

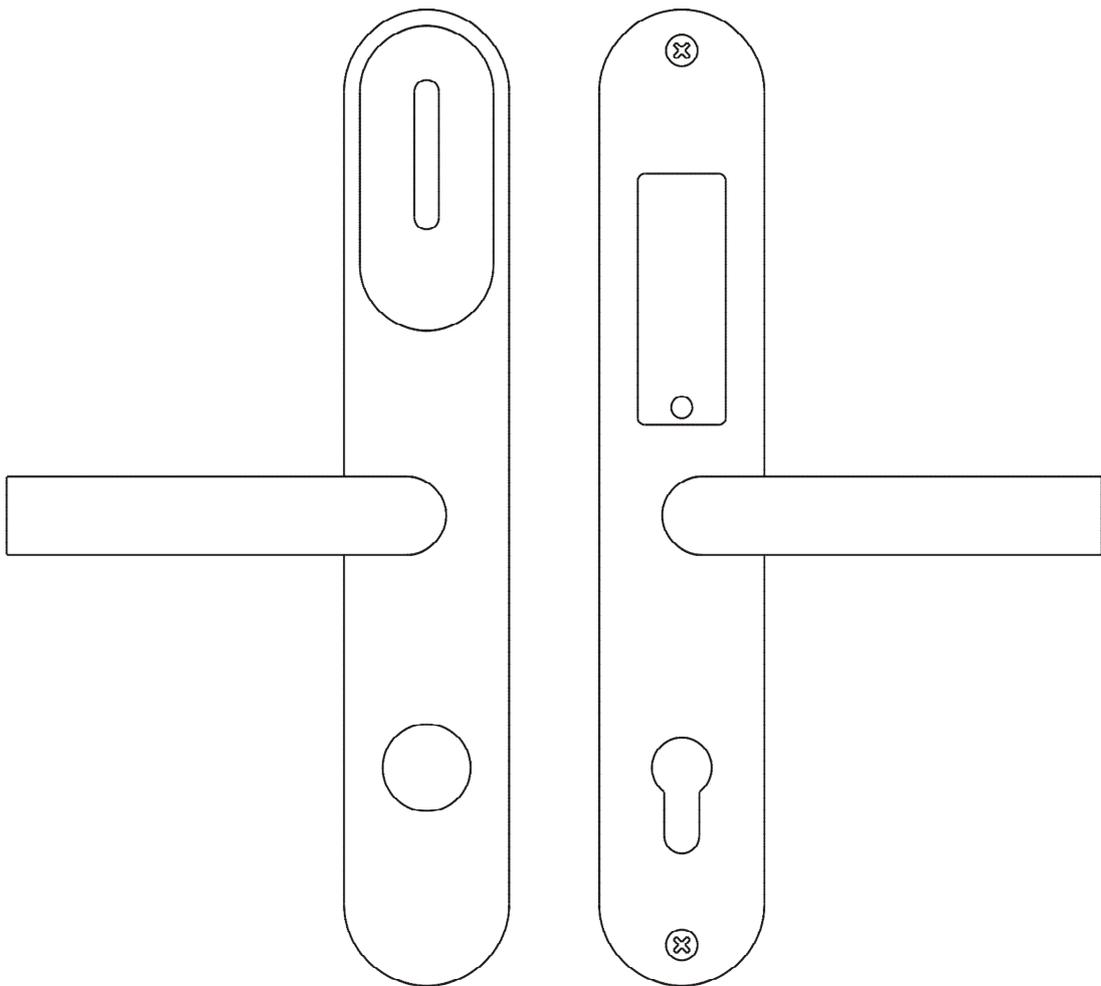
*Roger Access Control System*

# RWL-2-SL Standalone Door Lock

## Operating Manual

*Firmware version: 1.1*

*Document version: Rev. A*



## DESIGN AND APPLICATION

RWL-2-SL lock enables read-in access control based on MIFARE proximity cards - based on the card numbers stored in its memory, the lock decides autonomously if the access can be granted.

The RWL-2-SL lock consists of two escutcheons with handles. Card reader is installed in the external escutcheon while the battery pack is installed in the internal one. The internal handle is permanently coupled with latch and door can be always open without use of electronics. The external handle is separated from the latch and moves freely. When the access is granted the electronic module couples the external handle with latch to enable door opening. The RWL-2-SL lock can be optionally equipped with door cylinder and then be opened from the outside with traditional metal key. The lock is supplied by 4 AAA batteries. Low battery level can be signalled locally. The batteries enable one year operation for average 10 opening cycles per day.

