

*Roger Access Control System*

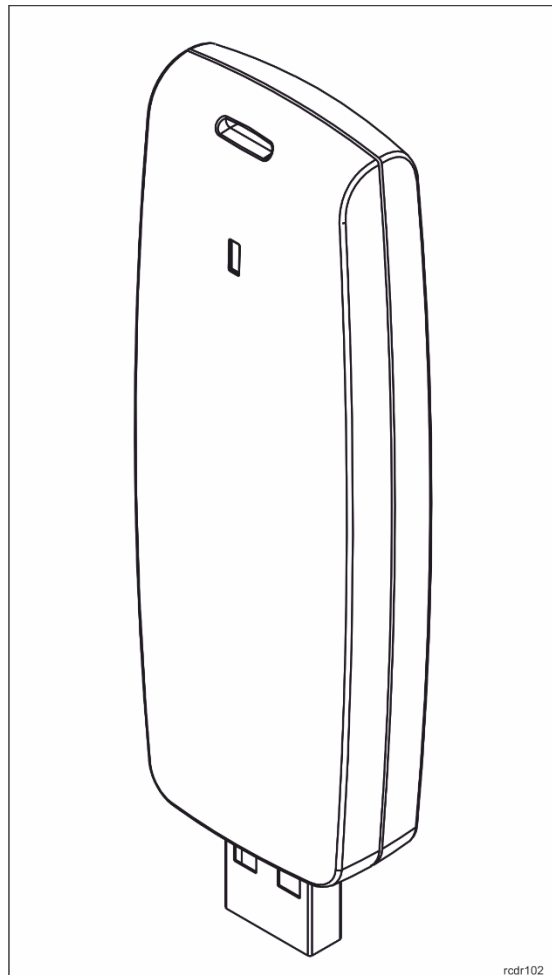
## RUD-3-DES

### Operating manual

*Firmware version: v2.3*

*Hardware version: v2.x*

*Document version: Rev. B*



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## PRODUCT DESIGNATION

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 RACS 4 (version 4.4.6 or newer is required) and 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 2.1**. The reader supports keyboard emulation mode - the read data can be entered into any application or text field. Roger company offers SDK programming package that enables a programmer to develop customized applications for a specific requirements.

## BUILD

RUD-3-DES is a miniature reader and writer for 13.56MHz ISO/IEC 14443A MIFARE® Classic, Plus (S, X) and DESFire (EV1, EV2, EV3). standard proximity cards and is supplied from serial USB port which is also used for communication with the device. A USB connection cable is included.

## 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
- Keyboard Emulation Mode
- Administrator reader for RACS 4 system
- Administrator reader for RACS 5 system
- Configuration from PC (RogerVDM software)
- Configuration from PC (RogerVDM software)
- Led indicator
- For indoor use only
- SDK programming package
- Dimension: 88,0x30,5x14,5 mm
- Weight: ~20g
- CE

## 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) in such case a management tool **RogerVDM** must be used for configuration.

## 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: 10

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):

RCN						
CSN				PCN		
C4	C5	C6	C7	22	33	44

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

### USING THE READER WITH ROGER MINIREADER PROGRAM

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*).

