Roger Access Control System

RWL-1 Wireless Lock

Operating Manual

Firmware version: 1.1

Document version: Rev. F

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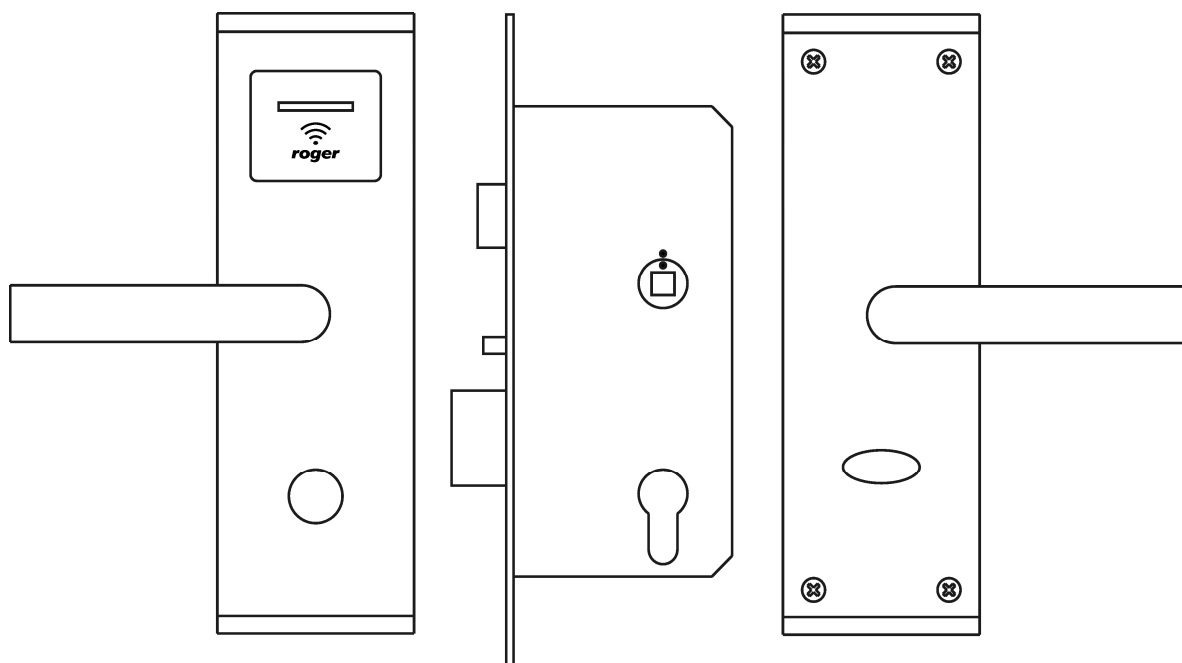
DESIGN AND APPLICATION

RWL-1 lock enables read-in access control based on MIFARE proximity cards. The lock can be operated in *Online mode* within RACS 5 access control system or in *Offline mode* as standalone device. In the Online mode the wirelessly connected MC16 controller decides if access is granted. In the *Offline mode,* based on the card numbers stored in its memory, the lock decides autonomously if the access can be granted. In case of wireless connection failure or disconnection with access controller the lock automatically switches from *Online mode* to *Offline mode.*

The RWL-1 lock consists of two escutcheons with handles and mortise lock. Card reader is installed in the external escutcheon while the battery pack is installed in the internal escutcheon. The internal handle is permanently coupled with deadbolt thus the door can be always opened from the inside regardless of proximity card and batteries charge level. The external handle is separated from the deadbolt and moves freely. When the access is granted the electronic module couples the external handle with deadbolt and latch to enable door opening. When the door is closed then the deadbolt is relocked automatically in order to protect door against unauthorized opening. The RWL-1 lock can be optionally equipped with door cylinder and then be opened from the outside with traditional metal key. The RWL-1 is equipped with deadbolt position detector and knob switch position detector. Optionally the RWL-1 can be equipped with external door contact to monitor door opening. Statuses of all detectors are reported to access controller. The wireless lock is supplied with 4 pcs of AA batteries. Low battery level can be signalled locally and reported to the access controller. The batteries enable two year operation for average 10 card readings per day.

Depending on door opening direction and handle location on the door leaf the adequate type of RWL-1 lock must be applied.

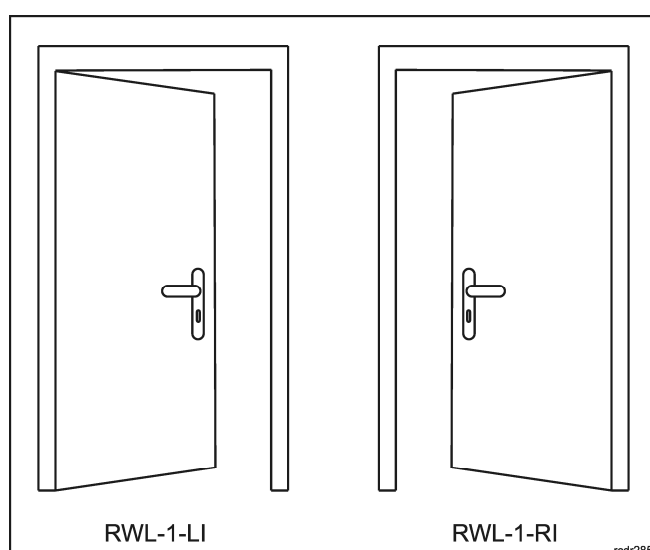| Version	Description
RWL-1-LI	Left hand door
RWL-1-RI	Right hand door
RWL-1-LO	Left hand reverse door
RWL-1-RO	Right hand reverse door