Depending on door opening direction and handle location on the door leaf the adequate type of RWL-2-SL lock must be applied.

Version	Description
RWL-2-SL-L	Left hand door, left hand reverse door
RWL-2-SL-R	Right hand door, right hand reverse door

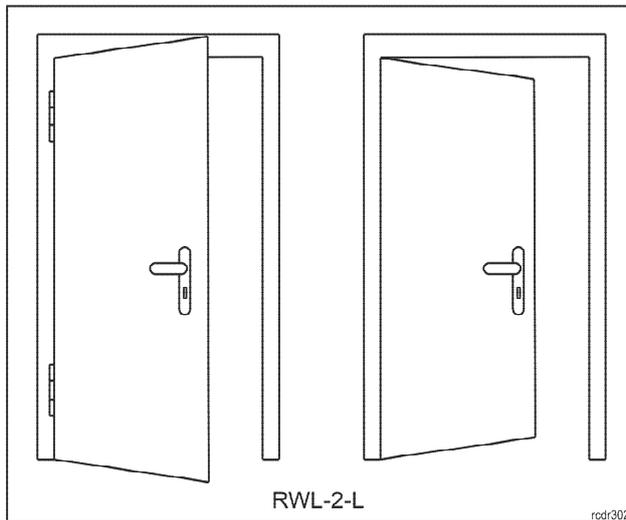


Fig 1. RWL-2-SL-L installation scenarios (view from the outside)

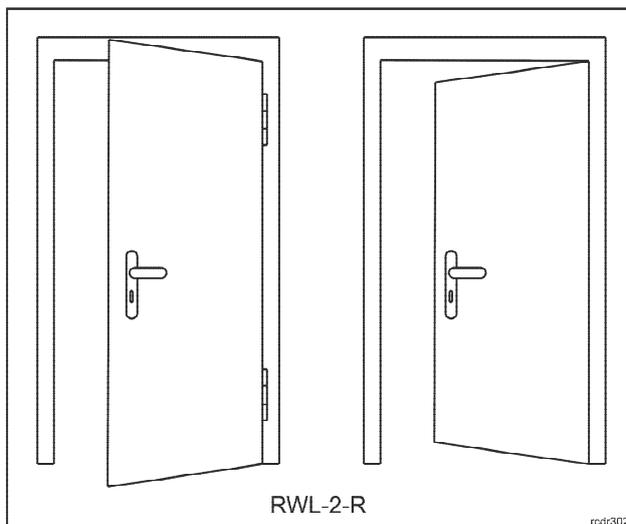


Fig. 2. RWL-2-SL-R installation scenarios (view from the outside)

## Mechanical construction

### External part of RWL-2-SL

The external part of RWL-2-SL 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 which can be used for emergency door opening with mechanical key. The electronic module which is located inside the escutcheon includes service contact (B) and programming contacts (C). Wires with plug (E) are used to connect the module with battery pack. Three isolated wires (F) are not used in RWL-2-SL.

