Roger Access Control System

PRT82MF and PRT84MF v2.0 RFID Readers

Operating Manual

QUADRUS Series

Firmware version 2.0.8

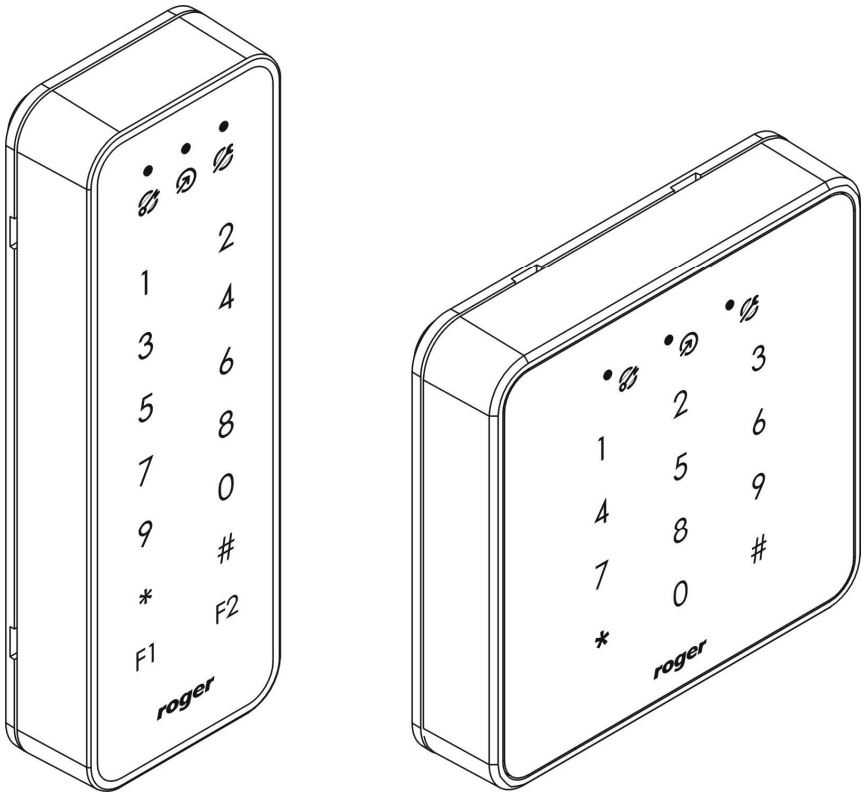
Hardware version: v2.0

Document version: Rev. C

CE

This document refers to the following products:

PRT82MF, PRT82MF-BK, PRT84MF, PRT84MF-BK



Contents

1. DESCRIPTION AND SPECIFICATION

1.1. General information

PRT82MF and PRT84MF access readers have been designed for use in access control systems to work with RACS CLK/DTA (Roger) or Wiegand 26..66 bit protocol access controllers. Readers operate as slave units which read cards/PIN-s and then send them to host access controller. Readers cannot work autonomously as standalone devices.
The factory new reader is pre-configured for **RACS CLK/DTA address ID=0**. Change of operating mode can be made by means of **RogerVDM** software (Windows) or through manual programming operating mode.

1.2. Features

- ISO14443A RFID Transponders
  - MIFARE® ULTRALIGHT
  - MIFARE® CLASSIC 1k and 4k
- CSN, SSN and MSN (*)
- Reading range up to 7 cm (PRT82MF)
- RACS CLK/DTA output format
- Wiegand 26..66 bit output format
- Three LED indicators
- LED control input
- Buzzer
- Buzzer control input
- Buzzer loudness adjust
- Backlight level adjust
- Touch type keypad
- Two function keys (PRT84MF)
- Tamper contact
- Configurable from PC (RogerVDM software)
- Indoor use
- Black or white color version
- CE mark

(*) – SSN and MSN sector is read only from MIFARE® Classic transponders

---

Note
Generally, reading range of device depends on several factors which the most important are: type and quality of a card, card position relative to the reader, electrical interferences in surrounding area and presence of metal objects in reader's neighborhood. Nominal reading range was declared for Roger reference ISO card placed in parallel to the front surface of the reader in such a way that card center is aligned with vertical axe of the reader and located approx. 3 cm from the lower edge of the enclosure.

1.3. RFID transponders

PRT82MF and PRT84MF readers support ISO 14443A and MIFARE® transponders. By default reader is configured to read Chip Serial Number (CSN) however it is possible to configure it for PCN (Programmable Card Number) as well.

1.4. Card code

Whenever card is read reader sends to controller RCN number (*Returned Card Number*). In general, RCN can be formed from a combination of CSN number and PCN number. The CSN number is a *Chip Serial Number* which is factory programmed and cannot be modified. The PCN number is a number which can be programmed by user in protected data sectors of the card. Configuration of reader

allows to define rules which specify the method how the RCN number is formed from CSN and PCN numbers.

RCN (Returned Card Number)	
CSN	PCN

1.4.1. CSN number

The part of the RCN number which is formed by CSN number is defined by means of **CSN length** parameter. This parameter specifies the number of bytes taken from the CSN number and put into final RCN number. In general, depending on a card type, CSN may contain 4 or 7 bytes, however **CSN length** parameter can be set from 0 to 15 bytes and following cases may occur:

- **CSN length=0** means that no CSN bytes will be included in RCN,
- if number of available CSN bytes is lower than declared **CSN length** parameter then the CSN number is filled by leading zeros,
- if **CSN length** is lower than number of bytes available in CSN, then RCN gets **Least Significant Bytes (LSB)** of CSN number only.

Example 1: If CSN contains 4 bytes:

55h	66h	77h	88h

and **CSN length** = 5 then the CSN section of RCN is equal to:

00h	55h	66h	77h	88h

Example 2: If CSN contains 4 bytes:

55h	66h	77h	88h

and **CSN length** = 2 then the CSN section of RCN is equal to:

77h	88h

1.4.2. PCN number

Depending on Mifare card type the PCN number can be formed according to following rules:

Sector type	The source of PCN number
NONE	PCN is not used to form RCN at all.
SSN	PCN is read from the indicated sector and block of card. AID number (Application ID) is ignored.
MSN	PCN is read from indicated block in the first identified sector, which has been marked by two-byte AID number. In some cases many sectors may be marked by indicated AID, so it is possible to read a random value from the block.

The number of bytes which are read from the block is defined by parameters: **First byte** and **Last byte**. If the First byte>Last byte then it is treated as *normal sequence* of byte reading but it First byte<Last byte then it is treated as *reverse sequence* of bytes.