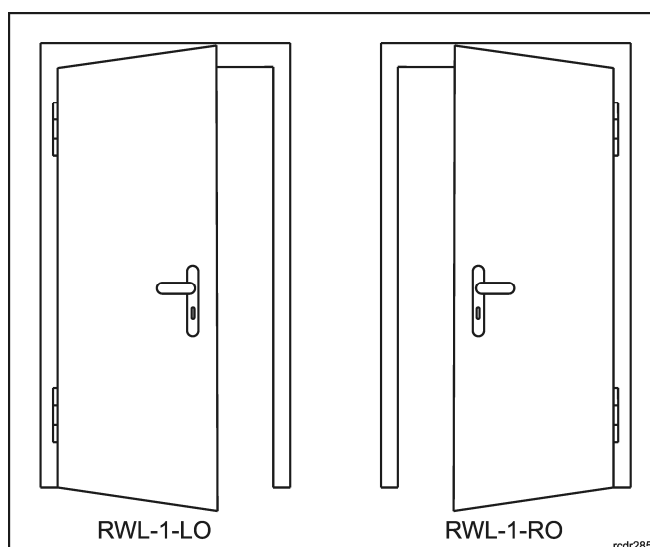Fig 1. RWL-1 lock in inward opening doors while standing outside

Fig. 2. RWL-1 lock in outward opening doors while standing outside

Mechanical construction

External part of RWL-1

The external part of RWL-1 consists of escutcheon with handle and it is dedicated to installation at the entry to controlled room. The escutcheon includes card reader (A) and hole for door cylinder (G) which can be used for emergency door opening with mechanical key. The electronic module which is located inside the escutcheon includes service pins (B) and programming pins (C). Wires with larger plug (D) are used to connect the electronic module with mortise lock and wires with smaller plug (E) are used to connect the module with battery pack. Two isolated wires (F) ended with heat shrinkable sleeve are used to connect external door contact. The status of the contact is represented by DOOR CONTACT input in RACS 5 system.
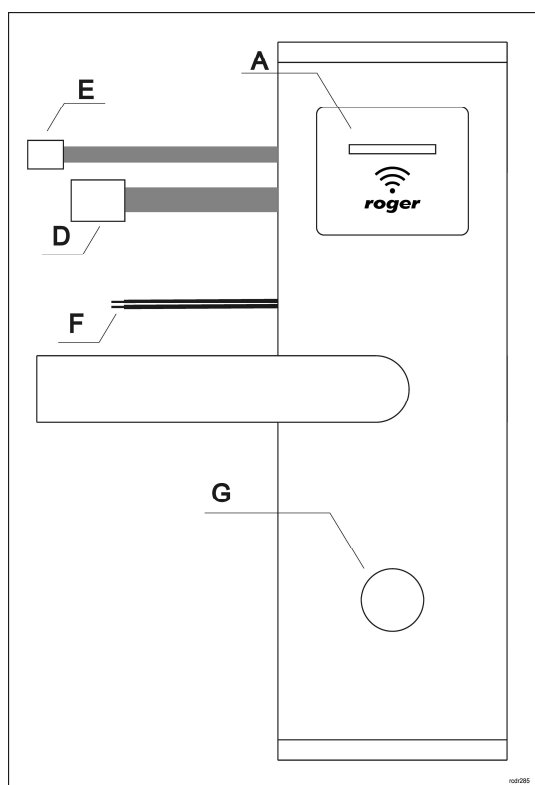

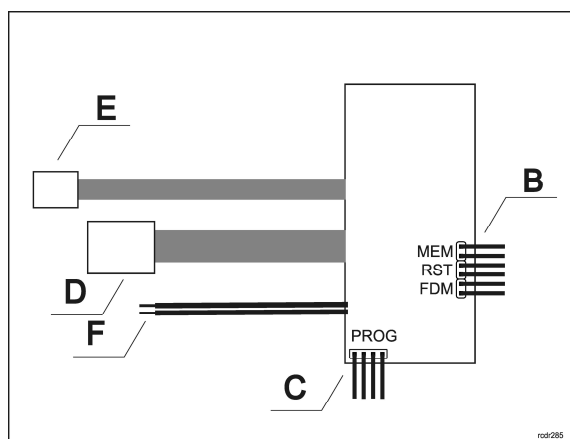Fig. 3. External part of RWL-1

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Fig. 4. Electronic module inside external escutcheon

