

Roger Access Control System

Graphic touch panel MD70 v3.0

User Manual

Firmware version: 1.x

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Contents

1. Description and Specification.....	3
2. Configuration.....	3
2.1 Configuration wizard.....	3
2.2 MD70 Configuration.....	5
2.3 Configuration for access control system (RACS 5)	5
2.4 <i>Settings MD70</i> app	5
2.4.1 Communication	6
2.4.2 Credentials settings	7
2.4.3 Comments	9
2.4.4 Function keys	9
2.4.5 Advanced	9
2.4.6 Default	10
2.5 <i>AdminMode</i> app	10
2.6 <i>Settings</i> app	10
2.6.1 Wireless & networks	10
2.6.2 Device	10
2.6.3 Personal.....	11
2.6.4 System	11
2.7 Other preinstalled apps.....	12
2.7.1 File explorer	12
2.7.2 Ethernet.....	12
2.7.3 Browser	12
2.7.4 Emaila	12
2.7.5 Restart.....	12
2.7.6 Clock	12
2.8 App installation	12
3. Installation	12
3.1 Terminals and connection diagram	12
3.1.1 R485 bus	13
3.1.2 Ethernet connection.....	13
3.2 Power supply	13
3.3 LED indicators.....	14
3.4 Installation and use guidelines	14
4. Ordering information.....	15
5. Product history	15

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The product communicates only with another network device using a non-Internet-compatible communication protocol.

1. DESCRIPTION AND SPECIFICATION

MD70 is a graphical touch panel with built-in camera and dual band 125kHz/13,56 MHz proximity reader. Generally, terminal is dedicated for operation in as a user authentication device and system commanding terminal in the RACS 5 access control and building automation system. In particular, MD70 is suitable for operation as a time and attendance registration point. It is possible to install on the panel third party Android applications and thus extend its functionality. Users can be authenticated on the terminal by proximity card, PIN. MD70 allows definition of Widgets which can be used to trigger any arbitrary selected action in the RACS 5 system or, to present any of its states. The built-in camera can be used to make photos of the system users who login on the terminal and for online picture transmission to the access system management software. The MD70 can be connected to the access controller via a wired RS485 bus. The device is stylistically aligned with QUADRUS device series.

Table 1. Technical Specification	
Parameter	Value
Nominal supply voltage	12VDC
Nominal current consumption	~500mA, 800mA max (current consumption depends on CPU load)
Screen	7" / 800x480px, capacitive touch panel
Camera	2 Mpx / Autofocus
Communication interfaces	Ethernet, RS485
Built-in reader	Card reader EM125kHz and ISO/IEC 14443A/MIFARE Ultralight, Classic, Plus; DESFire EV1, EV2, EV3.
Environment	Indoor general conditions, temperature: +5°C to +40°C, relative humidity: 10 to 75% (no condensation)
Dimensions (H x W x D)	134 x 218 x 25mm
Weight	approx. 500g
Compliance	CE, RoHS

2. CONFIGURATION

MD70 panel can be operated in two device modes: as Access Point in RACS 5 access control system (*RACSPoint* app in fullscreen or building automation mode) or as undefined mode. The mode can be selected with *Configuration Wizard* app (when started for the first time) or *Settings MD70* app (any time).

2.1 Configuration wizard

Configuration wizard app is displayed automatically when the panel is started for the first time. Select language version and accept license agreement in order to start selection screen with available device modes (fig. 1). The panel can work as RACS 5 terminal (*RACSPoint* app) or without

any startup app (Undefined). The device mode can be selected or changed later using *Settings MD70* app.

Note: The list of available options depends on installed apps.

