

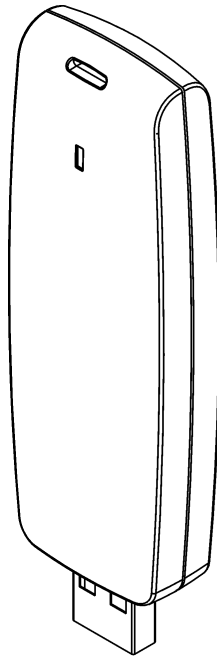
Roger Access Control System

Operating Manual RUD-3-DES v2.1

Firmware version: v2.1.2.50 or newer

Hardware version v2.1

Document version: Rev. E



rod/102

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1. DESCRIPTION AND SPECIFICATION

1.1. General information

RUD-3-DES is a miniature reader and writer for 13.56MHz ISO/IEC 14443A MIFARE® Classic, Plus and DESFire standard proximity cards and is supplied from serial USB port which is also used for communication with the device. The RUD-3-DES can be used as card enroll reader for access control system or any other application which requires card reader. Card can be enrolled straight from the **PR Master** (version 4.4.6 or newer is required), **VISO** or using dedicated **Roger MiniReader** application (version 1.2 or newer required). RUD-3-DES can also provide a transponder programmer functionality, but in such cases **RogerVDM** (v1.6.6.25795 or newer) should be used. Roger company offers SDK programming package that enables a programmer to develop customized applications for a specific requirements.

1.2. Features

- MIFARE®: Ultralight⁽¹⁾, Classic, Plus (S, X) and DESFire (EV1, EV2, EV3)
- Read number: CSN, SSN, MSN, DESFIRE File
- Write number: SSN, MSN, DESFire File
- Reading distance up to 6 cm for MIFARE® Classic, up to 2 cm for MIFARE® Plus and DESFire
- Communication interface: USB-HID
- LED indicator
- Configuration from PC (RogerVDM software)
- USB cable with magnetic stand
- For indoor use only
- SDK programming package
- CE

⁽¹⁾ Ultralight support: card serial number (CSN) read only

1.3. Proximity Cards

RUD-3-DES is factory set for chip serial number (CSN – Chip Serial Number) reading. For higher security level reading rules can be changed to handle programmable secure sector numbers (PCN – Programmable Card Number, see [AN024 MIFARE Cards](#) document available at roger.pl website) in such case a management tool **RogerVDM** must be used for configuration.

1.4. Card numbers

Reader Returned Card Number (RCN) is a combination of a Chip Serial Number (CSN) and Programmable Card Number (PCN) created on the basis of following formula, CSN number of bytes and PCN number length that results from flexible defined PCN first byte position (MSB) and PCN last byte position (LSB) can be adjusted according user requirements.

RCN	
CSN	PCN

Example:

Reader configuration:
 CSN number of bytes: 4
 PCN MSB: 8
 PCN LSB: 11

Chip Serial Number CSN (HEX) – 7 bytes						
C1	C2	C3	C4	C5	C6	C7

Programmed Card Number PCN (HEX) – 16 bytes (maximum length of card data block)															
AA	BB	CC	DD	EE	FF	00	11	22	33	44	55	66	77	88	99

Returned Card Number RCN (HEX) – 8 bytes							
CSN				PCN			
C4	C5	C6	C7	22	33	44	55

Note: More information about card reading and programming are described in the [AN024 MIFARE cards](#) application note.

2. WORKING WITH PC PROGRAMS

2.1. Roger MiniReader

The **Roger MiniReader** (v1.1.12 or newer) displays the list of available USB readers connected to the PC. In order to read a single card, you need to select the Read single card command, and then put a card close to the reader. When the code is read, it automatically appears in the Card codes window. If you use the Read multiple cards command, program will read cards in a loop and insert them to the Card codes window. In order to interrupt the reading process, you need to use the Stop reading command. The cards read can automatically be copied to the Clipboard (Tools > Options > Copy card code to clipboard). By using it, the card codes can be moved to other applications or saved to a text file (Tools > Options > Append card code to file).