Note: The First byte and Last byte can be set from 0 to 15 (16 positions).

PCN can be coded in data block on card either as HEX or ASCII. When coded as ASCII every byte specify one HEX digit of the card number. If coded as HEX each byte provides two HEX digits. If the card code is coded as ASCII then the PCN length is twice less than difference between First byte and Last byte parameters. PCN read-out parameters from Ultralight card are the same as for Classic cards, while storage location of PCN code is fixed and cannot be defined.

Example 1: The form of data stored on card block is presented below, settings: First byte = 5, Last byte = 9, Format = BIN.

						First byte				Last byte						
Position in data block	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
HEX code	00h	11h	22h	33h	44h	55h	66h	77h	88h	99h	AAh	BBh	CCh	DDh	EEh	FFh

Read PCN code read from block:

55h	66h	77h	88h	99h

Example 2: The form of stored data on card block is presented below, settings: First byte = 9, Last byte = 5, Format = BIN.

						Last byte				First byte						
Position in data block	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
HEX code	00h	11h	22h	33h	44h	55h	66h	77h	88h	99h	AAh	BBh	CCh	DDh	EEh	FFh

Read PCN code read from block:

99h	88h	77h	66h	55h

Example 3: The form of stored data on card block is presented below, settings: First byte = 3, Last byte = 10, Format = ASCII HEX.

				First byte							Last byte					
Position in data block	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
ASCII code	'0'	'1'	'2'	'3'	'4'	'5'	'6'	'7'	'8'	'9'	'A'	'B'	'C'	'D'	'E'	'F'
HEX code	30h	31h	32h	33h	34h	35h	36h	37h	38h	39h	41h	42h	43h	44h	45h	46h

Read PCN code read from block:

34h	56h	78h	9Ah

Example 4: The form of stored data on card block is presented below, settings: First byte = 2, Last byte = 10, Format = ASCII HEX.

			First byte								Last byte					
Position in data block	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
ASCII code	'0'	'1'	'2'	'3'	'4'	'5'	'6'	'7'	'8'	'9'	'A'	'B'	'C'	'D'	'E'	'F'
HEX code	30h	31h	32h	33h	34h	35h	36h	37h	38h	39h	41h	42h	43h	44h	45h	46h

Read PCN code read from block:

02h	34h	56h	78h	9Ah

Example 5: The form of stored data on card block is presented below, settings: First Byte = 10, Last Byte = 2, Format = ASCII HEX.

			Last byte								First byte					
Position in data block	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
ASCII code	'0'	'1'	'2'	'3'	'4'	'5'	'6'	'7'	'8'	'9'	'A'	'B'	'C'	'D'	'E'	'F'
HEX code	30h	31h	32h	33h	34h	35h	36h	37h	38h	39h	41h	42h	43h	44h	45h	46h

Read PCN code read from block:

0Ah	98h	76h	54h	32h

1.4.3. RCN number

As explained earlier, reader sends to controller the RCN (Returned Card Number) which in general, can be combination of CSN and PCN numbers.

Example:
Settings of reader:

- CSN length = 4
- First byte = 8
- Last byte = 10
- Format = BIN

CSN						
C1	C2	C3	C4	C5	C6	C7

PCN															
AA	BB	CC	DD	EE	FF	00	11	22	33	44	55	66	77	88	99

RCN number returned by reader:

RCN						
CSN				PCN		
C4	C5	C6	C7	22	33	44

RCN code returned by PRT series reader configured to Wiegand 66 bit mode (64 data bits + 2 control bits):

00	C4	C5	C6	C7	11	22	33

RCN code returned by PRT series reader configured to Wiegand 42 bit mode (40 data bits + 2 control bits):

C6	C7	22	33	44

RCN code returned by PRT series reader configured to Wiegand 26 bit mode (24 data bits + 2 control bits):

22	33	44

RCN code returned by PRT series reader which is set to RACS CLK/DTA mode:

C6	C7	22	33	44

Notes:

1. In order to configure the reader to read CSN number only it should be selected **Sector type** parameter to value '0' – NONE, while **CSN length** parameter set according to required code length.

2. In order to configure the reader to read code stored in PCN sector only, the **Sector type** parameter should be set to value other than '0' – NONE, while **CSN length** parameter should be set to 0.

3. If RCN number configured in reader is longer than the length of code transmitted by the reader in selected mode, then reader omits leading digits of RCN code. This rule applies both to RACS CLK/DTA output format (Roger) which always transmits 5 bytes (40 bits) and to Wiegand output format which transmits from 2 to 8 bytes (16 to 64 bits).

4. If RCN number configured is shorter than the length of code transmitted by the reader in selected mode, then reader adds leading zeroes to the RCN code. This rule applies both to RACS CLK/DTA output format (Roger) which always transmits 5 bytes (40 bits) and to Wiegand output format which transmits from 2 to 8 bytes (16 to 64 bits).

2. OUTPUT FORMATS

PRT82MF/PRT84MF readers can work in RACS CLK/DTA or Wiegand 26..66 bit operating mode.

2.1. RACS CLK/DTA mode

This mode is dedicated for operation with Roger access controllers. Different devices can be connected to RACS CLK/DTA lines provided that each of them has unique address ranging from 0 to 15. Reader address can be programmed either in so called **Memory Reset** procedure or from **RogerVDM** program. In RACS CLK/DTA mode reader LED and Buzzer is controlled by communication protocol and no additional control lines for this purpose are necessary. When all LED-s are flashing it indicates that the reader lost communication with the host unit.