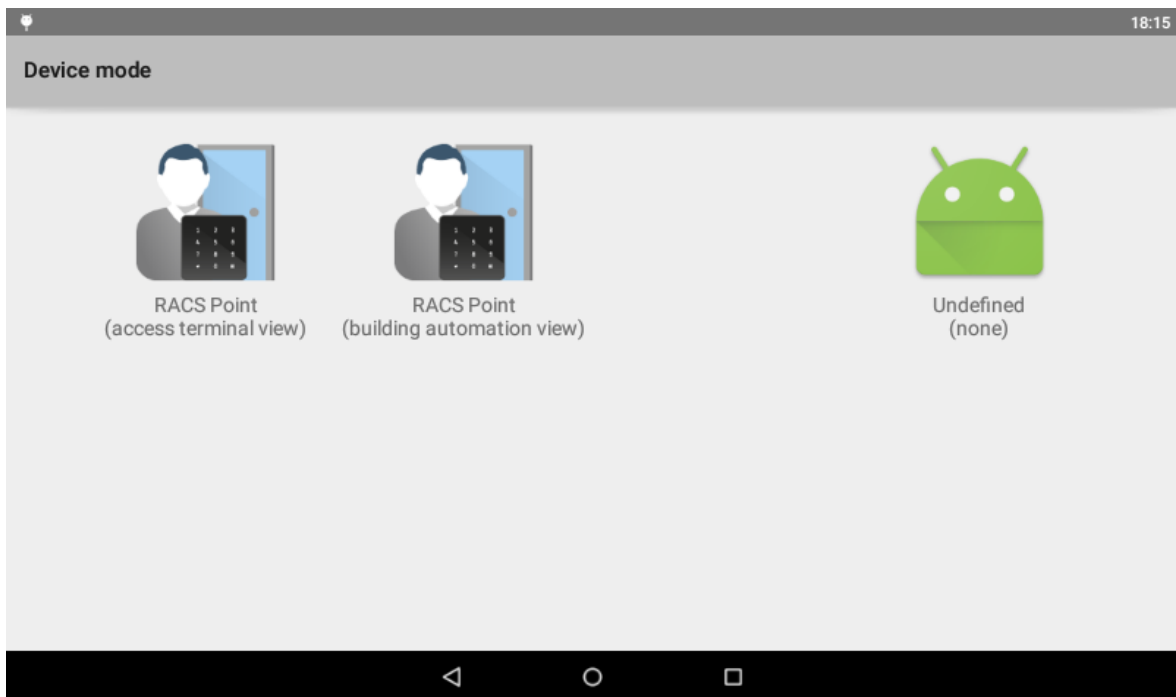


Fig. 1 Device mode selection

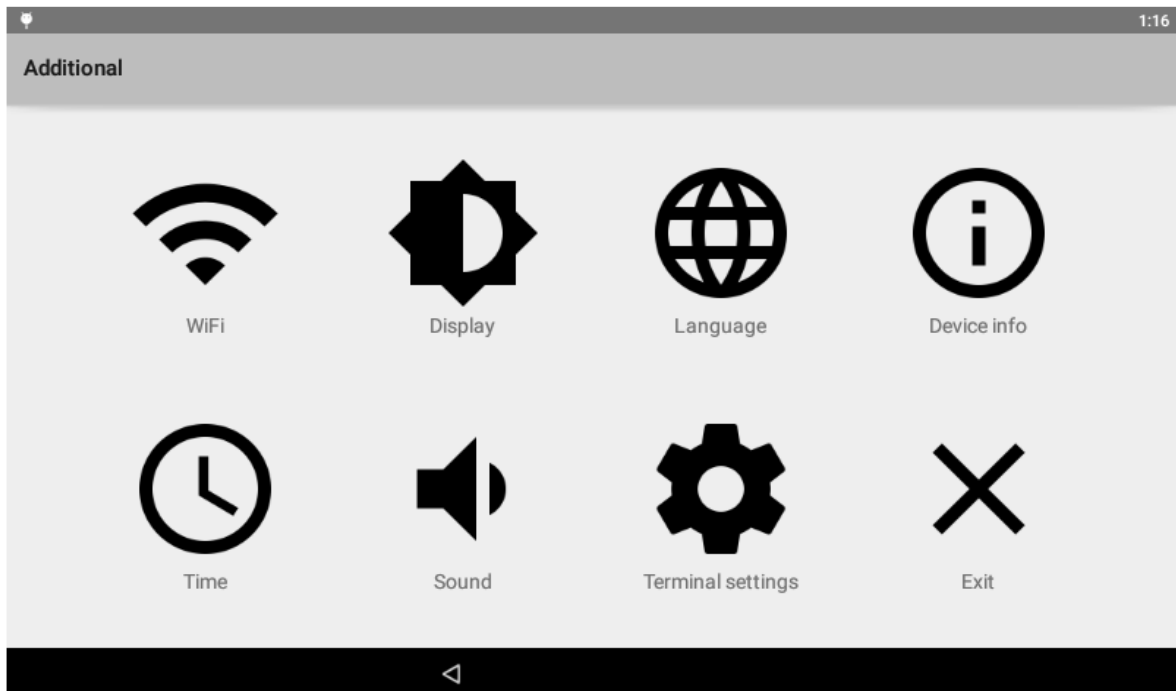


Fig. 2 Additional settings

In the next window it is possible to define additional settings and to display device information. Terminal settings icon is a shortcut to *Settings MD70* app which is used to configure basic parameters for operations with Roger systems. The *Settings MD70* app is described in point 2.4. When *Exit* icon is selected then device is restarted in selected device mode.

Note: IP address of MD70 terminal is defined with *Ethernet* app, which is mentioned in point 2.7.2.

2.2 MD70 Configuration

When *Configuration wizard* and *Settings MD70* app is closed then the configuration or modification of settings is possible within service mode which is started by clicking green icon on the right part of screen (fig. 3) and then entering password (by default "admin"). The access is granted for 15 minutes and then it can be automatically disabled. It is also possible to immediately block the access to service menu using *AdminMode* app.

