Roger Access Control System

PRxx2 series controllers
Functional description and programming guide

Document version: Rev. F

This document refers to following products:
PR102DR, PR402DR, PR402DR-BRD, PR402-BRD, PR602LCD, PR612, PR622 and PR302

Contents:

Typing conventions

Functions, options and commands	bold letter
Examples	italics letters
Specific names related to RACS4 system	with first capital letter
STATUS, FLAG OR TIMER	capital letters
Notes	separated with two lines (upper, lower) from the standard text

I. GENERAL

1.1 Introduction

This document applies to PRxx2 series advanced controllers and includes devices with built-in EM125kHz reader for installation near the door (PR602LCD, PR612, PR622 and PR302) as well as devices without built-in reader for installation inside metal box preferably in some distance from door (PR102DR, PR402-BRD, PR402DR, PR402DR-BRD). PR402-BRD controller is discontinued and it is replaced by PR402DR controller, which is available both in plastic enclosure for installation on DIN 35mm rail (PR402DR) or as electronic module (PR402DR-BRD). The name PR402 applies to all possible models of this controller, while the name PR402DR applies only to both the latest versions. PR102DR controller was developed on the basis of popular PR402DR controller as cost effective solution with simplified hardware and functionalities. PR102DR controller similarly to PR402DR controller is available both in plastic enclosure for installation on DIN 35mm rail (PR102DR) or as electronic module (PR102DR-BRD). In the present document the name PR102DR applies to all versions of that controller. Essential features of PR102DR controller are listed in table 1, section 2.3 and tables 7, 8 and 9. The most effective way of getting acquainted with PR102DR functionalities is to download and install PR Master software, then to load included demo configuration and to open window with PR102DR controller properties in PR Master software.

This manual describes functions and options of PRxx2 series controllers, which can be configured by means of PR Master software. The document includes information on architecture, communication and operation modes. Information which is useful in installation is provided in installation guides of particular controller, while comprehensive information on PR Master software is available in the manual for that software (including Schedules, Access Groups, Access Zones, Online monitoring, Event history, etc.).

1.2 Design and architecture

The PRxx2 series controllers are single door access controllers for two-way door control. Each PRxx2 controller can work with two logical access points (readers) called respectively: Terminal ID0 and Terminal ID1. PR602LCD, PR612, PR622 and PR302 controllers are equipped with built-in EM125kHz reader, which is logically treated as Terminal ID1. The PR402 and PR102DR controllers are not equipped with any built-in reader but they can work with two external readers. Generally, the PRxx2 controllers are designed to operate with PRT series readers (from Roger) configured to RACS Clock&Data data protocol, or with Wiegand 26-66bit or Magstripe protocols. The PR602LCD controller, which is equipped with keypad and LCD, is also recommended as Time&Attendance terminal – see 2.19.2 Time&Attendance based on RCP Master software.

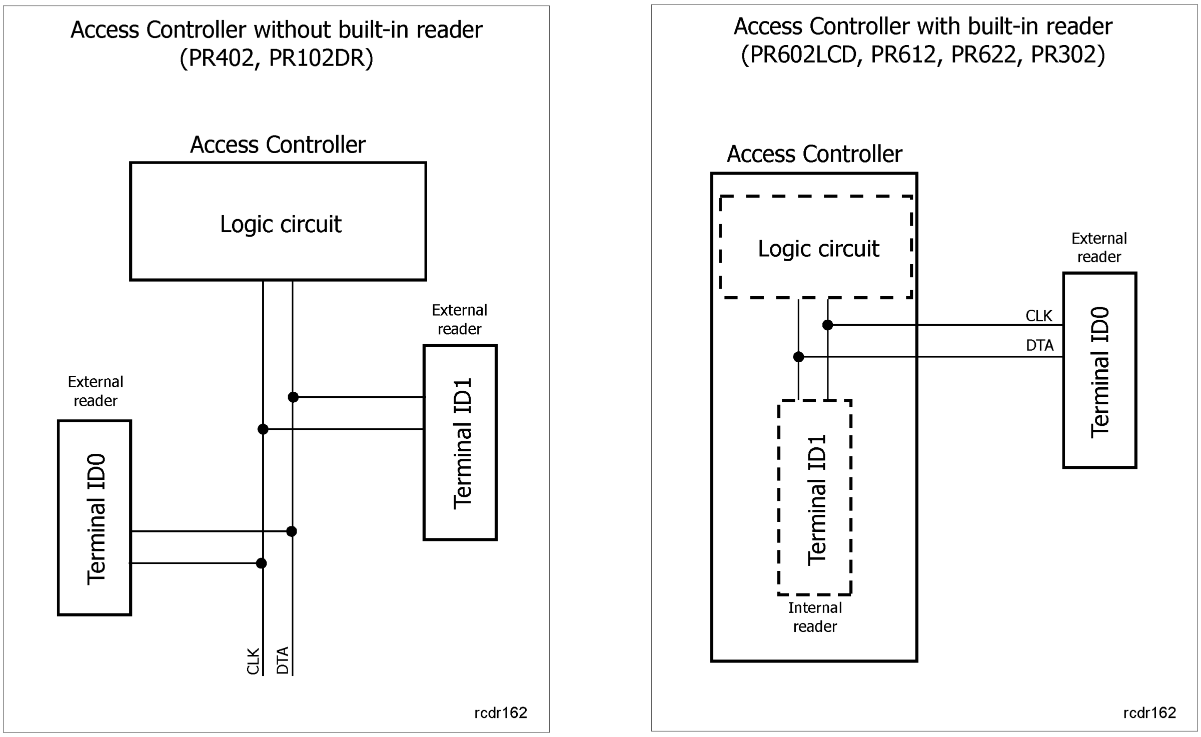


Fig. 1 General architecture of controllers and readers

PRxx2 series controllers (also called advanced ones) contrary to PRxx1 series controllers (also called standard ones) are equipped with built in memory for event storing and with real time clock (RTC). It means, that in case of advanced controllers it is not required to use CPR-32SE network controller in order to ensure time based functions and event recording. The memory buffer in controllers can store up to 32000 events. The CPR-32SE can be installed in subsystem consisting of PRxx2 series controllers but it is not necessary unless such functions as Global APB or Alarm Zones are used (see 2.11 Anti-passback and 2.12 Alarm Zones).
PRxx2 controller can register up to 4000 users. Each user has its own ID number and may have proximity card and/or PIN. Controller firmware can be upgraded on-site by means of RS485 serial interface and what is important the firmware upgrade process does not require unit to be removed from its original place of installation. PRxx2 controllers can operate fully autonomously (Offline and Online Standalone System) or in the Network System with or without CPR32-SE network controller. Advanced controllers must be programmed from PC. Contrary to PRxx1 series controllers, PRxx2 controllers cannot be programmed manually but some commands can be entered manually from keypad. These commands are rather used for device control and not programming (see 2.18 Keypad Commands). Remote programming must be done by means of PC with PR Master software (Roger).
The communication with single controller or management of the whole access control system requires a dedicated interface device e.g.:

- UT-4 (RS485 <-> Ethernet).
- UT-2USB (USB <-> RS485),
- UT-2 (RS-232 <-> RS485),
- RUD-1 (USB <-> RS485),

Table 1. List of PRxx2 series controllers

Controller	PR102DR / PR102DR-BRD	PR402DR / PR402DR-BRD	PR402-BRD	PR602LCD	PR612	PR622	PR302
Power supply	12VDC	12VDC, 24VDC, 18VAC	12VDC, 18VAC	12VDC	12VDC	12VDC	12VDC
Programmable NO/NC inputs	2	8	4	3	3	3	3
Programmable relay outputs	1 x 1.5A/30V	1 x 1.5A/30V 1 x 5A/30VDC and also 5A/230VAC	2 x 5A/30VDC and also 5A/230VAC	1 x 1.5A/30V	1 x 1.5A/30V	1 x 1.5A/30V	1 x 1.5A/30V
Programmable transistor outputs 1A/15VDC	1	2	2	2	2	2	2
Built-in EM 125kHz reader	Not	Not	Not	Yes	Yes	Yes	Yes
External PRT series readers	2	2	2	1	1	1	1
External Wiegand 26-66bit readers	Nie	2	2	1	Not	Not	1
Built-in keypad	Not	Not	Not	Yes	Yes	No	Yes
Built-in function keys	Not	Not	Not	Yes	Not	Not	Not
Other	- with enclosure for installation on DIN 35 mm rail (PR102DR) or as electronic module (PR102DR-BRD).	- with enclosure for installation on DIN 35 mm rail (PR402DR) or as electronic module (PR402DR-BRD). - built-in 1.2A/12VDC power supply unit, - possible direct connection of backup battery	- electronic module, - built-in 1.2A/12VDC power supply unit, - possible direct connection of backup battery.	- outdoor and indoor versions available, - LCD, - screw terminals or connection cable (45 cm).	- outdoor operation, - screw terminals.	- outdoor operation, - screw terminals.	- outdoor operation, - screw terminals, - possible refitting to version without keypad.

1.3 Features of PRxx2 series controllers

Features of advanced series PRxx2 controllers:

- Single door, two-way access control
- Possible connection of PRT series readers (Roger)
- Possible connection of Magstripe oraz Wiegand third party readers (except for PR102DR, PR612 and PR622)
- Operation in Standalone or Network systems
- Real Time Clock with a battery back-up
- Programmable inputs/outputs
- DIN RAIL 35mm enclosure (only PR402DR and PR102DR)
- Elevator access control (max. 32 floors, XM-8 module required)
- Operation with XM-2 I/O module
- Firmware upgrade through RS485 serial port
- Communication with controllers by RS485 bus
- Management through LAN/WAN (UT-4DR or UT-4 interface required)
- PR Master - management and monitoring software (Windows XP/Vista/7)
- Integration with an alarm system via I/O lines and Alarm Zones
- Integration with CCTV systems
- User identification by means of proximity card or PIN
- 32000 event buffer (FIFO)
- Up to 4000 users
- 250 Access Groups
- 99 Schedules
- 128 time periods within single Schedule
- 4 Holiday Schedules (H1-H4)
- Programmable validity time for user proximity card or PIN
- Limited number of access granting for user
- Two User mode (two users required to open door)
- Conditional Access (access allowed when authorized user present)
- High Security mode (identification on both readers required)
- View Map, Evacuation Monitor, Access Point Monitor (in Online Monitoring mode)
- Random user inspection
- Local Anti-passback (single door)
- Global Anti-passback (multiple doors, CPR32-SE required, except for PR102DR)
- Time&Attendance registration
- CE mark

Functional limitations of PR102DR controllers in relation to PRxx2 series controllers:

- Operation only with PRT series readers in RACS Clock&Data mode. Wiegand and Magstripe readers, including biometric readers F7, F10 and F11, long range readers GP60 and GP 90 as well as any third party readers cannot operate with PR102DR,
- Local Anti-passback, excluding Global Anti-passback (see 2.11 Anti-passback),
- Arm/Disarm functionality but without Arm/Disarm Schedules and Alarm Zones (see 2.12 Alarm Zones),
- No Facility Codes (see 2.8 Facility Code),
- Operation with XM-8 modules (elevator access control) and XM-2 modules is not available,
- Only static T&A modes (see 2.19 Time and Attendance (T&A)),
- Following modes are not available: Two User, Conditional Access and High Security, as well as Random user inspection (see 2.17 Special options),
- Only default Identification Mode and Door Mode i.e. Schedules cannot be assigned,
- Limited number of functions for programmable inputs, outputs and functions keys (see sections 2.13, 2.14 I 2.15). Auxiliary Conditions and Schedule are not available,
- Keypad Commands entered from external PRT series reader are not available (see 2.18 Keypad Commands).

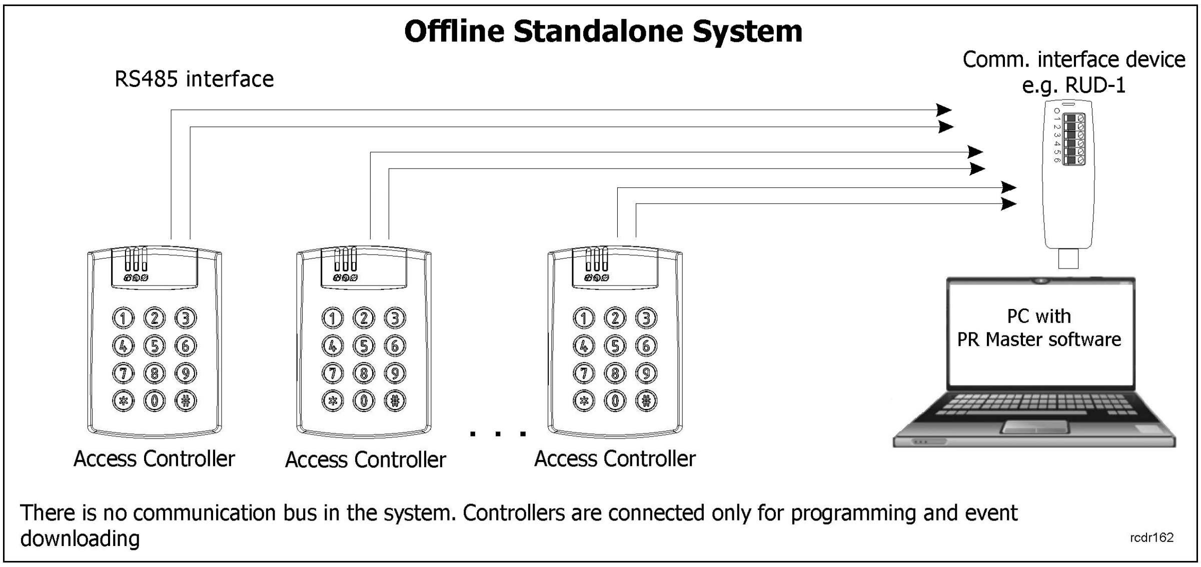
II FUNCTIONAL DESCRIPTION

2.1 Available scenarios of operation

2.1.1 Standalone System

In Standalone mode an access controllers operate autonomously and communicate only with PC. In this mode events are stored in the internal memory buffer of the access controller. All clock-related functions are controlled by an internal clock circuit which is equipped with a battery back-up. Connection to RS485 communication bus is required only for uploading the configuration to the controller and downloading events from the controller. It is not necessary to maintain stable connection with PC (PR Master software) but such connection can be ensured in order to facilitate further servicing. No global functions (Global APB, Alarm Zones) are available in Standalone system. Offline Standalone System consists of individual controllers, which are not connected RS485 communication bus. They must be configured separately by means of temporary connection through communication interface device (e.g. RUD-1). Online Standalone System is based on permanent connection of all controllers to RS485 bus in order to facilitate their programming, event downloading and possible monitoring. Such system is not considered as Network System because RS485 bus in such case is used only for management of standalone controllers.

Note: PRxx2 series controller cannot be programmed manually by means of keypad, therefore it is recommended to configure its ID address before installation in the building. The connection to a PC requires an adequate interface device (e.g. RUD-1, UT-2USB, UT-4DR). Factory default address of the controller is ID=0 and devices connected to RS485 bus must have different addresses in range of 00..99 or the conflict occurs (see 2.2.2 Controller address).


Offline Standalone System

There is no communication bus in the system. Controllers are connected only for programming and event downloading

Fig. 2 Standalone system (Offline)

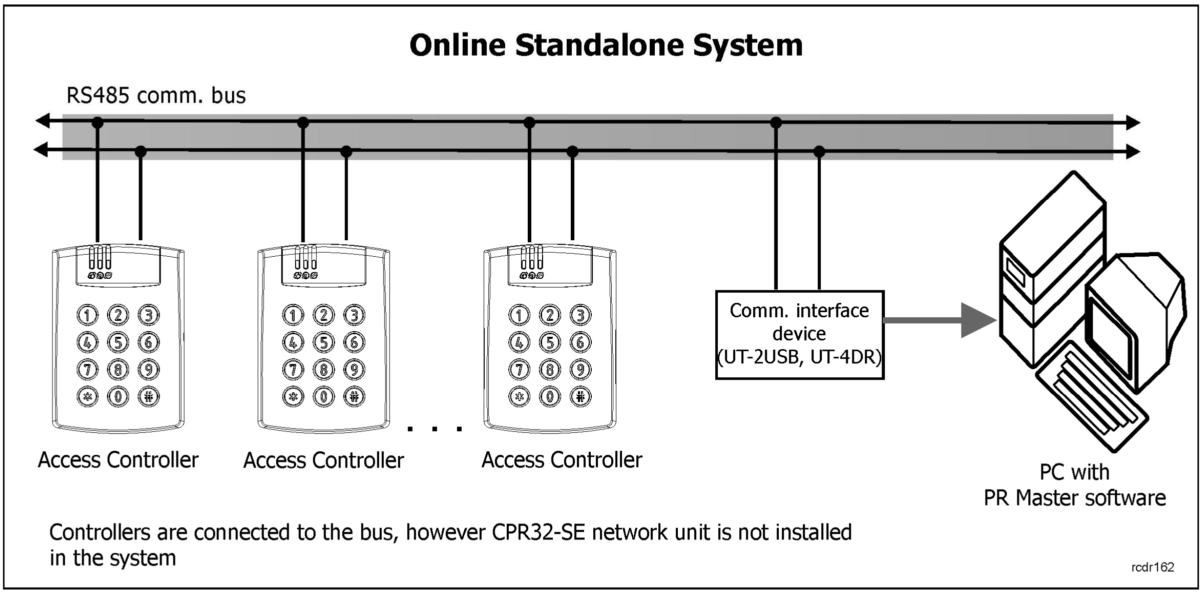

Online Standalone System
RS485 comm. bus
Comm. interface device (UT-2USB, UT-4DR)
. . .
Access Controller
Access Controller
Access Controller
PC with PR Master software
Controllers are connected to the bus, however CPR32-SE network unit is not installed in the system
rcdr162

Fig. 3 Standalone System (Online)

2.1.2 Network System (with CPR32-SE unit)

Whenever an access control system is equipped with RS485 communication bus and it is used for data transmission between various devices connected to the bus, then such system is Network System and is called Integrated Access Control System (IACS). In the RACS4 system the presence of a CPR32-SE unit makes the system IACS type. It is recommended to use Network System when global functions such as Global APB or Alarm Zones are required. Otherwise it might be enough to use Online Standalone System, which differs from Network System only in regard of CPR32-SE presence.