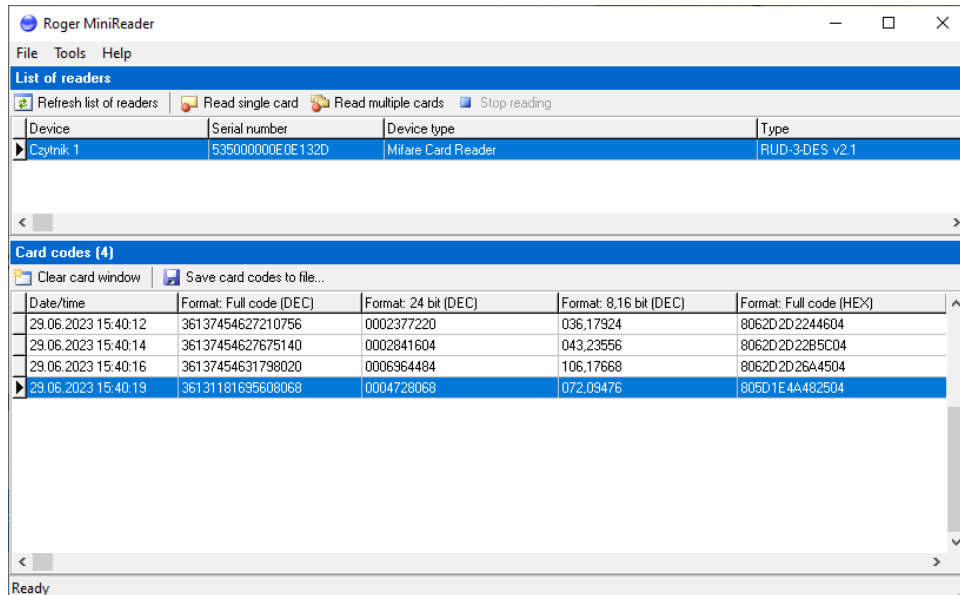


Fig. 1 Roger MiniReader main window

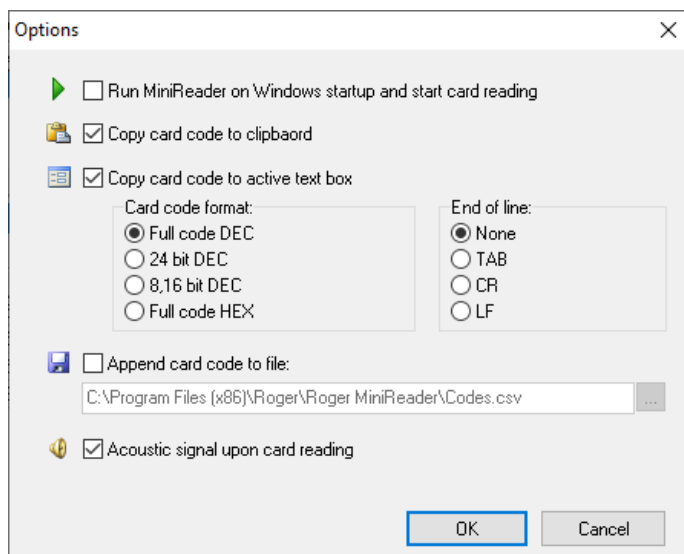


Fig. 2 Configuration window

## RACS 4 AND RACS 5 SYSTEM 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.

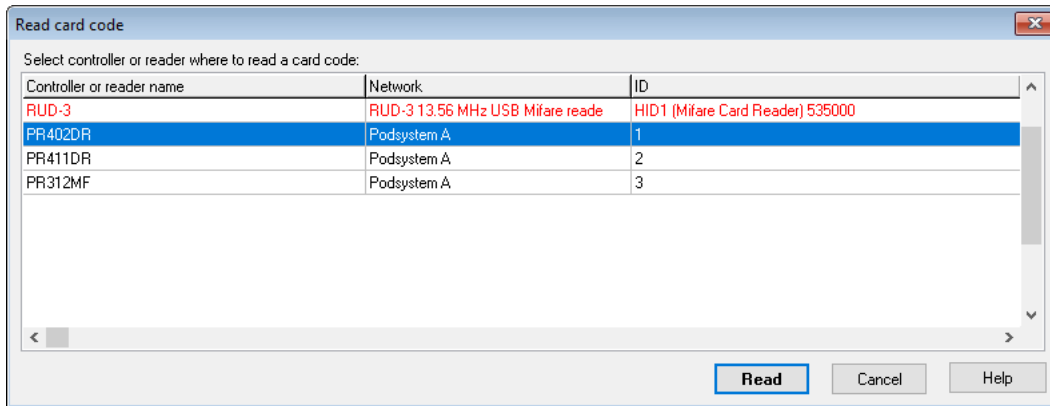


Fig. 3 PR Master reader section

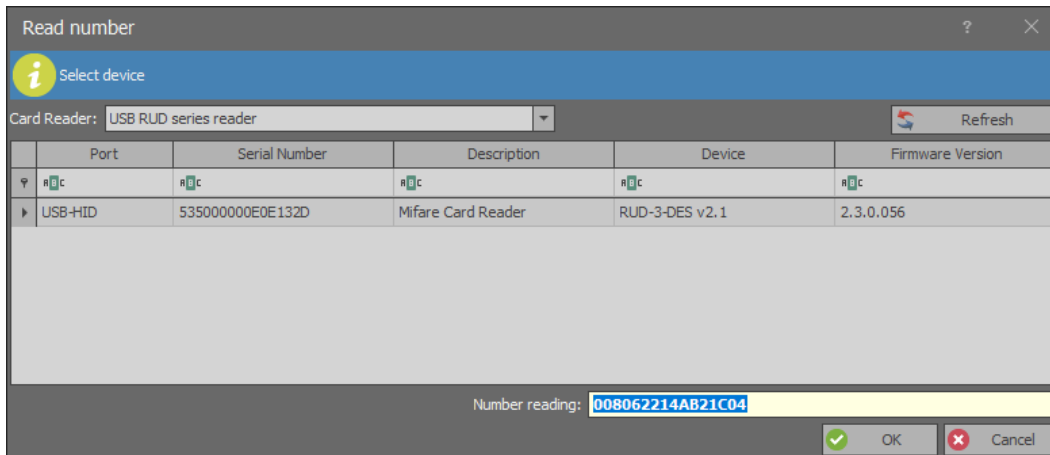


Fig. 4 VISO reader section

## 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.

The device also has a keyboard emulation function. This option allows to enter data read from RFID cards in the application and works in the same way as a computer keyboard. By default this feature is disabled, to use it changes by means of RogerVDM software have to be applied.

