*Roger Access Control System*

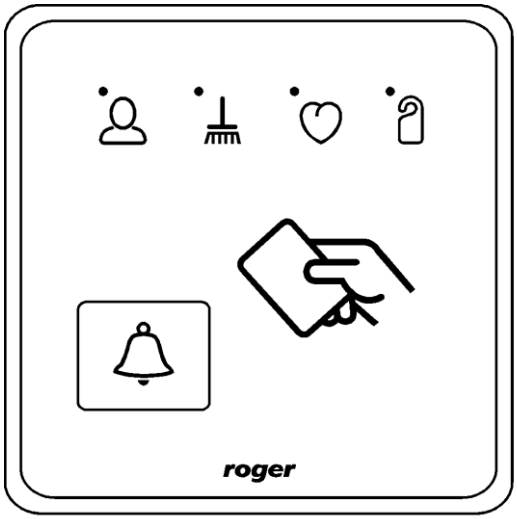
# Installation guide for HRT82MF proximity card reader

*Firmware version: 1.0.2.6 or newer*

*Hardware version: 1.1*

*Document version: Rev. B*

CE

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# 1. INTRODUCTION

This manual contains minimum information that is necessary to properly install device. Following documents supplement this manual:

- Functional description of HRC series controllers
- Installation guide for HRC series controllers
- PR821-CH User Manual

In order to acquire the first one it is necessary to obtain Roger consent and sign non-disclosure agreement (NDA). The remaining ones are available at www.roger.pl.

# 2. DESCRIPTION AND SPECIFICATION

HRT82MF proximity card reader is peripheral device used both in a hotel system based on HRC series controllers and in a hotel system based on PR821-CH controllers. The device communicates with controller using RACS CLK/DTA bus and enables MIFARE® card number reading for the purpose of user identification and access granting. The reader enables serial number (CSN) reading for such cards as MIFARE Ultralight/Classic/Plus/Desfire. Additionally it allows to read configurable Mad Sector Number (MAD) and Sector Serial Number (SSN) as well as combinations of CNS and MSN or SSN for MIFARE Classic cards.
HRT82MF front panel includes touch button and four LED indicators for signalling such hotel indications as 'hotel staff presence', 'do not disturb', 'make up room' and 'assistance'. The device is equipped with front panel backlight and buzzer.

| **Table 1. Specification** | |
|---|---|
| Supply voltage | Nominal 12VDC, min./max. range 10-15VDC |
| Proximity cards | 13.56MHz in acc. with ISO14443A and MIFARE |
| Reading distance | Up to 15 cm for ISO cards (depends on card type and quality) |
| Average current consumption | 60mA |
| Tamper resistance | Isolated contact, NC type (normally closed when enclosure is assembled and attached), 24V/50mA |
| Distance | Between controller and HRT device (RACS CLK/DTA): max. 150m |
| Environmental class (acc. to EN 50131-1) | Class II, indoor general conditions, temperature: -10°C- +50°C, relative humidity: 10 to 95% (no condensation) |
| IP code | IP41 |
| Dimensions HxWxD | 85 x 85 x 22 mm |
| Weight | ~ 100g |
| Certificates | CE |

# 3. INSTALLATION

## 3.1 Terminals and connection diagram

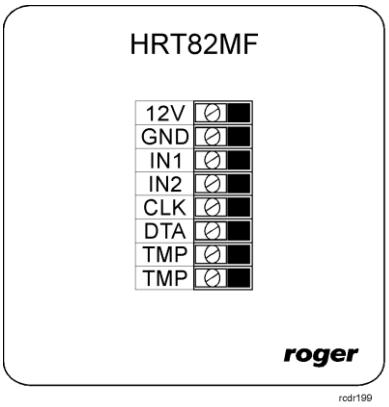



Fig. 1 HRT82MF card reader

| **Table 2. HRT82MF terminals** | | | |
|---|---|---|---|
| Term. | Description | Term. | Description |
| 12V | 12VDC power supply | CLK | RACS CLK/DTA bus |
| GND | Ground | DTA | RACS CLK/DTA bus |
| IN1 | not used | TMP | Tamper |
| IN2 | not used | TMP | Tamper |