Internal part of RWL-1

The internal part of RWL-1 consists of escutcheon with handle and it is dedicated to installation at the exit from controlled room. The escutcheon is equipped with knob switch (H) and detector to monitor its status using cable with connector (I). The connector can be plugged into socket (K) at the mortise lock. In *Online mode* the status of knob is reported to access controller with KNOB SWITCH input, which can be further configured in VISO management software. In *Offline mode* the door can be locked with the knob switch and then it cannot be opened from the outside using proximity card. When the handle is twisted then the knob reverts to normal position. The internal escutcheon includes also battery pack (J). In order to replace batteries unscrew two top bolts and pull the pack off. Wires with plug (M) are connected to socket (E) at external escutcheon in order to supply it.
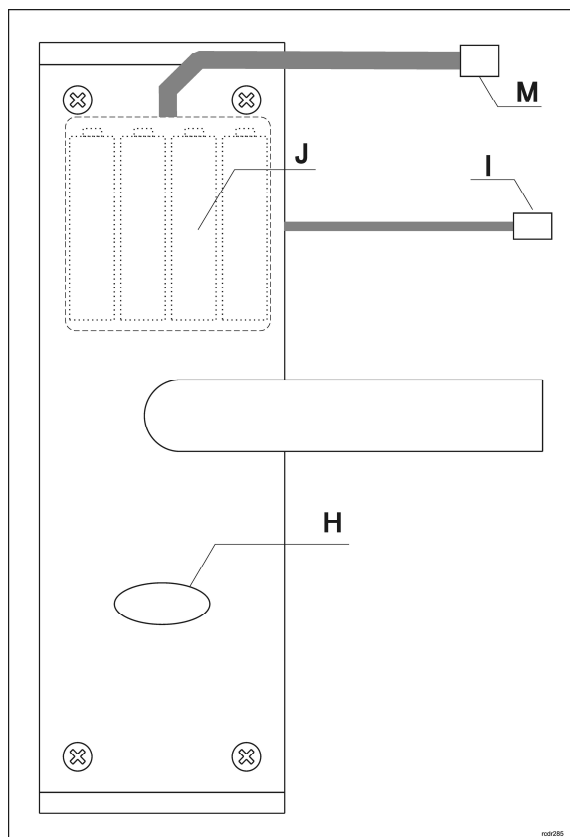

Fig. 5. Internal part of RWL-1

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Mortise lock

The mortise lock includes servomechanism which can be controlled by electronic module located inside external escutcheon. Two groups of wires with plugs come out of the mortise lock. The larger plug (L) is used for connection with internal part of RWL-1 while the smaller plug (K) for connection with external part of RWL-1.

The lock is equipped with latch (M), deadbolt (N) and release bolt (O). Once the door is closed, the deadbolt is released automatically. Deadbolt status is reported to access controller (DEADBOLT input). The door can be opened by internal handle, external handle or metal key. The deadbolt can be controlled by external handle only if it is coupled by servomechanism controlled by electronic module. External handle is coupled momentary whenever access is granted. When the RWL-1 is operated in *Office mode* then external handle is coupled permanently. Handle spacing i.e. distance from handle to cylinder in the mortise lock equals to 72mm.
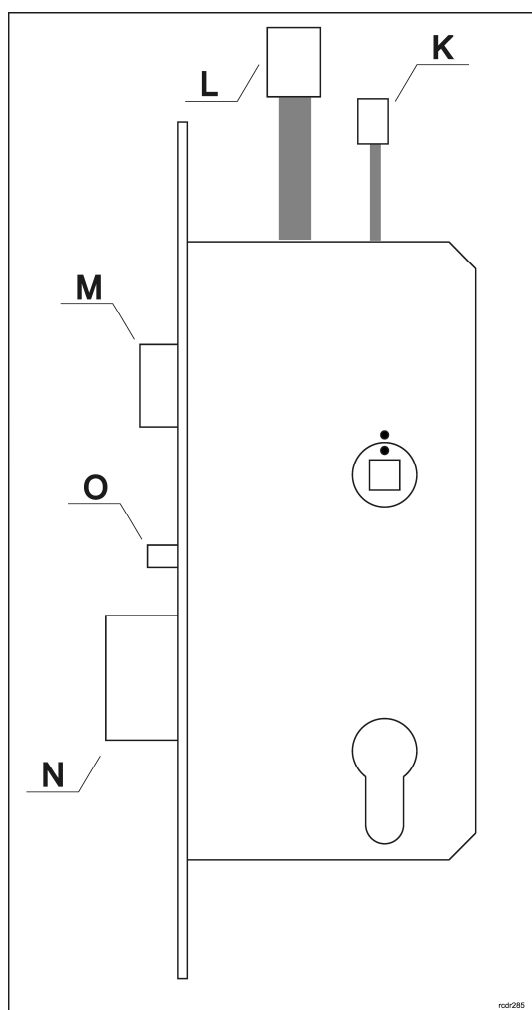
Fig. 6. Mortise lock

Door cylinder

RWL-1 lock is adapted to door cylinder installation. Such cylinder enables emergency door opening from the outside using metal key. The size of cylinder depends on door thickness and it must be selected in such way that it would not protrude by more than 12mm over door surface. The door cylinder 26/10 is included with RWL-1 lock and it can be used in door with 38mm to 55mm thickness.

FUNCTIONAL DESCRIPTION

The RWL-1 can be used as autonomous access control point, where the access is granted based on the data stored in the lock's memory, or as a networked access point operating in the on-line access

control system. In the *Online mode* access is controlled by the external controller. Transmission between the lock and controller is wireless and requires intermediary RWH-1 hub. Regardless of the selected working mode (online or offline) the lock requires configuration which can be done from the programming computer with the RogerVDM application and connected to the lock through RUD-1 communication interface. If the lock is designated to operate in *Offline mode* with list of 50 users, each equipped with *Main card* and *Backup card*, it can be programmed manually without computer. In this scenario, two programming cards, called ADD card and DEL card, are used to program the unit.