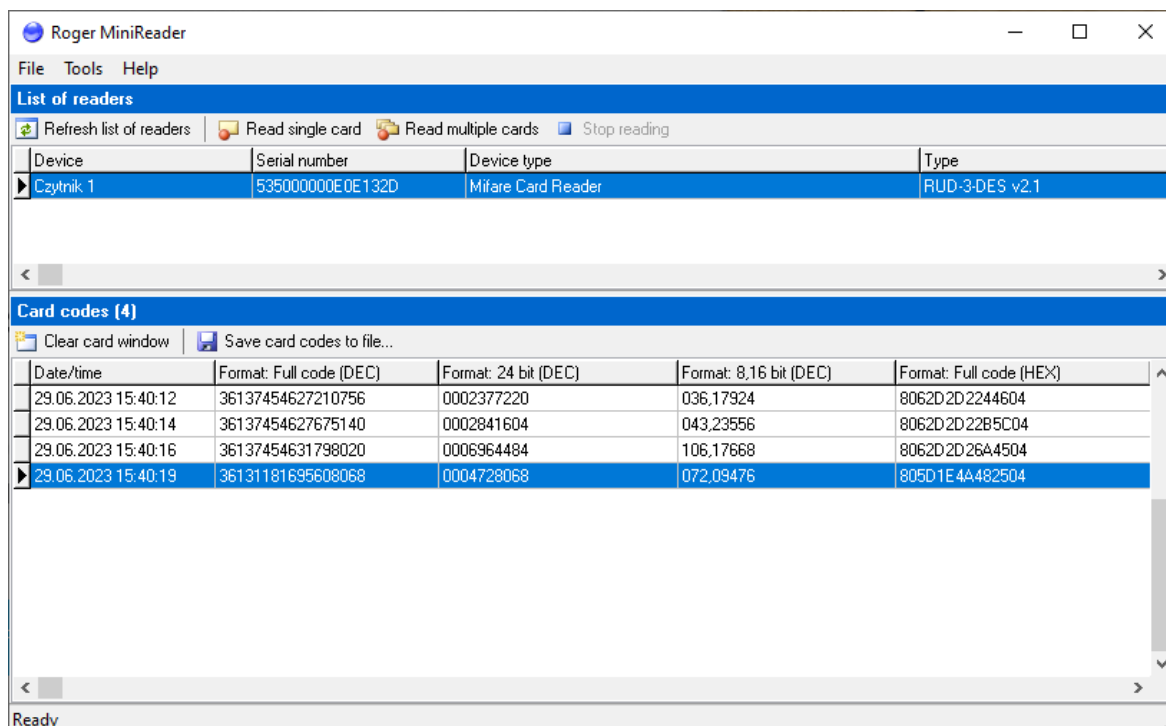


Fig. 1 Roger MiniReader main window.

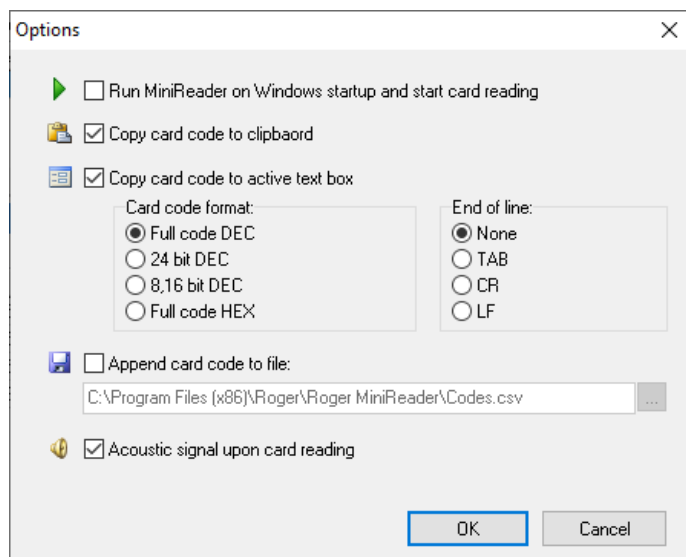


Fig. 2 Configuration window.