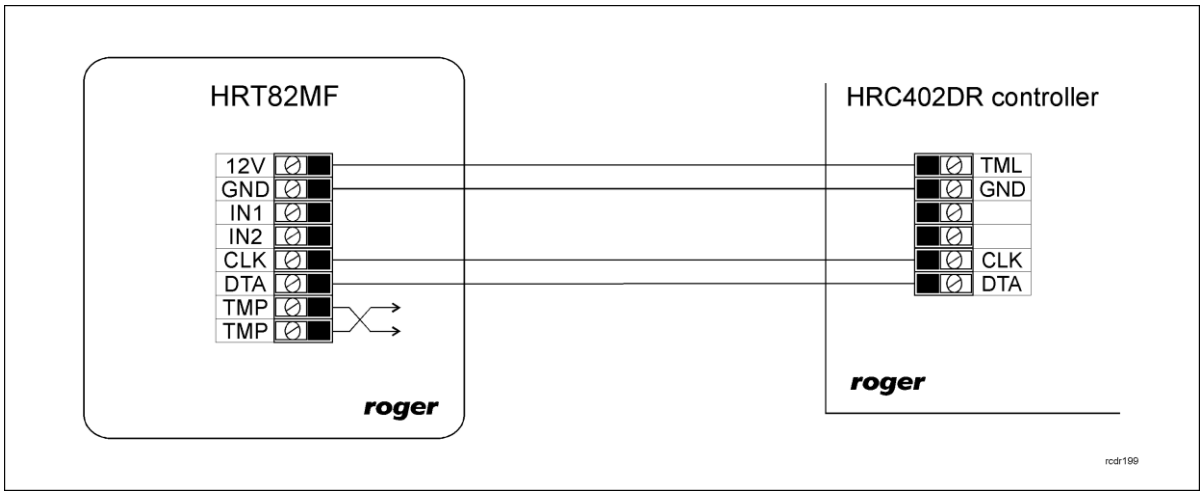



Fig. 2 Connection to controller with 12VDC power supply output

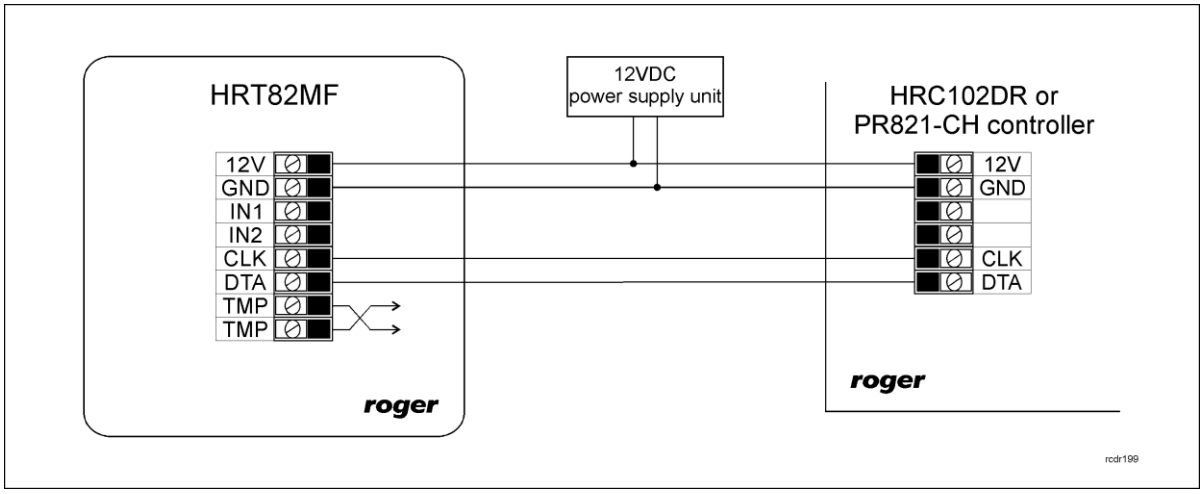



Fig. 3 Connection to controller without 12VDC power supply output

## 3.2 Power supply

HRT82MF requires 12VDC nominal power supply. The power must be connected to 12V and GND terminals. Additionally, the GND terminal is used as reference potential for the RACS CLK/DTA bus. HRT82MF power supply can be provided by connection to buffer power supply unit (e.g. PS-15DR, PS20) or connection to TML output of HRC402DR controller (see fig. 2). Backup battery connected to power supply unit or directly to HRC402DR controller can be used in order to ensure operation in case of 230VAC power failure.

Note: All devices connected to the same RACS CLK/DTA bus must be connected to common reference potential (GND).

## 3.3 RACS CLK/DTA communication bus

RACS CLK/DTA is the addressable bidirectional communication standard developed and applied in Roger controllers in order to enable their communication with peripheral devices. Addresses of all devices connected to CLK and DTA lines must be properly configured in range of 00..15. Standard unshielded signal cables (e.g. U/UTP cat. 5) with maximal length of 150m can be used for RACS CLK/DTA communication.

## 3.4 Front panel

**LED indicators**

In the top part of HRT82MF reader there are located four icons and LED indicators. Their functions are explained in table 3 and they depend on type of connected controller.

**Table 3. LED indicators**

| Symbol | Name | Colour | Function | |