Basically, settings in service menu can be divided into general settings ("Settings app" section) such as display or sound parameters and Roger system settings ("Settings MD70 app" section).

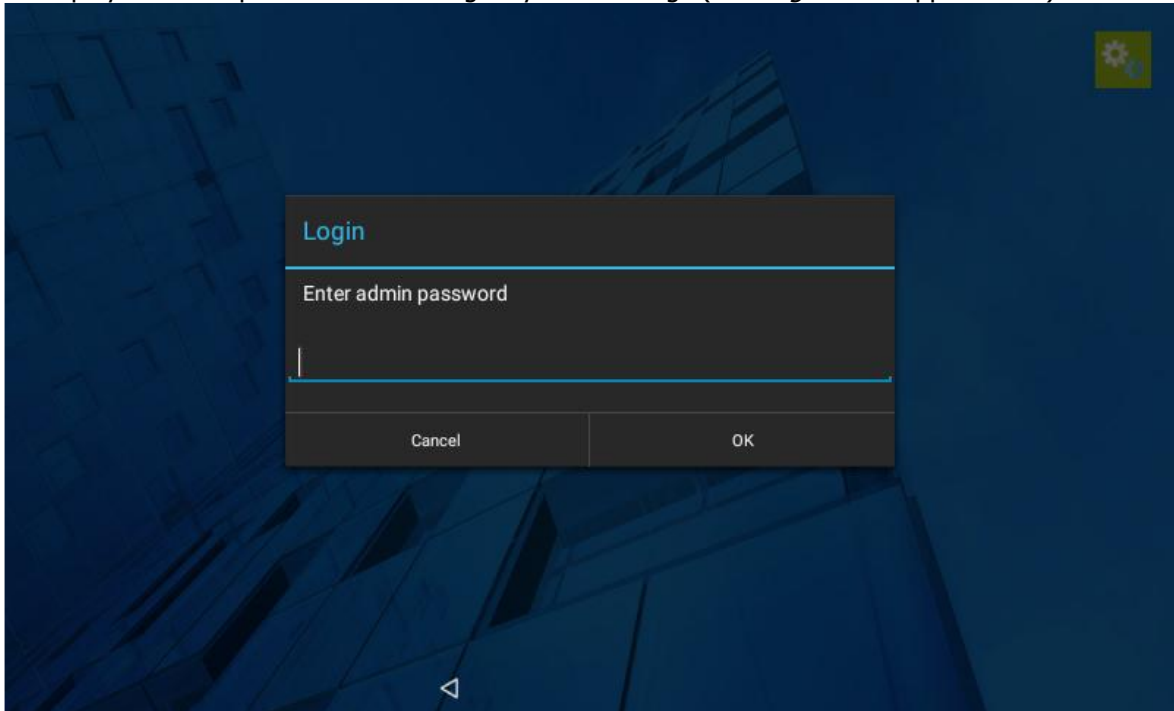


Fig. 3 Login screen for MD70 service menu.

2.3 Configuration for access control system (RACS 5)

In order to use the MD70 in the RACS 5 system, select and configure the communication channel (RS485) in the "MD70 Settings" application (detailed description in section 2.4) and activate one of the RACS Point application modes. The RACS Point application can operate in two selected modes:

- Access terminal mode: the app is started automatically showing system login window including camera view, numeric keypad and message display
- Building automation mode: the app operates in background and enables to use widgets to control building automation. This mode allows to use third party widgets.

After exiting *Settings MD70* app, the *RACS Point* app shall be started automatically.

Note: Specific *RACS Point* settings are configured within the app.

2.4 Settings MD70 app

Regardless of selected device mode, basic parameters for operations in RACS 5 system are configured with *Setting MD70* app (fig. 4). Detailed information on the rules for configuring card reading and submitting the PCN code is available in the user manual for the MCT series readers.

Note: Settings are saved automatically when you exit the application (the "back" on-screen button at the bottom of the display). After saving the settings, the application may automatically launch according to the entered settings.