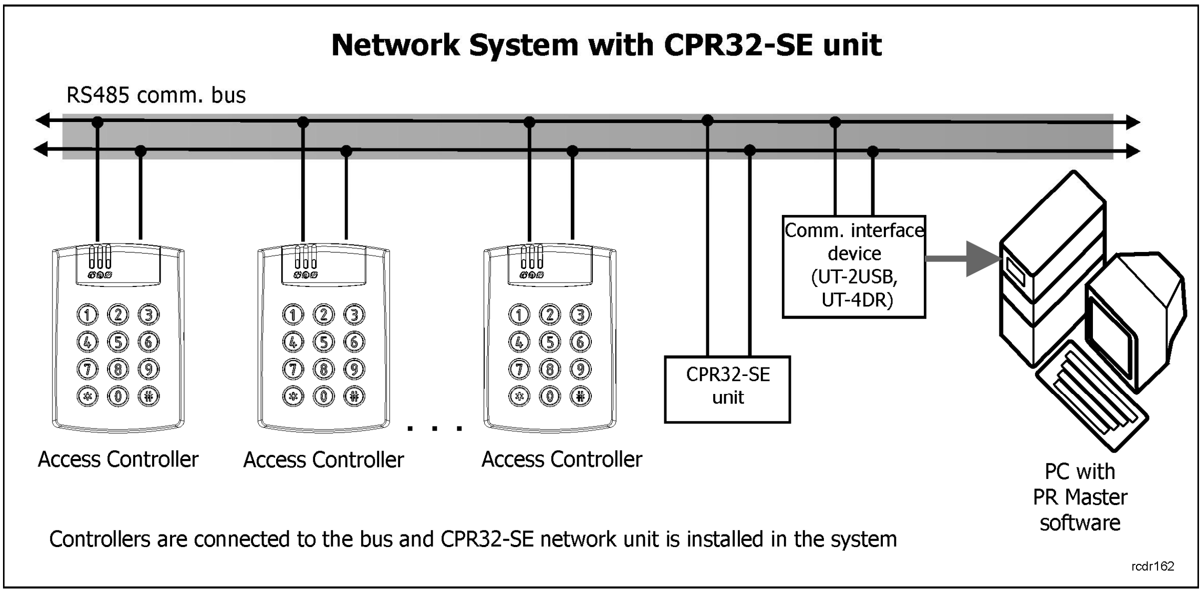

Network System with CPR32-SE unit
RS485 comm. bus
Comm. interface device (UT-2USB, UT-4DR)
CPR32-SE unit
. . .
Access Controller
Access Controller
Access Controller
PC with PR Master software
Controllers are connected to the bus and CPR32-SE network unit is installed in the system
rcdr162

Fig. 4 Network System (with CPR32-SE unit)

Note: The presence of communication bus does not imply that particular access control system is IACS type. If communication bus is used only for controller programming and event downloading then such system is called Online Standalone system.

In case of PRxx2 series controllers the CPR32-SE offers following functionalities:

- Events are not stored in controller internal buffers but in CPR32-SE buffer (250 000 events)
- Global APB (see 2.11 Anti-passback),
- Alarm Zones (see 2.12 Alarm Zones),
- Controller's date/time synchronization by the CPR32-SE internal clock

In case of CPR32-SE failure the system automatically switches to Online Standalone mode and all controllers operate in this mode till communication with CPR32-SE is restored. In case of such failure only global functions are impaired and the system is still operating properly i.e. users and their access rights are maintained, controllers open doors properly and events are recorded in controller buffers.

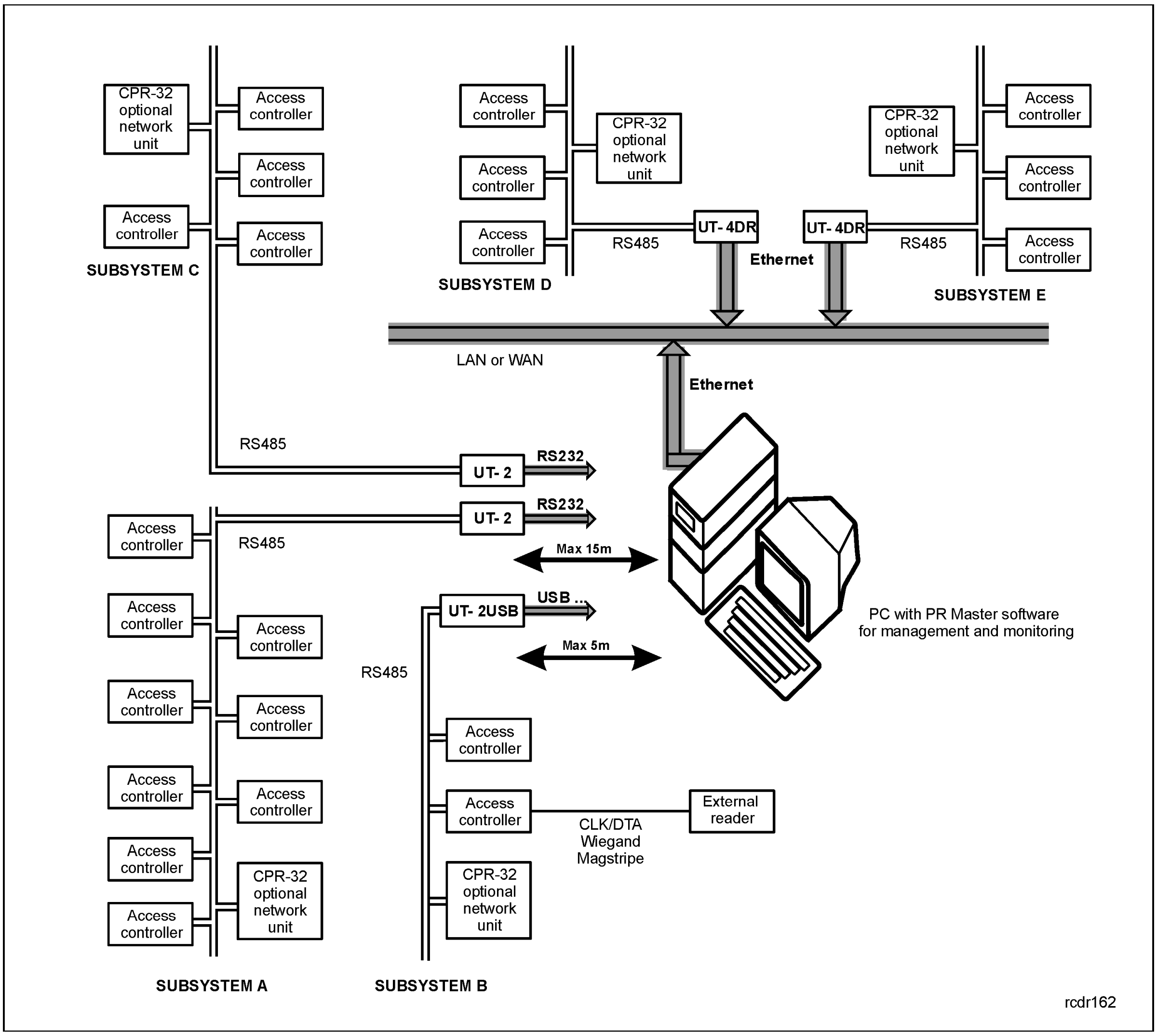


Fig. 5 RACS4 architecture for Network System

Following rules are valid for RACS4 system shown in figure 5:

- The maximum number of subsystem connected to PC cannot exceed 250 and the maximal number of single door controller within the subsystem cannot exceed 32 units,
- The subsystem must be connected to PC by separate communication interface device (number of USB ports can be increased by means of USB hub and in case of Ethernet, single RJ45 port is enough),
- All access controllers are single door controllers for two-way door control and external readers can be connected to the controllers,

- CPR32-SE is optional device and in case of PRxx2 series controllers it mainly makes global functions available,
- PC with PR Master software does not have to be switched on or connected all the time in order to ensure operation of access control system. It is necessary only if the administrator requires event and alarm monitoring and wants to control the system manually,
- All cable connections to access control devices can be made by means of unshielded twisted pair (UTP cat. 5) or any other signal cables.

2.2 Communication

2.2.1 RS485 Interface

PRxx2 controllers are equipped with RS485 communication interface. The interface can be used for communication and programming. Controller connected to RS485 bus must be configured in regard of its address in range of 00..99. The communication bus may accommodate up to 32 access controllers and one optional CPR32-SE unit, which does not require address setting.
The RACS4 system communication bus topology is fairly flexible. Tree-like structures as well as star-like topologies are allowed, while *loop* topology is forbidden (see fig. 6). Any signal cables can be used as RS485 communication bus, however unshielded twisted-pair (UTP cat. 5) is recommended. Terminating resistors at either end of the communication bus are not required. Shielded cables can be used if strong electromagnetic interferences are expected in the area.
Maximum cable lengths in the RACS4 system are as follows::

- between any controller and CPR32-SE unit: 1200m,
- between any controller and communication interface device: 1200m,
- between CPR32-SE and communication interface device: 1200m.

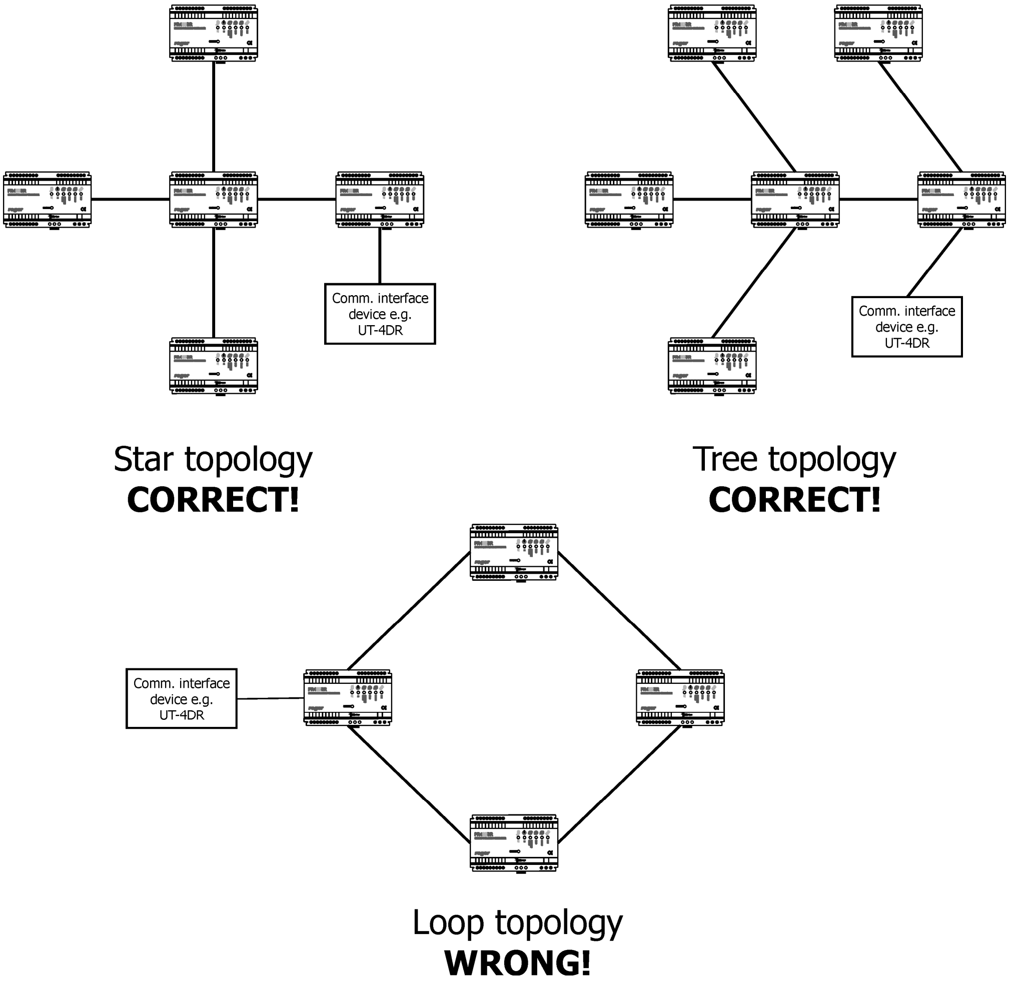

Comm. interface device e.g. UT-4DR
Comm. interface device e.g. UT-4DR
Star topology
CORRECT!
Tree topology
CORRECT!
Comm. interface device e.g. UT-4DR
Loop topology
WRONG!

Fig. 6 Possible topologies of RS485 bus connections

Note: All devices connected to RS485 bus must share the same ground potential, and this condition is clearly satisfied if all devices are supplied from the same power supply unit. If more than one power supply unit is used, then negative DC terminals of each power supply unit need to be connected with each other by means of additional wire (could be standard signal wire). If such connection is not feasible for any reasons, negative DC output of each power supply unit should be earthed separately, however, the difference of earth potential across all units cannot exceed +/-2V. DO NOT short-circuit positive terminals of built-in power supply units (PR402).

The structure incorporating RS485 communication bus, access controllers and optional CPR32-SE unit is called an Access Control Network or simply a Network (or Subsystem). Each Network in the RACS4 system must be connected to PC via a separate communication port. It can be the standard COM Port, Virtual COM Port (VCP) or Ethernet port. In case of VCP, interface device from Roger, which emulates COM port, e.g. RUD-1 or UT-2USB can be used. In case of Ethernet port, UT-4DR is recommended

Each type of PRxx2 controller can manage single door in one-way or two-way mode. Presently, RACS4 permits integration of up to 250 Networks (Subsystems), each including up to 32 controllers. PC with PR Master software communicates with each Network by means of separate communication port, which means that it is possible to integrate Networks connected to PC by means of following interfaces: RS232, USB, Ethernet and Wi-Fi, thus creating one access control system.

Note: All mentioned communication interfaces can be used not only for controller programming but also for the management of entire access control system, depending on applied scenario (see 2.1 Available scenarios of operation). In case of on-site programming, we recommend RUD-1 interface device that provides built-in 12VDC output which can be used for temporary supply of programmed device.

2.2.2 Controller address

Every controller connected to RACS4 system communication bus (RS485) must have its own address in range of 00-99. Default address is ID=00 and can be modified either remotely using PR Master software (Roger) or manually (see Installation Guide of particular controller) or by means of jumpers (PR402DR, PR102DR). Moreover, it is possible to assign a so called "FixedID" to the controller. This option is particularly useful if there is a risk that someone will accidently change controller address causing in disruption of the whole system. The fixed address can be set, changed or cleared only by means of RogerISP software during firmware upgrade procedure.

Besides mentioned methods of addressing, the PR402DR controller offers the option to set address by means of programming jumpers. The whole range of possible address is 0-127. If controller address is set in range of 0-99 then it cannot be changed neither by means of PR Master nor manually. It can be modified only if jumper address is set above 99. For details regarding various address settings refer to the relevant Installation Guide.

Note: The fixed address (FixedID) has always the highest priority – if it is set then it can be modified only using RogerISP software during firmware upgrade procedure.

2.2.3 RACS Clock & Data interface

Besides the RS485 communication bus, PRxx2 controllers feature also the so-called RACS Clock & Data interface, which is generally used for connection of external readers and extension modules. Following devices can be connected to the interface:

- primary reader (Terminal ID0, address ID=0),
- secondary reader (Terminal ID1, address ID=1),
- auxiliary reader at Terminal ID0, address ID=2 – see 2.17.3 High Security,
- auxiliary reader at Terminal ID1, address ID=3 - see 2.17.3 High Security,
- I/O extension module – XM-2, address ID=5 – see 2.2.4 XM-2 – I/O extension module,

- I/O extension module – XM-8, address range ID=8…11 – see 2.2.5 XM-8 – I/O extension module,
- PSAM-1 module, address ID=4 – see 2.2.6 PSAM-1.

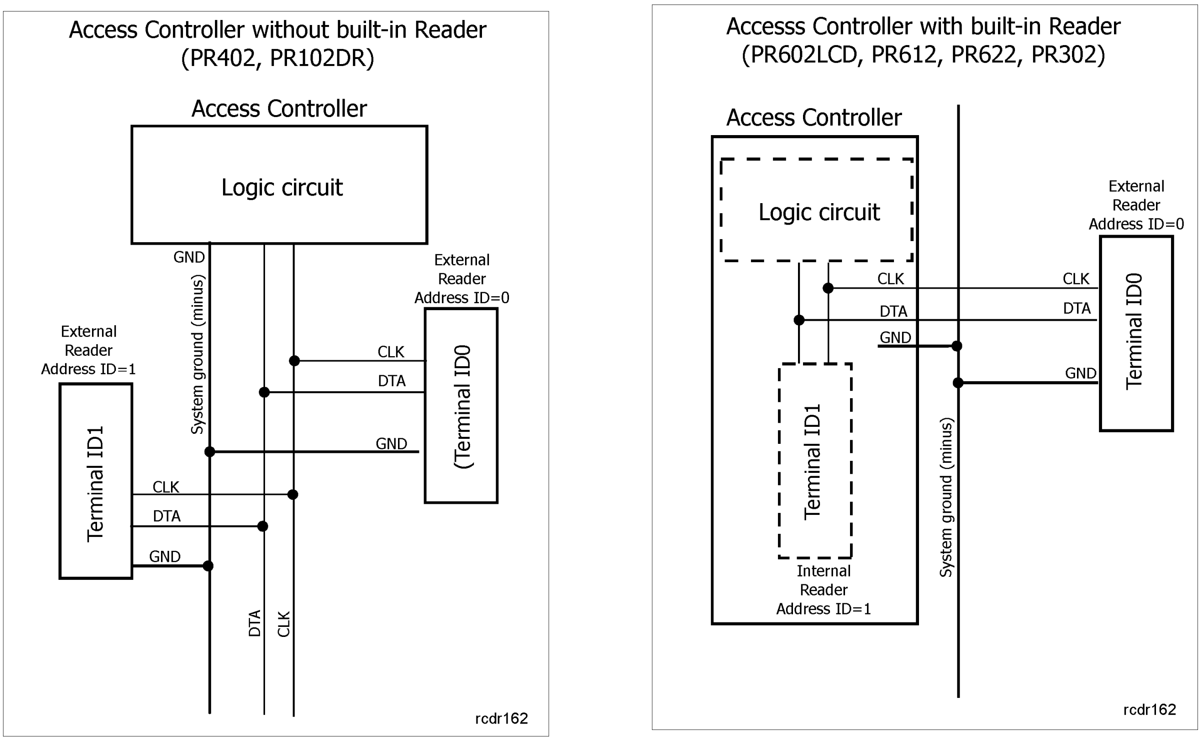


Fig. 7 RACS Clock&Data interface

For CLK/DTA lines any type of signal cable can be used. There is no need to use either twisted or shielded cables. The maximum cable length between controller and external reader and/or XM-2 extension module is limited to 150m. Similarly as in case of RS485 bus, all devices connected to CLK/DTA line should have common negative supply terminals. Such condition is usually satisfied because devices connected to CLK/DTA line are usually directly supplied from controller (PR402). Otherwise negative terminal of each reader must be connected to respective controller GND or COM terminal.

2.2.4 XM-2 – I/O extension module

The PRxx2 series controller can operate with single XM-2 I/O extension module. This module offers two NO/NC inputs and two relay outputs. Both inputs and outputs of XM-2 can be programmed in the same way as internal inputs/outputs of the controller. The XM-2 can be used to extend number of available inputs/outputs and/or separate relay output connected to door lock. Such separation of relay output might be required in case of PR602LCD, PR612, PR622 and PR302 controllers as they are installed near the door and can suffer from intrusion. The XM-2 module connected to controller must be configured to address ID=5. Digital communication between controller and XM-2 module is performed by means of RACS Clock&Data bus. For more information on XM-2 module refer to its Installation Guide, which is available at www.roger.pl.

2.2.5 XM-8 – I/O extension module

The PRxx2 series controller can operate with up to 4 XM-8 modules in address range ID=8…11. The XM-8 module is used in elevator access control. It can operate 8 relay outputs at each XM-8 modules and in case of four XM-8 it can control 32 floors in the building. Digital communication between controller and XM-8 module is performed by means of RACS Clock&Data bus. For more information on XM-8 module refer to its Installation Guide, which is available at www.roger.pl.