Note: Due to the small size of the proximity keyfobs, they may be incorrectly detected by the built-in proximity sensor. In the RWL series locks, it is recommended to use full-size ISO proximity cards.

Proximity cards

The lock is equipped with a card reader which supports MIFARE® cards. Factory configured device reads card serial number (CSN - *Chip Serial Number*), but using RogerVDM software it can be configured to use programmable card number (PCN – *Programmable Card Number*) stored in the encrypted memory of the MIFARE card.

Card number

The card number which RWL-1 lock reads from the card and returns to the access controller is called RCN (*Returned Card Number*). In general, the RCN can be composed of two sections:

- CSN section
- PCN section

The CSN section is a part of the RCN card number taken from the card serial number (CSN). The serial number is programmed by card manufacturer.

The PCN section is a part of the RCN card number taken from the card's programmable memory. The programmable number can be encrypted with own key in order to enable protection against card copying.

Due to relatively easy copying of the card serial numbers (CSN), it is recommended to configure the lock for operation with programmable card numbers (PCN).

Offline mode

In the *Offline mode*, the lock grants access for cards stored in its memory. The lock can operate permanently in *Offline mode* or enter this mode temporary, when wireless connection with controller is lost in *Online mode.*

Up to 100 cards can be defined and stored in lock's memory. Each card can be authorised for momentary door opening (option: *Normal access*) and/or to open the door for unlimited time (option: *Office access*). If the card is authorized for *Normal access* then it opens the lock for the time specified by the parameter *Lock pulse*. If the card is authorized for *Office mode* then it can open the lock for unlimited time. When lock is switched to *Office mode* door can be open without use of a card. If the card is authorised for *Normal access* and *Office mode* then in order to get normal access it must be used once while in order to activate *Office mode* it must be used twice.

The access to a room from the outside can be blocked with knob switch located at the internal escutcheon. The functioning of knob can be disabled with the parameter *Don't disturb knob switch.*

Backup cards

Up to 100 cards can be defined and stored in lock's memory. Each card can belong to individual user. Optionally the lock can operate with 50 users only. In such a case each user can have two cards: *Main card* and *Backup card*. Both cards have the same authorizations and the enrolment of *Backup card* is optional. Factory new lock is configured to operate with 50 users. This mode is also used when lock's default settings are restored. Switching to 100 users mode can be done only by means of RogerVDM software. The main benefit of *Backup cards* is to enable selective removing of *Main cards* from the

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lock's memory even if such *Main cards* are not physically available (e.g. lost or damaged). Therefore it is recommended to mark and store *Backup cards* in designated place for future use.

Note: *Backup card* is assigned with same authorizations as accompanying *Main card* and can be used in the same way as the *Main card*.

Online mode

In the *Online mode*, the lock is wirelessly connected to access controller which controls the access to the room. Cards and inputs are reported to the controller which makes decision about access.

By default, the lock works in the *Offline mode* and in order to switch to the *Online mode*, the DEL card must be used five times. Such method can also be used to delete current configuration of the RACS AIR network.

When wireless connection is lost, the lock automatically switches to *Emergency mode* (see Access in Emergency mode section). When the wireless connection is restored then the lock automatically returns to *Online mode*.

Note: Due to their nature, wireless systems are exposed to all kinds of interferences. The communication can be affected by ambient electromagnetic radiation and periodic disturbances. Radio communication can also be intentionally suppressed. Therefore in RACS 5 system, the Emergency mode was introduced to enable lock operation when wireless connection is lost. If the Emergency mode is not configured in RACS 5 AIR system then there is a risk that mentioned disturbances will affect the system and hinder its operation.

Radio channels

The wireless communication utilizes the IEEE 802.15.4/ 2.4GHz band which is shared with Wi-Fi networks. If the lock uses the same channel as Wi-Fi network then in case of intensive Wi-Fi transmission the lock may occasionally lose communication with the hub. Prior to wireless system installation it is recommended to verify what channels are occupied by local Wi-Fi networks and use those which are free. Radio channel scanning can be made using popular mobile apps.

Note: It must be noted that positive test results do not guarantee proper operation of the system as bandwidth occupation and interferences can significantly change in time (e.g. due to new devices or mobile devices in vicinity). If occasional and temporary switching of locks into Emergency Mode is not acceptable in the premises then please consider the application of RACS 5 wired devices.

Wi-Fi channels (according to IEEE 802.11)			
Channel	Frequency range [GHz]	Channel	Frequency range [GHz]
1	2,401 - 2,423 (2,412)	8	2,436 - 2,458 (2,447)
2	2,406 - 2,428 (2,417)	9	2,441 - 2,463 (2,452)
3	2,411 - 2,433 (2,422)	10	2,446 - 2,468 (2,457)
4	2,416 - 2,438 (2,427)	11	2,451 - 2,473 (2,462)
5	2,421 - 2,443 (2,432)	12	2,456 - 2,478 (2,467)
6	2,426 - 2,448 (2,437)	13	2,461 - 2,483 (2,472)
7	2,431 - 2,453 (2,442)	14	2,473 - 2,495 (2,484)

RACS AIR channels (according to IEEE 802.15.4)			
Channel	Frequency [GHz]	Channel	Frequency [GHz]

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11	2,405	19	2,445
12	2,410	20	2,450
13	2,415	21	2,455
14	2,420	22	2,460
15	2,425	23	2,465
16	2,430	24	2,470
17	2,435	25	2,475
18	2,440	26	2,480

Access granting in Emergency mode

Emergency mode enables functioning of access control with wireless locks in case of temporary interferences in radio communication or access control system failure. The access is based on settings saved in lock's memory.

