Roger Access Control System
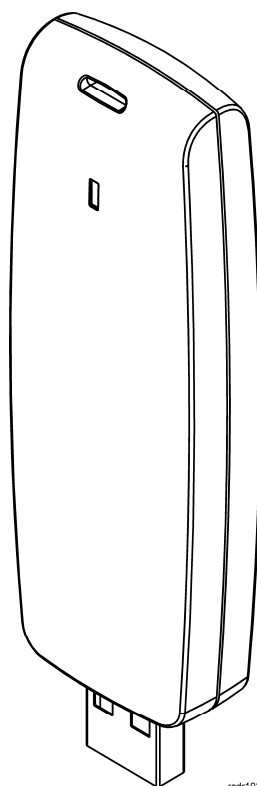
Installation guide for RUD-1 Communication Interface

Firmware version: n.a.

Document version: Rev. C

$$C\epsilon$$

rcdr102

1. DESCRIPTION AND SPECIFICATION

RUD-1 is an optional, universal, portable, hardware communication interface (USB/RS485) dedicated to Roger access control devices. It is designed for installers, who use laptops to configure and manage controllers and readers made by Roger. It has small dimensions and can be easily connected to USB port. RUD-1 includes built-in 12VDC/120mA converter, which can be used to supply power to programmed device (controller or reader). RUD-1 also does not require power supply unit as it draws power from USB port.

RUD-1 can be used in following scenarios:

- Communication with RACS4 Access Control System
- Configuration and management of PRxx1 series and PRxx2 series controllers by means of PR Master software
- Configuration and management of readers by means of RARC software (inter alia PRTxxEM series and PRTxxMF series readers)
- Firmware update by means of Roger ISP software (PRxx1 series and PRxx2 series controllers)
- Firmware update by means of Roger ISP software (PRTxxEM series and PRTxxMF series readers)
- Third party applications as USB/RS485 or USB/RS232 converter

RUD-1 is compatible with following version of software:

- PR Master v4.3 and later
- RARC v1.3 and later
- RogerISP v4.0 and later

It is recommended to install drivers prior to RUD-1 connection to computer. Drivers are available at www.roger.pl. The RUD-1 supports Windows 98, Me, XP, VISTA, 7, Windows Server 2003, Linux (kernel 2.4.20 or later), Apple Mac OS 8, 9, Mac OS X. Once RUD-1 is connected to USB port new serial port (COM) appears in the system. Roger applications (PR Master, RARC, Roger IPS) automatically recognize RUD-1 and show its name on the list of available serial ports in brackets e.g. COM4 (RUD-1). All electrical connections should be carried out while interface is unplugged from the USB port. Optionally, the USB A-A cable (delivered with a package) can be used to extend distance between PC and RUD-1 interface. The maximal distance for USB transmission is 5 meters.

Table 1. RUD-1 specification	
Power supply	5 VDC from USB Port
Average current consumption	30 mA (no external load on 12V DC output)
Max. output current on 12V output	120mA
Operating temp. range	0...+55º C.
Communication speed	0-115.2 kbit/s
Flow control on RS485	Automatic
Max. communication distance for USB	5 meters
Max. communication distance for RS485	1200 meters
Relative humidity	10 to 95% (without condensation)
Dimensions	88 x 30.5 x 14.5 mm
Weight	~ 30g

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2. INSTALLATION

2.1 RUD-1 terminals and LED

Table 2. RUD-1 terminals	
Terminal number	Function
1	+12V (output)
2	GND
3	RS485 A
4	RS485 B
5	TXD or RTS
6	RXD or CTS

12VDC voltage output
RUD-1 provides 12V DC output in order to supply programmed device (controller, reader). The maximum current for the output equals to 120mA.

Note: User must ensure that the maximum current drawn by RUD-1 is not exceeded, otherwise USB port might be damaged. Always, check documentation for current consumption required for the device supplied from the RUD-1.

RS485 lines
These lines fully support RS485 electrical standard. The data flow control is provided by the internal logic of the RUD-1 using following formula: the RS485 circuit automatically switches to transmit mode when data comes from the PC and returns to receive mode when transmission from PC completes. RUD-1 can be used in Roger system as well as in third party applications as USB/RS485 converter.

Devices, which communicate by means of RS485 standard should have common supply minus (GND). If particular device is supplied from RUD-1 then such condition is satisfied. Otherwise connect GND terminal of RUD-1 interface with GND terminal of controller/reader.

TXD and RXD lines
These lines are used for serial communication between programmed reader and PC in RS232 standard. RUD-1 can be used in third party applications as USB/RS232 converter but the usefulness of device in particular application must be tested in practice.