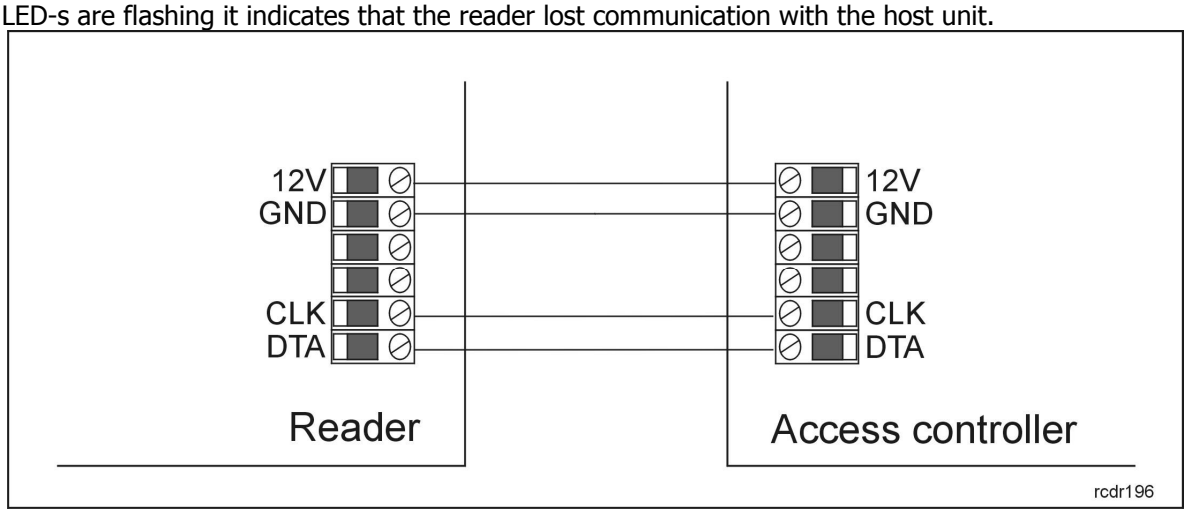


Fig. 1 PRT82MF/PRT84MF connection to Roger access controller

2.2. Wiegand mode

In this mode reader transmits data using **CLK** and **DTA** lines which are connected to controller accordingly as **DATA0** and **DATA1** lines. In such one-way transmission LEDs control is made by IN1 and IN2 inputs.

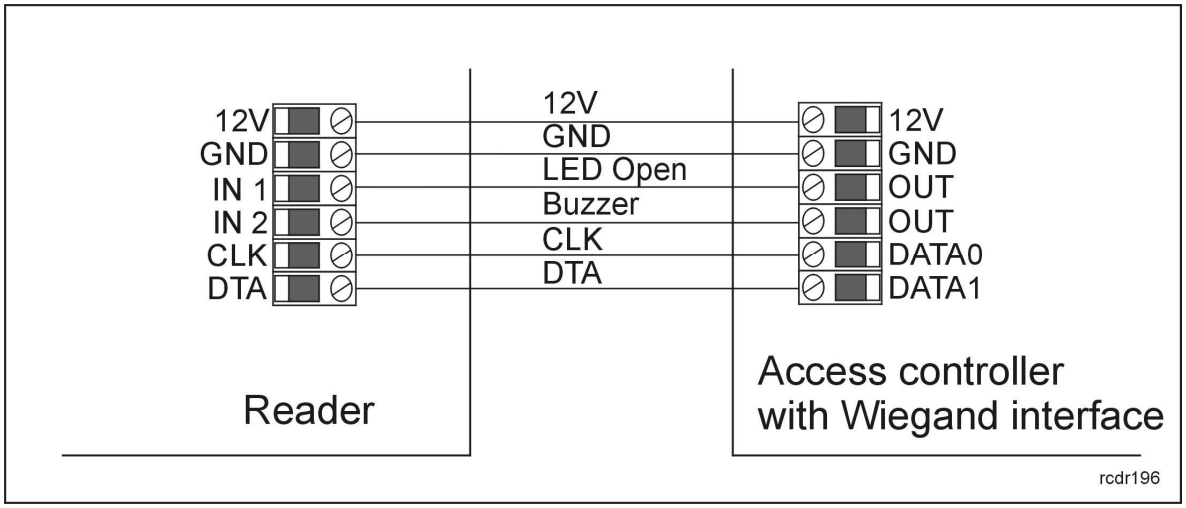


Fig. 2 Connection between PRT82MF/PRT84MF and access controller - Wiegand

3. READER CONFIGURATION

PRT82MF/PRT84MF readers can operate in few modes, which determine the method of communication with controller. The setting of operating mode and data transmission format can be set by means of **RogerVDM** software (Windows) or manually during **Programming Operating Mode** procedure.

3.1. RogerVDM configuration

To use the method it is necessary to connect the reader to PC by means of RUD-1 interface (Fig. 3) and run RogerVDM software (available at www.roger.pl).

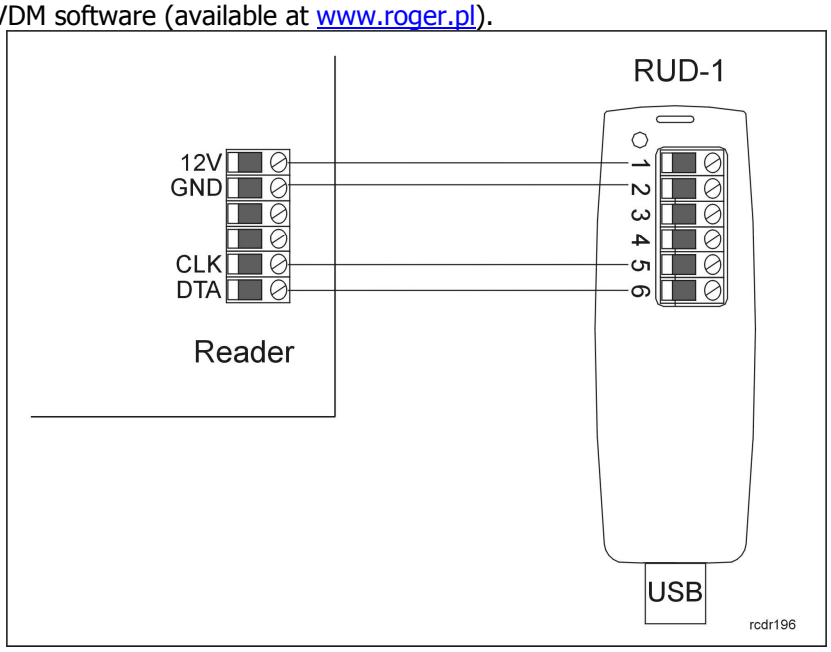


Fig. 3 Connection between PRT82MF/PRT84MF reader and RUD-1 interface

Connection method

1. Connect the reader to RUD-1 interface according to Fig. 3.
2. Put jumper on MEM contacts.
3. Restart the reader (place and remove jumper on RST contacts or switch power supply off/on).
4. While LED SYSTEM is flashing select in RogerVDM: *Device->New*.
5. Choose the device model, firmware version, communication channel and serial port, on which RUD-1 is installed (Fig. 4).
6. Click *Connect*, the software will establish connection with the reader and automatically will proceed to *Configuration* tab, which enables full configuration of the reader parameters.
7. Set the parameters (configuration window is shown on Fig. 5, the description of available options is given in Table 1).
8. Click *Send to device* – the software will send the configuration to the reader.
9. Remove jumper from MEM contacts.
10. Restart the reader (place and remove jumper on RST contacts or switch power supply off/on) – the reader will switch to normal operation with new settings.