|---|---|---|---|---|
| | | | HRC controller | PR821-CH controller |
| | HOTEL STAFF | Green | Programmable | Presence of hotel staff card in card holder |
| | MUR | Orange | Programmable | Activated 'make up room' flag |
| | ASSIS-TANCE | Blue | Programmable | Activated 'assistance' flag |
| | DND | Red | Programmable | Activated 'do not disturb' flag' |

**Touch button**
HRT82MF reader is equipped with touch button dedicated to entry bell. However in case of both HRC and PR821-CH controllers the function is programmable and the button can be used for various purposes.

## 3.5 Wall mounting and installation guidelines

HRT82MF consists of front panel and base which are factory assembled and require manual disassembly prior to installation according to fig. 4.

**Installation guidelines**

- Install device on wall far from sources of heat and moisture
- It is recommended to install device on Ø60mm flush mounting box
- Front panel and base must be properly oriented in order to ensure functioning of tamper resistance.
- All electric connections must be made with power supply switched off
- Run connection wires through hole in device base and then connect wires to screw terminals
- If device and controller are supplied from different power supply units then it is necessary connect GND terminals of both devices
- Front panel can be regularly cleaned with wet cloth and mild detergent. Do not clean by means of abrasive materials and strong cleaners like alcohols, solvents, etc.
- Damages resulting from improper maintenance or use are not covered by warranty