2.2. RACS 4 and RACS 5 systems support

RUD-3-DES is well suited for RACS systems and can be used as an administrator reader for entering new card numbers into access control applications. From the list of available readers for **PR Master** or **VISO** control program choose RUD-3-DES and follow application reading steps.

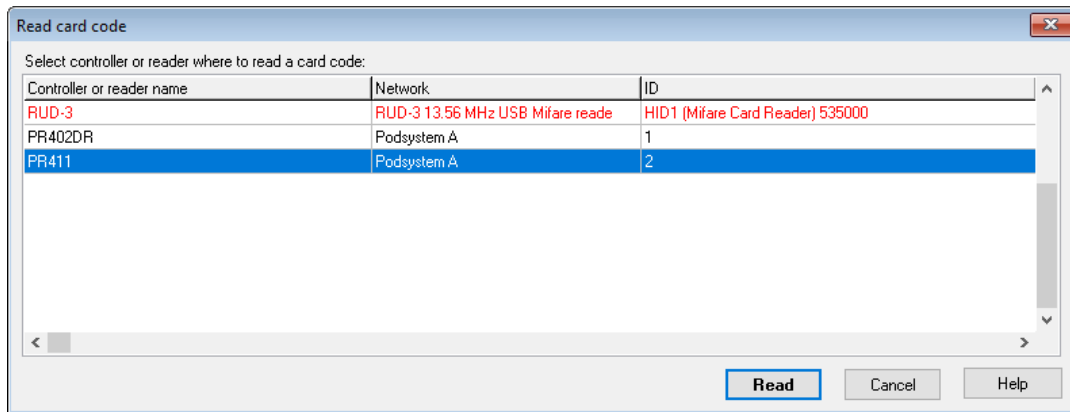


Fig. 3 PR Master reader selection.

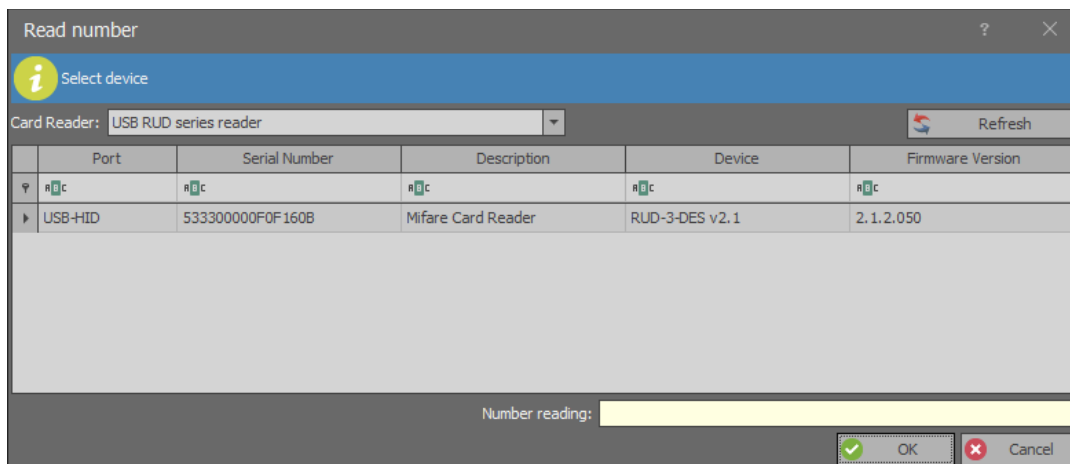


Fig. 4 VISO reader selection.

2.3. Third-party software

Support for RUD-3-DES reader can also be implemented in other programs, in such case, the logic of reader handling depends completely on the program's author. For integration purposes a RUD-3-DES software SDK has been released. SDK package contains DLL files dedicated for USB HID class RUD-3-DES device, .NET software example and programmer documentation.

3. DEVICE CONFIGURATION

Card number read and write rules are configurable with **RogerVDM** (Windows) management tool that can be downloaded from Roger website www.roger.pl.

3.1. RogerVDM configuration tool

For device configuration connect it to PC USB port and run **RogerVDM** software. From the top menu list select Device > New than choose Your reader version and set USB communication channel for USB-HID class device, finally press Connect button.

