative (-) pole. The cable length between power supply and the controller should not exceed 50m.

Take into consideration that a $0.22mm^2$ cable has a resistance of approximately 9 ohm per 100m. The power supply at the end of cable should be a minimum of 9V. If you are using el. strike, it is highly recommended that the voltage drop is calculated. At greater distances, a thicker cable of $0.5mm^2$ or more should be used wherever possible.

If the load is, for example, 0.5A (with el. strike) then, on the $0.22mm^2$ cable voltage drop will be 4.5V at 100m. For the device with 60mA consumption, the voltage drop is 0.5V.

Reading distance depends on where the controller is installed. The presence of metal or interferences can significantly reduce the reading distance. **DO NOT** install the controller directly on metal surfaces and/or cover it with a metal cover.

It is **not recommended** to install controllers closer than **30cm** from each other in any direction. Otherwise, it may result in inaccurate readings or, indeed, in the controller **not reading at all**.

For the Rex R-3-7 to comply with EMC directives (CE), you have to put ferrite core on the cable as close to the Rex as possible, making two turns!

Inputs, outputs and environment

Inputs:
Inputs are realized with opto-isolators. The input is active, when pulled to ground with an open collector transistor or mechanical switch, which is connecting the input pin of the controller to the Ground.

Outputs:
Output has a pre-installed protection diode for an inductive load. It is also protected from current overload. The best way is to use a 0.25A el. strike or a 0.5A el. magnet, which has to be connected to the same positive pole (+) as the controller. Connect the negative pole (-) to the door strike output (wire 3). When the output is active it is pulled to ground. This can be changed with function 5 – negate output (for el. magnet).

Environment:
The controller has IP65 protection, but you must assure good cable joints, protected against moisture, otherwise corrosion may damage the controller. Damage in such cases is not covered by the warranty.

Rex R-1-7 reading range:
The controller has a program algorithm that, at power start, sets parameters based on the installation environment, so as to ensure an optimal reading range. **DO NOT** install the controller directly on metal surfaces and/or cover it with a metal cover; it may stop working/reading. If you plan to test the controller and move it onto different surfaces, then you have to reset it (power off/on) on each surface.

Installation of Rex R

Remove black plastic screw covers on the top and the bottom of the controller. Install the controller to the wall with two supplied screws. Use diagonal holes - it enables a small correction of the position of the controller (up, down, left, right). When the controller is installed, put the screw covers back on.

REX R - STANDALONE CONTROLLER

The entire set-up procedure is carried out with the master card or code.

The master card and code cannot be replaced or duplicated. After registration the master card and code should always be kept in a secure place. You cannot change any setting without them and neither can we. Keep that in mind when storing the master card and code.

Programming Rex with the master card

First connection to power supply and registration of the master card:

Turn the power supply on (2 beeps indicate power on). Approach a card, you will use as a master card (3 beeps indicate a successful registration). The first card registered becomes **master card.** All the other cards will be registered as **users (user cards)**.

Usage of master card:

If you hold the master card in front of the controller, every two seconds a double beep is heard. The number of double beeps indicates the programming function.

PROGRAMMING FUNCTIONS WITH MASTER CARD

Function	Description
1	Register or delete user cards
2	Pulse time/ Duration of active output or toggle mode
3	Door status switch input/ time till pre-alarm
4	Duration of pre-alarm
5	Negate output
6	Delete a lost card
7	Delete a lost card
9	Switch to Wiegand 26-bit or table reader
13	Delete all

Function 1) User cards
Register or delete user cards.
SETUP:
Approach the master card and remove it after 1 double beep. Within a period of three seconds approach a user card. The user card is now registered and with it, you can open output on the controller. If the card has already been registered, it is now deleted and its position is now empty. Next registered card will take the first available position on the list or position of the deleted card. To delete a lost user card, you must maintain a list of registered cards and codes, arranged in order of registrations (positions).

Function 2) Pulse time/ Duration of active output or toggle mode
Set the duration of active output/ the time in which you can open door or set output to toggle mode. Toggle mode means, if the user card is registered, output will remain opened (if it was closed) or closed (if it was open) till next registration.

Set the duration of active output:
Approach the master card and remove it after 2 double beeps. The controller will start to beep every second. Each beep indicates 1 second of active output. Duration of active output can be max. 60 seconds. When you hear the required number of beeps, approach a user card for confirmation.

Set toggle mode:
Approach the master card and remove it after 2 double beeps. Approach a user card before the first beep. Toggle mode is selected.

Function 3) Door status switch input
Set the time till pre-alarm / time in which the door can stay open, without triggering the pre-alarm and consequently the alarm. This function is used when the door status switch on el. strike is connected to Input0/I0/wire 5 on the controller.
SETUP:
Approach the master card and remove it after 3 double beeps. The controller will start to beep every second. Each beep indicates 1 second till pre-alarm. Duration of the time till pre-alarm can be max. 60 seconds. When you hear the required number of beeps, approach a user card for confirmation.