Dynamic user list

Dynamic user list is created on ongoing basis when the system is operated. Each card which was granted access according to access controller logic is stored on dynamic list. Such card in Emergency mode enables unconditional access granting. After the time specified by the parameter *Dynamic user list timeout* the card is automatically removed from the list. Such feature is especially useful in case of lost or inactive cards.

Offline mode user list

In Emergency mode, lock additionally applies *Offline mode* user list and can grant the access according to the description given in section Offline mode. The card can be granted access if it is stored on any of two mentioned user lists.

LED indicators

RWL-1 lock is equipped with 4 LED indicators which functions are described in the table below.

LED indicators		
Name	Colour	Description
LED RED	Red	*Online mode*: the function of this LED is programmed in VISO management software. *Offline mode*: indicator is blinking when lock waits for the optional second card reading. If it occurs, lock switches to *Office mode*.
LED GREEN	Green	In *Online mode* the function of this LED is programmed in VISO management software. In *Offline mode* the indicator is not used.
LED BLUE	Blue	*Online mode*: the indicator is controlled by access controller in accordance with the logic applied in the RACS 5 system. If the lock switches to *Offline mode* due to communication failure then LED BLUE is operated as lock was in *Offline mode* except that it blinks instead of steady light. The indicator blinks slowly if wireless communication is not configured. In *Offline mode* the indicator: • 2 sec pulse when access is granted and external handle is coupled

		• two 2 sec pulses when access is denied • lights steadily when operates in *Office mode*
LED SYSTEM	Orange	• lights steadily in case of lock's configuration error • pulses slowly in case of low battery level (batteries must be replaced) • pulses every 2 sec when wireless connection is being established in *Online mode*

Power supply

RWL-1 lock is supplied from 4 pcs of AA batteries. In case of average 10 operations daily the alkaline batteries enable 2 year functioning. Low battery level is reported to VISO management software and additionally it is signalled locally by orange LED SYSTEM pulsing and acoustic signal generated prior to entering standby mode.

CONFIGURATION

RWL-1 lock can be programmed manually or from PC computer. Manual programming enables card management for *Offline mode* only. All configuration settings can be setup and edited using RogerVDM program. Connection to PC requires RUD-1 interface.

Factory new lock is configured for *Offline mode* and includes 2 programming cards (ADD card and DEL card). *Lock pulse* by default is set to 2 sec while built-in RFID reader is configured to read card serial numbers (CSN).

Factory cards		
Label	Name	Authorization
ADD	ADD programming card	New card adding to the lock
DEL	DEL programming card	Card deleting from the lock

Configuration recovery from the lock

In some circumstances it might be required to recover the configuration settings from the lock. Such operation can be done by means of RogerVDM software. Regardless of the operating mode it is not possible to recover communication password and card encryption keys. Recovery of the user cards programmed in the lock's memory, can be disabled by means of *Card codes protection* option, which by default is set off so the card codes can be read from the lock's memory.

Note: Once the *Card code protection* option is set, the only way to clear it is to execute memory reset which erases entire lock's memory.

Manual programming of the users

If the lock operates in *Offline mode* then it can be configured manually without computer. Using manual programming it is possible to add and delete user cards. Factory new lock is configured for *Offline mode* with *Backup cards* and delivered with 2 programming cards (ADD card and DEL card). The manual programming of the users can be used either when lock operates with *Backup cards* (50 users limit) or without *Backup cards* (100 users limit). When lock operates with 100 user limit, programming steps related to the *Backup cards* shall be skipped.

Note: It is possible to program new ADD and DEL programming cards during memory reset procedure.

User adding

A. Read ADD programming card.

B. Read first card to program user's *Main card*.

C. Read second card to program user's *Backup card*.

Notes:

- New user shall be granted *Office access* if step A is repeated twice.

- New user shall be granted *Normal access* and *Office access* if step A is repeated thrice.

- If *Backup card* is not needed then read ADD programming card again in step C.

- If already programmed card is used in step B or C then the lock shall generate 2 sec acoustic warning and shall finish programming procedure.

Example: Programming of user with *Normal access*

- Read ADD programming card once.

- Read first card to program user's *Main card*.

- Read second card to program user's *Backup card*.

- Wait till 3 acoustic beeps are *generated* by lock and then you can continue with more cards programming.

Example: Programming of user with *Office access*

- Read ADD programming card twice.

- Read first card to program user's *Main card*.

- Read second card to program user's *Backup card*.

- Wait till 3 acoustic beeps are *generated* by lock and then you can continue with more cards programming.

Example: Programming of user with *Normal access* and *Office access*

- Read ADD programming card thrice.

- Read first card to program user's *Main card*.

- Read second card to program user's *Backup card*.

- Wait till 3 acoustic beeps are *generated* by lock and then you can continue with more cards programming.

User deleting

A. Read DEL programming card.

B. Read *Main card* or *Backup card* to remove both cards from the lock's memory.

Note: All cards can be removed from memory using memory reset procedure.

Example: User deleting

- Read DEL programming card.