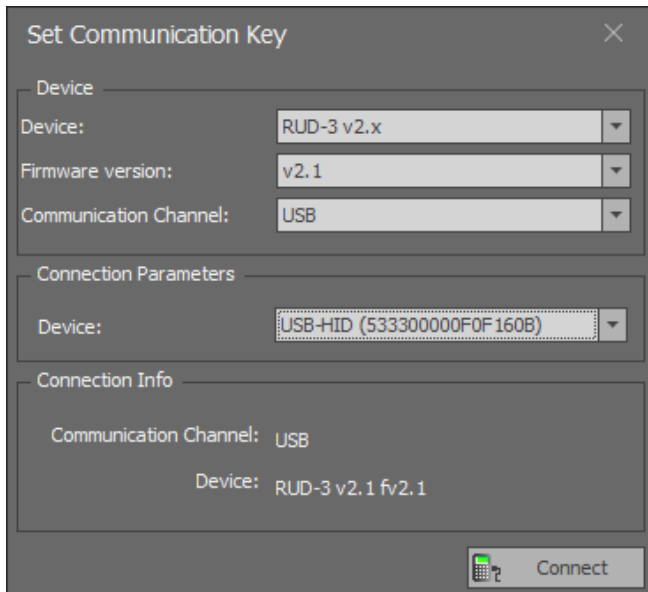


Fig. 5 Device select window.

RUD-3-DES will be initialized for communication, device configuration window will appear automatically:

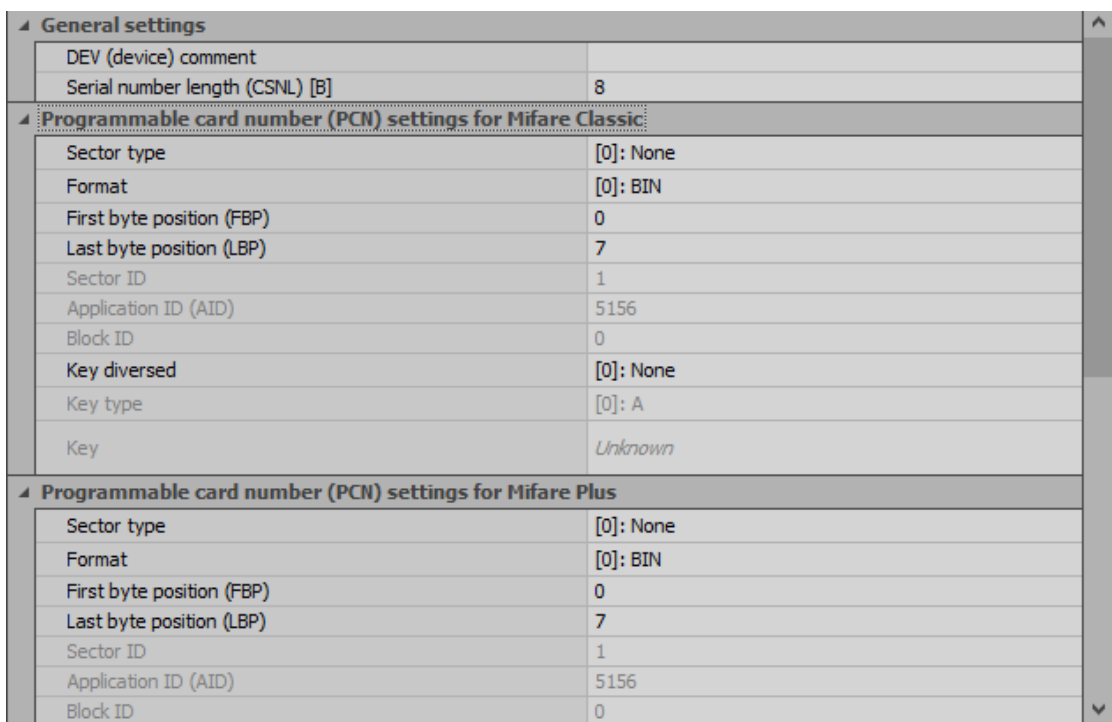


Fig.6 Device configuration window.