2.2.6 PSAM-1 – Power supply monitoring module

The PRxx2 series controller can operate with single PSAM-1 module (address ID=4). The module can be optionally used with PS10, PS20 i PS15v24 power supply units from Roger or with any third party units. The PSAM-1 module can operate in standalone or network mode. In standalone mode, alarm signals are available at the module output lines. In network mode, digital communication between controller and PSAM-1 is performed by means of RACS Clock&Data. In standalone mode, the module can operate with all PRxx1 and PRxx2 series controllers. In network mode it can operate only with PRxx2 series controllers. The PSAM-1 module can monitor and alarm following states:

- Low backup battery
- Backup battery failure
- No 230VAC voltage
- Actual voltage level at power supply unit output (in network mode only)

For more information on PSAM-1 module refer to its Installation Guide, which is available at www.roger.pl.

2.2.7 Wiegand/Magstripe interface readers

All PRxx2 series controllers can operate not only with PRT series readers but also with Wiegand and Magstripe third party readers. Details on such connection are specified in Installation Guides for particular controllers. The communication is performed by means of controller input lines (PR402DR) or by means of RACS Clock&Data interface (remaining PRxx2 controllers).
The configuration of controller by means of PR Master software is necessary. The administrator must select the controller in the main window of PR Master software in order to display controller properties and then in **Terminal ID0** tab and/or **Terminal ID1** tab (see 3.2 Terminal ID1 tab) select the adequate communication interface from the list allowing for:

- Electric standard,
- Transmitted data type,
- Data coding method.

The electric standard corresponds to electric characteristics of signal used in communication between controller and reader. Prxx2 series controllers use following electric standards:

- Wiegand,
- Magstripe (ABA Track II Emulation),
- RACS Clock & Data (Roger).

Note: The negative power supply terminals of all devices connected to CLK/DTA line (incl. access control readers) should be connected together.

The PRxx2 series controllers are compatible with Wiegand formats varying from 26 up to 66 bytes with or without parity bytes. It is not necessary for the administrator to select number of bits as controllers recognize the reader bit stream length and adjust accordingly.
The data type parameter determines data transmitted by a reader i.e.:

- Card or PIN,
- Only Card,
- Only PIN,
- User ID.

In case of Card or PIN the controller attempts to recognize the source of the signal transmitted by the reader and interprets the data accordingly. In the remaining cases it is always interpreted according to particular controller settings (card, PIN, user ID).
The coding system setting determines digit/number coding. The following coding systems may be used:

- BIN, i.e. binary format,
- HEX, i.e. hexadecimal format,
- BCD, i.e. binary coded decimal format.

2.2.8 Biometric readers

All PRxx2 series controllers can operate with fingerprint readers F7, F10 and F11. Following rules were applied in the integration of biometric readers with RACS4 system:

- Upon identification a reader transmits a sequence of bytes corresponding to user ID,
- The reader transmits Wiegand format compatible data by means of RACS Clock&Data terminals or input lines (PR402DR),
- The reader is also connected RS485 bus or Ethernet network in order to communicate with PR Master software on the computer.

The communication with fingerprint readers is performed by means of Wiegand interface and additionally be means of RS485 or Ethernet interface. The configuration of controller by means of PR Master software is necessary. The administrator must select the controller in the main window of PR Master software in order to display controller properties and then in **Terminal ID0** tab and/or **Terminal ID1** tab (see 3.2 Terminal ID1 tab) select the function [**17]: Wiegand 26…66 bit reader, User ID (BIN)**. Every modification of user list is simultaneously updated at access controllers and fingerprint readers. Additionally, PR Master software enables fingerprint recording and storing in RACS4 database. If two fingerprint readers are connected to single controller then it is necessary to use PR-GP interface device (Roger).
For more information on biometric readers refer to their Installation Guides, which are available at www.roger.pl.

2.2.9 Long range proximity readers

All PRxx2 series controllers can operate with GP60 and GP90 long range proximity readers. Both devices are available within Roger price list. The communication of controller with these readers is performed by means of Magstripe interface (recommended) or Wiegand interface. The configuration of controller by means of PR Master software is necessary. The administrator must select the controller in the main window of PR Master software in order to display controller properties and then in **Terminal ID0** tab and/or **Terminal ID1** tab (see 3.2 Terminal ID1 tab) select the function **[31]: Magstripe reader, card only** or**[04]: Wiegand 26…66 bit reader, card only**. If two long range readers are connected to single controller then it is necessary to use PR-GP interface device (Roger).
For more information on GP60 and GP90 long range proximity readers refer to their Installation Guides, which are available at www.roger.pl.

2.3 Users

Access control users

Up to 4000 users can be stored in PRxx2 series controller. Every user within the system can be identified according to its unique ID (ID=0000-3999) as well as assigned proximity card and/or PIN (1 to 6 digits). Upon entering PIN at the keypad of controller or PRT series reader operating with RACS Clock&Data interface it is necessary to conclude the PIN with [#] key. In case of Wiegand/Magstripe different methods of PIN entering are accepted e.g. without [#] at the end or based on immediate transmission of every digit.
Users can be assigned to 4 classes: NORMAL, SWITCHER FULL, SWITCHER LIMITED and MASTER. Moreover, NORMAL users with ID above 1000 can be assigned the Local SWITCHER attribute and be able to arm/disarm particular controller (see 3.5 Arming tab). Each type of user features different rights in regard of programming and arming/disarming.

Table 2. User types

Name	ID range	Description
MASTER	000	Door opening and arming/disarming rights. MASTER user can be defined within Memory Reset procedure or by means of PR Master software. The MASTER user identifier (card or PIN) can be used for simple controller testing during installation i.e. relay output activation (which corresponds to door opening) and controller arming/disarming. In order to arm/disarm a controller it is necessary to use card or PIN twice. The MASTER user is by default assigned to No Group, thus he has access rights in the whole access control system regardless of any Schedule (unless it is limited by other special options).
SWITCHER Full	ID=001-049	Door opening and arming/disarming rights. In order to arm/disarm a controller it is necessary to use card or PIN twice.
SWITCHER Limited	ID=050-099	Only arming/disarming rights. In order to arm/disarm a controller it is necessary to use card or PIN once.
NORMAL	ID=100-999	Only door opening rights. The NORMAL users with ID above 1000 can be assigned Local SWITCHER attribute. In such case the user can arm/disarm particular controller. Contrary to Full and Limited SWITCHERS the Local SWITCHER attribute is assigned to particular user at particular controller. In order to arm/disarm a controller it is necessary to use card or PIN twice.

Access Groups

Access control users can be assigned to following groups: No Group, No Access Group or group defined by administrator of RACS4. The first ones are default groups and the latter can be defined by means of the option **Groups** in the main window of PR Master software. The maximum number of user groups in PRxx2 controllers equals to 250. The access group membership determines user access rights within a given access control system. All users assigned to particular user group share the same access rights. It is possible and sometimes even required to specify group with single user. All users within specific Group have right to access particular Access Zones according to specified Schedule. Users belonging to No Group are given unlimited 24h/7d access to all Access Zones, while users assigned to No Access Group cannot open any door.

Note: In the RACS 4 system the user may belong only to single Access Group.

2.4 Identification Modes

Following Identification Modes are available for the purpose of user identification

Table 3: Identification modes

Mode	Description
Card or PIN	Controller requires card or PIN
Card and PIN	Controller requires card and PIN
Card Only	Controller requires card only, PINs are not accepted
PIN Only	Controller requires PIN only, cards are not accepted

Identification Modes are set for both sides of door. Unless modified by administrator, the controller applies default Identification Mode (i.e. Card or PIN). Identification modes apply to all users at particular controller/reader and they can be set or switched by:

- Schedule – **Schedule** option in the main window of PR Master software and **Terminal ID0** tab and/or **Terminal ID1** tab (see 3.2 Terminal ID1 tab) within properties of particular controller
- Input line – see 2.13 Inputs
- Function key – see 2.15 Function keys
- Keypad Command from controller keypad or PRT reader keypad – see 2.18 Keypad Commands

2.5 Door Modes

Door Modes determine rules for locking/unlocking of access controlled doors. Following Door Modes are available in RACS4 system:

Table 4: Door Modes

Mode	Description
Normal	Normally the door is locked and opened only for the time of granted access.
Unlocked	The door is unlocked permanently. No identification is required to enter or exit.
Conditionally Unlocked	Initially, the door is in the Normal Mode. As soon as the first user is granted an access, the controller switches to the Unlocked mode.
Locked	The door is locked permanently for all users regardless of their access rights.

Default mode is always the Normal Mode. Door Modes can be set or changed by:

- Schedule – **Schedule** option in the main window of PR Master software and **Access** tab (see 3.4 Access tab) within properties of particular controller
- Input line – see 2.13 Inputs
- Function key – see 2.15 Function keys
- Keypad Command from controller keypad or PRT reader keypad – see 2.18 Keypad Commands
- Remote command from PR Master software – options can be selected from the list by right clicking particular controller in the main window of PR Master software

2.6 Armed/Disarmed Modes

The concept of Armed/Disarmed Modes

PRxx2 controllers feature 2 arming modes: Armed and Disarmed. The current mode of controller is always displayed by means of bicolor STATUS LED. The red colour refers to Armed Mode while the green colour refers to Disarmed Mode. Both modes are also displayed at PRT series reader, if it is connected to PRxx2 series controller.
Armed and Disarmed Modes can be switched by means of:

- User identifier i.e. proximity card or PIN, see 2.3 Users,
- Schedule - **Schedule** option in the main window of PR Master software and **Arming** tab (see 3.5 Arming tab) within properties of particular controller,
- Input line - see 2.13 Inputs,
- Function key - see 2.15 Function keys,
- Keypad Command from controller keypad or PRT reader keypad – see 2.18 Keypad Commands,
- Remotely from CPR32-SE network unit – Alarm Zones logic, see 2.12 Alarm Zones,
- Remote command from PR Master software - options can be selected from the list by right clicking particular controller in the main window of PR Master software.

All arming/disarming methods can be used concurrently i.e. all methods have the same level of priority. The only exception is the input line with the function **[03]: Disarmed mode switch**

(toggle). When the input function is assigned to the controller then all other methods for arming/disarming are ignored by the controller.
The purpose of Armed/Disarmed Modes in RACS4 system is to provide:

- additional level of access control,
- integration with intrusion alarm systems.

The additional access control level can be achieved if the option **Access disabled when controller armed** (see 3.4 Access tab) is selected. When the option is inactive the user with adequate access rights can get access regardless of current Armed/Disarmed Mode. When the option is active then it is necessary to disarm the controller prior to use of authorized identifier (proximity card, PIN). Regardless of the option, if the controller is disarmed only user with adequate access right can get the access. By default the option is switched off.
Input and output lines of the controller are used in the integration of RACS4 with intrusion alarm system. Alarm Zones are also useful in such integration (see 2.12 Alarm Zones).

Manual arming/disarming by user

PRxx2 series controller can be armed/disarmed by means of identifier (proximity card, PIN) assigned to following user types: MASTER, SWITCHER Full, SWITCHER Limited and NORMAL with Local Switcher attribute (see 2.3 Users).
Arming/disarming procedure for SWITCHER Full, MASTER and NORMAL with Local SWITCHER attribute:

- Swipe the card and/or enter PIN (depending on current Identification Mode - see 2.4 Identification Modes),
- Wait till LED SYSTEM blinks,
- When the LED SYSTEM blinks use identifier once more (proximity card, PIN). In case of Card and PIN Identification Mode, in this step use only one identifier (proximity card or PIN).

In case of Switcher Limited user it is enough to use identifier (proximity card, PIN) once.

Arming/disarming by Schedule

The controller can change its Armed/Disarmed Mode according to Arming/Disarming Schedule (i.e. General Purpose Schedule defined by administrator). Arming/Disarming Schedule operates according to following rules: in time specified by From... parameter the controller switches to Disarmed mode while in time specified by To... parameter it switches to Armed Mode. The controller shall not switch to Armed mode if input line with function **[13]: Arming disabled** is active. All schedules in RACS4 system are defined by means of **Schedules** option in the main window of PR Master software.
Arming/disarming can be based on the Schedule assigned to particular Alarm Zone (affecting controllers assigned to that Alarm Zone) or on the Schedule assigned to particular controller. If the administrator selects Never schedule then the controller shall be armed after controller settings upload or reset. If the administrator selects Always schedule then the controller shall be disarmed after controller settings upload or reset. Both built-in schedules can be easily overridden by any method used for arming/disarming.

Note: The selection of schedule for arming/disarming does not mean that controller monitors and controls if it is actual Armed/Disarmed Mode conforms to the schedule. The schedule only specifies time when Armed/Disarmed Mode is automatically switched. If the administrator requires the controller to maintain Armed Mode (auto-arming) within specified time period then it is necessary to use following option: **Automatically restore armed mode after time** (see 3.5 Arming tab).

The moment of auto-arming can be delayed by means of following methods:

- Function key – see 2.15 Function keys,
- Input line – see 2.13 Inputs,
- Keypad Command from controller keypad or PRT reader keypad – see 2.18 Keypad Commands,

- When access is granted.

Delay for auto-arming can be defined by administrator in range of 5 to 99 minutes. It is also possible to specify warning before auto-arming in range of 1 to 99 minutes. The warning is an acoustic signal generated by controller/reader.
For more information on auto-arming and acoustic warning refer to description of PR Master options – see 3.5 Arming tab.

2.7 Access Rights

In order to define access rights in RACS4 system it is necessary to specify who, where and when can be granted the access. It is recommended to use following procedure in order to define access rights in RACS4 system:

- Specify Access Zones by means of **Access Zones** option in the main window of PR Master software,
- In the properties of controllers assign Terminals ID0 and/or ID1 (readers) (see 3.2 Terminal ID1 tab) to previously specified Access Zones,
- Specify Schedules by means of **Schedules** options in the main window of PR Master software (see also 2.16 Schedules and Auxiliary Conditions),
- Specify Access Groups by means of **Access Groups** option in the main window of PR Master software,
- Link User Groups to Access Zones and Schedules,
- Add or import users to User Groups by means of **Users** option in the main window of PR Master software,
- Use **Access Map** option in the main window of PR Master software in order to verify previous settings,
- Optionally define additional access control mechanisms (e.g. Door Modes, input lines for exit buttons, APB zones, etc.)

The controller in RACS4 system grants the access according to following procedure:

- User identification (proximity card, PIN),
- Determining to which User Group particular user belongs,
- Determining if particular User Group has access rights at particular controller/reader in particular moment,
- Verification of additional access control mechanisms (APB, Special options, Door Mode, etc.),
- Access granted or access denied decision,
- Door strike activation

Note: In RACS4 system in order to define access rights it is necessary to specify who, where and when can be granted the access. User assigned to No Access Group cannot open any door, while user assign to No Group can open all doors 24h/7d.

Controller denies access under the following circumstances:

- Unknown user,
- Incomplete identification e.g. correct PIN is entered but user is expected also to use proximity card when Card and Pin Identification Mode is selected for the reader.
- User is SWITCHER Limited type,
- User cannot enter particular Access Zone because of Schedule,
- Controller is armed and the option: **Access disabled when controller armed** is on
- Input line of the controller with the function **11]: Access disabled** is activated.

Note: If user is unknown at the controller, long beep type acoustic signal is generated upon identification (proximity card, PIN). If the user is known but currently has no access rights then two long acoustic signals are generated.

Whenever controller grants the access, it activates LED OPEN. The LED remains lit as long as controller relay output connected to door lock is activated.

Door lock control

Following parameters related to door opening/closing can be configured by means of PR Master software (see 3.4 Access tab):

- Door Unlock Time (time of door strike release),
- Delay before relay is opened (delay of door strike release),
- Door Open Timeout (when the time elapses and door is still opened, the DOOR AJAR alarm is raised – see 2.9 Door Alarms. It is necessary to install door contact and connect it to controller in order to use this option).

Optionally, the door can be controlled in latch mode i.e. door lock is released infinitely i.e. until the next access granting.

Typically, there are four methods for the door lock control:

- applying voltage for the lock (e.g. door strike),
- removing voltage from lock (e.g. magnetic lock or fail-safe door strike),
- applying electric pulse (e.g. barrier, turnstile),
- triggering servomotor

The PRxx2 series controller can operate the lock by means of following functions, which can be assigned to the output lines of controller:

- **[97]:Entry door lock (term. ID0)**
- **[98]:Exit door lock (term. ID1)**
- **[99]:Door lock**

The controller activates output function **[99]** for access granted event regardless of identification point (Terminal ID0 or Terminal ID1). Output function **[97]** is activated for access granted event if the identification occurs at Terminal ID0 and output function **[98]** is activated for access granted event if the identification occurs at Terminal ID1. In practice, output functions **[97]** and **[98]** can be used for turnstile control as it enables to determine direction of rotation. If access is granted then door is opened for the time specified by the option **Door Unlock Time** within PR Master software.

2.8 Facility Code

Facility Code (also called: Site Code) is a part of the whole EM125kHz proximity card code which is located between 16th and 24th bit and is intended to characterize some group of cards customized and produced for individual order.

Example: If the card has following code (presented in binary form):
0001000000000000111011100010001010110111
the underline digits 11101110 are treated as Facility Code.

Proximity cards and key fobs provided by Roger have card code printed in two forms: full card code in decimal system e.g. 6873508319123 and reduced code which is generated from the first 24 bits of the full card code. This reduced code is presented as three decimal digits (from range 000-255) separated by comma from remaining 5 digits e.g. 238,08887. As a result the first 3 decimal digits before comma correspond to card Facility Code.

When Facility Code option is active, controller grants the access to all users with the same Facility Code. Thanks to this feature controller can be used to grant access to larger number of cardholders whose cards comply to a given Facility Code.

Also, the group of cards with particular Facility Code can be assigned to specific User Groups, thus all users with the same Facility Code will have the same access rights.

Options related to Facility Code are available in controller properties, which can be accessed in the main window of PR Master software (see 3.4 Access tab).

2.9 Door Alarms

Following types of Door Alarm are available in PRxx2 series controllers:

- PREALARM
- DOOR AJAR
- FORCED ENTRY

All mentioned types of alarms can be raised at individual output lines **[28]: FORCED ENTRY**, **[29]: DOOR AJAR** and **[30]: PREALARM** or cumulatively in the output line with function **[256]: Door alarm**. If alarm is raised in **[256]** output then the type of alarm can be recognized based on electric signal modulation (see Table 5). If more than one alarm type is raised in **[256]** output, then controller signals alarm with highest priority.
Door Alarm can also be signalled by means of internal buzzer. The logic is the same as for electric signal at controller output line.
Options related to Door Alarm are available in controller properties, which can be accessed in the main window of PR Master software (see 3.6 Options tab).