- Read *Main card* or *Backup card* to remove both cards from the lock's memory.

- Wait till 3 acoustic beeps are generated by lock and then you can continue with more cards programming.

Programming with RogerVDM software

RogerVDM software enables full configuration of the lock operated either in *Online mode* or *Offline mode*. In case of *Offline mode* it is also possible to configure list of 100 users with *Main cards* instead

of default list of 50 users with *Main cards* and *Backup cards*. The selection of user limit is done with the parameter *Backup cards*. When the option is set to *[1]: Yes* then lock operates with 50 users limit.

Note: It is recommended to backup RWL-1 settings, save them to file and protect against loss and access of unauthorized persons.

The procedure below includes steps required to configure the lock using computer and RogerVDM software.

1. Place jumper on MEM pins.

2. Connect the lock to RUD-1 interface using dedicated cable (fig. 6).

3. Short RST pins for a moment preferably by placing and removing jumper – Orange LED SYSTEM shall pulsate.

4. In RogerVDM select *Device/New* and then select type of device (RWL-1) and serial COM port with RUD-1 interface.

5. Select required settings.

6. Make backup by saving settings to file (button: *Send to File…*).

7. Upload settings to the lock (button: *Send to device*).

8. In RogerVDM select *Device/Disconnect*.

9. Remove jumper from MEM pins.

10. Short RST pins for a moment preferably by placing and removing jumper.

11. The lock is ready for operation.

Note: The jumper can be left on MEM pins. If so the lock can be later configured remotely using wireless method.
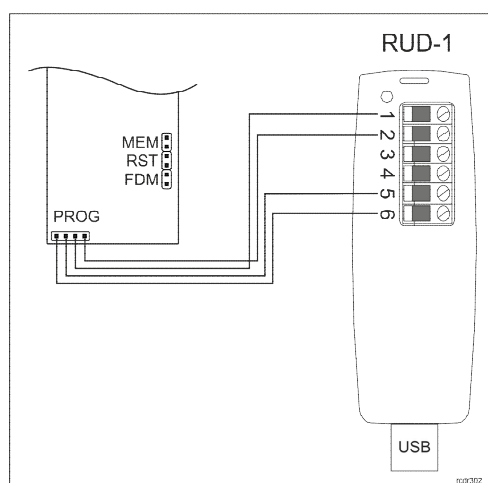

Fig. 7. Connection of lock to the RUD-1 interface

RogerVDM commands

The table below includes commands which are available in RogerVDM software for RWL-1 lock.

Command/button	Description
Tab: Configuration	
Load defaults	Restore default settings
Read from File…	Load backup configuration

Send to File...	Save backup configuration
Read from Device	Reads configuration from device
Send to Device	Upload configuration to device
Tab: Credentials	
Add	Adds new user
Edit	Edit existing user
Delete	Delete existing user
Delete all	Delete all users
Read from file	Read users list from file
Write to file	Save users list to file
Read from device	Read users list from device
Send to device	Save users list to device
Tab: Tools	
Erase RACS AIR...	Erase configuration of RACS AIR network

RWL-1 configuration parameters in RogerVDM

The table below includes RWL-1 configuration parameters which can be modified using RogerVDM software within low level configuration of device (tab: *Configuration*).

Parameter	Function
General settings	
Operating mode	The parameter enables selection of *Offline mode* or *Online mode*. Default value: Offline.
LED SYSTEM flash after card read	When option is set then card reading is confirmed with flash on LED SYSTEM. Default value: Yes.
Short sound after card read	When option is set then card reading is confirmed with short acoustic beep. Default value: Yes.
LED SYSTEM pulsing when card close to the reader	When option is set then orange LED SYSTEM pulses whenever card is detected near the reader. Default value: No.
Battery low level signalisation	When option is set then lock signals low battery level by orange LED SYSTEM indicator pulsing and series of 5 acoustic beeps after card reading. Default value: Yes.
Buzzer loudness level	The parameter defines loudness level of the built-in buzzer. When set to zero then buzzer is disabled. Default value: 100%
Offline mode	
Lock pulse [s]	The parameter defines lock opening time when access is granted. Default value: 2s.
ADD programming card	The card code of the ADD programming card.
DEL programming card	The card code of the DEL programming card.
Backup cards	When option is on, then each user programmed in the lock can have both *Main card* and *Backup card*. When the option is off then each user can have the *Main card* only. Default value: Yes.
Card codes protection	When option is set then it is not possible to read user card codes