RTS and CTS lines
These lines can be optionally used for operation of RUD-1 with RACS4 system and are intended to improve effectiveness of the data flow between PR Master software on the PC and Roger Access Control System. These lines can improve the transmission if the system consists of at least 15-20 controllers and CPR-32SE network controller.

LED indicator
RUD-1 is equipped with single bicolour LED indicator which may light in green or red. When blinking green it indicates data transmission from the PC, when blinking red it indicates data receiving from the connected system or device.

2.2 Connection of RUD-1 to RACS4 Access Control System

RUD-1 Communication Interface can be used for communication with RACS4 Access Control System in the same way as UT-2USB Communication Interface. In such situation, built-in voltage converter 12VDC/120mA is not used and controllers are supplied from other sources. Connect RUD-1 to RS485 bus in accordance with fig. 1.
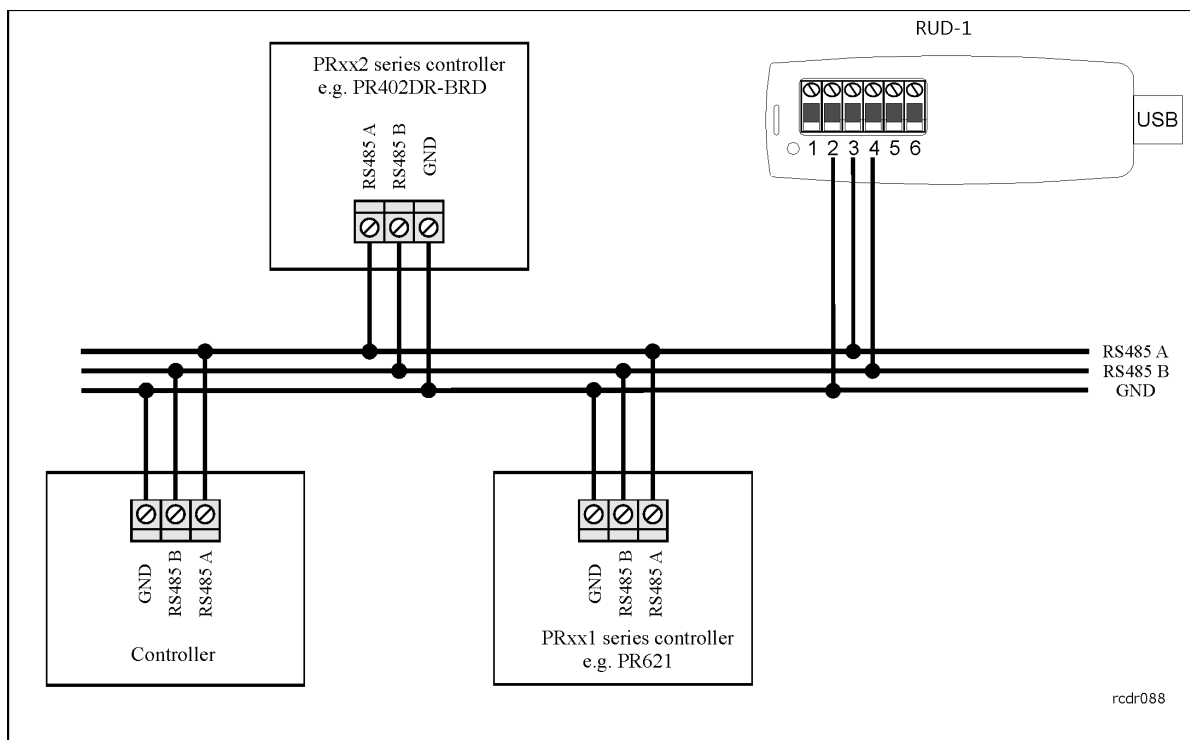
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Fig. 1 Connection diagram of RUD-1 and RACS4 Access Control System

2.3 Connection of RUD-1 to controller (configuration)

RUD-1 Communication Interface can be used for configuration of PRxx1 series and PRxx2 series controllers by means of computer with PR Master software. Built-in converter with 12VDC/120mA output can be used to supply power to particular controller during configuration. If the controller is supplied from other source, then DO NOT connect terminal 1 of RUD-1 to the controller.

Table 3. Connection of RUD-1 to controller (configuration)		
PR402DR, PR402DR-BRD, PR411DR, PR411DR-BRD controllers		
RUD-1 terminal	RUD-1 terminal function	Controller terminal/wire
1	+12V (output)	BAT+
2	GND	GND (any)
3	RS485 A	A
4	RS485 B	B
5	not used	not used
6	not used	not used
PR602LCD, PR311SE, PR611 controllers		
1	+12V (output)	+12V (red)
2	GND	GND (black)
3	RS485 A	RS485 A (brown)
4	RS485 B	RS485 B (white-green)
5	not used	not used
6	not used	not used

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PR102DR, PR302, PR621 controllers		
1	+12V (output)	+12V
2	GND	GND
3	RS485 A	RS485 A
4	RS485 B	RS485 B
5	not used	not used
6	not used	not used

PR402-BRD controller

Note: In case of PR402-BRD controller supplied with 12VDC it is necessary to place jumper on B.supp contacts on controller board.