Note: While connecting with the reader it is forbidden to use keypad or read a card.

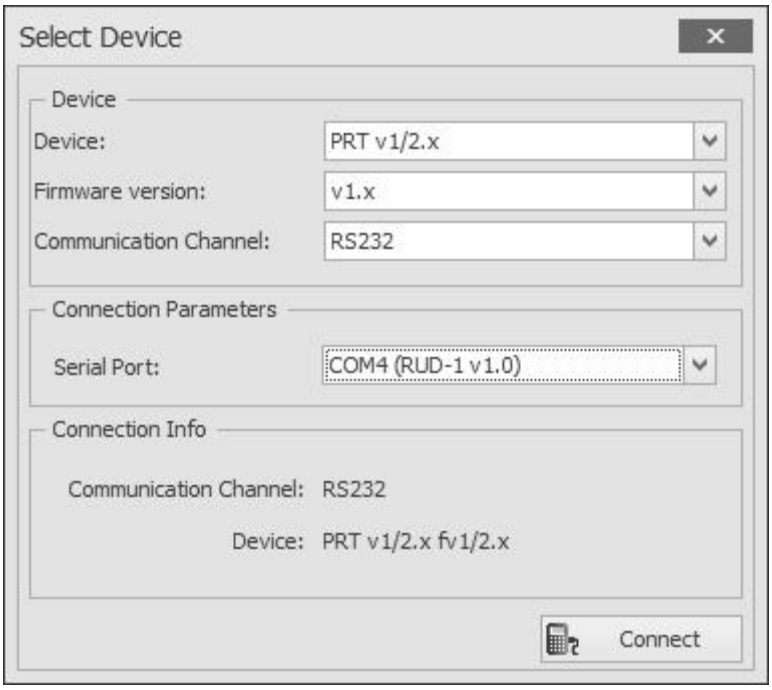


Fig. 4 Select Device window view

Table 1: Description of configuration parameters

Parameter name	Available values	Description
General		
Name	16 ASCII characteres	Device description, any comment.
Output format		
Data Output Format	0 – RACS CLK/DTA 1 – Wiegand	Defines the data output transmission format.
RACS CLK/DTA address	0..3	ID address for RACS Clock/Data transmission.
Wiegand Output Format transmission mode	0..5	Set the length of transmitted card code: 0 - Wiegand 26 bit 1 - Wiegand 34 bit 2 - Wiegand 42 bit 3 - Wiegand 66 bit 4 - Wiegand 32 bit without control bits 5 - Wiegand 32 bit reversible, without control bits

Keypad Data Output Format for Wiegand Mode	0..6	Sets the PIN/keys transmission options: 0 – The PIN code 1 to 10 digits is transmitted as a BCD number 1 - The PIN code 1 to 12 digits is transmitted as a binary number 2 - Each key pressed is immediately transmitted to the host controller as a sequence of 4 bits + 2 control bits 3 - Each key pressed is immediately transmitted to the host controller as a sequence of 4 bits without control bits 4 - Each key pressed is immediately transmitted to the host controller as a sequence of 8 bits + 2 control bits 5 - Each key pressed is immediately transmitted to the host controller as a sequence of 8 bits without control bits 6 - 1-6 keys long PIN, keys are buffered and send to host controller as sequence of 24 bits
Communication Timeout	0 – function disabled 1..64000	Time to elapse before communication loss signal (in ms). Avaliable for RACS Clock/Data format only.
LED SYSTEM	0 - None 1 - IN1 2 - IN2	Sets input designated to control given LED in Wiegand mode.
LED OPEN	0 - None 1 - IN1 2 - IN2	Sets input designated to control given LED in Wiegand mode.
LED STATUS	0 - None 1 - IN1 2 - IN2	Sets input designated to control given LED in Wiegand mode.
LED SYSTEM Pulsing When Card is Close to Reader	0 - Off 1 - On	When set on LED SYSTEM will pulsing when card is close to the reader.
Keypad Backlight Level	0..100%	Sets keypad backlight level.
Keypad Backlight Animation	0 - Off 1 - On	When option is set keypad backlight is smoothly darkened 20s after last card is read last PIN is entered.
Keypad Backlight Dimming	0 - Off 1 - On	When option is set keypad backlight is momentary switched off whenever card is read or key is pressed.
LED SYSTEM Flash Upon Card Read	0 - Off 1 - On	When option is set LED SYSTEM generates single flash whenever card is read.
LED SYSTEM Flash Upon Key Press	0 - No 1 - Yes	When option is set LED SYSTEM generates single flash whenever key is pressed.
Input Types		
IN1	0 – NO 1 – NC	Sets input type.

IN2	0 – NO 1 – NC	Sets input type.
Acoustic Signalization		
Buzzer Loudness Level	0..100%	Programs buzzer loudness level.
Buzzer Control in Wiegand Mode	0 - None 1 - IN1 2 - IN2	Sets input designated to control internal buzzer in Wiegand mode.
Short Sound Upon Card Read	0 – No 1 – Yes	When option is set buzzer generates short beep whenever card is read.
Short Sound Upon Key Pressed	0 – No 1 – Yes	When option is set buzzer generates short beep whenever key is pressed.
CSN Number Settings		
Number of CSN bytes	0..16	Defines number of CSN bytes used to form RCN.
Advanced Settings		
Stop card/PIN reading when buffer full	0 – No 1 – Yes	When option is active reader stops card/PIN reading until previous PIN/card is transmitted to controller.
Clear card/PIN buffer timeout [s]	0..64	Timeout of card/PIN buffer clearing.
Buffer overflow signalization	0 - Off 1 - On	When option is active reader will signal on LED SYSTEM that card/PIN buffer overflow occurred.
Encrypt card/PIN data send over RS485 bus	0 - Off 1 - On	When option is active the card/PIN output data will be encrypted.
Mifare Classic Settings		
Card Type	0 – NON 1 – SSN 2 – MAD	Specifies the type of sector where PCN number is stored. If value '0' is chosen then RCN will be formed from CSN number only.
Format	0 – BIN 1 – HEX ASCII	Specifies coding method of PCN number in data block.
First byte	0..15	Specifies position of the byte in data block where PCN number begins.
Last byte	0..15	Specifies position of the byte in data block where PCN number ends.
Sector ID	0..39	Data sector where PCN number is stored.
AID	0000 – FFFFF	Specifies AID number (Application Identifier) which indicates sector from which the card code is read. (by default Roger AID number is: 5156).
Block ID	0..15	Specifies block number within sector where PCN code is stored.
Key Type	0- A 1- B 2- Roger (classified)	Specifies key type used to read the data from data sector.
Key	000000000000 – FFFFFFFFFFFF	6 bytes security key, which will be used to read the data from sector.