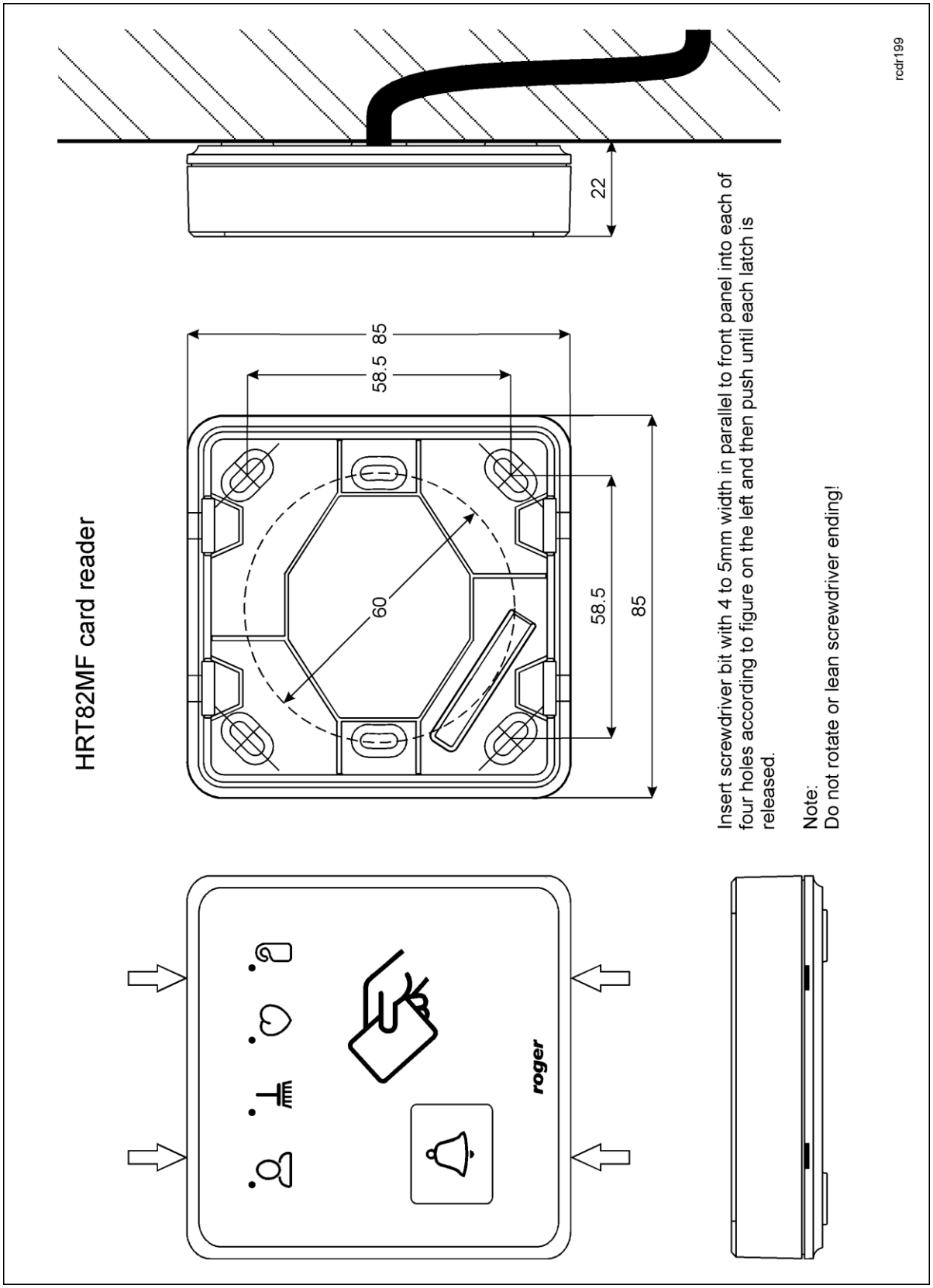



Fig.4 HRT82MF latches and wall mounting

# 4. CONFIGURATION

## 4.1 Device programming

The address of factory new HRT82MF is ID=1 and such device is ready to communicate with HRC series controller requiring no additional configuration. In case of operation with PR821-CH controller it is necessary to configure the address ID=0.
If necessary, HRT82MF settings can be modified with RogerVDM software (available at www.roger.pl) after connection to RUD-1 communication interface.