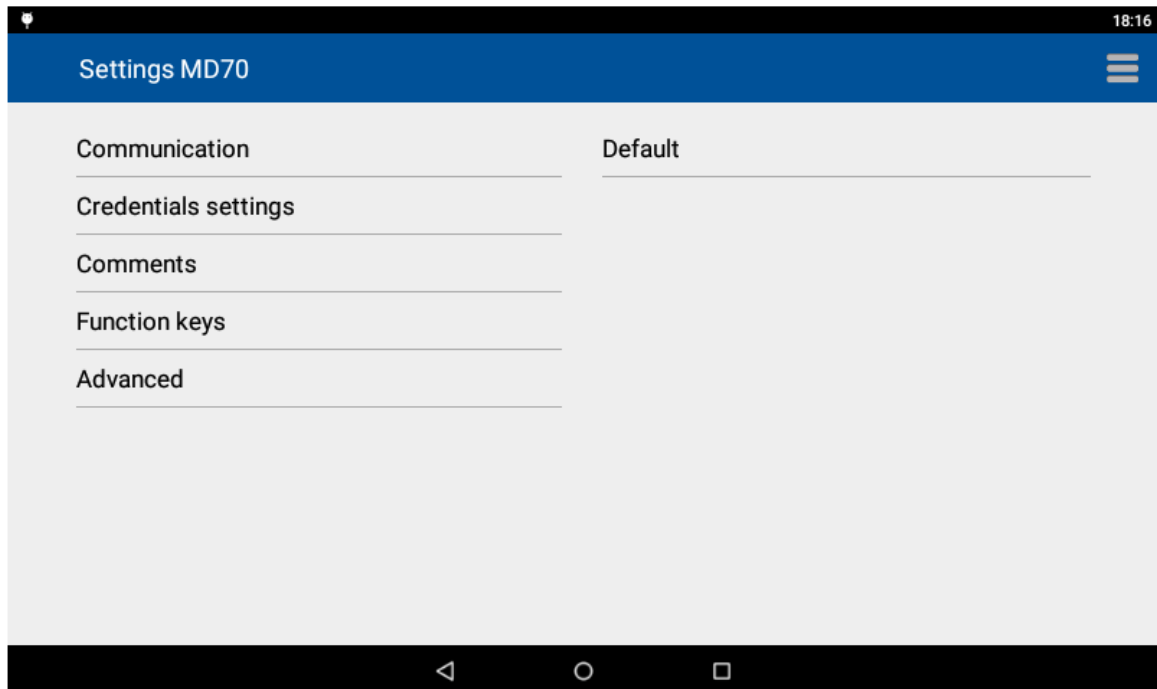


Fig. 4 *Settings MD70* app start screen

2.4.1 Communication

RS485 address

Defines MD70 address on RS485 bus. The channel number indicates serial port with connected device e.g. RS485A (addresses in range 100-115), RS485B (addresses in range 200-215).

Communication lost signalization delay [s]

Defines time in seconds after which reader will signal lost of communication with controller. The value '0' disables the function.

Encryption enable [off, on]

When option is active reader will encrypt data transmitted over RS485 communication bus.

Communication key

Encryption key for RS485 bus communication.

UDP settings

Host IP address (function unavailable)

Defines IP address of master device (e.g. MCX16-RS) connected to MD70 terminal.

Device communication port (function unavailable)

Defines port of master device (e.g. MCX16-RS) connected to MD70 terminal.

Broadcast port (function unavailable)

Defines port for device and service function detection.

Communication key (function unavailable)

Encryption key for UDP communication.

VCR settings

Device communication port

Defines port for VCR communication (video from built-in camera).

Communication key

Encryption key for VCR communication.

RogerVDM Communications settings (function unavailable)

Communication key (function unavailable)

Encryption key for communication with RogerVDM software.

Device communication port

Defines port for communications with RogerVDM software.

2.4.2 Credentials settings

The tab for configuration of cards and QR codes. Detailed information of card reading and CSN/PCN are covered in MCT reader manuals.

2.4.2.1 CSN settings

CSNL

CSNL parameter specifies the number of bytes taken from CSN number and used to create the RCN number.

Card read mode [0: MF + EM, 1: MF, 2: EM]

Choice of card technology to be read by the built-in reader. Choosing 'MF + EM' causes simultaneous reading of EM125kHz cards and Mifare cards.

2.4.2.2 Mifare Classic settings

Card type [0: NONE, 1: SSN, 2: MAD]

Specifies the type of sector where PCN number is stored. If value '0' is set then RCN will be formed from CSN number only. If value '1' is chosen then PCN code will be read from file on the card.

Format [0: BIN, 1: ASCII HEX]

Format of data in the block.

First byte position (FBP) [0-15]

Specifies position of the byte in data block where PCN number begins.

Last byte position (LBP) [0-15]

Specifies position of the byte in data block where PCN number ends.

Sector ID [0-39]

Key used to encrypt data on card.

AID [0000-FFFF]

Specifies AID number (Application Identifier) of the file where PCN code is stored. By default: 5156 (Roger AID).

Block ID [0-14]

Block ID in the sector with PCN. For sectors 0-31 blocks 0-2 are available, while for sectors 32-39 blocks 0-14 are available.

Key type [0: Key type A, 1: Key type B]

Specifies key type used to encrypt data stored on the card.

Card key [000000000000-FFFFFFFFFFFF]

12 bytes key used to encrypt data stored on the card.

2.4.2.3 Mifare Ultralight settings**Card type** [0: NONE, 1: SSN, 2: MSN]

Specifies the type of sector where PCN number is stored. If value '0' is set then RCN will be formed from CSN number only. If value '1' is chosen then PCN code will be read from file on the card.