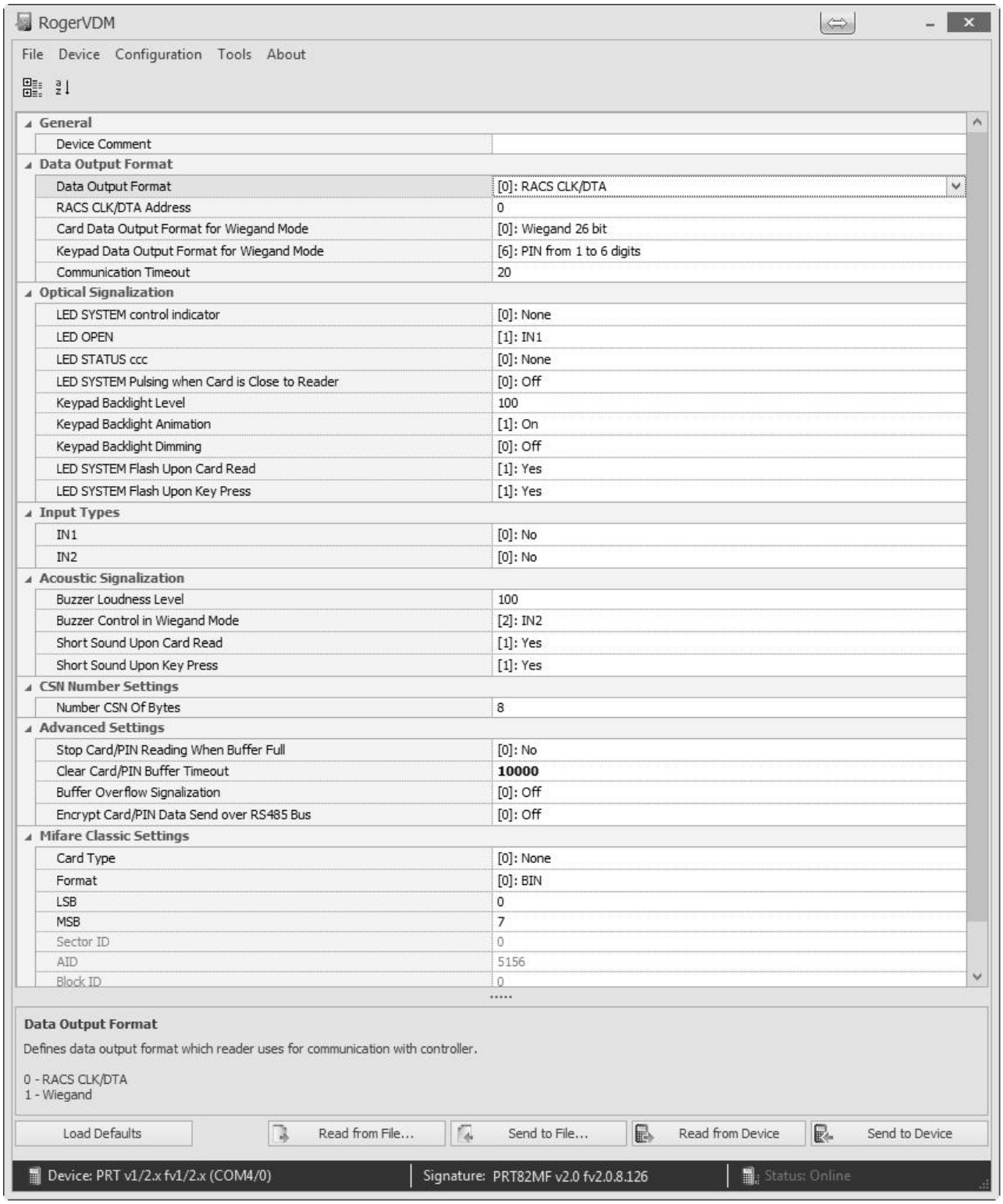


Fig. 5 Configuration window view

3.2. Operating mode manual programming

Procedure of operating mode manual programming allows to choose the operating mode and to keep previous configuration at the same time.

Operating mode programming procedure

1. Remove all connections from CLK and DTA lines.
2. Put jumper on MEM contacts.
3. Restart the reader (place and remove jumper on RST contacts or switch power supply off/on).
4. While LED SYSTEM is flashing enter three digits which define required operating mode (Table 2).
5. Remove jumper from MEM contacts.
6. Restart the reader (place and remove jumper on RST contacts or switch power supply off/on) – reader will resume work with new configuration.

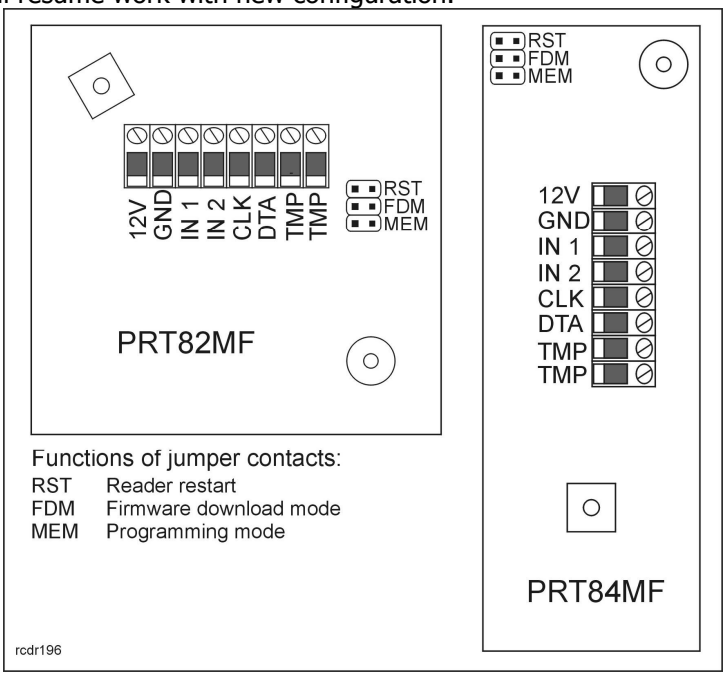


Fig. 6 Connection terminals and programming jumpers

If the Wiegand mode is selected then line IN1 is configured to control LED OPEN while IN2 to control buzzer. If necessary these settings can be changed by RogerVDM software.