1	+12V (output)	+12V
2	GND	GND
3	RS485 A	RS485 A
4	RS485 B	RS485 B
5	not used	not used
6	not used	not used

2.4 Connection of RUD-1 to reader (configuration)

RUD-1 Communication Interface can be used for configuration of PRTxxEM series and PRTxxMF series readers by means of computer with RARC software. Built-in voltage converter with 12VDC/120mA output can be used to supply power to particular reader during configuration. Make all connections in accordance with fig. 2
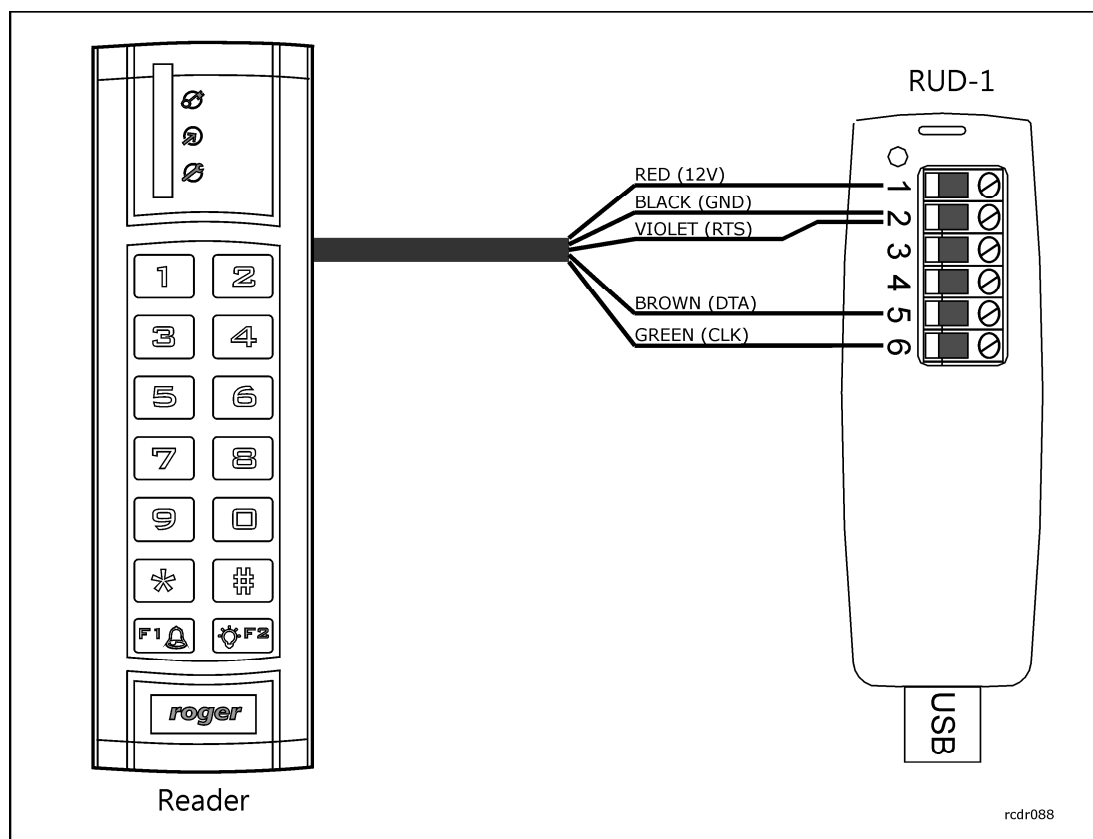

Fig. 2 Connection diagram of RUD-1 and PRTxxEM series or PRTxxMF series reader

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2.5 Connection of RUD-1 to controller (firmware update)