Page number [0-12]

Memory page number with PCN number

2.4.2.4 Mifare Plus settings**Card type** [0: NONE, 1: SSN, 2: MAD]

Specifies the type of sector where PCN number is stored. If value '0' is set then RCN will be formed from CSN number only. If value '1' is chosen then PCN code will be read from file on the card.

Format [0: BIN, 1: ASCII HEX]

Format of data in the block.

First byte position (FBP) [0-15]

Specifies position of the byte in data block where PCN number begins.

Last byte position (LBP) [0-15]

Specifies position of the byte in data block where PCN number ends.

Sector ID [0-39]

Key used to encrypt data on card.

AID [0000-FFFF]

Specifies AID number (Application Identifier) of the file where PCN code is stored. By default: 5156 (Roger AID).

Block ID [0-14]

Block ID in the sector with PCN. For sectors 0-31 blocks 0-2 are available, while for sectors 32-39 blocks 0-14 are available.

Key type [0: Key type A, 1: Key type B]

Specifies key type used to encrypt data stored on the card.

Card key [000000000000-FFFFFFFFFFFF]

12 bytes key used to encrypt data stored on the card.

2.4.2.5 Mifare DESFire settings**Card type** [0: NONE, 1: SSN, 2: MAD]

Specifies the type of sector where PCN number is stored. If value '0' is set then RCN will be formed from CSN number only. If value '1' is chosen then PCN code will be read from file on the card.

Format [0: BIN, 1: ASCII HEX]

Format of data in the block.

First byte position (FBP) [0-15]

Specifies position of the byte in data block where PCN number begins.

Last byte position (LBP) [0-15]

Specifies position of the byte in data block where PCN number ends.

Sector ID [0-39]

Key used to encrypt data on card.

Application ID [0000-FFFF]

Specifies AID number (Application Identifier) of the file where PCN code is stored. By default: 5156 (Roger AID).

File ID [0-32]

Defines file number in which RCN is placed. For DESFire EV0 cards it is acceptable number from 0 to 16, however in EV1 cards numbers from 0 to 32 can be used.

Key number [0-13]

Defines key ID of application which is used to encrypt file.

Communication protection level [0:Plain, 1: Data authentication by MAC, 2: Full encryption]

Defines encryption for communication between card and reader.

General key number [0-13]

Defines file access key number on card.

Key type [0 – TDES Crypto DESFire Native Mode, 1 – TDES Crypto Standard Mode, 2 – 3KTDES Crypto, 3 – AES128 Crypto]

Defines type of access key number on card.

Key [0000000000000000-FFFFFFFFFFFFFFFF]

Key used to encrypt data on card. 3KTDES key type contains 24 bytes, TDES and AES keys contain 16 bytes.

2.4.2.6 QR code**QR key** [0000000000000000-FFFFFFFFFFFFFFFF]

16-bytes protection key for QR code reading.

2.4.3 Comments

Comments are used to enter text information for available objects. Comments are then displayed in management software (e.g. VISO) to allow easier identification of device objects.

2.4.4 Function keys

The section enables to configure function keys for their use in *RACS Point* app and define their descriptions.

2.4.5 Advanced

Card number data type [1: None, 2: Number 16 bit, 4: Number 24 bit, 8: Number 32 bit, 16: Number 40 bit, 32: Number 56 bit, 64: Number 64 bit, 128: CID32B, 256: ABA_TRACK2, 512: F8C16, 1024: F16C32, 2048: GUID, 4096: SAN] (default: Number 40 bit)

Defines data type returned by reader to controller.

LED SYSTEM flash after card read [on, off] (default: on)

When option is set LED SYSTEM generates single flash whenever card is read.

Card/PIN buffer timeout [s] [0-64] (default: 10s)

Time in seconds after which Card/PIN buffer will be automatically cleared.

LCD6 mode (function unavailable)

Keypad settings**Time between keys [s]** [1-64] (default: 10s)

Defines max. time in seconds between two consecutive key presses.

Single key press [on, off] (default: on)

When option is active reader will report every single key press to controller. When disabled then full PIN is transmitted.

Min. length of PIN [0-16] (default: 4)

Defines minimal number of digits in PIN. When '0' is selected then PIN is disabled.

Max. length of PIN [0-16] (default: 16)

Defines maximal number of digits in PIN.

Allow [*] key on PIN beginning [on, off] (default: off)

When option is active then terminal allows to use asterisk [*] key on the first position of PIN. The key can be recognized by controller for special functions.

Device mode**Device mode**

Defines MD70 device mode and allows to specify startup app.

Advanced**Daily reboot** [on, off] (default: on)

When option is active then terminal is automatically restarted daily.

2.4.6 Default

The section allows to restore default settings (concerns only *Settings MD70* app).

Note: Settings are saved automatically when the app is exited (Back button on terminal screen). Selected app is started automatically or system apps are restarted when *Settings MD70* app is exited.