Table 2: Operating Modes	
Code	**Operating mode**
000	RACS address ID=0
001	RACS address ID=1
002	RACS address ID=2
003	RACS address ID=3
10x	26 bit Wiegand
11x	34 bit Wiegand
12x	42 bit Wiegand
13x	66 bit Wiegand
14x	32 bit Wiegand (no parity)
15x	32 bit Wiegand reverse order (from LSB to MSB, no parity)

The third digit of the operating mode code (marked by "x") specifies the method which reader employs when transmitting PIN-s or keys. For details regarding methods of PIN transmission refer to Table 3.

Readers without keypad can be programmed by so called *multiple card reading method* . In this method key pressing is emulated by multiple card reading. In order to emulate key N read card N-times and then wait for two beeps. Once you hear this two beeps you can proceed further with next digits of the reader operating mode. Digit 0 is emulated by 10-times card reading. Any ISO 14443A card can be used to program the reader using *multiple card reading method*.

Example:
In order to program mode 001:

- *read RFID transponder 10 times and wait for two beeps*
- *read RFID transponder 10 times and wait for two beeps*
- *read RFID transponder 1 time and wait for two beeps*

Table 3: PIN and Keys Transmission Options

Code	Description	Details
X=0	1-10 digits long PIN, transmitted in BCD format	Each key pressed is buffered in reader's memory; with a press of a [#] key reader transmits entire PIN code. The PIN code is transmitted as a BCD coded number.
X=1	1-12 digits PIN, transmitted in binary format	Each key pressed is buffered in reader's memory; with a press of a [#] key reader transmits entire PIN code. The PIN code is transmitted as a binary number.
X=2	Each key pressed is transmitted separately as 4-bit number plus 2 control bits	Each key pressed is immediately transmitted to the host controller as a sequence of 6 bits (EXXXXP) where XXXX represents the code of the pressed key supplemented by two control bits (E and P). The E represents the even bit calculated from the first half of a transmitted code where P represents the parity of a second half of the bit stream. This format is compatible with HID 5355 series readers, option "with parity". Key coding as in Table B.
X=3	Each key pressed is transmitted separately as 4-bit number	Each key pressed is immediately transmitted to the host controller as a sequence of 4 bits (XXXX) which represent the code of the pressed key, no control bits added. This format is compatible with HID 5355 series readers, option "without parity". Key coding as in Table B.
X=4	Each key pressed is transmitted separately as 8-bit number with parity	Each key pressed is immediately transmitted to the host controller as a sequence of 10 bits (EXXXXXXXXP) where XXXXXXXX represents the code of the pressed key supplemented by two control bits (E and P). The E represents the even bit calculated from the first half of a transmitted code where P represents the parity of a second half of the bit stream. Key coding as in Table A.
X=5	Each key pressed is transmitted separately as a 8-bit number without parity bits	Each key pressed is immediately transmitted to the host controller as a sequence of 8 bits (XXXXXXXX) where XXXXXXXX represents the code of the pressed key supplemented by two control bits (E and P). The E represents the even bit calculated from the first half of a transmitted code where P represents the parity of a second half of the bit stream. Key coding as in Table A.

X=6	1-6 keys long PIN transmitted as Wiegand 26 bit stream with control bits	1-6 keys long PIN, each key represented by 4-bit long codes (key codes according to Table B). Reader sends data after six keys are pressed or earlier when # key is pressed. Key's buffer is cleared if keys have not been entered within programmed timeout. Examples: Keys entered "1234#" – code transmitted "001234" Keys entered "123456" – code transmitted "123456"

Table A: 8-bit key coding

Key	HEX	BIN
0	F0	11110000
1	E1	11100001
2	D2	11010010
3	C3	11000011
4	B4	10110100
5	A5	10100101
6	96	10010110
7	87	10000111
8	78	01111000
9	69	01101001
*	5A	01011010
#	4B	01001011
F1	3C	00111100
F2	2D	00101101

Table B: 4-bit key coding

Key	ASCI	BIN
0	0	0000
1	1	0001
2	2	0010
3	3	0011
4	4	0100
5	5	0101
6	6	0110
7	7	0111
8	8	1000
9	9	1001
*	A	1010
#	B	1011

3.3. Memory Reset Procedure

The **Memory Reset** procedure restores factory configuration settings and sets reader to RACS ID=0 operating mode.

Memory Reset Procedure

1. Remove all connections from CLK and DTA lines.
2. Put jumper on MEM contacts.
3. Restart the reader (place and remove jumper on RST contacts or switch power supply off/on).
4. While LED SYSTEM is flashing press ***** or read any ISO 14443A card 11-times.
5. Remove jumper from MEM contacts.
6. Restart the reader – it will start with new settings.

4. INSTALLATION GUIDELINES

- The reader enclosure consists of a front and rear panel. Before installation it is necessary to separate them by means of ordinary flat screwdriver according to method explained in Fig. 7
- Reader should be mounted on a vertical piece of supporting structure, usually wall, away from sources of heat and moisture
- PRT82MF can be mounted on a flush type box 60mm diameter - it is recommended method of installation
- The rear panel should be mounted with use of delivered screws with orientation shown on Fig. 8 so that tamper lever leans on the surface and presses the tamper switch
- Connection wires should go along the hole in base of reader and plug to terminals according to Fig. 6
- Any electrical connections should be performed with wires without any voltages
- When using separate power supply sources for the reader and the controller it is necessary to **short both supply minus**
- It is forbidden to short power supply positives (+) unless it is clearly allowed by power supply documentation
- The front panel of the reader should be periodically cleaned with a slightly moistened cloth and soft detergent. It is forbidden to use abrasives and heavy duty detergents such as: alcohols, solvents, gasoline etc. Damage caused by improper maintenance is not covered by warranty
- Keypad backlight level can be set up by means of RogerVDM software and it should be adjusted to the light conditions existing is place of installation