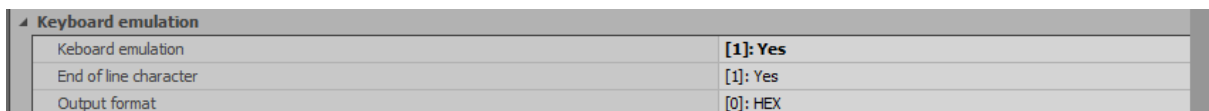


Fig. 5 Keyboard emulation mode settings section

## 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](http://www.roger.pl).

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*

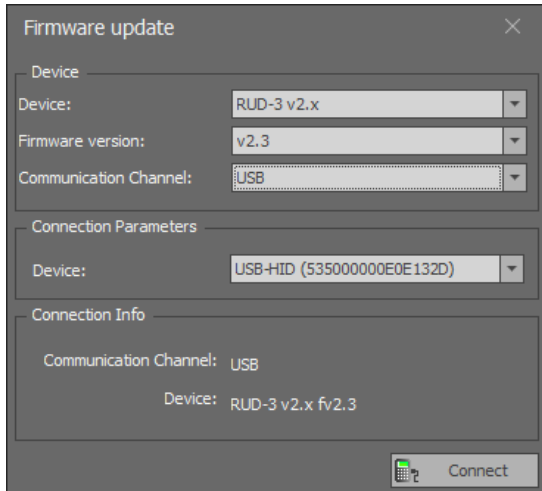


Fig. 6 Device select window

The program will establish a connection with the reader and automatically switch to the Configuration window. The window contains a number of parameters defining both the rules for reading and writing card codes, which are explained in Application Note [AN024 MIFARE Cards](#).

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.