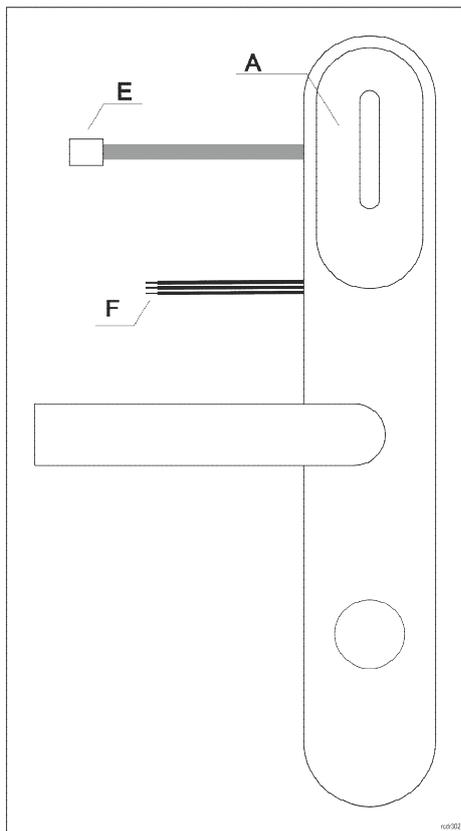


Fig. 3. RWL-2-SL entry escutcheon

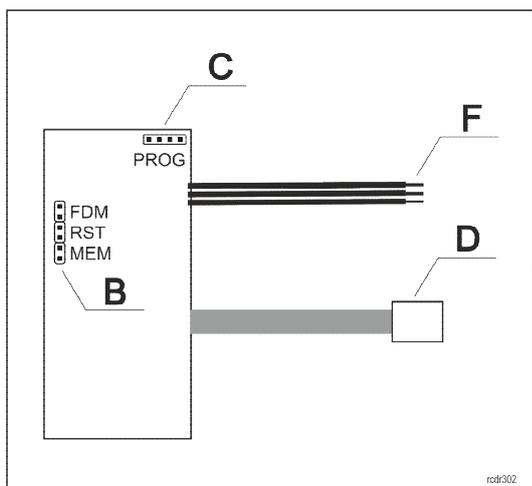


Fig. 4. Electronic module inside entry escutcheon

## Internal part of RWL-2-SL

The internal part of RWL-2-SL consists of escutcheon with handle and it is dedicated to installation at the exit from controlled room. The internal escutcheon includes battery pack. In order to replace batteries remove hex screw and battery cover. Wires with plug (G) are connected to socket (E) at external escutcheon in order to supply it.

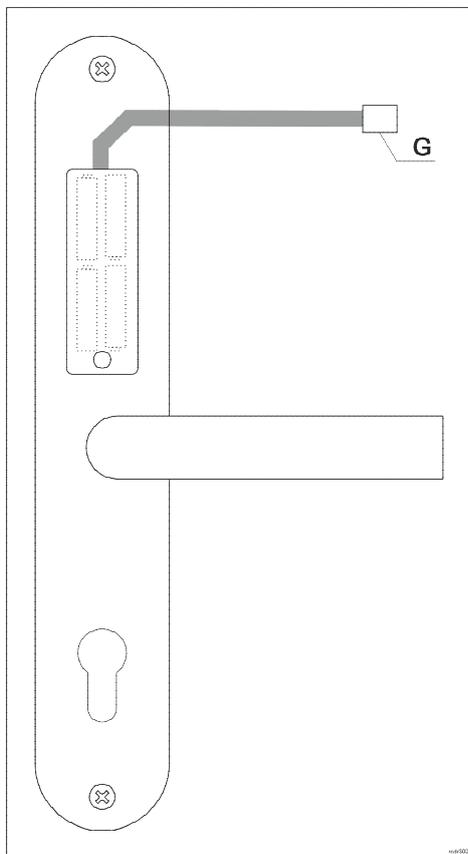


Fig. 5. RWL-2-SL exit escutcheon

## Door cylinder

RWL-2-SL lock enables installation of a lock cylinder. 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 16mm over door surface of inside and in range 21-24 from outside.

## FUNCTIONAL DESCRIPTION

The RWL-2-SL can be used as autonomous access control point, where the access is granted based on the data stored in the lock's memory. 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 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.

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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.

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## 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-2-SL 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).

## Standalone Access Control

The lock grants access for cards stored in its memory. 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.

## 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 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.

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

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## LED indicators

RWL-2-SL lock is equipped with 3 LED indicators which functions are described in the table below.

LED indicators		
Name	Colour	Description
LED RED	Red	Indicator is blinking when lock waits for the optional second card reading. If it occurs, lock switches to <i>Office mode</i> .
LED BLUE	Blue	Indicator: <ul style="list-style-type: none"> <li>• 2 sec pulse when access is granted and external handle is coupled</li> <li>• two 2 sec pulses when access is denied</li> </ul>

		<ul style="list-style-type: none"> <li>lights steadily when operates in <i>Office mode</i></li> </ul>
LED SYSTEM	Orange	<ul style="list-style-type: none"> <li>lights steadily in case of lock's configuration error</li> <li>pulses slowly in case of low battery level (batteries must be replaced)</li> </ul>

## Power supply

RWL-2-SL lock is supplied from 4 pcs of AAA batteries. In case of average 10 operations daily the alkaline batteries enable 1 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-2-SL lock can be programmed manually or from PC computer. All configuration settings can be setup and edited using RogerVDM program. Connection to PC requires RUD-1 interface.