RUD-1 Communication Interface can be used for firmware update in PRxx1 series and PRxx2 series controllers by means of computer with Roger ISP software. Built-in voltage converter with 12VDC/120mA output can be used to supply power to particular controller during firmware update. Current firmware files are available at www.roger.pl. Make all connections in accordance with table 2 in section 2.3 of this document. In Roger ISP software select the option **USB-RS485 Converter**, according to fig. 3.
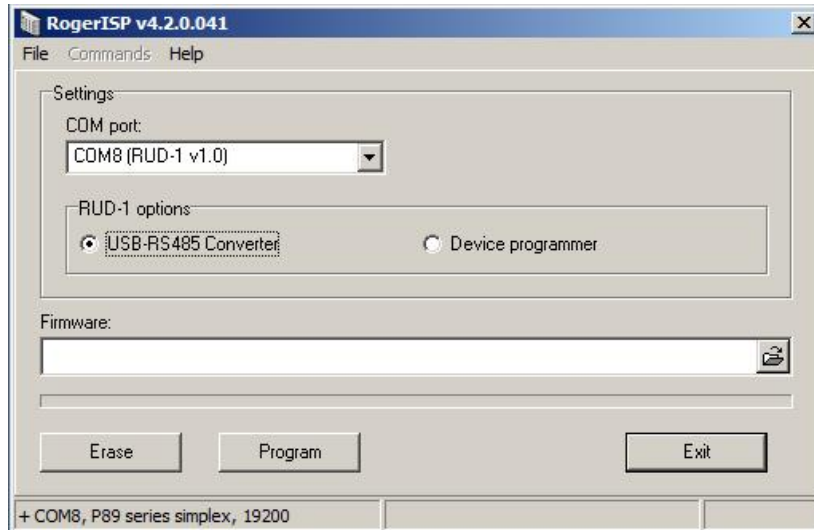

Fig. 3 Firmware update by means of Roger ISP software (controller)

2.6 Connection of RUD-1 to reader (firmware update)

RUD-1 Communication Interface can be used for firmware update in PRTxxEM series and PRTxxMF series readers by means of computer with Roger ISP software. Built-in voltage converter with 12VDC/120mA output can be used to supply power to particular reader during firmware update. Current firmware files are available at www.roger.pl. Make all connections in accordance with fig. 2 in section 2.4 of this document. In Roger ISP software select the option **Device programmer**, according to fig. 4.
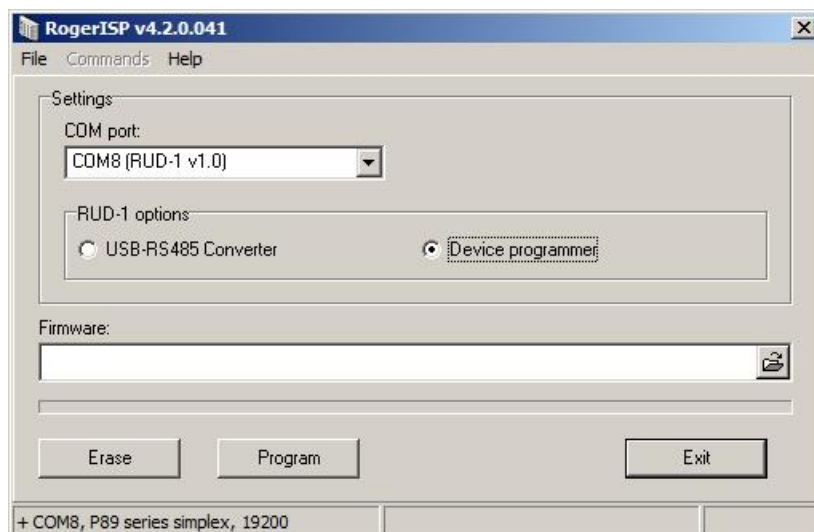

Fig. 4 Firmware update by means of Roger ISP software (reader)

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2.7 Use of RUD-1 in third party applications

RUD-1 Communication Interface is based on FT232 device made by FTDI. The communication is provided through virtual serial port, which is established during installation of FT232 drivers (FTDI). RUD-1 can work in two operation modes: RS-485 or RS-232. The mode can be selected by means of CBUS2 and CBUS3 lines of FT232 device:

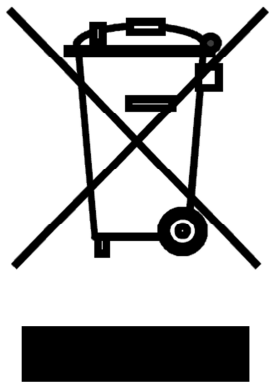- RS485: CBUS2=0, CBUS3 = 1
- RS232: CBUS2=0, CBUS3 = 0

The lines should be configured with closed virtual serial port by means of D2XX Direct Drivers – DLL available at FTDI webpage at the location http://www.ftdichip.com/Drivers/D2XX.htm. It is required to use so called CBUS Bit Bang Mode by means of FT_SetBitMode(0xC0, 0x20) function.
In case of using PRT readers it is necessary to select RS-232 mode (see above) and additionally provide 0 state at reader RTS line.

3. ORDERING INFORMATION

Table 3. Ordering information	
RUD-1	Communication interface with USB cable (1.5m). Windows drivers are available at www.roger.pl.

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.j.
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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