	from the lock's memory. Once option is set it can be cleared by memory reset procedure only. The purpose of the option is to prevent unauthorized person to read card numbers from the lock's memory. Default value: No.
Don't disturb knob switch	When option is set (Yes), rotating the knob switch located on the internal escutcheon will disable access to the room by means of cards. Each time door is opened using handle, knob switch returns to off position. Default value: No (option off).
Wireless settings	
Device MAC address	Factory set RWL-1 lock identification number.
Hub MAC address	The identification number of the wireless hub (e.g. RWH-1) to which lock may connect.
Radio channels	Radio channels enabled to be used by lock. It is recommended to allow all channels on the lock and restrict radio channels on the hub. Default value: all channels available.
Network identifier	The identification number of the wireless network in which lock operates (PAN ID). Each network working on the same radio channel should be assigned with unique PAN ID. The range of available values is 0-16. Optionally the parameter can be set to AUTO. In such case the hub shall select PAN ID automatically. Default value: AUTO.
Encryption key	Encryption key used for wireless communication. In case of recommended empty field the key shall be defined and applied automatically when the network is defined. Default value: Auto.
Notification time [s]	The parameter defines how often the lock shall wake from standby mode and shall communicate with hub to confirm its availability in the network. The shorter is the notification time the more often communication is established and batteries are discharged quicker. Default value: 60s.
Registration time [s]	The parameter defines the time necessary to read card at the lock in order to add the lock to the network. If the time is exceeded then lock adding procedure must be started from the beginning. This parameter concerns network establishing procedure only. Default value: 600s.
Network restore attempt time [min.]	The parameter defines time between consecutive attempts to restore wireless communication with the hub when it is broken due to some reason. Default value: 30min.
Radio channel	The parameter indicates radio channel used by the lock. This parameter is read-only and appears only if the lock is successfully enrolled into the network.
Network ID	The parameter indicates network ID (PAN ID) in which lock operates. This parameter is read-only and appears only if the lock is successfully enrolled into the network.
Dynamic user list	The parameter enables dynamic user list. Users from the list can be granted access when the communication with lock is lost. Default value: Yes.
Dynamic user timeout [s]	The parameter specifies how long each card on dynamic user list is stored and consequently can be granted access. The time is counted from the latest use of the card. Default value: 3600.

Minimal access granting for dynamic user list	The parameter specifies the minimal number of access grantings for storing card on dynamic user list. Successive access grantings must be within the time specified by Dynamic user timeout. Default value: 1.
Comments	
DEV comment	Any text to be displayed in VISO management software in order to facilitate object identification. DEV object represents the whole device (wireless lock). Default value: RWL-1.
DEADBOLT comment	Any text to be displayed in VISO management software in order to facilitate object identification. DEADBOLT object represents input which monitors deadbolt position. Default value: Deadbolt.
KNOB SWITCH comment	Any text to be displayed in VISO management software in order to facilitate object identification. KNOB SWITCH object represents the input which monitors knob switch located at the internal escutcheon. Default value: Knob switch.
DOOR CONTACT comment	Any text to be displayed in VISO management software in order to facilitate object identification. DOOR CONTACT object represents input which monitors door contact (if installed). Default value: Door contact.
LED RED comment	Any text to be displayed in VISO management software in order to facilitate object identification. LED RED object represents output which controls LED RED. Default value: LED red.
LED GREEN comment	Any text to be displayed in VISO management software in order to facilitate object identification. LED GREEN object represents output which controls LED GREEN. Default value: LED green.
LED SYSTEM comment	Any text to be displayed in VISO management software in order to facilitate object identification. LED SYSTEM object represents output which controls orange LED SYSTEM. Default value: LED system.
LOCK comment	Any text to be displayed in VISO management software in order to facilitate object identification. LOCK object represents output which controls the lock's servomechanism. Default value: Lock.
BUZZER comment	Any text to be displayed in VISO management software in order to facilitate object identification. LOCK object represents output which controls the internal buzzer. Default value: Buzzer.
CDI comment	Any text to be displayed in VISO management software in order to facilitate object identification. CDI object represents lock's built-in card reader. Default value: CDI.
PWR comment	Any text to be displayed in VISO management software in order to facilitate object identification. PWR object represents lock's power supply i.e. 4 x AA batteries. Default value: PWR.
Input types	
DEADBOLT	The parameter defines DEADBOLT input type (NO or NC). Default value: NO.
KNOB SWITCH	The parameter defines KNOB SWITCH input type (NO or NC). Default value: NO.
DOOR CONTACT	The parameter defines DOOR CONTACT input type (NO or NC). Default value: NC.

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Input response time	
DEADBOLT	Parameter defines minimal duration of pulse [ms] which is required to trigger the input DEADBOLT. Default value: 50ms.
KNOB SWITCH	Parameter defines minimal duration of pulse [ms] which is required to trigger the input KNOB SWITCH. Default value: 50ms.
DOOR CONTACT	Parameter defines minimal duration of pulse [ms] which is required to trigger the input DOOR CONTACT. Default value: 50ms.
Reader settings	
Reader object type	The parameter defines type of data returned to controller by lock's card reader. Based on this parameter the controller recognizes card number. Default value: 40 bit number.
Advanced card read settings	
CSN length	The parameter defines number of bytes taken from the card serial number (CSN) and applied in the returned card number (RCN). Default value: 8.
Mifare Classic settings	
Sector type	When the parameter is enabled then returned card number (RCN) is composed of two parts: the programmable card number (PCN) and the card serial number (CSN). When the option is disabled then the returned card number (RCN) is composed of the card serial number (CSN) only. Default value: None.
Format	The format of the programmable card number (PCN) stored in the card's memory. Default value: BIN.
First byte position (FBP)	The parameter specifies the position of the most significant byte (MSB) of programmable card number (PCN). Default value: 0.
Last byte position (LBP)	The parameter specifies the position of the least significant byte (LSB) of programmable card number (PCN). Default value: 7.
Sector ID	The parameter specifies sector number in card's memory where programmable card number (PCN) is stored. Default value: 0.
Application ID	The parameter Application ID (AID) is located in card's MAD sector and it specifies the sector where programmable card number (PCN) is stored if the *Sector type* (see above) is configured as MAD. Default value: 5156 (Roger AID).
Block ID	The parameter specifies the block number where programmable card number (PCN) is stored in a particular sector of card's memory. For sectors 0-31, blocks 0-2 are available while for sectors 32-39, blocks 0-14 are available. Default value: 0.
Key type	The parameter specifies key type used for encryption of data in card's memory. Default value: A.
Key	The parameter specifies 6-byte key used to encrypt data in card's memory. Default value: FF...FF.