Factory new lock is configured with 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.

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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.

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## Manual programming of the users

The lock can be configured manually without computer. Using manual programming it is possible to add and delete user cards. Factory new lock is configured 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.

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

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## 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.

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

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**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, 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.

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Note: It is recommended to backup RWL-2-SL settings, save them to file and protect against loss and access of unauthorized persons.

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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-2-SL) 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.

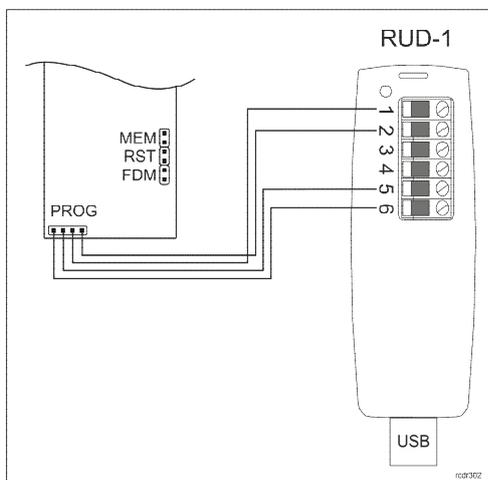


Fig. 6. Connection of lock to the RUD-1 interface

## RogerVDM commands

The table below includes commands which are available in RogerVDM software for RWL-2-SL lock.

Command/button	Description
<b>Tab: Configuration</b>	
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
<b>Tab: Credentials</b>	
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

## RWL-2-SL configuration parameters in RogerVDM

The table below includes RWL-2-SL configuration parameters which can be modified using RogerVDM software within low level configuration of device (tab: *Configuration*).

Parameter	Function
<b>General settings</b>	
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%
<b>Standalone mode</b>	
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 <i>Main card</i> and <i>Backup card</i> . When the option is off then each user can have the <i>Main card</i> 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.
<b>Advanced card read settings</b>	
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.
<b>Mifare Classic settings</b>	
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 <i>Sector type</i> (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* 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*.

## Memory reset

Memory reset erases all programmed card and restores factory configuration settings. After reset the locks operates 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 3 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.

## INSTALLATION

The lock is designed for installation in door with 38 to 75mm 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.
- Optionally install external door contact (e.g. reed relay) and deadbolt contact - connect them to brown and yellow wires.
- Lead battery wires through hole and then connect them to the external escutcheon.
- Check position of spindle support (fig. 7) and mount door handle spindle.
- Install batteries (4xAAA) 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.

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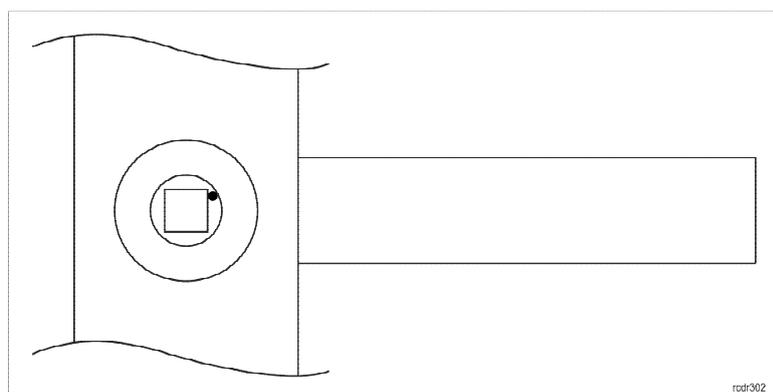


Fig. 7 Proper position of spindle support

### Specification

Parameter	Value
Power supply	4 x AAA (LR03) alkaline batteries
Battery life	Approx. 1 years with 10 entries per day
Door thickness	38 – 75 mm
Handle spacing	72 mm
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	47 x 280mm
Weight	Approx. 1100g
Certificates	CE (see: INSTALLATION section)

## Ordering information

Product	Description
RWL-2-SL-L	Standalone door lock with escutcheons; left hand, left hand reverse
RWL-2-SL-R	Standalone door lock with escutcheons; right hand, right hand reverse

## Product history

Product version	Released	Description
1.1	XII 2021	The first commercial version of the product



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.

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