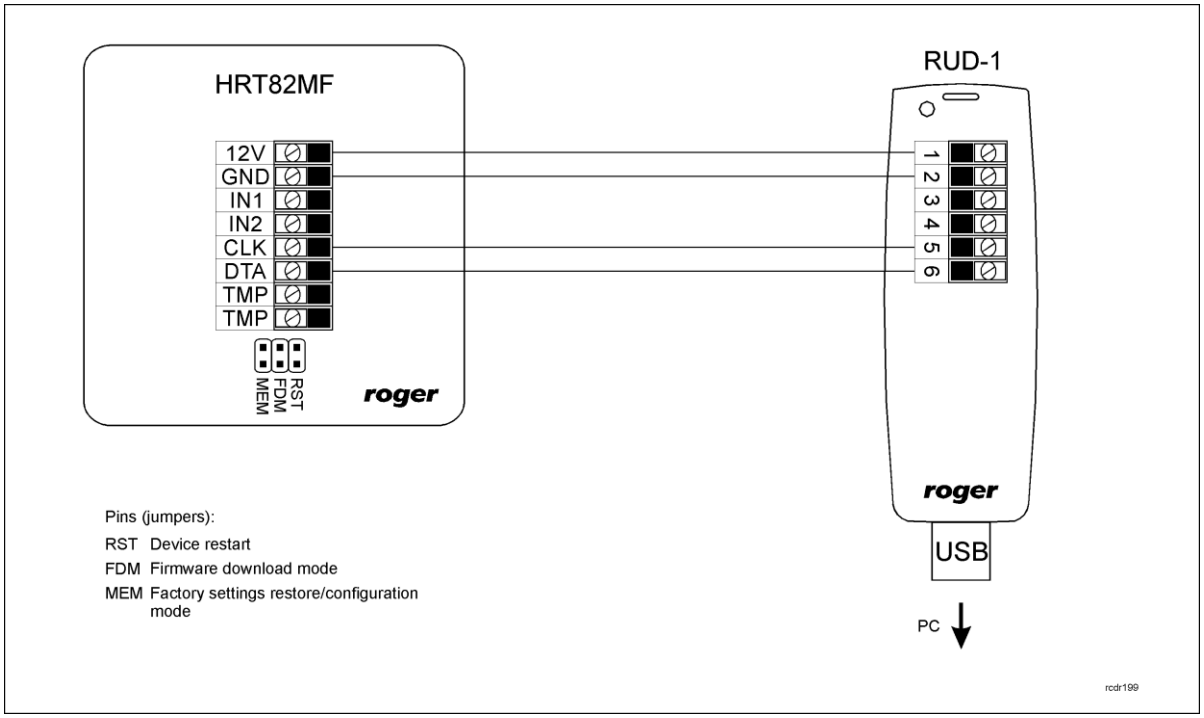



Fig. 5 HRT82MF and RUD-1 connection

**Connection and configuration procedure**

1. Connect device to RUD-1 communication interface according to fig. 5
2. Place jumper on MEM pins
3. Restart the device (place and remove jumper on RST pins or switch power supply off and on)
4. Install and start RogerVDM software
5. In the opened window select device, firmware version, communication channel and serial port with connected RUD-1 – see fig. 5
6. Select *Connect* button, the software shall establish connection with the device and automatically switch to configuration window
7. Enter required settings (configuration window is shown in fig. 7, while options are described in table 4)
8. Select *Send to Device* button – the software shall upload new settings
9. Remove jumper from MEM pins
10. Restart the device (place and remove jumper on RST pins or switch power supply off and on)

Note:
During connection procedure placing jumper on MEM pins and restarting the device restores its factory default settings.