Function 4) Pre-alarm and alarm
Set the pre-alarm time. This is the time in which the controller, with short beeps, alerts you that the door was left open. If you don't close the door in the pre-alarm time, the alarm will be triggered and signaled with long beeps by the controller.
SETUP:
Approach the master card and remove it after 4 double beeps. The controller will start to beep every second. Each beep indicates 1 second of the pre-alarm time. Duration of the pre-alarm time can be max. 60 seconds. When you hear the required number of beeps, approach a user card for confirmation.

Function 5) Negate / switch output state
This function is used, when you connect an electric strike or electric magnet which needs power supply to remain in locked state.
SETUP:
Approach the master card and remove it after 5 double beeps. Within a period of three seconds approach a user card. The output state will be switched from the current one.

Function 6) Delete a lost card
Delete the next card on the list. Use this function if you lost a card and you wish to delete it from the controller. In order to use this function you must maintain a list of registered cards and codes, arranged by order of registrations so that you can find the card or code, which was registered before the lost one.
SETUP:
Approach the master card and remove it after 6 double beeps. Within a period of three seconds approach the user card, which was registered **before** the lost one. This will delete the lost user card. Next registered card will take the position of a deleted card.

Function 7) Delete a lost card
Delete the previous card on the list. Use this function if you lost a card and you wish to delete it from the controller. In order to use this function you must maintain a list of registered cards and codes, arranged by order of registrations so that you can find the card or code, which was registered after the lost one.
SETUP:
Approach the master card and remove it after 7 double beeps. Within a period of three seconds approach the user card, which was registered **after** the lost one. This will delete the lost user card. Next registered card will take the position of a deleted card.

Function 9) Switch to Wiegand 26-bit or table reader

Switch the controller to a Wiegand 26-bit reader or a table reader. Table reader sends a card number through RS485. The controller can be changed back to standalone controller with the master code. The controller signals, when in Wiegand 26-bit mode or table reader mode with flashing red and green LED.

Switch:
Approach the master card and remove it after 9 double beeps. The controller will start to beep every second. Each beep presents a different function, which is selected with a user card.
2. beep – If a user card is approached after 2 beeps, the controller will switch to Wiegand 26-bit reader.
3. beep – If a user card is approached after 3 beeps, the controller will switch to table reader.

Switch from Wiegand 26-bit or table reader to controller:
Enter the master code and press ↵ . Press 9 and ↵ . Press 1 and ↵ .

Function 13) Delete all

Reset/ delete all data to default.
SETUP:
Approach the master card and remove it after 13 double beeps. Within a period of three seconds approach a user card. This will delete all data and reset the controller to default settings. The controller confirms this, after three seconds, with one long and triple beep.

Programming Rex with the master code

The default master code is 1234. The maximum code length is 6 digits. The master code must be CHANGED for security reasons, because the default one is written in controller's manual and with it, anybody can set himself his own code, to open YOUR door.

PROGRAMMING FUNCTIONS WITH MASTER CODE

Function	Description
0	Change master code
1	Register or delete user codes
2	Pulse time/ Duration of active output or toggle mode
3	Door status switch input/ time till pre-alarm
4	Pre-alarm and alarm/ duration of pre-alarm
5	Negate output
9	Switch to Wiegand 26-bit
13	Delete all

Function 0) Master code

Change the master code.
Setup:
Enter the default master code and press ↵ . Press 0 and ↵ . Enter the new master code and press ↵ . Again enter the new master code and press ↵ . Store the master code in a secure place.

Function 1) User codes

Register or delete user codes.
Setup:
Enter the master code and press ↵ . Press 1 and ↵ . Enter the new user code and press ↵ . Again enter the new user code and press ↵. User code is now registered and with it, you can open output on the controller. If the code has already been registered, it is now deleted. Next code or card you register, will take the first empty position in the system.

Function 2) Pulse time/ Duration of active output or toggle mode

Set the duration of active output/ the time in which you can open door or set output to toggle mode. Toggle mode means, if the user card is registered, output will remain opened (if it was closed) or closed (if it was open) till next registration.

Set the duration of active output:
Enter the master code and press ↵ . Press 2 and ↵ . Enter the duration of active output in seconds (max. 60seconds) and press ↵.

Set toggle mode:
Enter the master code and press ↵ . Press 2 and ↵. Press 0 and ↵ .

Function 3) Door status switch input

Set the time till the pre-alarm / time for which door can stay open, without triggering the pre-alarm and consequently the alarm. This function is used when the door status switch on el. strike is connected to Input0/I0/wire 5 on the controller:
Setup:
Enter the master code and press ↵ . Press 3 and ↵ . Enter the duration of time till pre-alarm in seconds (max. 60 seconds) and press ↵ .