Users

Credentials tab in RogerVDM top menu enables management of the cards programmed in the lock's memory. As explained earlier, lock can operate with 50 users with *Main card* and *Backup card* or 100 users with *Main card* only. Each user can be granted with *Normal access* and/or *Office mode*

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authorisation. If programmed, the *Backup card* have the same authorisations as a *Main card* it accompanies. When user is granted with the *Normal access* authorisation it can open a door for the time defined by *Lock pulse* parameter. When user is granted with *Office mode* it can open the door for unlimited time and then, when required using the same card it can terminate *Office mode*. Both options can be granted to the same user.

When card has both authorisations, with the first card usage lock opens for *Lock pulse* time and waits for optional second card usage what is signalled by LED SYSTEM blinking. If the card is used second time lock switches into *Office mode*. If the lock is in the *Office mode* then with the single use of a card with *Office mode* authorisation lock terminates *Office mode*.

Note: When wireless communication is lost the lock switches automatically from *Online mode* to *Offline mode.* It returns to *Online mode* as soon as the radio link is returned.

Memory reset

Memory reset erases all programmed card and restores factory configuration settings. After reset the locks operates in *Offline* mode with 50 users list and reads card serial number (CSN). In order to perform memory reset procedure proceed with following steps:

- Remove jumper from the MEM pins (if applicable).
- Short RST pins for a moment preferably by placing and removing jumper.
- When acoustic signalization is started place jumper on MEM pins and the devices shall confirm memory reset with 2 acoustics beeps.
- Read any proximity card and it shall be new ADD programming card.
- Read any proximity card and it shall be new DEL programming card.
- Wait for 3 acoustic beeps. The lock shall restore default factory settings and shall switch to normal operation.

Note: If device will be used in *Online Mode*, additionally read the DEL card five times.

INSTALLATION

The lock is designed for installation in door with 38 to 55mm thickness and with 72mm handle spacing. Prior to installation make sure that door cylinder is long enough.

Lock installation

- Make holes in door using drilling template In case of non-rebated door it might be necessary to use metal plate. Both, drilling template and metal plate are included in the factory new set.
- Install mortise lock in such a way that marks which specify proper location of handle pin will be aligned (fig. 6). Lead K and L groups of wires through top hole to external escutcheon.
- Install handle pin (2 parts) in mortise lock (with carvings towards lock).
- Optionally install external door contact (e.g. reed relay) and connect it to F group of wires (fig. 3).
- Lead battery wires and knob switch detector (fig. 5 pos. I and M) through bottom hole and then connect the groups of wires.
- Install batteries (4xAA) in the pack and then insert into internal escutcheon.
- Mount escutcheons and verify if the internal handle controls the cylinder and metal key can open the door.

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Note: Ensure access to metal key to enable emergency opening of the door.
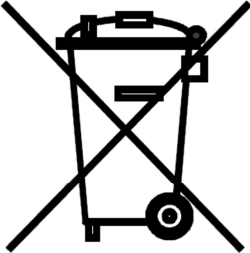
Specification

Parameter	Value
Power supply	4 x AA (LR06) alkaline batteries
Battery life	Approx. 2 years with 10 entries per day
Door thickness	38 – 55 mm
Handle spacing	72 mm
Wireless communication	According to IEEE 802.15.4/ 2.4GHz standard; transmission range up to 10m
Built-in card reader	ISO/IEC 14443A MIFARE®
Environmental class (acc. to EN 50131-1)	Class I, indoor general conditions, temperature: +5°C to +40°C, relative humidity: 10 to 95% (no condensation)
IP code	IP40
Dimensions	78 x 242mm
Weight	Approx. 2200g
Certificates	CE

Ordering information

Product	Description
RWH-1	RACS 5 AIR wireless hub
RWL-1-LI	Wireless door lock with escutcheons; left hand
RWL-1-RI	Wireless door lock with escutcheons; right hand
RWL-1-LO	Wireless door lock with escutcheons; left hand reverse bevel
RWL-1-RO	Wireless door lock with escutcheons; right hand reverse bevel

Product history

Product version	Released	Description
1.0	IX 2017	The first commercial version of the product
1.1	VII 2019	Dynamic user list added

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This symbol placed on a product or packaging indicates that the product should not be disposed of with other wastes as this may have a negative impact on the environment and health. The user is obliged to deliver equipment to the designated collection points of electric and electronic waste. For detailed information on recycling, contact your local authorities, waste disposal company or point of purchase. Separate collection and recycling of this type of waste contributes to the protection of the natural resources and is safe to health and the environment. Weight of the equipment is specified in the document.

Contact:
Roger sp. z o.o. sp.k.
82-400 Sztum
Gościszewo 59
Tel.: +48 55 272 0132
Fax: +48 55 272 0133
Tech. support: +48 55 267 0126
E-mail: biuro@roger.pl
Web: www.roger.pl

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