Table 5. Door Alarms

Alarm	Description	Priority	Signalling (modulation)
PREALARM	The alarm is raised in case of five consecutive attempts of identification at particular controller by unknown user within 5 minutes. The user, who is in the system but does not have access right at particular controller does not trigger PREALARM.	Low	Single pulse lasting 0,5 sec. repeated with 4 sec. period
DOOR AJAR	The alarm is raised if door is not closed after time specified by parameter Door Open Timeout (see 3.4 Access tab). It is necessary to install door contact and connect it controller in order to use that option.	Medium	Double pulses (each lasts 0,5 sec.) repeated with 4 sec. period
FORCED ENTRY	The alarm is raised if controller detects door opening when access is not granted. It is necessary to install door contact and connect it controller in order to use this alarm. The alarm is also raised in case of PIN entry under duress (see 3.6 Options tab).	High	Single pulse lasting 2 sec. repeated with 4 sec. period

2.10 System Flags (Timers)

System Flags are logic states in a controller's memory corresponding to certain conditions/events related to controller. Some of the flags are predefined for particular purposes (LIGHT, TAMPER, INTRUDER), whereas other are fairly universal and can be used for administrator defined purposes (AUX1, AUX2).
Initially, every flag is switched off. Flags can only be switched on upon certain system events/conditions. Flag returns to previous states autonomously after a preset time interval elapsed or after specific event took place forcing the flag to return to deactivated state.
Flag activation time is determined by a relevant timer. Some of the flag timers can be set into a bi-state type mode (latch mode) – in this mode flag state changes permanently till occurrence of particular event. Flag state can be signalled in controller output line if certain function is assigned to the output.
For more information on Flags activation and deactivations refer to Table 6. Timer settings are available in controller properties, which can be accessed in the main window of PR Master software (see 3.8 Timers tab)

Table 6. System Flags (Timers)

Flag (timer) activation	Flag (timer) deactivation	Flag activation result
LIGHT flag		
- Input lines: **[68]:Set LIGHT** **[70]:Toggle LIGHT** - Function keys: **[68]:Set Light** **[70]:Toggle LIGHT** - Keypad Commands: **[F21]:Start LIGHT timer** **[F23]:Toggle LIGTH timer**	- Automatically when time specified for LIGHT flag elapses; - Output lines: **[69]:Clear LIGTH** **[70]:Toggle LIGTH** - Function keys: **[69]:Clear LIGTH** **[70]:Toggle LIGTH** - Keypad Commands: **[F22]:Clear LIGTH timer** **[F23]:Toggle LIGTH timer**	- Output line: **[64]: LIGTH**
TAMPER flag		
- Input line: **[08]:TAMPER**	- Automatically when time specified for TAMPER flag elapses - Controller disarming - Function key: **[77]: Clear Intruder and Tamper alarms**	- Output line: **[65]: TAMPER** - Alarm event: **[08]: Tamper - ON**
AUX1 flag		
- Input lines: **[71]:Set AUX1** **[73]:Toggle AUX1** - Function keys: **[71]:Set AUX1** **[73]:Toggle AUX1** - Keypad Commands: **[F24]:Start AUX1 timer** **[F26]:Toggle AUX1 timer**	- Automatically when time specified for AUX1 flag elapses - Input lines: **[72]:Clear AUX1** **[73]:Toggle AUX1** - Function keys: **[72]:Clear AUX1** **[73]:Toggle AUX1** - Keypad Commands: **[F25]:Clear AUX1 timer** **[F26]:Toggle AUX1 timer**	- Output line **[66]: AUX1**
AUX2 flag		
- Input lines: **[74]:Set AUX2** **[76]:Toggle AUX2**	- Automatically when time specified for AUX2 flag elapses - Input lines: **[75]:Clear AUX2**	- Output line **[67]: AUX2**

- Function keys: **[74]:Set AUX2** **[76]:Toggle AUX2** - Keypad Commands: **[F27]:Start AUX2 timer** **[F29]:Toggle AUX2 timer**	**[76]:Toggle AUX2** - Function keys: **[75]:Clear AUX2** **[76]:Toggle AUX2** - Keypad Commands: **[F28]:Clear AUX2 timer** **[F29]:Toggle AUX2 timer**	
INTRUDER flag		
- Input line: **[09]:Intruder** - Function key: **[09]:Intruder Alarm** - Komenda z klawiatury: **[F30]: Start INTRUDER timer**	- Automatically when time specified for INTRUDER flag elapses - Controller disarming - Function key: **[77]: Clear Intruder and Tamper alarms**	- Output line: **[68]: Intruder Alarm** - Alarm event: **[52]: INTRUDER alarm ON**
FORCED ENTRY flag		
- Input line **[01]: Door contact** when controller does not grant access - user entered PIN which, differs by +/-1 in the last digit from correct PIN (see 3.6 Options tab)	- Automatically when time specified for FORCED ENTRY flag elapses - Use of authorized identifier (proximity card and/or PIN) - Controller arming/disarming	- Output lines: **[28]: FORCED ENTRY** **[256]: Door Alarm** - Alarm event: **[005]: FORCED ENTRY** or **[017]: PIN code under duress**
PREALARM flag		
- 5 consecutive attempts of identification (proximity card and/or PIN) at particular controller by unknown user	- Automatically when time specified for PREALARM flag elapses - Use of authorized identifier (proximity card and/or PIN) - Controller arming/ disarming	- Output lines: **[29]: PREALARM** **[256]: Door Alarm** - Alarm event: **[003]: PREALARM**
DOOR AJAR flag		
- Input line: **[01]: Door contact** when time specified by Door Open Timeout elapsed and the input is still active i.e. door is opened	- Automatically when following input line becomes deactivated: **[01]: Door contact** - Automatically when time specified FOR DOOR ajar flag elapses Use of authorized identifier (proximity card and/or PIN)	- Output lines: **[30]: DOOR AJAR** **[256]: Door Alarm** - Alarm event: **[004]: DOOR AJAR**

	- Controller arming/ disarming Note: The input line **[01]: Door contact** has the highest priority. DOOR AJAR flag is on as long as this input is active (i.e. door is opened). Once the input line becomes deactivated, the flag is off regardless of its Timer.	

Note: Output line **[256]: Door Alarm** can be blocked by other options available in PR Master software (see 3.6 Options tab).

2.11 Anti-passback

By activating the APB option the system requires user to identify interchangeably at APB zone entrance and exit (i.e. the sequence of entry-exit-entry-exit should be maintained). PRxx2 controllers monitor the latest identifications of users and store it in APB Register. APB rules can apply either to a single door or a larger zone called the Anti-passback Zone. APB Zones are defined independently of other zones in RACS4 (Access Zones, Alarm Zones). In regard of area covered by APB, it can be divided into:

- Local APB
- Global APB

Local APB is defined for a single controller (single door) and both readers corresponding to the entrance and exit of APB zone must be connected to that single controller. By default Terminal ID0 is entry reader while Terminal ID1 is exit reader, but this arrangement can be easily changed by system administrator (see 3.2 Terminal ID1 tab).
Global APB refers to access control area called APB Zone with multiple doors. One APB Zone may incorporate readers connected to various controllers within single network (subsystem). In Global APB, users willing to exit particular APB zone need first to enter it. Global APB may be used in systems including at least 2 controllers and a CPR32-SE network unit.
In regard of RACS4 system reaction for violation of APB rules, following types of APB are available:

- Hard APB,
- Soft APB.

In case of Soft APB every violation of APB rules results in the recording of event **[509]: APB Violation** in Event history and the controller grants the access. In case of Hard APB every violation also results in event **[509]: APB Violation** recorded in Event history but the controller does not grant the access and generates two long acoustic pulses.
RACS4 also enables configuration of True APB i.e. APB with door contact. Normally, if user is granted access to APB zone then APB Register is updated accordingly but the controller does not monitor if particular user actually entered/left the zone. In case of True APB the APB Register is updated when access is granted and controller receives the signal from door contact that the door was opened. If only access is granted then APB Register is not updated. True APB requires connection of door contact to controller input line with function **[01]: Door contact**. Options related to APB are available in controller properties, which can be accessed in the main window of PR Master software (see 3.7 Advanced tab).

Note: After reset of APB Register every user of RACS4 system can identify at any reader (entry or exit) and then follow APB rules i.e. identify interchangeably at entry and exit.

APB Zones

An APB Zone is an independent access control area with multiple doors (controllers). APB Zone incorporates a list of entry and exit readers. The PRxx2 series controller is capable of monitoring single door with two-way control. Therefore, it needs to be located at a border between two APB Zones. Then one of the readers connected to the controller monitors the entrance to APB zone, while the other monitors exit from that zone (which by the way is entry to another APB zone). It is forbidden to control entry to APB zone by means of two readers connected to the same controller.

Note: The PRxx2 series controller located at the APB Zone border is not required to have two connected readers. APB zone entrance and exit can be controlled by two access controllers, each with single reader.

In every RACS4 system there is built-in, predefined APB Zone called Public zone. Public zone is an area surrounding access control system. For example, if access control system is installed inside the building then user leaving that building enters Public zone and consequently user entering the building exits Public zone.

In RACS4 systems, single APB zone can incorporate controllers only from single network (subsystem). Controllers from different subsystem cannot be part of single APB Zone.

APB Register

The APB register is stored in access controller memory and it includes information on the user latest entry or exit to/from APB Zone.
As a result of APB Register reset, any user can identify at any reader (entry of exit) but then he must follow APB rules and identify interchangeably at entry/exit readers belonging to APB Zone.
The reset of APB Register occurs automatically after connection of power supply to the controller and it can also be done by means of:

- Input line – see 2.13 Inputs,
- Function key - see 2.15 Function keys,
- Remote command from PR Master software – the option can be used by right clicking particular controller and selection APB reset option,
- Keypad Command from controller keypad or PRT reader keypad – see 2.18 Keypad Commands,
- Schedule – **Schedule** option in the main window of PR Master software and **Advanced** tab (see 3.7 Advanced tab) within properties of particular controller.

Hierarchy of APB Zones

APB Zone Hierarchy reflects zonal relationships between various APB zones within single access network (subsystem). In access control systems with global ABP users are allowed to move only from one adjacent APZ Zone to another adjacent APB Zone. The APB Hierarchy can be switched on/off by means of **APB Zones** option in the main window of PR Master software.

Note:
1. The term Passage refers to a controller located at a border of two ABP Zones.
2. Adjacent APB Zones are connected with the Passage including single controller (one of the readers connected to controller belongs to one APB Zone and the other reader to the other APB Zone).
3. The APB Hierarchy is configured automatically when readers are assigned to particular ABP Zones in a system. The hierarchy can be modified by changing readers assignment within the system i.e. by assigning readers to other APB Zones.

Procedure for configuration of Local APB by means of PR Master software

1. In properties of particular controller (PR Master software) open **Advanced** tab and select the option **Enable Anti-passback**.

2. If necessary, following options and settings can be selected in **Advanced** tab: True APB, Hard/Soft APB Schedule, APB Reset Schedule and max number of users. In case of schedules, both built-in schedules and custom schedules (defined by means of **Schedules** option in the main window of PR Master software) can be applied.
3. In properties of particular controller, open **Terminal ID1** tab and in **Location** field select one of the options: **Entry from the room/area** or **Exit from the room/area**, thus making particular reader the entry or exit terminal.
4. Update the configuration of controller by means of PR Master software.
5. APB Register can be reset by right clicking particular controller in the main window of PR Master software and selection of the option **Reset APB Register on controller** from the list. APB Register can be reviewed by means of the option **Read APB Register on controller** from the same list.

Procedure for configuration of Global APB by means of PR Master software

1. Specify names of APB Zones by means of **APB Zones** option in the main window of PR Master software and if necessary select **Enable APB Hierarchy** option and specify maximum numbers of users in particular zones.
2. In properties of particular controller open **Advanced** tab and then select the option **Enable Anti-passback.**
3. If necessary, following options and settings can be selected in Advanced tab: True APB, Hard/Soft APB Schedule and APB Reset Schedule. In case of schedules, both built-in schedules and custom schedules (defined by means of **Schedules** option in the main window of PR Master software) can be applied.
4. In properties of particular controller open **Terminal ID1** tab and in the field **APB Zone** select one of the available APB Zones from the list. Terminal ID1 will be the entry to that APB Zone. Open **Terminal ID0** tab and similarly select one of available APB Zones from the list. Terminal ID0 will be the entry to that APB Zone. You can always use built-in APB Zone i.e. Public Zone in your configuration. After mentioned above actions, readers shall be listed in the window opened by means of **APB Zone** option in the main window of PR Master software.
5. Repeat the actions mentioned in point 4 for the remaining controllers of Global APB within single network (subsystem) and then configure remaining APB Zones, if applicable.
6. Verify the settings in the window opened by means of **APB Zones** option in the main window of PR Master software.
7. Update the configuration of controllers and CPR32-SE by means of PR Master software.
8. APB Register can be reset by right clicking particular controller in the main window of PR Master software and selection of the option **Reset APB Register on controller** from the list. APB Register can be reviewed by means of the option **Read APB Register on controller** from the same list.

2.12 Alarm Zones

Alarm Zones are used in the integration of RACS4 with intrusion alarm systems. The Alarm Zone is a group of controllers intended to arm/disarm concurrently. If any controller of particular Alarm Zone arms/disarms (it is not relevant what method for aming/disarming is applied) then the remaining controllers follow. Alarm Zones feature require operation of CPR32-SE network unit, which monitors all access controllers within Alarm Zones and switches their Arm/Disarm Modes accordingly.

Note: Alarm Zones do not block other methods of controller arming/disarming.

If the controller Armed/Disarmed mode is managed by means of its input line with the function **[03]:Disarmed mode switch (toggle)**, then Armed/Disamed Mode of the controller cannot be switched by any other method (including CPR32-SE). If the controller with **[03]** input was a part of Alarm Zone then its Armed/Disarmed still would depend only on the **[03]** input.

Hierarchy of Alarm Zones

In RACS4, the administrator can configure multiple Alarm Zones and they can operate independently or they can be arranged in hierarchy order. In case of independent Alarm Zones they do not affect each other, while hierarchic Alarm Zones can operate in master/slave relationship according to following rules:

- □ Arming the superior zone makes all subordinate zones armed
- □ Disarming the superior zone does not affect subordinate zones
- □ Arming the subordinate zone does not affect the superior zone
- □ Disarming the subordinate zone does not affect the superior zone

Alarm Zone hierarchy in RACS 4 system is arranged in tree structure, which reflects relationship and dependencies among them. In figure 8, there is shown example of Alarm Zone hierarchy.

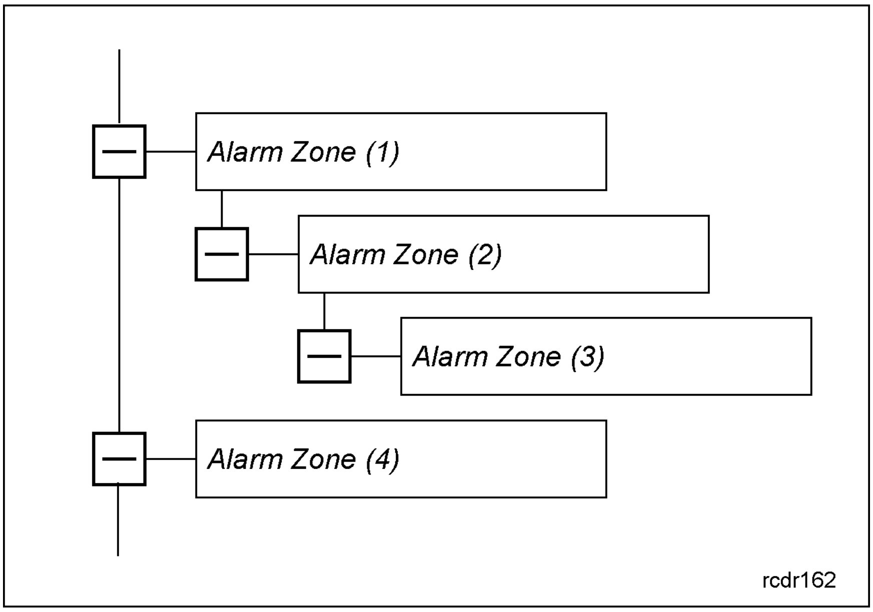


Fig. 8 Hierarchy of Alarm Zones

Based on example shown in fig. 8, following dependencies can be specified: Alarm Zone (4) is independent of other zones; Alarm Zone (2) is dependent on Alarm Zone (1), while Alarm Zone (3) is dependent on Alarm Zone (2); Arming of Alarm Zone 1 results in arming of Alarm Zones (2) and (3), while arming of Alarm Zone (2) results in arming of Alarm Zone (3); Disarming of Alarm Zone (1) does not affect subordinate zones i.e. Alarm Zones (2) and (3).

Procedure for configuration of Alarm Zones

1. Specify names of Alarm Zones by means of the option **Alarm Zones** in the main window of PR Master software, selecting network (subsystem) and if necessary Schedule as well as hierarchy of Alarm Zones.
2. Selection of predefined Schedule i.e. Always or Never Schedule actually results in cancelling of automatic arming/disarming of Alarm Zones and determines only default Arm/Disarm Mode of controllers. Custom Schedules can be defined by administrator by means of **Schedules** option in the main window of PR Master software.
3. In properties of particular controller open **Arming** tab and then select the option **Enable Arm/Disarm Schedule**.
4. Within the same tab, additional parameters related to arming/disarming can be defined. These parameters generally enable delay of auto-arming and configuration of acoustic warnings (see 3.5 Arming tab).
5. The area of Alarm Zone is defined by assignment of controllers and not their readers (Terminals ID0, ID1). The assignment is done by enabling arm/disarm Schedule (see point 3 above).
6. Verify the settings in the window opened by means of **Alarm Zones** option in the main window of PR Master software.
7. Update the configuration of controllers and CPR32-SE by means of PR Master software.

For more information on auto-arming and acoustic warning refer to description of PR Master options – see 3.5 Arming tab.

2.13 Inputs

The number of programmable inputs in the controller depends on its type – see table 1. Optional XM-2 extension module can be connected to PRxx2 series controller in order to increase number of inputs by two (IN1 and IN2 at XM-2 module). In case of PRxx2 series controllers, input lines can be configured in regard of their function, Schedule, Auxiliary Condition, NC/NO triggering and T&A mode by means of PR Master software within properties of particular controller (see 3.10 Input IN1…IN8 tabs). In case of PR102DR controller only function and NC/NO triggering can be programmed. For NO line (normally open), the triggering is done by closing the circuit while in case of NC line (normally close), the triggering is done by opening the circuit (voltage disconnection). Additionally all input functions can be divided into momentary and constant types. In case of constant input functions, RACS4 systems detects the moment of input activation and deactivation. In case of momentary input functions, RACS4 system detects only their activation, thus it is not relevant how long the input is activated and when it is deactivated as only the activation triggers certain actions within the system. For example, **[01]: Door contact** function is constant type and the controller reacts to its activation and deactivation, while the function **[02]: Exit button** is momentary one and the controller reacts only to its activation.

Note: In case of PR102DR controller only following functions are available: [00] - [02], [07] - [09], [11], [13], [14], [60], [61], [64] – [79]

Table 7 Input functions

No.	Function	Type	Description
[00]	**None**	-	Input line is not used.
[01]	**Door contact**	Constant	The input is dedicated to connection of door opening detector. Input activation is interpreted by the controller as door opening, while input deactivation is interpreted as door closing.
[02]	**Exit button**	Momen-tary	The input is dedicated to connection of exit button or other contact used for door opening. When the input is activated, the controller grants access and door can be opened.
[03]	**Arm/Disarm switch (toggle)**	Constant	The input is dedicated to control Arm/Disarm Mode of the controller. When the input is activated then controller is switched to Armed Mode. When the input is not activated then controller is switched to Disarmed Mode. Note: Only single input line of controller can be configured with that function and it has the highest priority among all arming/disarming methods.