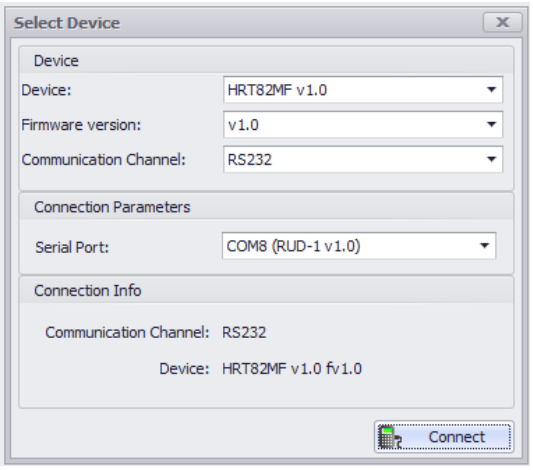



Fig. 6 Device select window in RogerVDM software

| | |
|---|---|
| General | |
| Device Name | none |
| Transmission Format | |
| RACS CLK/DTA Address | 1 |
| Communication Timeout | 20.0 |
| Optical Signalization | |
| Keypad Backlight Level | [6]: 100% |
| Backlight Animation | [0]: Off |
| Backlight Dim | [1]: On |
| Acoustic Signalization | |
| Buzzer Loudness Level | [5]: 100% |
| Card Read Confirmation Signal On Buzzer | [1]: Yes |
| Key Press Confirmation Signal On Buzzer | [1]: Yes |
| CSN Number Settings | |
| CSN Number of Bytes | 8 |
| Mifare Classic Settings | |
| Card Number | [0]: CSN |
| Format | [0]: BIN |
| LSB | 0 |
| MSB | 7 |
| Sector ID | 0 |
| AID | 5156 |
| Block ID | 0 |
| Key Type | [0]: A |
| Key | FFFFFFFFFFFF |
| Advanced Settings | |
| Stop Card/PIN Reading When Buffer is Full | [0]: No |
| Card/PIN Buffer Timeout | 2.0 |
| Card/PIN Frames Encryption | [0]: Off |

Fig. 7 Configuration window in RogerVDM software

| **Table 4. Configuration parameters** | | |
|---|---|---|
| Parameter | Values | Description |
| General | | |
| Device Name | 16 ASCII characters | Device description which can be filled with any comment by installer |
| Transmission Format | | |
| RACS CLK/DTA Address | 0..15 | Device address on RACS CLK/DTA bus. Default address ID=1 is required for communication with HRC controller, while the address ID=0 is required for communication with PR821-CH controller. |

| | | |
|---|---|---|
| Communication timeout | 0..255 | The device signals communication failure when selected timeout [0.5s] elapses. When 0 is selected then failure is not signalled at all. |
| Optical Signalization | | |
| Keypad Backlight Level | 0..100% | Keypad backlight level |
| Backlight Animation | On, Off | When activated, panel will temporary switch on keypad full backlight when card is read or key is pressed and dim the backlight afterwards. |
| Backlight Dim | On, Off | When activated, panel will temporary switch off keypad backlight when card is read or key is pressed. |
| Acoustic Signalization | | |
| Buzzer loudness level | 0..100% | Buzzer loudness level. Buzzer is switched off when 0 level is selected |
| Card Read Confirmation Signal on Buzzer | Yes, No | When activated, card reading is signalled with buzzer. |
| Key Press Confirmation Signal On Buzzer | Yes, No | When activated, button pressing is signalled with buzzer. |
| CSN Number Settings | | |
| CSN Number of Bytes | 0..8 | The parameter specifies how many bytes of read only Chip Serial Number (CSN) is used in UID card number. |
| Mifare Classic Settings | | |
| Card number | CSN, MSN. SSN | When CNS is selected then UID includes only this number. When MSN or SSN is selected then it is possible to use administrator defined UID. It is also possible to define UID consisting partially of CSN and MSN or SSN. |
| Format | BIN, HEX ASCII | Card number format. When BIN is selected then bytes from card correspond to UID number. When HEX ASCII is selected then bytes from card correspond to UID in ASCII hexadecimal format. |
| LSB | 0..15 | The location of MSN or SSN first byte. |
| MSB | 0..15 | The location of MSN or SSN last byte. |
| Sector ID | 0..39 | Sector number with SSN. For MSN this setting is disabled. |
| AID | 0000..FFFF | AID number in MAD sector which defines sector with MSN. For SSN this setting is disabled. |
| Block ID | 0..14 | Block number in the sector with MSN or SSN. |
| Key Type | A, B , Roger | Type of key used for reading MSN or SSN. |
| Key | 00000000000.. FFFFFFFFFFFF | Six bytes key used for reading MSN or SSN. |
| Advanced Settings | | |
| Stop Card/PIN Reading When Buffer is Full | yes, no | When activated, Card/PIN reading is stopped until buffer is empty. |

| | | |
|---|---|---|
| Card/PIN Buffer Timeout | | The device periodically resets its Card/PIN buffer when selected timeout [0,5s] elapses. When 0 is selected then buffer reset is off. |
| Card/PIN Frames Encryption | | When activated, frames with data from Card/PIN buffer are encrypted (EEA). |

## 4.2 Firmware update

HRT82MF firmware can be updated with RogerVDM (available at www.roger.pl) after connection to RUD-1 communication interface.