2.5 AdminMode app

The app is used to manage access to such MD70 areas as notification bar and service menu (both should be deselected prior to MD70 use in premises). Additionally the context menu of the app (top right corner) includes following commands:

- Password change – admin password configuration
- System settings – shortcut to system settings
- Device info – Basic device information is displayed including network settings
- System log – Basic device information is saved in file log located at storage/sdcard0/LOG/.
- Reboot – device restart

2.6 Settings app

The app is used to modify general settings of MD70 terminal.

2.6.1 Wireless & networks**2.6.1.1 Wi-Fi (function unavailable)****2.6.2 Device****2.6.2.1 Display**

Wallpaper: background for building automation mode

Sleep: time for screensaver activation

Screensaver: screensaver selection menu and configuration

Font size: Font size modification on the display

2.6.2.2 Sound & notification

Sound: sound settings configuration

Default notification ringtone: ringtone configuration

Other sounds: screen locking and touch sounds

Notification: management of app notifications, access to notifications is blocked when status bars are locked

2.6.2.3 Storage

Displays summary information on device memory

2.6.2.4 Apps

Displays list of installed apps (including details) and allows to uninstall them. Additionally information on RAM usage is available.

2.6.3 Personal

2.6.3.1 Accounts

Email configuration.

2.6.3.2 Language & input

Language: app and menu language selection

Spell checker: spell checker for text entered with screen keyboard

Personal dictionary: list of own expressions to be used by spell checker

Keyboard & input methods: keyboard settings (Android keyboard by default)

Speech: text-to-speech settings

Mouse/trackpad: pointer speed setting

2.6.3.3 Backup & reset

Full factory data reset

Note: All user settings, additional apps and device settings shall be erased. Device starting after full factory reset may take up to 20 minutes.

2.6.4 System

2.6.4.1 Date & time

Automatic date & time: automatic date/time synchronization; Internet connection required.

Automatic time zone: automatic time zone synchronization; Internet connection required

Set date: manual date configuration

Set time: manual time configuration

Select time zone: manual time zone selection

Use 24-hour format: 24-hour format selection

Choose date format: regional or manually selected

2.6.4.2 About tablet

Status : Network information including IP and MAC addresses, serial number and operation time

Legal information: information on software component licenses

Model number: MD70 model

Android version, Kernel version, Build number: Android OS version and compilation number

2.7 Other preinstalled apps

2.7.1 File explorer

MD70 internal memory card is located at /storage/sdcard0, while mass storage device connected to USB port is located at /storage/usbdisk.

Note: The access to system files is blocked but still it is necessary to remain cautious when file and folder names are deleted/renamed.

2.7.2 Ethernet

The app is used to configure Ethernet connection of MD70 including its IP address

2.7.3 Browser

Internet browser.

2.7.4 Email

Email app.

2.7.5 Restart

Device restart app.

2.7.6 Clock

Besides actual time display the app includes alarm clock, timer and stopwatch.

2.8 App installation

In order to update selected app or install new app it is necessary to download it from Internet or connect USB drive with the app to MD70 (automatically mounted at storage/usbdisk) and then use *File explorer* app.

Note: Due to security reasons or device compatibility with Roger systems, the installation and/or proper operations of some apps on the MD70 might be impossible. Each additional app uses MD70 resources and it may interrupt the operation of Roger software. Therefore the risk and responsibility related to installation of third party apps is borne by user.

Factory new device is equipped with the latest versions of all Roger apps. Some Roger apps may require MD70 operating system update or installation/update of other apps.

3. INSTALLATION

3.1 Terminals and connection diagram

Table 2. MD70 terminals and ports	
Terminal/ port	Description
12V	12VDC power supply
GND	Ground and RS485 bus reference potential
A	RS485 communication bus, line A
B	RS485 communication bus, line B
ETH0	Ethernet port
USB	USB host port

The MD70 installation control panel must be connected to the controller via the RS485 bus. Regardless of such selection some functionalities still may require connection to computer network (e.g. when MD70 is connected to controller via RS485 bus, photos can be transferred only through Ethernet). USB port is used for connection of mass storage device (pendrive) which can for example be used to update MD70 app.

3.1.1 RS485 bus

Connect power supply and both A and B lines of RS485 bus according to fig. 5.