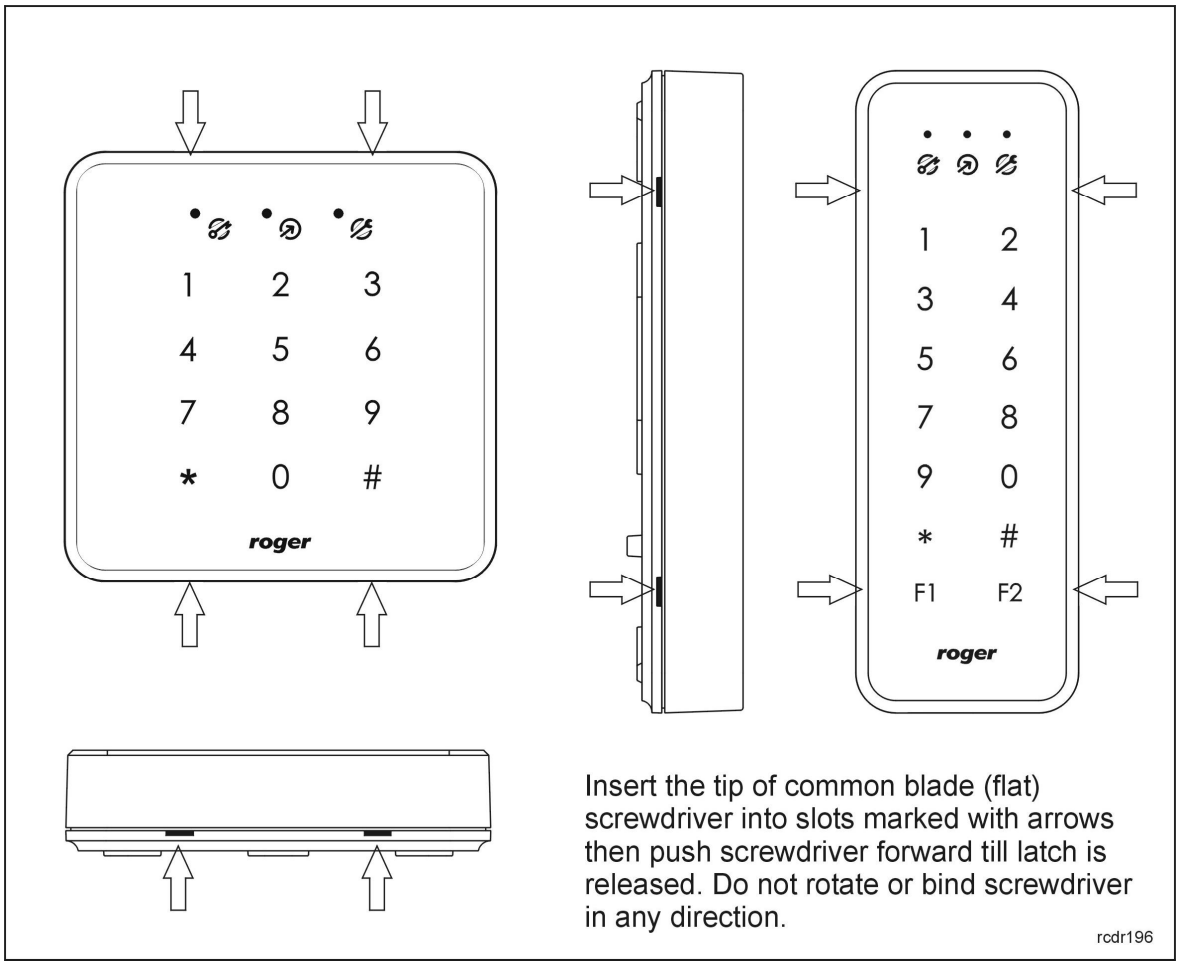


Fig. 7 Location of latches

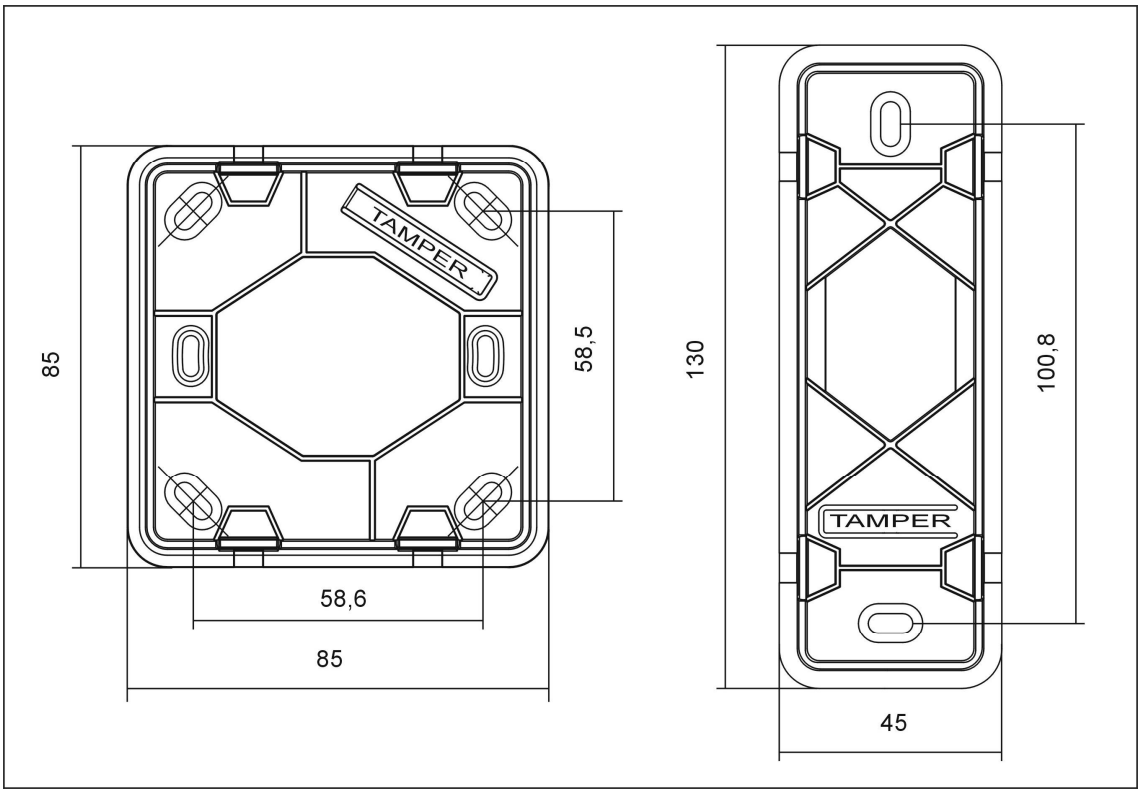


Fig. 8 Dimensions and location of Tamper lever

Table 4: Connection terminals description		
Name	**RACS CLK&DTA Mode**	**Wiegand Mode**
12V	Supply input plus.	
GND	Supply input minus.	
IN1	Emulates F3. Line is active when shorted to ground.	Depending on configuration can control LED or buzzer. Line is active when shorted to ground.
IN2	Emulates F4. Line is active when shorted to ground.	Depending on configuration can control LED or buzzer. Line is active when shorted to ground.
CLK	Clock communication line.	DATA0 communication line.
DTA	Data communication line.	DATA1 communication line.
TMP	Tamper switch isolated contacts. Normal closed when enclosure is closed and attached to the surface.	

5. FIRMWARE UPDATE

Firmware update can be done by means of RogerVDM software and RUD-1 communication interface. The file with latest firmware is available at www.roger.pl

Firmware update procedure

1. Connect reader to RUD-1 interface according to Fig. 3
2. Put jumper on FDM contacts (location of contacts is given on Fig. 6)
3. Run RogerVDM application
4. Choose: *Tools -> Update Firmware*
5. Select device type, communication port for RUD-1, and path to firmware file (*.hex)
6. Click *Update* and follow the instructions

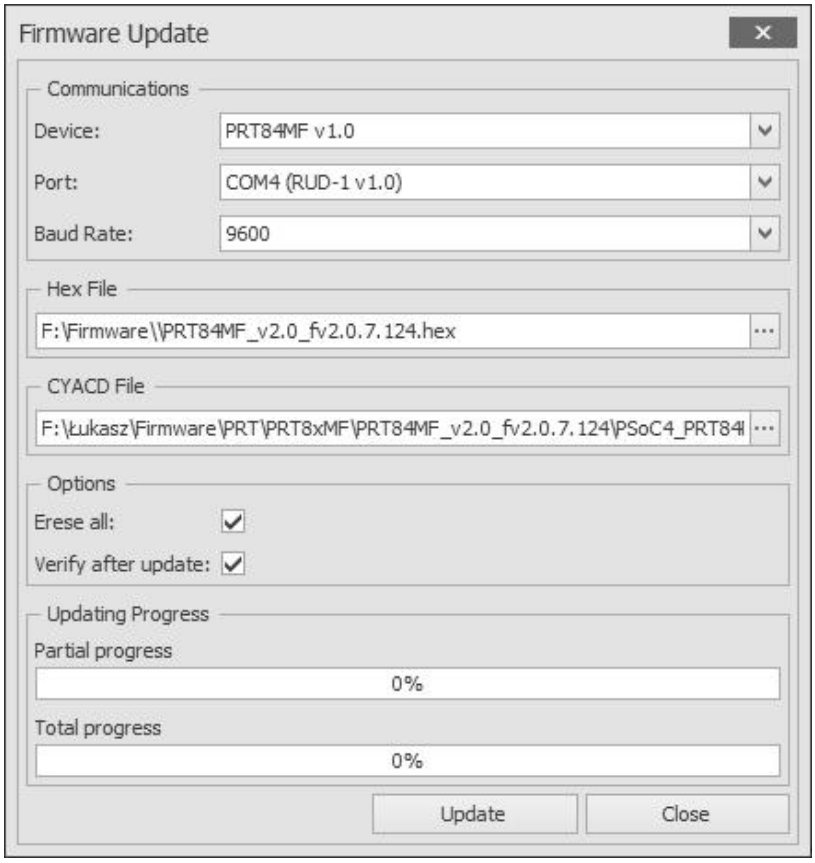


Fig. 9 Firmware Update window view

6. TECHNICAL SPECIFICATION

Technical specification	
Supply voltage	10-15 VDC
Current consumption (average)	PRT82MF: ~60 mA PRT82MF-BK: ~45 mA PRT84MF: ~65 mA PRT84MF-BK: ~50 mA
Reading distance	PRT82MF/PRT82MF-BK: Up to 7 cm (for ISO size card) PRT84MF/PRT84MF-BK: Up to 5 cm (for ISO size card)