**Firmware update procedure**

1. Connect device to RUD-1 communication interface according to fig. 5
2. Install and start RogerVDM software
3. Close *Select Device* window
4. In top menu select *Tools->Update firmware*
5. In the opened window select device, port with connected RUD-1 and specify path to firmware file (*.hex) – see fig. 8
6. According to displayed message place jumper on FDM pins and restart the device (place and remove jumper on RST pins or switch power supply off and on)
7. Select *Update* button
8. After firmware upload remove jumper from FDM pins and reset device (place and remove jumper on RST pins or switch power supply off and on)

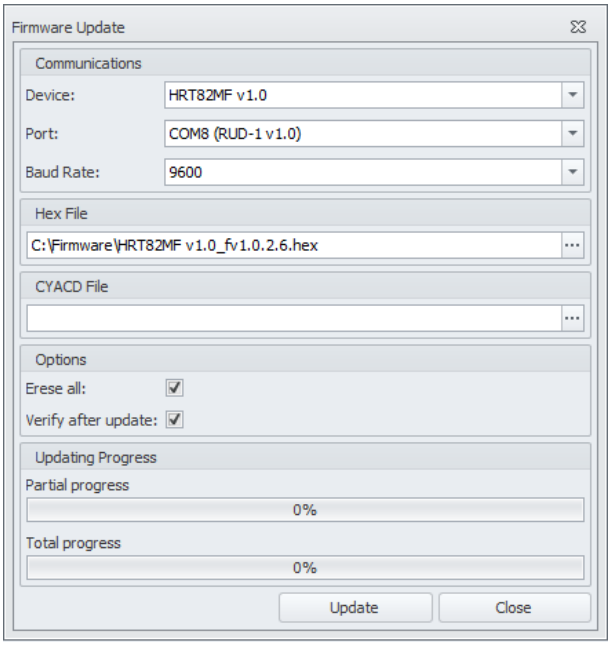



Fig. 8 Firmware update window in RogerVDM software

## 4.3 Memory reset

In order to restore HRT82MF factory default settings place jumper on MEM pins and then restart the device either by placing and removing jumper on RST pins or by switching power supply off and on. Moreover, memory reset is also part of connection and configuration procedure (see 4.1).

# 5. TROUBLESHOOTING

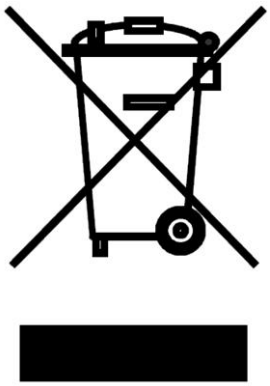
| Table 5. Troubleshooting | | | |
|---|---|---|---|
| Issue | Visual indication | Acoustic indication | Solution |
| No communication with controller | All LED indicators are blinking. | - | 1. Check if RACS CLK/DTA bus is properly connected, wires are undamaged and the bus does not exceed 150 m. All devices connected to particular RACS CLK/DTA bus should have common supply minus (GND).<br>2. Check if the controller is properly configured for communication with the device. |
| Device configuration error | HOTEL STAFF green LED indicator single blinking every 2 sec. | Short beep every 2 sec. | 1. Connect the device to PC with RogerVDM software and configure it again (see 4.1). |
| Device firmware error | HOTEL STAFF green LED indicator double blinking every 2 sec. | Short double beep every 2 sec. | 1. Upload the firmware again (see 4.2) |

# 5. ORDERING INFORMATION

| Table 6. Ordering information | |
|---|---|
| HRT82MF | MIFARE hall card reader |
| RUD-1 | Communication interface with 12VDC power supply output |

# 6. PRODUCT HISTORY

| Table 7. Product history | | |
|---|---|---|
| Version | Released | Description |
| HRT82MF v.1.0 | 07/2014 | The first commercial version of the product |
| HRT82MF v.1.1 | 03/2015 | Modified icon on front panel |



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