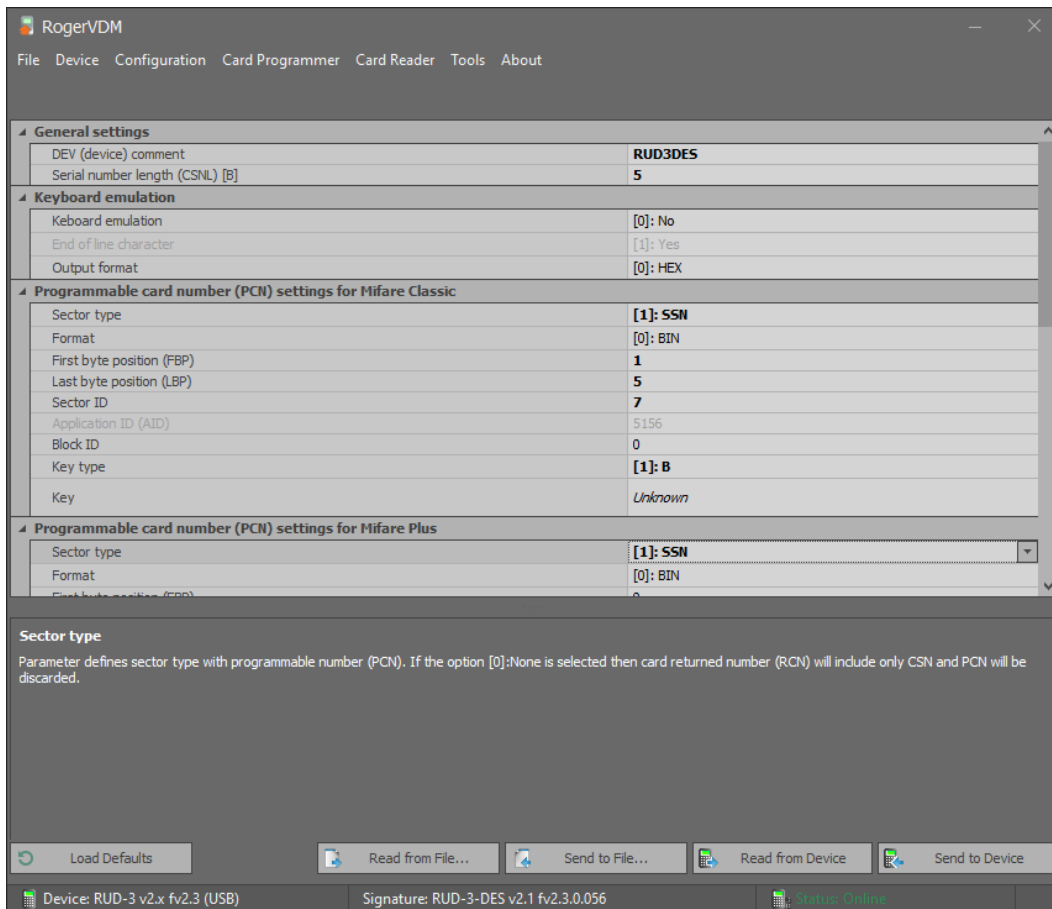


Fig. 7 Device configuration window

## 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 Mifare...* button, for Classic, Plus or DESFire type.

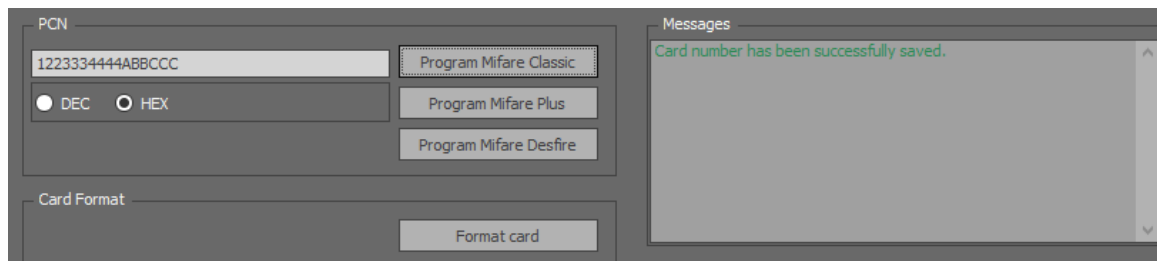


Fig. 8 Card programming window

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

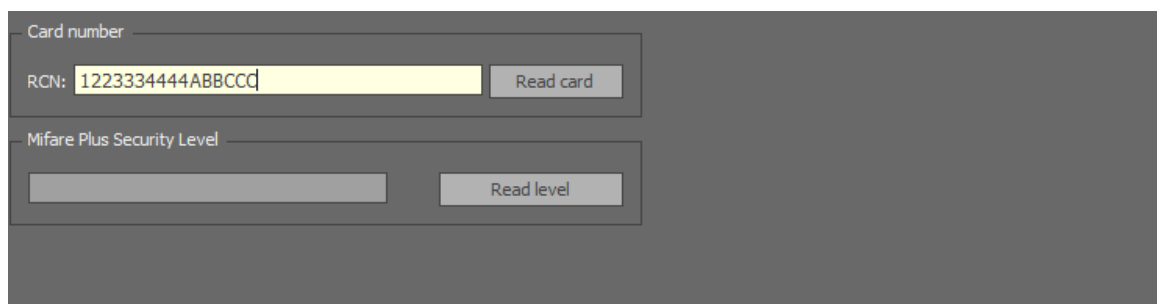


Fig. 9 Card reader window

## 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.

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**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.

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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.

## FIRMWARE UPDATE

The firmware of the reader can be updated by means of the RogerVDM v2.08.35278 or newer software. The file with the current firmware is available at [www.roger.pl](http://www.roger.pl).

Before changing the reader firmware, make sure that the firmware downloaded from the manufacturer's website is appropriate for the updated device and that the programs which use the reader are disabled. After starting the RogerVDM program close the device selection window and in Tools menu select the proper device (RUD-3-DES) from the list. Then indicate the access path to

the location where the software file (\*.bin type) is saved. After clicking the Update button the software update begins and must be carried out in accordance with the program instructions displayed during the process.