Above window contains list of device configuration parameters which are explained in RogerVDM application.

Note: reader parameter configuration applies to both write and read card number operation. Configuration modifications must be confirmed with *Send to device* button to take effect.

3.2. Card number write and read operations

Card programming window is dedicated for PCN number programming operation according rules setup from program Configuration window. Required PCN must be entered in the appropriate data format DEC or HEX in the Card Code window box and confirmed with a proper “Program” button, for Classic, Plus or DESFire type.

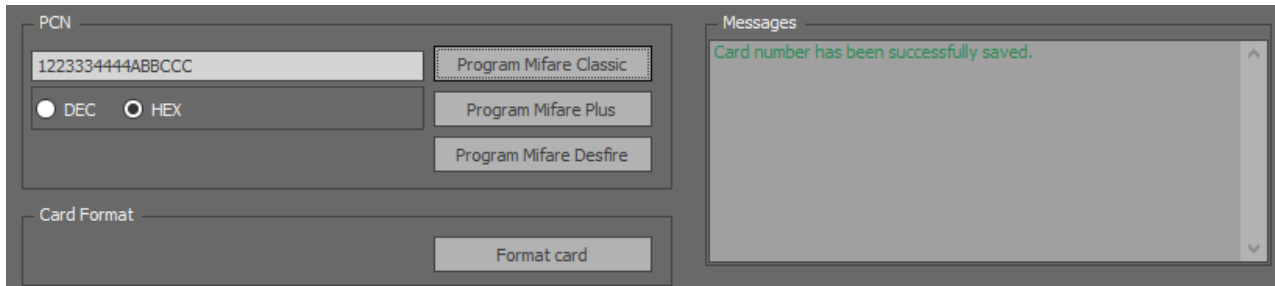


Fig. 7 Card programming window.

Write operation result will be confirmed with adequate message in the *Messages* box. RCN number can be read in Card Reader window.

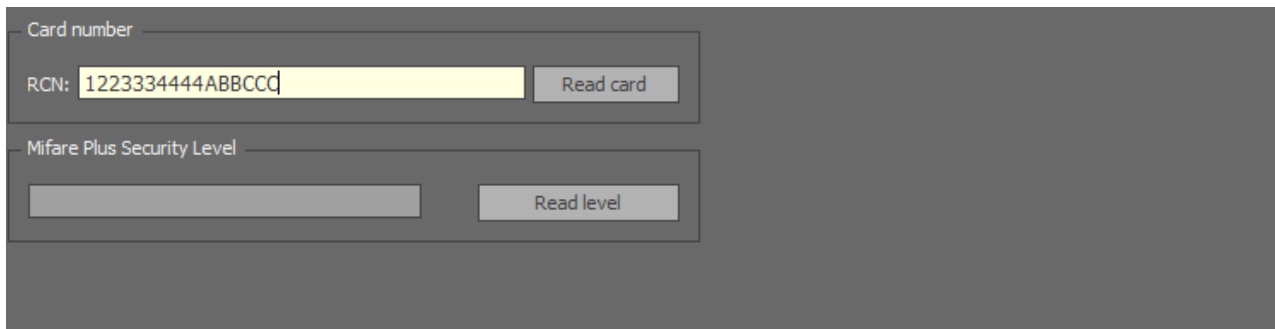


Fig. 8 Card reader window.

4. DEVICE INSTALLATION

RUD-3-DES is a USB-HID (Human Interface Device Class) device and it's supported by 32bit and 64bit versions of Windows 10, Windows 8, Windows 7. RUD-3-DES doesn't require dedicated drivers, it's handled by OS generic USB HID driver. You may connect the device directly to the PC USB port, driver installation will start automatically.

Note: You should not disconnect a reader while the software working with it is being run. Violating this rule usually causes that the application controlling the reader may hang up and you will have to terminate it by using Windows Task Manager.

Programs provided by Roger (**PR Master**, **VISO**, **Roger MiniReader** and **RogerVDM**) automatically detect that the RUD-3-DES reader and present it on the list of available devices.