[05]	**AC lost**	Constant	The input is used for 230VAC power supply monitoring. When the input is not activated then it reflects adequate 230VAC power supply to the unit, which supplies the controller with 12VDC. When the input is activated then it reflects 230VAC power shortage to the unit, which supplies the controller with 12VDC. The input with function **[05]** can be used for connection of PSAM-1 module available in PS10, PS20 and PS15 power supply units (Roger) or connection of output from third party power supply unit if it provides 230VAC monitoring. Note: Regardless of input with function **[05]**, PR402 controllers can monitor 18VAC power supply, if it is connected to controller terminals.
[06]	**Low battery**	Constant	The input is used monitoring of backup battery connected to power supply unit. When the input is not activated then it reflects adequate operation of back battery connected to power supply unit with 12VDC output. When the input is activated then back battery requires charging or replacement. The input with function **[06]** can be used for connection of PSAM-1 module available in PS10, PS20 and PS15 power supply units (Roger) with backup batteries, or connection of output from third party power supply unit if it provides its backup battery monitoring. Note: Regardless of input with function **[06]**, PR402 controllers can monitor backup battery if it is directly connected to controller terminals.
[07]	**Door bell**	Constant	When the input is activated then acoustic signal is generated by means of internal speaker and the output with function **[15]:Door bell** is activated. Both, acoustic signal and output are activated for 4 sec.
[08]	**TAMPER**	Momentary	The activation of **[08]** input results from tamper alarm and results in activation of TAMPER flag. Tamper contact is installed inside PR602LCD, PR612, PR622 and PR302 controllers and it is connected to separate wires/terminals, which can be connected to input with function **[08]** or any other external devices (e.g. alarm siren).
[09]	**INTRUDER**	Momentary	The activation of **[09]** input results from activation of connected alarm detector and results in activation of INTRUDER flag.
[11]	**Access disabled**	Constant	As long as the input is activated, the controller definitely disables the access at particular door.
[13]	**Arming disabled**	Constant	As long as the input is activated, the controller cannot be armed manually (proximity card, PIN). Auto-arming is not blocked but it can be delayed by means of this function for specific configuration of the controller.

[14]	**Door lock switch**	Constant	As long as the input is activated, the controller enables the access at particular door for everyone (Unlocked Door Mode).
[44]	**Switch momentary access on terminal ID1 on**	Momen-tary	The assignment of **[44]** function to any input results in replacement of event related to access granting i.e. instead of standard **[001]: Access granted**, the event **[547]: Access granted-special mode** is generated when access is granted by the controller. The event **[547]** is ignored within Attendance report in PR Master software. When the input with function **[44]** is activated then Terminal ID1 is emulated for 8 seconds or till the identification of user by means of proximity card and/or PIN. Within this time, standard event **[001]:Access granted** is generated when access is granted by the controller. Note: The function **[44]** is available only in PR602LCD, PR612, PR622 and PR302 controllers.
[45]	**Switch momentary terminal ID1 to emulate terminal ID0**	Momen-tary	When the input is activated, the controller with built-in reader (Terminal ID1) switches to emulation of Terminal ID0. Each Terminal can be configured differently. The emulation lasts 8 seconds or till the identification of user by means of proximity card and/or PIN. The event related to access granting is **[001]: Access granted**. Note: The function **[45]** is available only in PR602LCD, PR612, PR622 and PR302 controllers.
[46]	**Random check confirm**	Momen-tary	When the input is activated, then random user inspection is confirmed, controller is unblocked and the next user can identify at the reader by means of proximity card and/or PIN. The input is used only with the option: **Random check requires confirmation** (see 3.7 Advanced tab).
[47]	**Entry button**	Momen-tary	The input is dedicated to connection of entry button or other contact used for door opening. When the input is activated, the controller grants access and door can be opened. Function **[47]** operates in the same way as function **[02]**.
[48]	**Keypad selected T&A mode (toggle)**	Momen-tary	The input is used in connection with Time&Attendance applications (RCP Master software).
[49]	**Keypad selected T&A mode (momentary)**	Momen-tary	The input is used in connection with Time& Attendance applications (RCP Master software).
[50]	**Next T&A mode (toggle)**	Momen-tary	The input is used in connection with Time& Attendance applications (RCP Master software). Function **[50]** is available only in PR602LCD controller.

[51]	**Next T&A mode (momentary)**	Momen-tary	The input is used in connection with Time& Attendance applications (RCP Master software). Function **[50]** is available only in PR602LCD controller.
[56]	**Predefined T&A mode (toggle)**	Momen-tary	The input is used in connection with Time& Attendance applications (RCP Master software).
[57]	**Predefined T&A mode (momentary)**	Momen-tary	The input is used in connection with Time& Attendance applications (RCP Master software).
[58]	**Postponed Auto-arming delay ON**	Momen-tary	When the input is activated then auto-arming is delayed by the time specified with **Programmed auto-arming delay** option (see 3.5 Arming tab).
[59]	**Postponed Auto-arming delay OFF**	Momen-tary	When the input is activated then auto-arming delay resulting from the option **Programmed auto-arming delay** is cancelled and the controller attempts to arm instantly if required by Arming/Disarming Schedule (see 3.5 Arming tab).
[60]	**APB Register reset**	Momen-tary	When the input is activated then APB Register is reset (cleared) and any user can identify by means of proximity card and/or PIN at any terminal (reader) but in the next steps Anti-pass back rules must be followed.
[61]	**Arm/Disarm switch (momentary)**	Momen-tary	The input is used to toggle Armed and Disarmed Modes.
[62]	**Set all XM-8 outputs OFF**	Momen-tary	When the input is activated then all relay outputs of XM-8 module connected to the controller are switched off.
[63]	**Set all XM-8 outputs ON**	Momen-tary	When the input is activated then all relay outputs of XM-8 module connected to the controller are switched on.
[64]	**Set Normal door mode**	Momen-tary	When the input is activated then Normal Door Mode is selected for the controller.
[65]	**Set Unlocked door mode**	Momen-tary	When the input is activated then Unlocked Door Mode is selected for the controller.
[66]	**Set Cond. Unlocked door mode**	Momen-tary	When the input is activated then Conditionally Unlocked Door Mode is selected for the controller.
[67]	**Set Locked door mode**	Momen-tary	When the input is activated then Locked Door Mode is selected for the controller.
[68]	**Set LIGHT**	Momen-tary	When the input is activated then LIGHT Flag (Timer) is on.
[69]	**Clear LIGHT**	Momen-tary	When the input is activated then LIGHT Flag (Timer) is off.
[70]	**Toggle LIGHT**	Momen-tary	When the input is activated then LIGHT Flag (Timer) is switched on/off.

[71]	**Set AUX1**	Momen-tary	When the input is activated then AUX1 Flag (Timer) is on.
[72]	**Clear AUX1**	Momen-tary	When the input is activated then AUX1 Flag (Timer) is off.
[73]	**Toggle AUX1**	Momen-tary	When the input is activated then AUX1 Flag (Timer) is switched on/off.
[74]	**Set AUX2**	Momen-tary	When the input is activated then AUX2 Flag (Timer) is on.
[75]	**Clear AUX2**	Momen-tary	When the input is activated then AUX2 Flag (Timer) is off.
[76]	**Toggle AUX2**	Momen-tary	When the input is activated then AUX2 Flag (Timer) is switched on/off.
[78]	**Disarmed mode (momentary)**	Momen-tary	When the input is activated then the controller is switched to Disarmed Mode.
[79]	**Armed mode (momentary)**	Momen-tary	When the input is activated then the controller is switched to Armed Mode.
[84]	**Card or PIN mode on term. ID0**	Momen-tary	When the input is activated then Identification Mode of Terminal ID0 (reader) is switched to Card or PIN.
[85]	**Card only mode on term. ID0**	Momen-tary	When the input is activated then Identification Mode of Terminal ID0 (reader) is switched to Card only.
[86]	**PIN only mode on term. ID0**	Momen-tary	When the input is activated then Identification Mode of Terminal ID0 (reader) is switched to PIN only.
[87]	**Card and PIN mode on term. ID0**	Momen-tary	When the input is activated then Identification Mode of Terminal ID0 (reader) is switched to Card and PIN.
[88]	**Card or PIN mode on term. ID1**	Momen-tary	When the input is activated then Identification Mode of Terminal ID1 (reader) is switched to Card or PIN.
[89]	**Card only mode on term. ID1**	Momen-tary	When the input is activated then Identification Mode of Terminal ID1 (reader) is switched to Card only.
[90]	**PIN only mode on term. ID1**	Momen-tary	When the input is activated then Identification Mode of Terminal ID1 (reader) is switched to PIN only.
[91]	**Card and PIN mode on term. ID1**	Momen-tary	When the input is activated then Identification Mode of Terminal ID1 (reader) is switched to Card and PIN.

Note: Following input functions can be assigned to only single input line of the controller: **[01]:Door contact, [03]:Disarmed mode switch (toggle), [05]:AC lost** or **[06]:Low battery**.

2.14 Outputs

The number of programmable outputs (relay and transistor type) in the controller depends on its type – see table 1. Optional XM-2 extension module can be connected to PRxx2 series controller in order to increase number of relay outputs by two (REL1 and REL2 at XM-2 module). In case of PRxx2 series controllers, output lines can be configured in regard of their function, Schedule and Auxiliary Condition by means of PR Master software within properties of particular controller (see 3.12 IO1…IO2 Output tabs and 3.11 REL1…REL2 Output tabs). In case of PR102DR controller only function can be programmed. Relay outputs REL1 and REL2 provide isolated NO, NC and COM terminals (under normal operating conditions NO-COM connectors are open, whereas NC-COM connectors are close). Every transistor input is capable of operating with current up to 1 A (and DC voltage up to 15V). Transistor outputs are equipped with internal fuses for switching off outputs automatically once a maximum current level is exceeded.
Default function for REL1 relay output is **[99]: Door lock** and it is used for door lock control.

Note: In case of PR102DR controller, only following functions are available for relay output REL1: [66], [67] i [99] and only following functions are available for transistor output IO1: [00], [10], [11], [15], [23], [24], [28] – [32], [64] – [68], [99], [256].

Table 8. Output functions

No.	Function	Description
[00]	**Disarmed mode**	As long as the controller is disarmed then the output is activated and as long as the controller is armed then the output is deactivated. Functions **[00]** and **[35]** operate in the opposite way.
[08]	**PC command**	The output with function **[08]** can be activated by means of command from PR Master software. In order to activate output **[08]**, right click particular controller in the main window of PR Master software and select the option **Set/clear controller output** or select the option **Controller output control** in the Command menu of Online monitoring mode in PR Master software. Both functions **[08]** and **[13]** can only be assigned to transistor outputs i.e. IO1 or IO2.
[09]	**Access granted**	The output is activated when access is granted by means of proximity card and/or PIN for the time specified with parameter Door Unlock Time in the properties of the controller (PR Master software).
[10]	**Door status**	As long as the door is opened the output **[10]** is activated. In fact the output represents the signal from controller input with the function **[01]: Door contact.**
[11]	**Access denied**	The output is activated for 2 sec. when controller denies the access.
[12]	**Schedule**	The output is activated in time periods specified by assigned Schedule, according to From and To parameters. The Schedule can be defined by means of the option **Schedules** in the main window of PR Master software.

[13]	**Schedule or PC command**	The output operates in the same way as output with function **[12**]. Additionally, output with the function **[13]** can be operated by means of commands from PR Master software in the same way as output with the function **[08]**. Both functions **[08]** and **[13]** can only be assigned to transistor outputs i.e. IO1 or IO2.
[14]	**User logged on term. ID0**	The output is activated upon user identification at Terminal ID0 and lasts activated till user identification at Terminal ID1. The function can be used to control turnstile rotation or in case of two-way controlled door, the output can be used for reporting entry/exit.
[15]	**Door bell**	The output is activated for 5 sec. when input with the function **[07]** or function key with the function **[255]** is activated.
[16]	**Room occupied**	The output is activated when the first user enters particular room (APB Zone) and remains activated until all users leave the room. The number of users inside the room is calculated by means of data stored in APB Register.
[17]	**Limit of users reached**	The output is activated when the number of users in particular room (APB Zone) reaches the limit. The output is deactivated when the number of users in the room is lower than the limit.
[18]	**Normal door mode**	The output is activated as long as Door Mode of the controller is Normal.
[19]	**Unlocked door mode**	The output is activated as long as Door Mode of the controller is Unlocked.
[20]	**Cond. Unlocked door mode**	The output is activated as long as Door Mode of the controller is Cond. Unlocked.
[21]	**Locked door mode**	The output is activated as long as Door Mode of the controller is Locked.
[22]	**Postponed Auto-arming Delay in progress**	The output is activated when auto-arming of the controller is delayed i.e. the output is activated for the time specified by following parameters: **Default auto-arming delay** and **Programmed auto-arming delay** (see 3.5 Arming tab) and remains activated till controller arming.
[23]	**External buzzer**	The output is used for connection of external loudspeaker, which can be operated and controlled in the same way as controller/reader internal speaker.
[24]	**Terminal restart**	The output is activated for 2 sec. when the controller detects communication failure with any of its external readers. The output line can be used to restart the reader in case of communication failure. Note: The controller can supervise the communication only with terminals operating in RACS Clock&Data mode (Wiegand and Magstripe readers are excluded).
[25]	**Pulse upon disarming**	The output is activated for 2 sec. when the controller switches to Disarmed Mode.
[26]	**Pulse upon arming**	The output is activated for 2 sec. when the controller switches to Armed Mode.

[27]	**Request to arm**	In general perspective, output with the function **[27]** operates in the same way as output with the function **[0]: Disarmed mode** i.e. as long as the controller is armed then the output **[27]** is deactivated and as long as the controller is disarmed then the output **[27]** is activated, but output **[27]** is also activated in case of unsuccessful arming. For example, if the controller is disarmed and the input with function [**13]: Arming disabled** is activated then arming attempt shall be unsuccessful but the output with function **[27]** shall be deactivated despite the fact, that the controller shall still be disarmed.
[28]	**FORCED ENTRY**	The output represents the state of FORCED ENTRY Flag. When the Flag is on then the output is activated, when the Flag is off then the output is deactivated.
[29]	**PREALARM**	The output represents the state of PREALARM Flag. When the Flag is on then the output is activated, when the Flag is off then the output is deactivated.
[30]	**DOOR AJAR**	The output represents the state of DOOR AJAR Flag. When the Flag is on then the output is activated, when the Flag is off then the output is deactivated.
[31]	**Door chime**	The output is activated for 2 sec. when the controller detects door opening. In order to use this output it is necessary to connect door contact to controller input with the function **[01]: Door contact**. Access granting itself does not activate the output **[31]**.
[32]	**APB violation**	The output is activated for 2 sec. when APB rules are violated. The output **[32]** is not used for signalling that maximal number of users in the room (APB Zone) is exceeded. Use the function **[17]** instead.
[33]	**Incoming auto-arming in progress (steady)**	The output represents the acoustic warning configured by means of the option **Incoming auto-arming in progress signalling time** (see 3.5 Arming tab). The output is deactivated when the time configured by the option elapses and the controller arms according to schedule.
[34]	**Incoming auto-arming in progress (pulsed)**	The output operates in the same way as output with the function **[33]** but it instead of constant signal, double pulse every 8 sec. is generated.
[35]	**Armed mode**	As long as the controller is disarmed then the output is deactivated and as long as the controller is armed then the output is activated. Functions **[00]** and **[35]** operate in the opposite way.
[36]	**Pulse upon access is granted**	The output is activated for 1 sec. when access is granted by the controller.
[37]	**AC failure**	The output is activated approx. 8 minutes after detection of AC power supply failure and is deactivated approx. 40 seconds after detection of AC power supply recovery.
[38]	**Low battery**	The output is activated approx. 9 minutes after detection of low battery level and is deactivated approx. 9 minutes after detection of adequate battery level.

[39]	**Random check request**	The output is activated for 2 sec. when particular user is selected by the controller for inspection. But if the option **Random check requires confirmation** is selected (see 3.7 Advanced tab) then the output [39] is activated until the inspection is confirmed by means of input with the function **[46]: Random check confirm** or by means of function key with the function **[46]: Random check confirm**.
[64]	**LIGHT**	The output represents the state of LIGHT flag. When the Flag is on then the output is activated, when the Flag is off then the output is deactivated.
[65]	**TAMPER**	The output represents the state of TAMPER flag. When the Flag is on then the output is activated, when the Flag is off then the output is deactivated.
[66]	**AUX1**	The output represents the state of AUX1 flag. When the Flag is on then the output is activated, when the Flag is off then the output is deactivated.
[67]	**AUX2**	The output represents the state of AUX2 flag. When the Flag is on then the output is activated, when the Flag is off then the output is deactivated.
[68]	**INTRUDER**	The output represents the state of INTRUDER flag. When the Flag is on then the output is activated, when the Flag is off then the output is deactivated.
[84]	**Card or PIN mode on term. ID0**	The output is activated as long as Identification Mode at Terminal ID0 (reader) is Card or PIN.
[85]	**Card only mode on term. ID0**	The output is activated as long as Identification Mode at Terminal ID0 (reader) is Card only.
[86]	**PIN only mode on term. ID0**	The output is activated as long as Identification Mode at Terminal ID0 (reader) is PIN only.
[87]	**Card and PIN mode on term. ID0**	The output is activated as long as Identification Mode at Terminal ID0 (reader) is Card and PIN.
[88]	**Card or PIN mode on term. ID1**	The output is activated as long as Identification Mode at Terminal ID1 (reader) is Card or PIN.
[89]	**Card only mode on term. ID1**	The output is activated as long as Identification Mode at Terminal ID1 (reader) is Card only.
[90]	**PIN only mode on term. ID1**	The output is activated as long as Identification Mode at Terminal ID1 (reader) is PIN only.
[91]	**Card and PIN mode on term. ID1**	The output is activated as long as Identification Mode at Terminal ID1 (reader) is Card and PIN.
[97]	**Entry door lock (term. ID0)**	The output is activated for the time specified by the parameter Door Unlock Time (see 3.4 Access tab), when the access is granted for user identified at Terminal ID0. The output is used for control of two-way door/passage when the entry/exit must be detected (e.g. turnstile).
[98]	**Exit door lock (term. ID1)**	The output is activated for the time specified by the parameter Door Unlock Time (see 3.4 Access tab), when the access is granted for user identified at Terminal ID1. The output is used for control of two-way door/passage when the entry/exit must be detected (e.g. turnstile).

[99]	**Door lock**	The output is activated for the time specified by the parameter Door Unlock Time (see 3.4 Access tab), regardless of Terminal, where user identification occurred. The function **[99]** is default setting of REL1 relay output of the controller and is used for door lock control.
[256]	**Door alarm**	The output represents Door Alarm (see 2.9 Door Alarm) Note: The function **[256]** is combined one and it consists of following alarms: DOOR AJAR, PREALARM and FORCED ENTRY. Each of mentioned alarm is signalled by means of different modulation (pulses). If more than one alarm occurs then the one with the highest priority is represented at the output **[256]**.

2.15 Function keys

The administrator can configure up to four function keys at the keypad of PR602LCD controller and up to two functions keys at the keypad of some PRT series readers. In case of PRxx2 series controllers, function keys (similarly to input lines) can be configured in regard of their function, Schedule, Auxiliary Condition and T&A mode by means of PR Master software within properties of particular controller (see 3.15 F1…F4 keys tabs). In case of PR102DR controller only function can be assigned to function key. PR Master software enables the configuration of all 4 function keys for both Terminal ID0 and Terminal ID1 regardless the fact whether these function keys are actually available at controller/reader keypad. Function keys of PRT series readers can be used only if these readers are configured to RACS Clock&Data mode. In case of Wiegand or Magstripe communication, function keys cannot be used. In general perspective, function keys operate in the same way as buttons connected to controller input lines.

Note: In case of PR102DR controller only following functions are available: [00], [02], [04], [09], [60], [61], [64] – [79], [255]

Table 9. Function keys

No.	Function	Description
[00]	**No function**	Function key is not used, no function is assigned.
[02]	**Release door**	The key enables door opening as in case of standard access granting.
[04]	**Key pressed (event only)**	Each use of the key with function [04] is registered in event history, and no further actions are performed within the system.
[09]	**INTRUDER**	The key with function **[09]** works in the same way as input line with function **[09]** and it activates INTRUDER flag (timer).