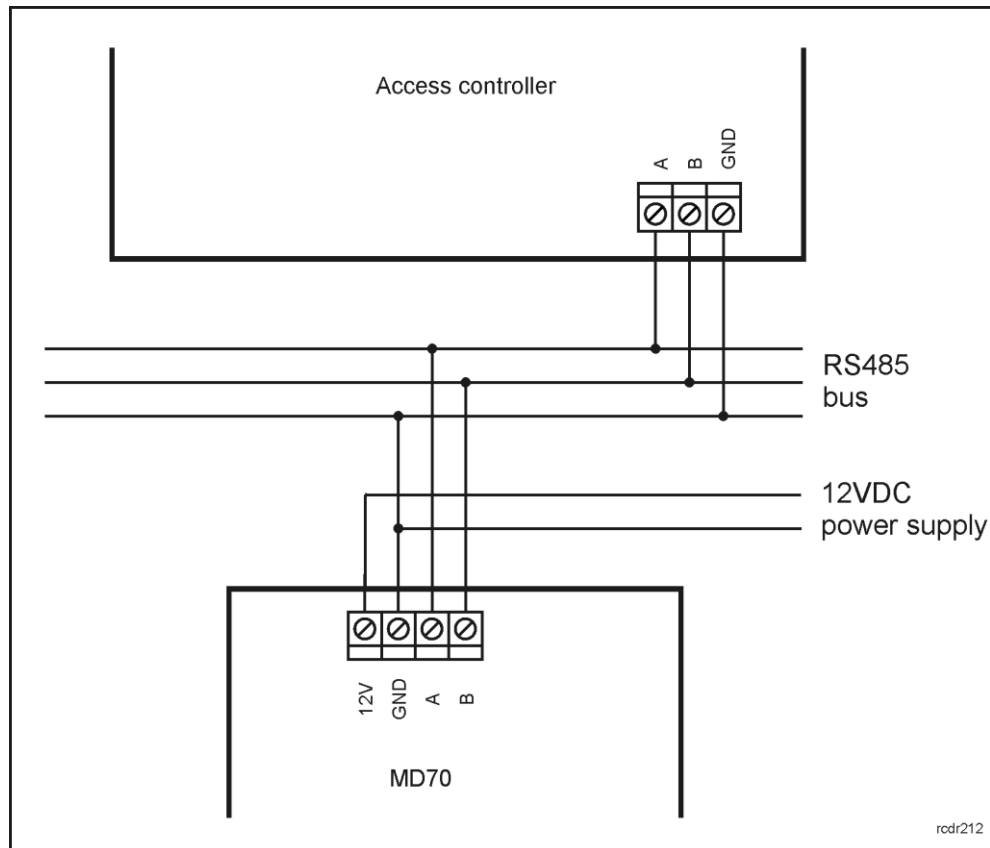


Fig. 5 MD70 connection to RS485 bus

Installation guidelines:

- the maximal distance between controller and terminal cannot exceed 1200m
- each device connected to RS485 bus must have unique address in range of 100-115
- all devices connected to the same RS485 communication bus should be connected to the same negative potential (GND)
- any RS485 bus topology can be used except for loop

3.1.2 Ethernet connection

Connect power supply and Ethernet cable with RJ45 connector to the MD70..

Note: The device may not work properly on 1Gb/s networks.




3.2 Power supply

The terminal requires 12VDC nominal power supply. The power should be connected to the +12V line and GND line. Additionally, the GND line can be used as reference potential for the RS485 bus (if used). All devices connected to RS485 bus should have the same supply minus (GND).

Note: Due to relatively high current consumption (up to 800mA), the MD70 requires efficient power supply unit and supply wires with adequate cross sections in order to prevent significant voltage drop. Unstable PSU may cause random restarting or even make MD70 starting impossible.

3.3 LED indicators

The MD70 terminal is equipped with three LED indicators. Their function depends on started app. In case of *RACS Point* app, indicators are compatible with MCT series readers.

Table 3. LED indicators in RACS systems			
Symbol	Name	Colour	Description
	STATUS	Red/Green	Armed/disarmed mode of Alarm Zone
	OPEN	Green	Door unlocked
	SYSTEM	Orange	This indicator is used mainly for signalling following system errors: <ul style="list-style-type: none"> • microcontroller memory failure (steady light). In such case restore default settings of the app • configuration error (2 Hz flashing light). In such case restore default settings of <i>Settings MD70</i> app

Note: No communication with master device (controller) is signalled with all LEDs flashing.

3.4 Installation and use guidelines

- The terminal consists of front panel and base which are factory assembled and they must be disassembled prior to terminal installation using standard flat head screwdriver. Insert flat ending successively into all four holes on both sides in order to release internal latches (fig. 5)
- The terminal should be installed on vertical structure (wall) far from heat and moisture.
- In particular, it is not allowed to install the device in places in places with high humidity and presence of fumes such as saunas, swimming pools, car washes, etc.
- Ensure power supply wires with adequate cross section and PSU with proper output power.
- It is recommended to install the terminal on double flush mounting box.
- Install terminal base with included screws according to the orientation indicated on the enclosure and in such way as to ensure tamper contact pressed against the surface.
- Connection wires should be led through hole in the base to MD70 screw terminals.
- All electric cables must be connected to devices with disconnected power supply.
- If terminal and controller are supplied not from the same PSU then GND terminals of both devices should be shorted.
- Do not short 12VDC power supply terminals.
- Clean front panel regularly by means of wet cloth and mild detergent. Do not clean by means of abrasive materials and strong cleaners like alcohols, solvents, etc. Damages to screen surface are beyond the scope of warranty.
- The electronic module inside the housing is sensitive to electrostatic charges (ESD). Before performing any work on the device's electronic module, the person performing the work must discharge any accumulated electrostatic charge. This can be accomplished, for example, by touching a grounded metal object with their bare hand.
- The product communicates only with another network device using a non-Internet-compatible communication protocol.