The RUD-3-DES reader can be connected directly to the PCs USB socket or using a cable with magnetic stand provided together with the reader. Using this cable is convenient because when you use a magnetic stand, the reader can be located at computer's case or any other metallic part of a desk or a table. Optionally, the RUD-3-DES can be connected to computer by other USB cable of a length not exceeding 5 meters. However any modifications of original USB cables are prohibited. The only acceptable way of prolonging USB cables is by using original factory-made extension cables.

5. FIRMWARE UPDATE

Firmware update can be performed with Roger firmware update tool **RogerISP** v4.3.4. Before beginning the firmware update process You need to download adequate for Your device firmware file from manufacturer’s website www.roger.pl and save it to known disk location. Close all programs associated with updated reader and run **RogerISP** tool. Choose Your reader from the list and put appropriate location of the firmware *.bin file, then You can push the “Program” button to start update, follow the instructions to end this process correctly.

Warning: It is strongly recommended to act in accordance with program instructions, waiver of required actions connected with violations of the update rules can damage Your device. Note that firmware update process is done entirely at your own risk.

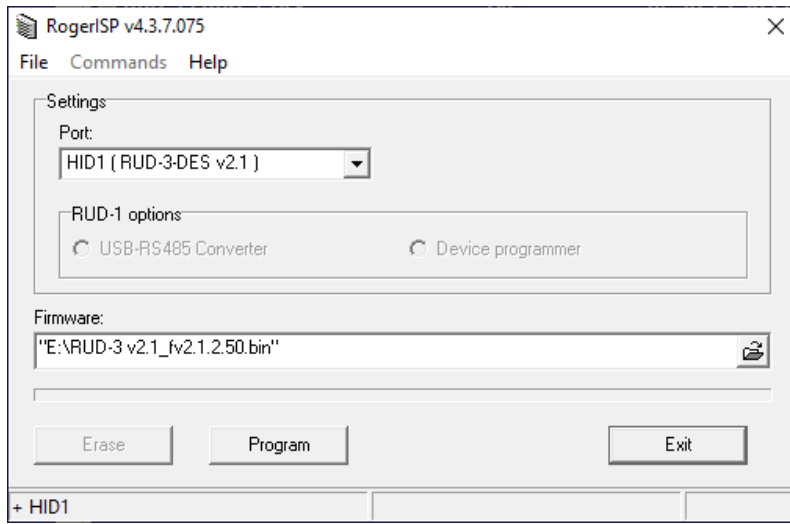


Fig. 9 Firmware update with RogerISP.

6. TECHNICAL DATA

Table 3 Technical Data	
Power supply	5 VDC directly from the USB port
Average current consumption	80 mA
Cards	13.56MHz ISO/IEC 14443A MIFARE® Classic, Plus and DESFire
Reading distance	Up to 6 cm for MIFARE® Classic cards Up to 3 cm for MIFARE® Plus and DESFire cards (while in an optimal relative location to the reader)
Reading time	~ 200 msec
Working temperature range	+5...+45° C
Relative humidity	0 – 95% (non-condensing)
Dimensions	88 x 30.5 x 14.5 mm
Weight	~ 20g

7. ORDERING INFORMATION

Table 4 Ordering information	
RUD-3-DES v2	The interface together with a cable and a magnetic stand

8. PRODUCT HISTORY

Product version	Firmware	Date	Description
RUD-3 v1	Fv 1.0.0.1	29/07/2011	First commercial product version.
RUD-3 v2	Fv 2.0.4.23	12/10/2015	Second commercial product version
RUD-3-DES	Fv 2.1.2.50	12/05/2021	The version replaces RUD-3 device



Such symbol on the product or its package means that the product should not be thrown away together with other wastes, because it may cause negative effects to an environment and humans health. User is responsible for delivering used equipment to the allotted location for gathering used electrical and electronic devices. Detailed information on recycling can be found at relevant local authorities, in a disposing company or in a place, where the product was bought. Separate gathering and recycling of such wastes contributes to natural resources protection and is safe for humans health and for natural environment. The equipment's weight is shown in the guide.

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