[44]	**Switch momentary access on terminal ID1 on**	The assignment of **[44]** function to any function key results in replacement of event related to access granting i.e. instead of standard event **[001]: Access granted**, the event **[547]: Access granted-special mode** is generated when access is granted by the controller. The event **[547]** is ignored within Attendance report in PR Master software. When the key with function **[44]** is pressed then Terminal ID1 is emulated for 8 seconds or till the identification of user by means of proximity card and/or PIN. Within this time, standard event **[001]:Access granted** is generated when access is granted by the controller. Note: The function **[44]** is available only in PR602LCD, PR612, PR622 and PR302 controllers.
[45]	**Switch momentary terminal ID1 to emulate terminal ID0**	When the key is pressed, the controller with built-in reader (Terminal ID1) switches to emulation of Terminal ID0. Each Terminal can be configured differently. The emulation lasts 8 seconds or till the identification of user by means of proximity card and/or PIN. The event related to access granting is **[001]: Access granted**. Note: The function **[45]** is available only in PR602LCD, PR612, PR622 and PR302 controllers.
[46]	**Random check confirm**	When the key is pressed, then random user inspection is confirmed, controller is unblocked and the next user can identify at the reader by means of proximity card and/or PIN. The input is used only with the option: **Random check requires confirmation** (see 3.7 Advanced tab).
[48]	**Keypad selected T&A mode (toggle)**	The key is used in connection with Time&Attendance applications (RCP Master software).
[49]	**Keypad selected T&A mode (momentary)**	The key is used in connection with Time& Attendance applications (RCP Master software).
[50]	**Next T&A mode (toggle)**	The key is used in connection with Time& Attendance applications (RCP Master software). Function **[50]** is available only in PR602LCD controller.
[51]	**Next T&A mode (momentary)**	The key is used in connection with Time& Attendance applications (RCP Master software). Function **[50]** is available only in PR602LCD controller.
[56]	**Predefined T&A mode (toggle)**	The key is used in connection with Time& Attendance applications (RCP Master software).
[57]	**Predefined T&A mode (momentary)**	The key is used in connection with Time& Attendance applications (RCP Master software).
[58]	**Set Postponed auto-arming delay ON**	When the key is pressed then auto-arming is delayed by the time specified with **Programmed auto-arming delay** option (see 3.5 Arming tab).
[59]	**Set postponed auto-arming delay OFF**	When the key is pressed then auto-arming delay resulting from the option **Programmed auto-arming delay** is cancelled and the controller attempts to arm instantly if required by Arming/Disarming Schedule (see 3.5 Arming tab).

[60]	**APB register reset**	When the key is pressed then APB Register is reset (cleared) and any user can identify by means of proximity card and/or PIN at any terminal (reader) but in the next steps Anti-pass back rules must be followed.
[61]	**Armed/Disarmed mode**	The key is used to toggle Armed and Disarmed Modes.
[62]	**Set XM-8 outputs OFF**	When the key is pressed then all relay outputs of XM-8 module connected to the controller are switched off.
[63]	**Set XM-8 outputs ON**	When the key is pressed then all relay outputs of XM-8 module connected to the controller are switched on.
[64]	**Set Normal Door Mode**	When the key is pressed then Normal Door Mode is selected for the controller.
[65]	**Set Unlocked Door Mode**	When the key is pressed then Unlocked Door Mode is selected for the controller.
[66]	**Set Cond. Unlocked Door Mode**	When the key is pressed then Conditionally Unlocked Door Mode is selected for the controller.
[67]	**Set Locked Door Mode**	When the key is pressed then Locked Door Mode is selected for the controller.
[68]	**Set LIGHT**	When the key is pressed then LIGHT Flag (Timer) is on.
[69]	**Clear LIGHT**	When the key is pressed then LIGHT Flag (Timer) is off.
[70]	**Toggle LIGHT**	When the key is pressed then LIGHT Flag (Timer) is switched on/off.
[71]	**Set AUX1**	When the key is pressed then AUX1 Flag (Timer) is on.
[72]	**Clear AUX1**	When the key is pressed then AUX1 Flag (Timer) is off.
[73]	**Toggle AUX1**	When the key is pressed then AUX1 Flag (Timer) is switched on/off.
[74]	**Set AUX2**	When the key is pressed then AUX2 Flag (Timer) is on.
[75]	**Clear AUX2**	When the key is pressed then AUX2 Flag (Timer) is off.
[76]	**Toggle AUX2**	When the key is pressed then AUX2 Flag (Timer) is switched on/off.
[77]	**Clear Intruder and Tamper alarms**	When the key is pressed then INTRUDER and TAMPER Flags (Timers) are off.
[78]	**Set Disarmed Mode**	When the key is pressed then the controller is switched to Disarmed Mode.
[79]	**Set Armed Mode**	When the key is pressed then the controller is switched to Armed Mode.
[84]	**Set Card or PIN mode on term. ID0**	When the key is pressed then Identification Mode of Terminal ID0 (reader) is switched to Card or PIN.
[85]	**Set Card only mode on term. ID0**	When the key is pressed then Identification Mode of Terminal ID0 (reader) is switched to Card only.
[86]	**Set PIN only mode on term. ID0**	When the key is pressed then Identification Mode of Terminal ID0 (reader) is switched to PIN only.
[87]	**Set Card and PIN mode on term. ID0**	When the key is pressed then Identification Mode of Terminal ID0 (reader) is switched to Card and PIN.

[88]	**Set Card or PIN mode on term. ID1**	When the key is pressed then Identification Mode of Terminal ID1 (reader) is switched to Card or PIN.
[89]	**Set Card only mode on term. ID1**	When the key is pressed then Identification Mode of Terminal ID1 (reader) is switched to Card only.
[90]	**Set PIN only mode on term. ID1**	When the key is pressed then Identification Mode of Terminal ID1 (reader) is switched to PIN only.
[91]	**Set Card and PIN mode on term. ID1**	When the key is pressed then Identification Mode of Terminal ID1 (reader) is switched to Card and PIN.
[255]	**Door bell**	When the key is pressed then acoustic signal is generated by means of internal speaker and the output with function **[15]:Door bell** is activated. Both, acoustic signal and output are activated for 4 sec.

2.16 Schedules and Auxiliary Conditions

Schedules

Schedule is a weekly calendar (Monday – Sunday) with 4 holidays (H1-H4). The Schedule can be divided into maximum 128 periods defined by From… and To… parameters. Following types of Schedules are available in RACS4 (PR Master software):

- General Purpose Schedules, which can be applied to various functions and options within the controller. They are mainly used when defining access rights for users (see 2.7 Access Rights),
- T&A Mode Schedules, which are used for automatic switching of T&A Mode at Terminal ID1. These Schedules are used only if PR Master software is used with RCP Master software (see 2.19.2 Time&Attendance based on RCP Master software),
- Door Mode Schedules, which are used for automatic switching of Door Modes (see 2.5 Door Modes)
- APB Reset Schedules, which are used for defining moments, when the controller automatically resets its Anti-passback Register (see 2.11 Anti-passback)
- Identification Mode Schedules, which are used for automatic switching of Identification Mode (see 2.4 Identification Modes).

For each of mentioned above Schedules the administrator can define not only week days but also holidays. These are days, when usual Schedules of week days are not valid and instead of them, some additional mechanisms are applied. Four different daily rules (H1 – H4) for holidays within particular Schedule can be specified in RACS4 system and then they can be assigned to particular days in years (holidays). In case of PRxx2 series controllers, the maximum number of holidays equals to 120.

Auxiliary conditions

Many functions and options within controller properties (PR Master software) can be enabled for activation according to administrator defined Schedules and/or only if certain Auxiliary Conditions are satisfied. It is possible in regard of:

- High Security Mode,
- [#] key options,
- Facility Code,
- Two User Mode,
- Use of cards and/or PINS assigned to SWITCHER users,
- Random User Check,
- Conditional Access,
- Keypad Commands,
- Input lines,
- Output lines,
- Function keys,
- Inputs and outputs at XM-2 module.

Auxiliary Condition indicates additional circumstance or state that must be satisfied in order to enable use of particular function/option (positive logic, e.g. condition **[130]**) or in order to disable use of particular function/option (negative logic, e.g. condition **[131]**).

Example:
*If Auxiliary Conditions **[129]: Enabled when controller armed** is assigned to function key F1 then the user will be able to use that key (and function assigned to that key) only if the controller is armed.*

Auxiliary Conditions can also be assigned to input/output lines or function keys. If the Auxiliary Condition is satisfied then particular line or key can be used (positive logic) or cannot be used (negative logic) depending on particular Auxiliary Condition. If particular Auxiliary Condition is satisfied then already activated line or key shall be deactivated and disabled.

Example:
*If input line with function **[07]: Door bell** and Auxiliary Condition **[129]: Enabled when controller armed** is activated then it shall be deactivated and disabled when the controller is disarmed.*

Table 10 Auxiliary Conditions

No.	Condition
[128]	Enabled when controller Disarmed
[129]	Enabled when controller Armed
[130]	Enabled when IN1 is ON
[131]	Disabled when IN1 is ON
[132]	Enabled when IN2 is ON
[133]	Disabled when IN2 is ON
[134]	Enabled when IN3 is ON
[135]	Disabled when IN3 is ON
[136]	Enabled when IN4 is ON
[137]	Disabled when IN4 is ON
[138]	Enabled when last login on term.ID0
[139]	Enabled when last login on term.ID1
[140]	Enabled when somebody occupies room
[141]	Disabled when somebody occupies room
[142]	Enabled when limit of users in room reached
[143]	Disabled when limit of users in room reached
[144]	Enabled when door in Normal mode
[145]	Disabled when door in Normal mode
[146]	Enabled when door in Unlocked mode
[147]	Disabled when door in Unlocked mode
[148]	Enabled when door in Cond.Unlocked mode
[149]	Disabled when door in Cond.Unlocked mode
[150]	Enabled when door in Locked mode

[151]	Disabled when door in Locked mode
[152]	Enabled when LIGHT timer active
[153]	Disabled when LIGHT timer active
[154]	Enabled when TAMPER timer active
[155]	Disabled when TAMPER timer active
[156]	Enabled when AUX1 timer active
[157]	Disabled when AUX1 timer active
[158]	Enabled when AUX2 timer active
[159]	Disabled when AUX2 timer active
[160]	Enabled when INTRUDER timer active
[161]	Disabled when INTRUDER timer active
[162]	Enabled when FORCED ENTRY timer active
[163]	Disabled when FORCED ENTRY timer active
[164]	Enabled when PREALARM timer active
[165]	Disabled when PREALARM timer active
[166]	Enabled when DOOR AJAR timer active
[167]	Disabled when DOOR AJAR timer active
[255]	None

2.17 Special options

2.17.1 Two User Mode

In this mode, the controller grants access if two users (with different cards and/or PINs) undergo the authentication procedure in any order. Both users should carry out the authentication procedure according to the current Identification Mode (see 2.4 Identification Modes) in particular controller and both users are required to have access rights at the controller. The second authentication can be done at any reader connected to the controller (Terminal ID0 or ID1), thus allowing also such situation that both users are located at opposite sides of the door. Two User Mode cannot be activated separately for each side of the door. The mode is activated by selection of Schedule and additionally Auxiliary Condition can also be assigned (see 2.16 Schedules and Auxiliary Conditions).

Procedure for configuration of Two User Mode:

1. Within controller properties (PR Master software) select **Access** tab (see 3.4 Access tab) and in the area **Two User Mode** select Always Schedule or any other General Purpose Schedule previously defined by administrator. The General Purpose Schedule can be specified by means of the option **Schedules** in the main window of PR Master software.
2. Upload the configuration to the controller.

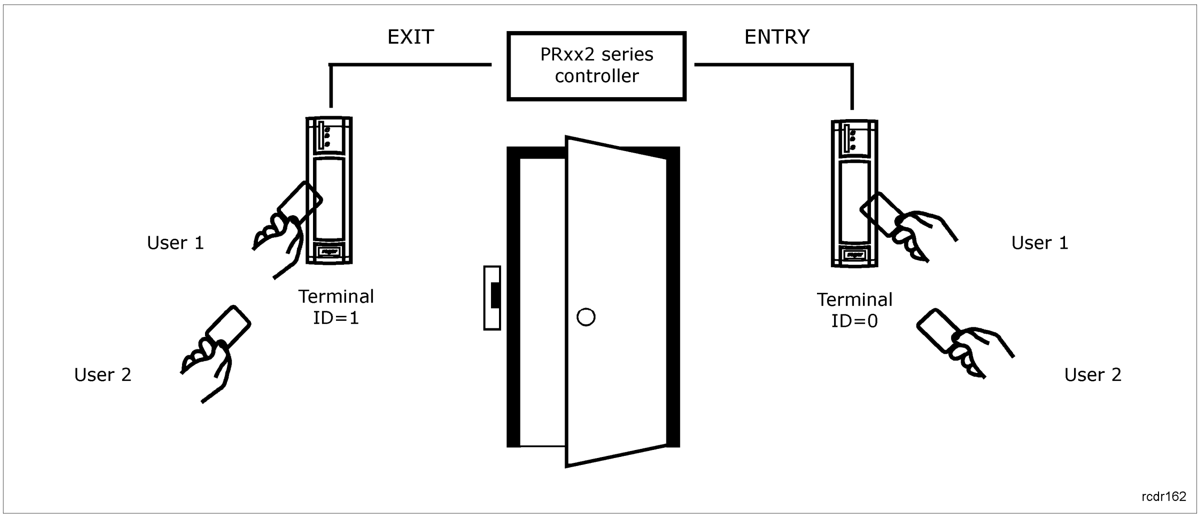


Fig. 9 Two User Mode

2.17.2 Conditional Access

In this mode, the controller grants entry not only to users with access rights but also to all other users of RACS4 system if any user with access rights is present in controlled room. Users (cards and/or PINs) unknown to RACS4 system cannot get access at all. When there is no user in controlled room then only users with access rights can enter such room. In case of Conditional Access Mode all user of RACS4 system can exit controlled room regardless of their access rights and number of users in the room.

Conditional Access Mode is based on Local Anti-passback (see 2.11 Anti-passback). The mode is activated by selection of Schedule and additionally Auxiliary Condition can also be assigned (see 2.16 Schedules and Auxiliary Conditions).

Note: Condition Access Mode is based on Local Anti-passback therefore after reset of APB Register only user with access rights can enter the room. Further on standard rules for Conditional Access Mode apply.

Procedure for configuration of Conditional Access

1. Specify Access Zone, where some users have access rights and some users do not have access rights (see 2.7 Access Rights).
2. In the properties of controller intended for Conditional Access Mode select **Advanced** tab (see 3.7 Advanced tab) and in the area **Conditional Access** select Always Schedule or any other General Purpose Schedule previously defined by administrator. The General Purpose Schedule can be specified by means of the option **Schedules** in the main window of PR Master software.
3. In the same tab of controller properties select the option **Enable Anti-passback.**
4. Assuming that Terminal ID0 is the entry reader to the room, select the tab **Terminal ID0** within controller properties (see 3.3 Terminal ID0) and then verify if in the field **Location (valid for Local APB only)** there is selected the option **Entry to the room/area**. If not, then select that option. If Terminal ID1 is to be entry reader then conduct analogical steps as mentioned above.
5. Upload the configuration to the controller.

2.17.3 High Security Mode

In this mode, the controller grants access if users undergoes two-stage authentication procedure. First, the user needs to authenticate at primary reader and then at secondary reader, both installed at the same side of the door. When this procedure is completed, the controller can grants access to the user. The mode can be defined separately for both sides of the door. The mode is activated by selection of Schedule and additionally Auxiliary Condition can also be assigned (see 2.16 Schedules and Auxiliary Conditions). In practical applications the secondary reader is biometric reader but any type of reader can be used as well. The secondary reader is always connected to RACS Clock&Data terminals (see 2.2.3 RACS Clock & Data interface) except for PR402DR controller, where Wiegand and Magstripe readers are connected to its input lines. In case of secondary readers, which communicate with controller by means of RACS Clock&Data protocol, the addresses ID2 or ID3 can be configured within Memory Reset procedure or by means of RARC software. The reader, which is built in the controller (PR602LCD, PR612, PR622 and PR302) has always address ID=1. Default address of new external reader is ID=0.

Procedure for configuration of High Security Mode:

1. Within controller properties (PR Master software) select **Terminal ID1** tab (see 3.2 Terminal ID1 tab) and in the area **High Security Mode** select method of communication with the secondary reader and Always Schedule or any other General Purpose Schedule defined by administrator. The General Purpose Schedule can be specified by means of the option **Schedules** in the main window of PR Master software.
2. If it is required to provide High Security Mode at both sides of the door then conduct the same steps in **Terminal ID0** tab within controller properties (see 3.3 Terminal ID0)
3. Upload the configuration to the controller.

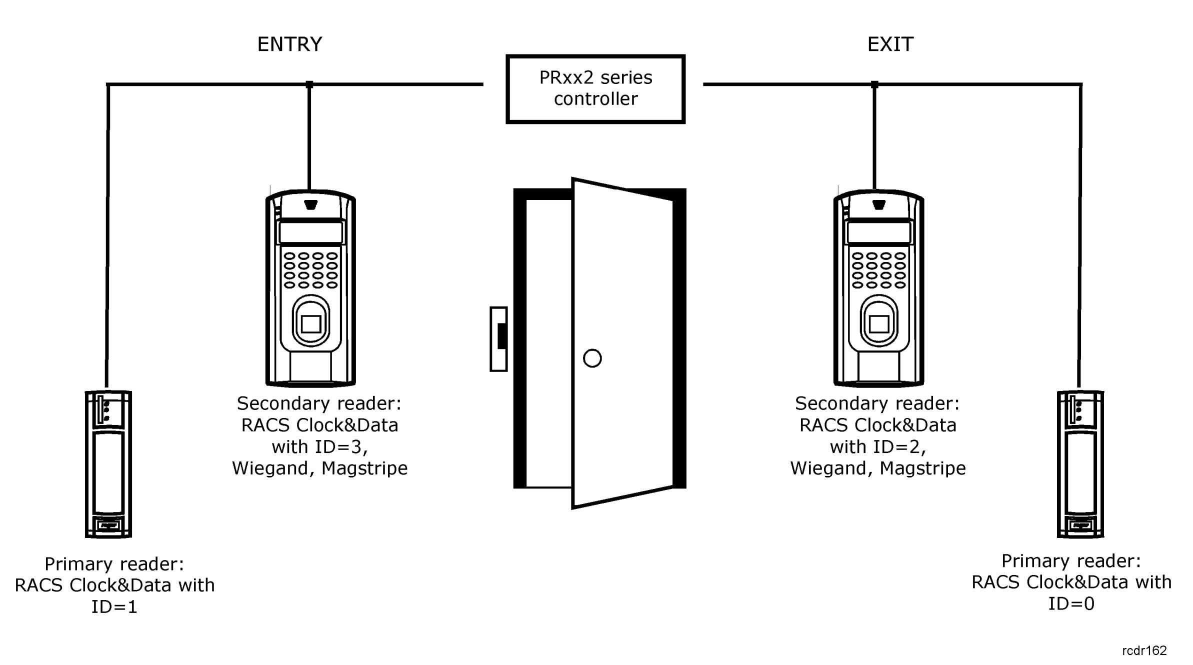

ENTRY
EXIT
PRxx2 series controller
Secondary reader: RACS Clock&Data with ID=3, Wiegand, Magstripe
Secondary reader: RACS Clock&Data with ID=2, Wiegand, Magstripe
Primary reader: RACS Clock&Data with ID=1
Primary reader: RACS Clock&Data with ID=0
rcdr162

Fig. 10 High Security Mode

2.18 Keypad Commands

PRxx2 series controllers as opposed to PRxx1 series controller cannot be entirely configured by means of commands entered with controller keypad or external PRT series reader keypad. However there are some Keypad Commands available, which are listed not only in the manual but also within properties of a controller in PR Master software (see 3.9 Keypad commands tab).
Commands may require authorization after entering by means of adequate identifier (card and/or PIN). The administrator can assign Schedule and Auxiliary Conditions for each Keypad Command (see 2.16 Schedules and Auxiliary Conditions). By default the controller accepts commands from both Terminals ID0 and ID1 but the administrator can limit commands to selected reader. The authorization, Schedule and Auxiliary Condition can be configured by means of the option **Properties**.