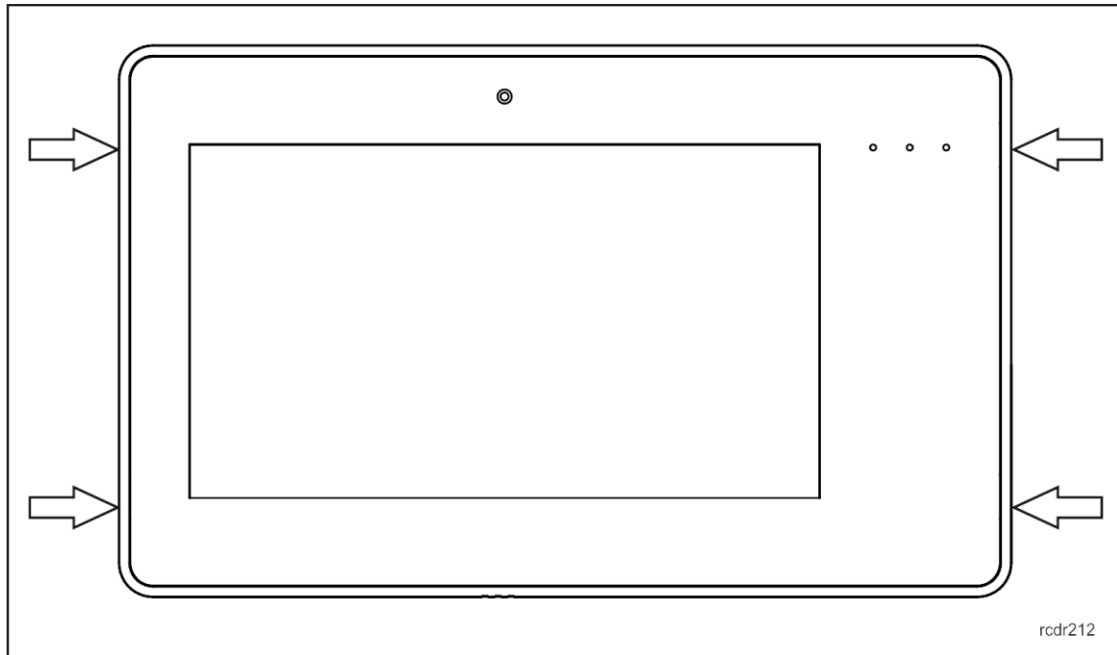


Fig. 6 MD70 enclosure opening

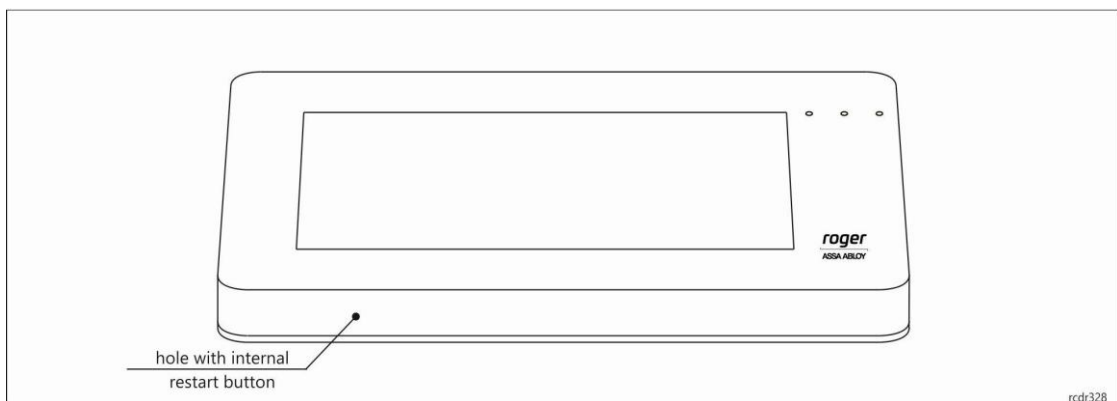




Fig. 7 MD70 restart button

4. ORDERING INFORMATION

Table 4. Ordering information	
Product	Description
MD70	Graphic touch panel with Mifare Classic/DESFire reader

5. PRODUCT HISTORY

Table 5. Product history		
Product version	Released	Description
1.0.4	I 2017r.	The first commercial version of the product
2.0	III 2023r.	The second commercial version of the product
3.0	III 2025 r.	The third commercial version of the product

 	<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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