Anti-sabotage protection (Tamper)	Isolated NO/NC contact, 50mA/24V, normal closed when enclosure is closed and attached to flat surface
Proximity cards	13.56MHz ISO14443A, MIFARE® Classic
Distance	Up to 150m cable distance
Degree of protection	IP41
Environmental class according to EN 50131-1	Class II, indoor, temperature: -10°C- +50°C, relative humidity: 10 to 95% (non-condensing)

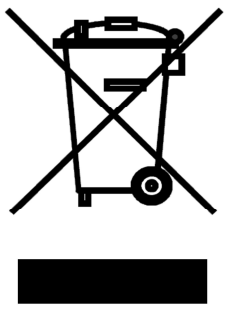
Dimensions H x W x D	PRT82MF/ PRT82MF-BK: 85 X 85 X 22 mm PRT84MF/ PRT84MF-BK: 130 X 45 X 22 mm
Weight	~100 g
Approvals	CE

7. ORDER GUIDE

Order guide	
PRT82MF	Dark grey enclosure, sensor keypad.
PRT82MF-BK	Dark grey enclosure, without keypad.
PRT84MF	Dark grey enclosure, sensor keypad, two function keys.
PRT84MF-BK	Dark grey enclosure, without keypad.
RUD-1	Portable communication interface USB-RS485 with 12VDC output.

8. PRODUCT HISTORY

Product history			
Electronic module	Firmware version	Date	Description
v1.0	fv1.0.4.116	08/08/2014	The first commercial version of product.
v1.0	fv1.0.8.126	08/07/2015	Memory Reset Procedure changes, possibility of manual operating mode programming added, reduced current consumption.
v2.0	fv2.0.8.126	08/07/2015	Increased the reading distance of PRT84MF.



The symbol of a crossed-through waste bin on wheels means that the product must be disposed of at a separate collection point. This also applies to the product and all accessories marked with this symbol. Products labeled as such must not be disposed of with normal household waste, but should be taken to a collection point for recycling electrical and electronic equipment. Recycling helps to reduce the consumption of raw materials, thus protecting 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