Function 4) Pre-alarm and alarm

Set the pre-alarm time. This is the time in which the controller, with short beeps, alerts you that door was left open. If you don't close the door in the pre-alarm time, the alarm will be triggered and signaled with long beeps by the controller.
Setup:
Enter the master code and press ↵ . Press 4 and ↵ . Enter the duration of pre-alarm time in seconds (max. 60 seconds) and press ↵ .

Function 5) Negate / switch output state

This function is used when you connect an electric strike or electric magnet which needs power supply to remain in locked state.
Turn on the negated output:
Enter the master code and press ↵ . Press 5 and ↵ . For confirmation press 1 and ↵ . The output state will be switched from the current one.

Function 9) Switch to Wiegand 26-bit or table reader

Switch the controller to a Wiegand 26-bit reader or a table reader. Table reader sends a card number through RS485. The controller can be changed back to standalone controller with the master code. The controller signals, when in Wiegand 26-bit mode or table reader mode with flashing red and green LED.
Switch:
Enter the master code and press ↵ . Press 9 and ↵ .
Press:
2 and ↵ – The controller will switch to Wiegand 26-bit reader.
3 and ↵ – The controller will switch to table reader.

Switch from Wiegand 26-bit or table reader to controller:
Enter the master code and press ↵ . Press 9 and ↵ . Press 1 and ↵ .

Function 13) Delete all

Reset/ delete all data to default:
Enter the master code and press ↵ . Press 13 and ↵ . For confirmation press 1 and ↵ . This will delete all data and reset the controller to default settings. The controller confirms this, after three seconds, with one long and triple beep.

Default settings

A three-second pulse, five-second open time, four-second pre-alarm time, door switch and push button have NO contact; output is set for fail secure el. strike. The controller is in standalone mode.

REX R- ACCESS OR TIME AND ATTENDANCE CONTROLLER

Access controller

As an access controller, it is intended for controlling entries, exits and passes of users in the system and controlling sliding doors, ramp, el. strike, turning alarm on/off… It needs to be set with V7, STOP, BLOCKER or CODEKS software.

Time and attendance controller

As a time and attendance controller, the controller is intended to register the employee's arrivals and exits from work, lunch break, private and business exits, sick leave... It needs to be set with V8kit, V7 or CODEKS software. In software you need to choose option "Time and attendance" for controller's reader. Set the software according to your requirements (time tables, users...) and send the tables. The controller will switch to a time and attendance controller. The keypad will serve for choosing different time intervals (private, business…).

For use with software, the controller's address must be changed from 255 to any number between 1 and 254. If you have more controllers on the communication line, don't duplicate addresses. Add them one by one on the communication line, because every controller has address 255 by default. You must change the controller's address before using any card. If you do not change the address, the first card you register will become the master card. If you have used the controller as a standalone controller before you will use it with software, you need to save your master card and code because they cannot be replaced, or you can set the controller to default settings (function 13).

Changing back to standalone controller from access controller:

Change the controller's address back to 255. If you have not used the controller as a standalone controller, the first card you register will become the master card. If you have already used the controller as a standalone controller, the master card is the same as before. It is recommended to reset the controller to default settings (function 13).

Communication

Connect the controller to the computer, with one of the power supplies, with communication converter, from the Spider family: Spider W5-USB, Spider W5-NET, Spider W40+NET.

The RS485 communication bus is used between the controllers and Jantar software. Up to 128 controllers can be lined up into one communication line. The maximum length of the communication line is 1000 cable meters. It is recommended that you use an FTP or S-FTP cable. Only a serial connection of controllers in a single communication line is allowed. **Star (parallel) connection is not allowed**.
All shields of S-FTP cables must be wired together and at **one point** connected to the earth. Individual connections to the earth are not allowed. Do not connect the shield of the cable to the ground of the controller.

ORDERING CODES

REX [box]-[card]-[software]
Box: **R**
Card: **1** – reading frequency 125kHz (cards)
          3 – reading frequency 13.56MHz (cards)
Software: **7** – V7, STOP, BLOCKER

Code	Description
REX R-1-7	Standalone or access controller with keypad and display in **R** box, Frequency 125kHz, for V7, STOP, BLOCKER or CODEKS software
REX R-3-7	Standalone or access controller with keypad and display in **R** box, Frequency 13.56MHz, for V7, STOP, BLOCKER or CODEKS software

OTHER

Warranty only applies when the controller Rex is used with power supply or/and communication converter from the Spider family.

Please read through our warranty and disclaimer statements.

Connection scheme and additional support for the use of this product can be found on:
http://www.jantar.si/forum/en

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