In the table 11, Login means use of adequate proximity card and/or PIN and it is necessary only if particular Keypad Command requires authorization. The authorization can be selected for each Keypad Command individually.

Note: In network systems (see 2.1.2 Network System (with CPR32-SE unit)) it is recommended not to use Keypad Commands for controller address modification as it may result in discrepancy between actual controller settings and controller settings within PR Master software.

Table 11 Keypad Commands

Command	Description
F00: Set controller ID	[*][0][0][#][Login][new ID address][#] The command sets a new ID for the controller in range of ID=00-99.
F01: Set date	[*][0][1][#][Login][DD][MM][YY][W][#] The command sets new date and a weekday according to following format: DD: Day (0-31) MM: Month (00-12) YY: Year (00-99) W: Day of week (0-6), where "0" refers to Sunday, "1" denotes Monday, etc.
F02: Set clock	[*][0][2][#][Login][HH][MM][#] The command sets new time according to following format: HH: Hour (00-23) MM: Minute (00-59)
F07: Set Normal door mode	[*][0][7][#][Login] The command activates the Normal Door Mode.
F08: Set Locked door mode	[*][0][8][#][Login] The command sets the Locked Door Mode.
F09: Set Unlocked door mode	[*][0][9][#][Login] The command activates the Unlocked Door Mode.
F10: Set Cond. Unlocked door mode	[*][1][0][#][Login] The command activates the Conditionally Unlocked Door Mode.
F11: Set Disarmed mode	[*][1][1][#][Login] The command sets a controller in the Disarmed Mode.
F12: Set Armed mode	[*][1][2][#][Login] The command sets a controller in the Armed Mode.
F13: Toggle Armed/Disarmed mode	[*][1][3][#][Login] The command toggles Armed/Disarmed Mode.
F14: Restart controller	[*][1][4][#][Login] The command causes the controller restart.

F15: APB Register reset	[*][1][5][#][Login] The command clears/initializes the APB register in the controller.
F16: Keypad selected T&A mode (toggle)	[*][1][6][#][Login[NNN][#] The command sets the T&A Mode on ID1 terminal. The T&A mode code is NNN(=000-255), The T&A mode change is permanent and refers to ID1 terminals.
F17: Keypad selected T&A mode (momentary)	[*][1][6][#][Login[NNN][#] The command sets the T&A Mode on ID1 terminal. The T&A mode code is NNN(=000-255). The T&A mode change is temporary (approx. 8 sec.) and refers to ID1 terminals.
F18: Set Postponed auto-arming delay ON (default delay)	[*][1][8][#][Login] The command postpones the auto-arming mode according to parameter: **Programmed auto-arming delay** (see 3.5 Arming tab).
F19: Set Postponed auto-arming delay ON (delay 1-255 min.)	[*][1][9][#][Login][NNN][#] The command delays the auto-arming by NNN minutes, other auto-arming delays are deactivated.
F20: Set Postponed auto-arming delay OFF	[*][2][0][#][Login] The command resets the auto-arming delay (if previously activated).
F21: Start LIGHT timer	[*][2][1][#][Login] The command switches the LIGHT flag on.
F22: Clear LIGHT timer	[*][2][2][#][Login] The command switches the LIGHT flag off.
F23: Toggle LIGHT timer	[*][2][3][#][Login] The command toggles the LIGHT flag state.
F24: Start AUX1 timer	[*][2][4][#][Login] The command switches the AUX1 flag on.
F25: Clear AUX1 timer	[*][2][5][#][Login] The command switches the AUX1 flag off.
F26: Toggle AUX1 timer	[*][2][6][#][Login] The command toggles the AUX1 flag state.
F27: Start AUX2 timer	[*][2][7][#][Login] The command switches the AUX2 flag on.
F28: Clear AUX2 timer	[*][2][8][#][Login] The command switches the AUX2 flag off.
F29: Toggle AUX2 timer	[*][2][9][#][Login] The command toggles the AUX2 flag state.
F30: Start INTRUDER timer	[*][3][0][#][Login] The command switches the INTRUDER flag on.

F31: Clear INTRUDER and TAMPER timers	[*][3][1][#][Login] The command switches off both INTRUDER and TAMPER flags.

F32: Change Identification Mode on term.ID1	[*][3][3][#][Login][N][#]
	The command switches the Identification Mode at Terminal ID1 according to N= 0..3, where:
	N=0: Card or PIN mode
	N=1: Card only mode
	N=2: PIN only mode
	N=3: Card and PIN mode

F33: Change Identification Mode on term.ID0	[*][3][3][#][Login][N][#] The command is used in the same way as F32 with the only difference that this command pertains to Terminal ID0.

2.19 Time and Attendance (T&A)

In RACS4 system there are two solutions for Time&Attendace. Both require use of PR Master software and access control system for recording of events.

2.19.1 Time&Attendance based on Attendance Areas within PR Master software

This is very simple Time&Attendance solution, which consists in counting the time of users presence in designated areas of RACS4 access control system. This solution requires only proper configuration of free of charge PR Master software. So called T&A Modes are not used at all in Time&Attendance based on Attendance Areas.

Procedure for configuration of Attendance Areas

1. Configure the access control system by means of the options: Access Zones, User Groups and Schedules in the main window of PR Master software (see 2.7 Access Rights).
2. In the main window of PR Master software select the option **Attendance Areas.**
3. In the opened window configure new area by entering its name as well as selecting entry and exit readers (Terminals ID0 and ID1). In practice, entries and exits are usually readers located at the entries and exits from/to the building/office. The administrator can assign multiple entry and exit readers within particular Attendance Area.
4. In case of Attendance Areas there is no need to select any options within the properties of any controller. Attendance Areas are operated regardless of Access Zones, APB Zones or Alarm Zones. No settings are uploaded to controllers. In case of Attendance Areas, PR Master just interprets events recorded by access control system.
5. The summary of Time&Attendance can be accessed by means of the option **Reports** and then **Attendance**. The summary in the report is up to date if all events are downloaded from controllers and/or CPR32-SE to PR Master software. The command **Read event buffers now** in the main window or PR Master software can be used for that purpose.

Note: Attendance Reports are described in detail within PR Master manual.

2.19.2 Time&Attendance based on RCP Master software

PR Master software can record events, which can be further exported to other program for detailed Time&Attendance summary in accordance with local laws or requirements. RCP Master is such external software for PR Master. The PR602LCD controller is recommended for Time&Attendace based on RCP Master as it is equipped with built-in reader, LCD and function keys.
Each terminal (reader) in RACS4 system can be the terminal for registration of events for RCP Master. PRxx2 series controller can operate with two readers (Terminal ID0 and ID1), which can be used for registration of **[001[Access granted** events with different T&A Modes. In general

perspective T&A Mode for events at Terminal ID0 is static and cannot be changed dynamically, while T&A Mode for events at Terminal ID1 can be changed dynamically as given below.
In RACS4 system the administrator can specify up to 255 T&A Modes, which can be used to differentiate **[001] Access granted** events. Every T&A Mode has its code (0-255) and name. Additional text information can be assigned to T&A Mode by selection of the option **Tools** in the top bar of PR Master main window and then the option **T&A Modes**.
T&A Modes with codes in range of 0 - 50 are reserved by RACS4 system. T&A Modes in range of 50 -255 can be freely defined by administrator. Following T&A Modes are predefined within RACS4 system:

- ENTRY (Code 000),
- EXIT (Code 016),
- ON-DUTY EXIT (Code 017),
- NO T&A (Code 032).

Access granted events with NO T&A Mode (code 032) are ignored in Time&Attendance summaries. In order to prepare data for Time&Attendance it is necessary to export events with T&A Modes from PR Master software. For that purpose select the option **Event history** in the main window of PR Master software and then after selection of filter parameters select the option **T&A Report** and finally select the **OK** button. In the newly opened window select the format of output file. In the next step the exported file must be imported into RCP Master software.

T&A Mode switching

Default T&A Mode for particular reader (Terminal ID0 or ID1) can be assigned by means of PR Master software. For that purpose, open the properties of particular controller by clicking the controller in the main window of PR Master software and select the tab **Terminal ID0** and/or **Terminal ID** (see 3.2 Terminal ID1 tab). In the field **Default T&A Mode** select desired mode. If the administrator selects **Entry** T&A Mode then all **[001]: Access granted** events at that reader shall be treated by system as starting moments for users within Time&Attendace system. The current T&A Mode can be switched manually by user or automatically by T&A Schedule. The T&A Mode can be switched permanently or momentary (approx. 8 sec.). Following methods can be used to switch T&A Mode of the reader:

- Input line – see 2.13 Inputs,
- Function key (at reader/controller keypad) – see 2.15 Function keys,
- Schedule – configured by means of the option **Schedules** and the tab **Options** in controller properties,
- Keypad Command from controller keypad or PRT reader keypad – see 2.18 Keypad Commands.

All mentioned above methods can be used interchangeably. The T&A Mode can be switched on Terminal ID1 i.e. the reader, which is built in the controller (PR602LCD, PR612, PR622 and PR302) or on the external reader connected to the controller (PR402, PR102DR). The Terminal ID0 for all controllers is always the external reader and it can have only default T&A Mode.

Note: If the option **Term. ID0 follows T&A Mode of Term. ID1** within controller properties (see 3.6 Options tab) is selected then it is possible to control dynamically and indirectly the T&A Mode at Terminal ID0 as it follows T&A Mode at Terminal ID1.

Table 12 Methods for T&A Mode switching

Method	Function	Description
Input line	**[48]: Keypad selected T&A mode (toggle)**	When the input is activated then the reader awaits for the user entering 3-digit code [NNN], which correspond to particular T&A Mode. After pressing the [#] key the reader switches to desired T&A Mode. The switching is permanent and concerns events from Terminal ID1, (NNN=000-255).

	[49]: Keypad selected T&A mode (momentary)	When the input is activated then the reader awaits for the user entering 3-digit code [NNN], which correspond to particular T&A Mode. After pressing the [#] key the reader switches to desired T&A Mode. The switching is momentary (8 sec.) and concerns events from Terminal ID1, (NNN=000-255).
	[50]: Next T&A mode (toggle)	When the input is activated then the reader switches to the next available T&A Mode. The switching is permanent and concerns events from Terminal ID1. The function is available only for PR602LCD controllers.
	[51]: Next T&A mode (momentary)	When the input is activated then the reader switches to the next available T&A Mode. The switching is momentary (8 sec.) and concerns events from Terminal ID1. The function is available only for PR602LCD controllers.
	[56]: Predefined T&A mode (toggle)	When the input is activated then the reader switches to T&A Mode, which is predefined for that input. Predefined T&A Mode can be set in the controller properties (PR Master software) in the tab of particular input. The switching is permanent and concern events from Terminal ID1.
	[57]: Predefined T&A mode (momentary)	When the input is activated then the reader switches to T&A Mode, which is predefined for that input. Predefined T&A Mode can be set in the controller properties (PR Master software) in the tab of particular input. The switching is momentary (8 sec.) and concern events from Terminal ID1.
Functions keys	**[48]: Keypad selected T&A mode (toggle)**	See function **[48]** of input line.
	[49]: Keypad selected T&A mode (momentary)	See function **[49]** of input line.
	[50]: Next T&A mode (toggle)	See function **[50]** of input line. The function is available only for PR602LCD controllers.
	[51]: Next T&A mode (momentary)	See function **[51]** of input line. The function is available only for PR602LCD controllers.
	[56]: Predefined T&A mode (toggle)	See function **[56]** of input line.
	[57]: Predefined T&A mode (momentary)	See function **[57]** of input line.
Keypad Commands	**F16: Keypad selected T&A mode (toggle)**	See function **[48]** of input line.
	F17: Keypad selected T&A mode (momentary)	See function **[49]** of input line.
Other	T&A Mode Schedules	T&A Mode Schedule can be used for automatic switching of T&A Mode at Terminal ID1. The schedule defines periods for particular T&A Mode. The procedure for configuration of T&A Schedules is given below.

Procedure for configuration of T&A Mode Schedules

1. In the main window of PR Master software select the option **Schedules** and then select the tab **T&A Mode Schedules**.
2. In the newly opened window use the button **Add** and then enter the name of your schedule and specify periods for particular T&A Modes in week days.
3. In the main window of PR Master software click particular controller and enter its properties.
4. In the tab **Options**, in the area **T&A Mode** select the option **Enable T&A Schedule** and in the field **T&A Schedule** select previously defined schedule.
5. If necessary, in the tabs **Terminal ID1** and/or **Terminal ID0**, in the field **Default T&A Mode** select desired T&A mode. The administrator can define own T&A Modes selecting the option **Tools** in the top bar of PR Master main window and then selecting the option **T&A Modes**.
6. Besides T&A Modes it is necessary to assign T&A IDs. For that purpose select the option **Users** in the main window of PR Master software, then **Add** or **Edit** button and in the tab **General** enter the number in **T&A ID** field.

Note: More information on RCP Master software is given in the manual of that software.

2.20 Recovery of events from RACS4 system in case of PC failure

PRxx2 series controller are equipped with memory buffer for 32000 events. If the installation includes CPR32-SE network controller then events within the subsystem are stored in the CPR32-SE buffer with capacity of 250000 events. Events are downloaded from controllers to computer with PR Master software by means of **Read event buffers now** command and during configuration upload, in Online Monitoring mode and when Event history is started. All events downloaded from controllers are not permanently erased but marked as possible for overwriting. Therefore in case of failure of PC with PR Master software the administrator can recover all not overwritten events from access controller or CPR32-SE memory.

Procedure for recovery of events (PRxx2 series controller)

1. Install PR Master software on operational PC.
2. Connect with the controller by means of interface device (e.g. UT-2USB).
3. Create new system or load previously exported system i.e. backup configuration (if available).
4. Click particular controller in the main window of PR Master software.
5. Select the option **Undelete event buffer on controller.**
6. Select the command **Read event buffer now** or **Event history** in the main window of PR Master software.

Procedure for recovery of events (CPR32-SE network controller)

1. Install PR Master software on operational PC.
2. Connect with the controller by means of interface device (e.g. UT-2USB).
3. Create new system or load previously exported system i.e. backup configuration (if available).
4. Click the CPR in the main window of PR Master software in order to open CPR properties.
5. In the newly opened window select the option **Tools** and then the option **Restore deleted events from CPR.**
6. Select the command **Read event buffer now** or **Event history** in the main window of PR Master software.

III. PROGRAMMING

PRxx2 series controllers are programmed by means of free of charge, management and monitoring PR Master software. The software can be downloaded from www.roger.pl. In the present section, all options available in the controller properties are described. Controller properties can be accessed by clicking particular controller in the main window of PR Master software. The options are used not only for configuration of the controllers but also for configuration of the access control system. The remaining PR Master options are described in the manual for that software.
PRxx2 series controllers as opposed to PRxx1 series controller cannot be entirely configured by means of commands entered with controller keypad or external PRT series reader keypad. However there are some Keypad Commands available (see2.18 Keypad Commands).

Note: Hints are provided for all options in the PR Master software. In order to display particular hint just point your mouse to the option and wait approx. 1 sec.