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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.

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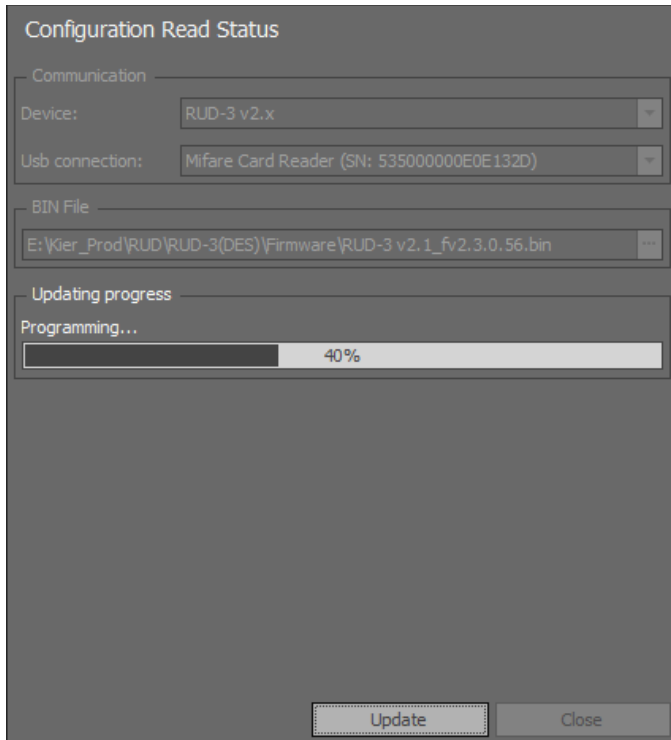


Fig. 10 Firmware update with RogerVDM

## TECHNICAL DATA


Technical data	
Power supply	5VDC directly from the USB port
Average current consumption	80mA
Cards	13.56MHz ISO/IEC 14443A MIFARE® Classic, Plus and DESFire
Reading distance	Up to 6 cm for the MIFARE® Classic ISO reference card in optimal orientation.
	Up to 3 cm for MIFARE® Plus (S, X) and DESFire ISO reference card in optimal orientation.
	Note: The parameters given above apply to the situation when the standard proximity card is in the optimal position relative to the reader.
Reading time	~ 200msec
Environment	Indoor general conditions, temperature: +5°C to +40°C, relative humidity: 10 to 975% (no condensation)
IP Rating	IP30
Dimensions	88,0x30,5x14,5 mm
Weight	~ 20g
Compatibility	CE; RoHS

## ORDERING INFORMATION

Product version	Description
RUD-3-DES v2	The interface together with a cable and a magnetic stand

## PRODUCT HISTORY

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
RUD-3-DES	Fv 2.3.0.56	26/01/2024	Second commercial product version

	<p>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.</p>
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