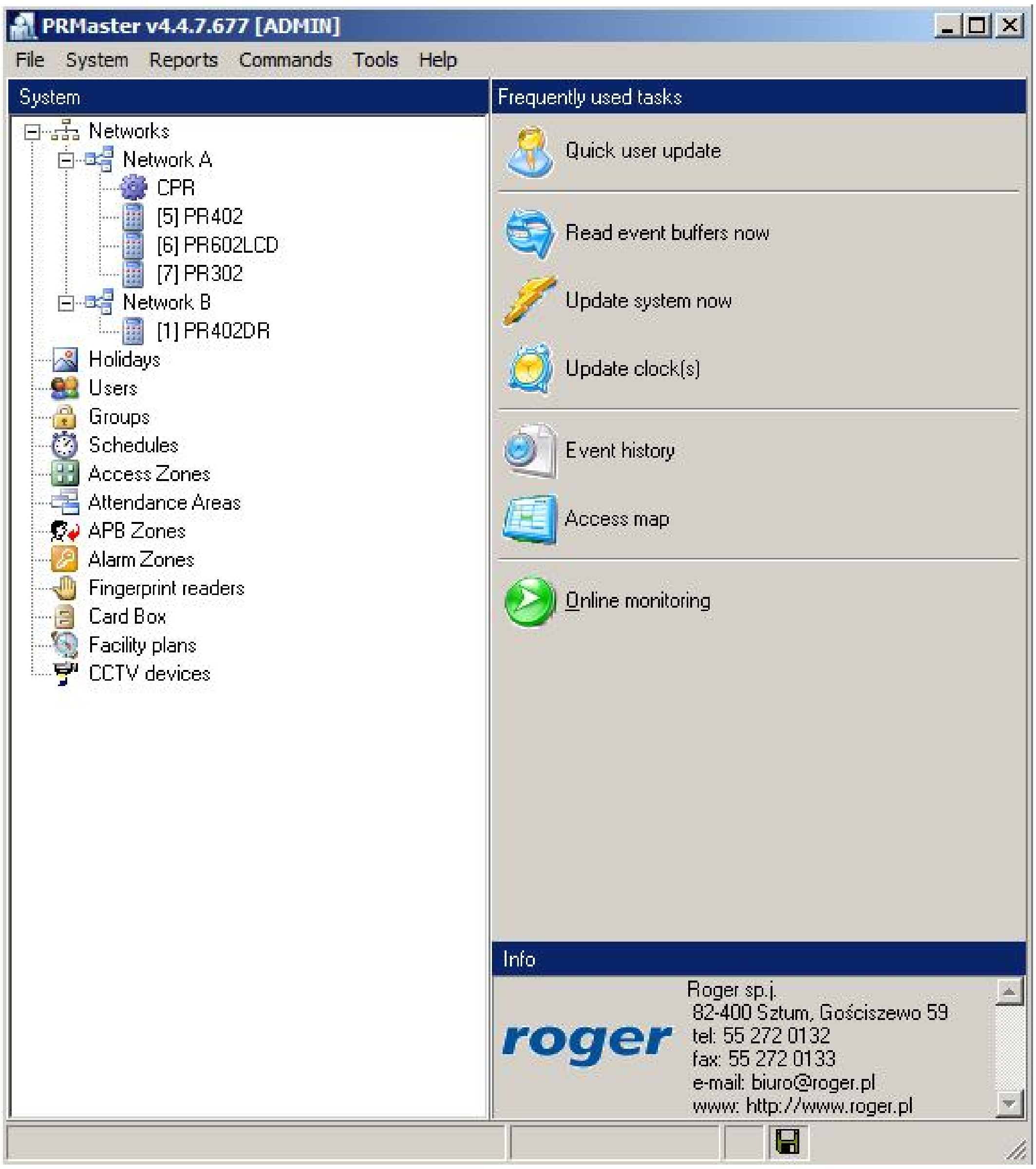


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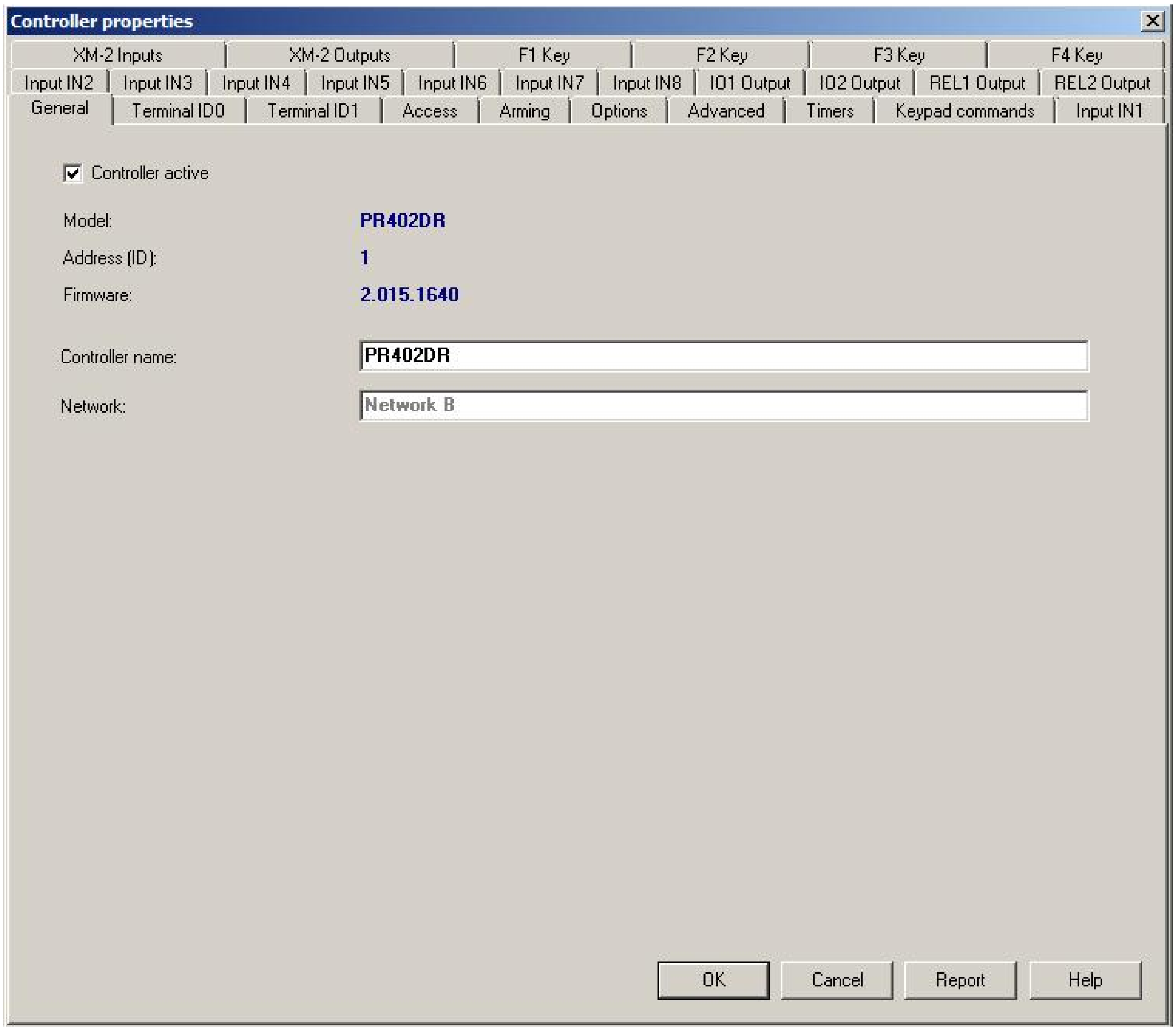
Fig. 11 The main window of PR Master software

3.1 General tab

In the **General** tab, the administrator can activate or deactivate the controller, change the name of controller and acquire some general information i.e.:

- Controller type,
- Controller address (ID),
- Firmware version,
- Controller name,
- Name of the subsystem (network).



☑ Controller active

Model: PR402DR

Address (ID): 1

Firmware: 2.015.1640

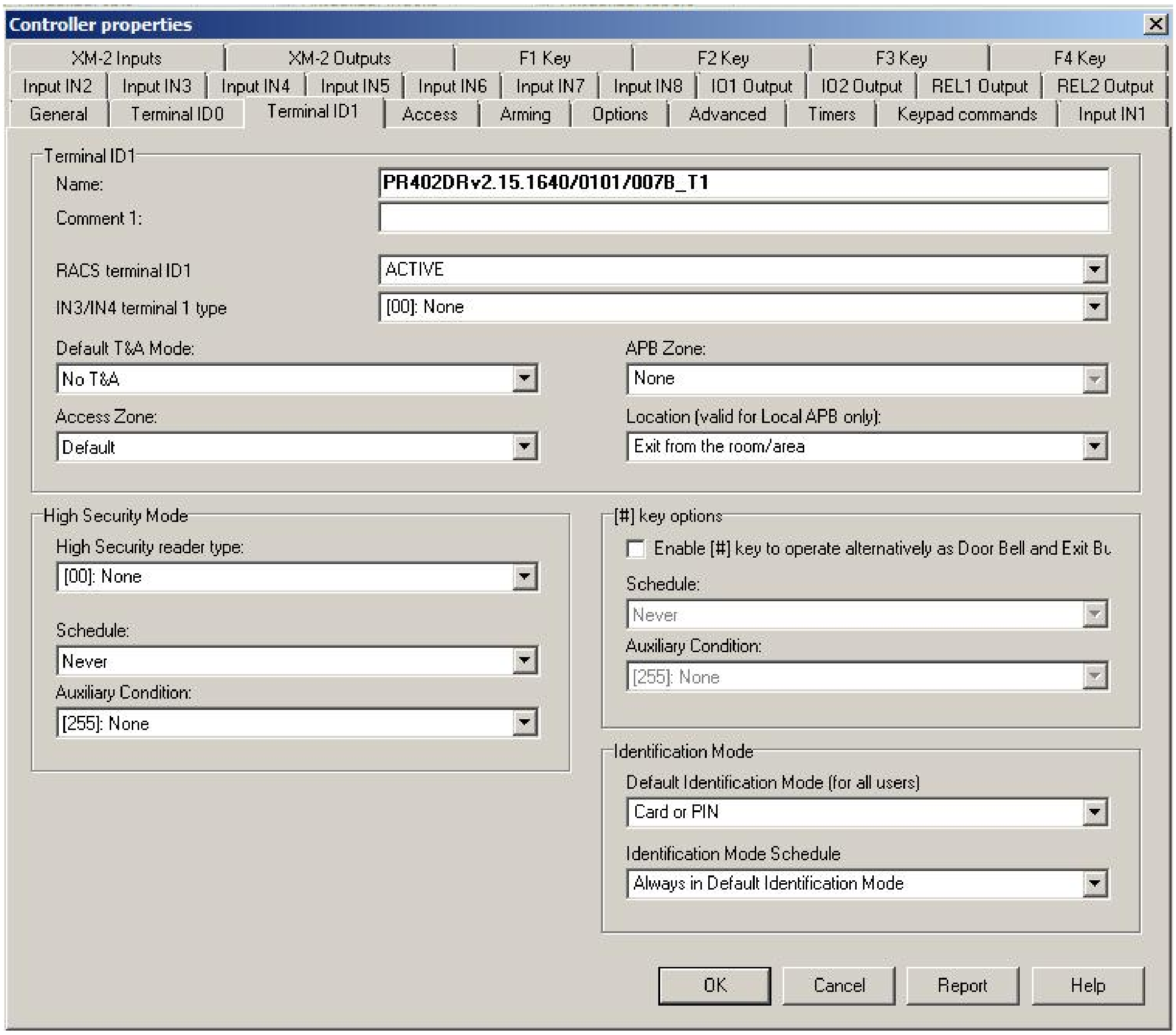
Controller name: PR402DR

Network: Network B

Fig. 12 General tab

3.2 Terminal ID1 tab

Terminal ID1 is the reader built into the controller (PR602LCD, PR612, PR622 and PR302) or the external reader connected to the controller (PR102DR, PR402) (see 1.2 Design and architecture).



Terminal ID1

Name: PR402DRv2.15.1640/0101/007B_T1

Comment 1:

RACS terminal ID1: ACTIVE

IN3/IN4 terminal 1 type: [00]: None

Default T&A Mode: No T&A

APB Zone: None

Access Zone: Default

Location (valid for Local APB only): Exit from the room/area

High Security Mode

High Security reader type: [00]: None

Schedule: Never

Auxiliary Condition: [255]: None

[#] key options

□ Enable [#] key to operate alternatively as Door Bell and Exit Bu

Schedule: Never

Auxiliary Condition: [255]: None

Identification Mode

Default Identification Mode (for all users): Card or PIN

Identification Mode Schedule: Always in Default Identification Mode

Fig. 13 Terminal ID1 tab

Area: Terminal ID1

In this area, the administrator can modify the name of reader, enter comments and select communication method with the reader (see 2.2.3 RACS Clock & Data and 2.2.7 Wiegand/Magstripe interface readers). Proper functioning of controller and reader usually requires also configuration of the reader i.e. mode, address, etc. New PRT series readers are by default configured to RACS Clock&Data mode and ID=0 address.

Option: Default T&A Mode – the option enables selection of predefined or administrator defined T&A Mode as default T&A Mode for the reader. The option is not used if Time&Attendace based on Attendance Areas is applied. For more information – see 2.19.2 Time&Attendance based on RCP Master software.

Option: Access Zone – the option is used for selection of the reader as the entry to particular Access Zone. The Access Zone can be created by means of the option **Access Zones** in the main window of PR Master software. For more information – see 2.7 Access Rights.

Option: APB Zone – the option is used for selection of the reader as the entry to APB Zone. The Anti-passback Zone can be defined by means of the option **APB Zones** in the main window of PR Master software. The option is used in Global APB and it is active if the option **Enable Anti-passback** is activated in the **Advanced** tab. For more information - see 2.11 Anti-passback

Option: Location (valid for Local APB only) – the option is used for selection of the reader as the entry or the exit for Local APB. The option is activated if the option **Enable Anti-passback** is activated in the **Advanced** tab. For more information - see 2.11 Anti-passback.

Area: High Security Mode

In this area, the administrator can select the secondary reader for parallel operation with Terminal ID1 in High Security Mode (see 2.17.3 High Security). The Schedule and Auxiliary Conditions can be assigned to High Security Mode (see 2.16 Schedules and Auxiliary Conditions). Two predefined Schedules i.e. Always and Never are already available and the administrator can also specify own Schedule by means of the option **Schedules** in the main window of PR Master software. The period defined by means of parameters From… and To… signifies the time, when High Security Mode is activated. If Always Schedule is selected then High Security Mode is active all the time.

Area: [#] key options

In this area, the administrator can activate the option **Enable [#] key to operate alternatively as Door Bell and Exit Button.** The Schedule and Auxiliary Conditions can be assigned to the option (see 2.16 Schedules and Auxiliary Conditions). If predefined Never Schedule is selected then [#] key at controller keypad or connected PRT series reader keypad operates in the same way as function key with the function **[255]: Door bell** (see 2.15 Function keys). If the function **[15]: Door bell** is assigned to one of output lines of the controller then external buzzer or any other acoustic device can be connected to that line. If predefined Always Schedule is selected then [#] key at controller keypad or connected PRT series keypad operates as function key with the function **[02]: Release door**. The administrator can also specify own Schedule by means of the option **Schedules** in the main window of PR Master software. Then, in periods specified by parameters From… and To… the [#] key shall operate as exit button and in the remaining time as door bell button.

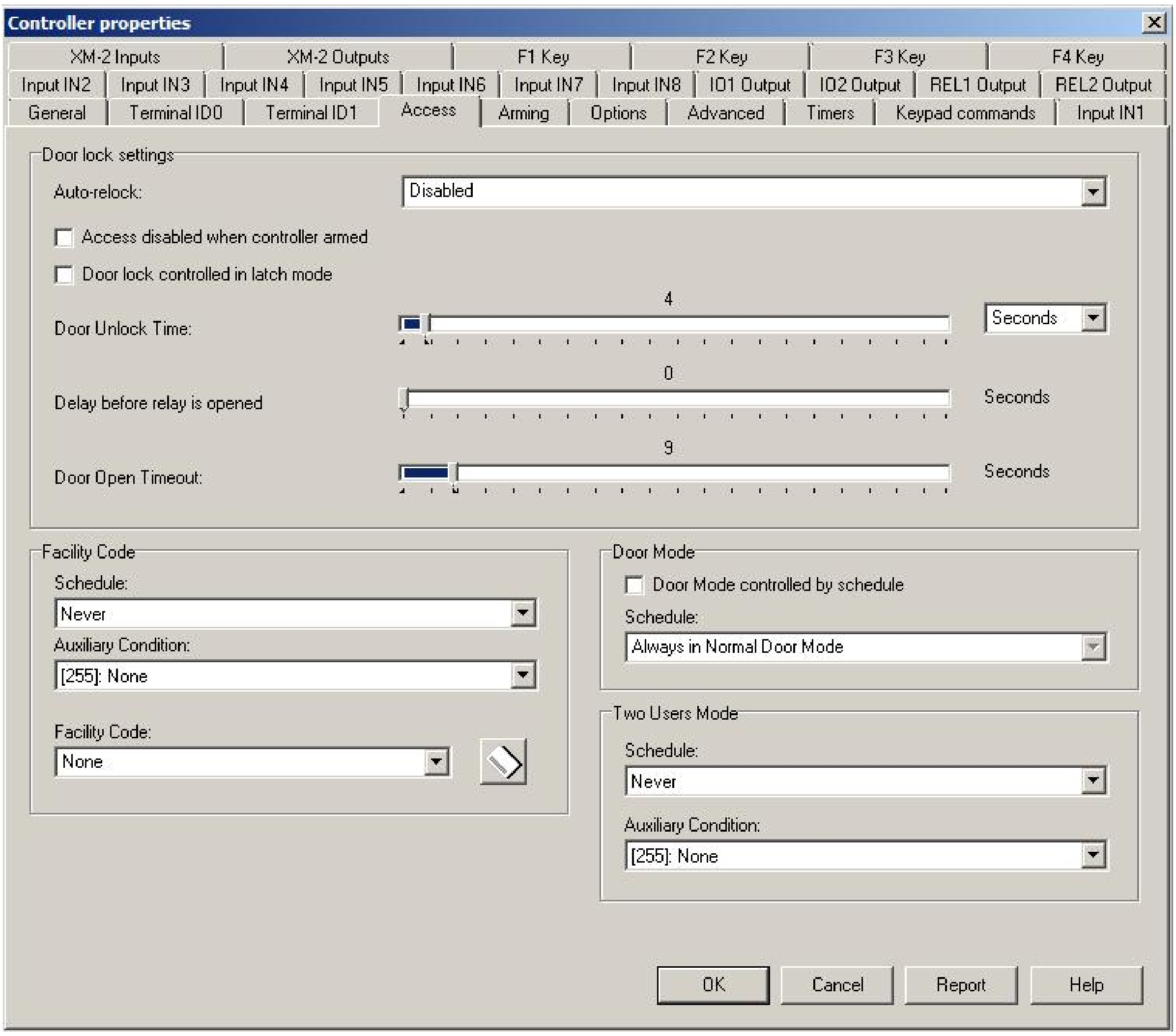
Area: Identification Mode

In this area, the administrator can select default Identification Mode (see 2.4 Identification Modes). The administrator can also assign Identification Mode Schedule after defining such Schedule by means of the option **Schedules** in the main window of PR Master software.

3.3 Terminal ID0 tab

In the tab **Terminal ID0** all options are the same as in the tab **Terminal ID1**. Terminal ID0 is always the external reader connected to PRxx2 series controller (see 1.2 Design and architecture).

3.4 Access tab



Door lock settings

Auto-relock: Disabled

□ Access disabled when controller armed

□ Door lock controlled in latch mode

Door Unlock Time: 4 Seconds

Delay before relay is opened: 0 Seconds

Door Open Timeout: 9 Seconds

Facility Code

Schedule: Never

Auxiliary Condition: [255]: None

Facility Code: None

Door Mode

□ Door Mode controlled by schedule

Schedule: Always in Normal Door Mode

Two Users Mode

Schedule: Never

Auxiliary Condition: [255]: None

Fig. 14 Access tab

<u>Area: Door lock settings</u>

In this area, the administrator can configure options and parameters related to door lock, which is connected to the controller (see 2.7 Access Rights).

Option: Auto-relock – the option is actually functional only if the door contact is connected to one of controller input lines with the function **[01]: Door contact** (see 2.13 Inputs). Based on the setting the controller can lock the door earlier than it would result from the parameter **Door Unlock Time**. The option can be disabled or one of following settings can be selected:

- Block the door lock upon door opening detection,
- Block the door lock upon door closing detection

Based on the first setting, the controller deactivates its relay output connected to the door lock when door opening is detected. In other words, the lock is blocked immediately when door opening is detected and not after time specified by parameter **Door Unlock Time** elapses. Based on the second setting, the controller blocks the lock immediately when door closing is detected.

Option: Access disabled when controller armed – when this option is selected then access can be granted only when the controller is disarmed (see 2.6 Armed/Disarmed Modes). If the controller is armed then the access is denied for all users, regardless of their access rights.

Based on that option, users who can arm/disarm the controller can also block and unblock the access to other users regardless of their access rights (including Schedules).

Option: Door lock controller in latch mode – when this option is selected then every access granting switches the output relay (which is connected to the door lock) to the opposite state. The output is in current state as long as the next access granting occurs. In other words, door lock can be closed or opened all the time. If the option is not selected then relay output is activated for the time specified by the parameter **Door Unlock Time** and then it automatically returns to the previous state.

Parameter: Door Unlock Time – this parameter is used for specifying how long the door lock must be opened. The range of possible settings is from 1 sec. to 99 minutes.

Parameter: Delay before relay is opened – this parameter is used for specifying delay for door opening after access granting. The range of possible settings is from 1 sec. to 99 sec.

Parameter: Door Open Timeout – this parameter is used for specifying time required for door closing after access granting. In order to make this parameter functional it is necessary to connect door contact to one of controller input lines with the function **[01]: Door contact** (see 2.13 Inputs). If the time specified by parameter **Door Open Timeout** elapses and the door is still opened then the Door Alarm called DOOR AJAR is raised (see 2.9 Door Alarm and 2.10 System Flags (Timers)). The range of possible settings is from 1 sec. to 99 sec.

Area: Facility Code

In this area, the administrator can configure Facility Code (see 2.8 Facility Code) as well as assign Schedule and Auxiliary Condition (see 2.16 Schedules and Auxiliary Conditions). Two predefined Schedules i.e. Always and Never are already available and the administrator can also specify own Schedule by means of the option **Schedules** in the main window of PR Master software. The period defined by means of parameters From… and To… signifies the time, when Facility Code is activated. By means of the button with card icon, the administrator can read his proximity card by means of connected reader in order to determine its Facility Code (the fragment of card number).

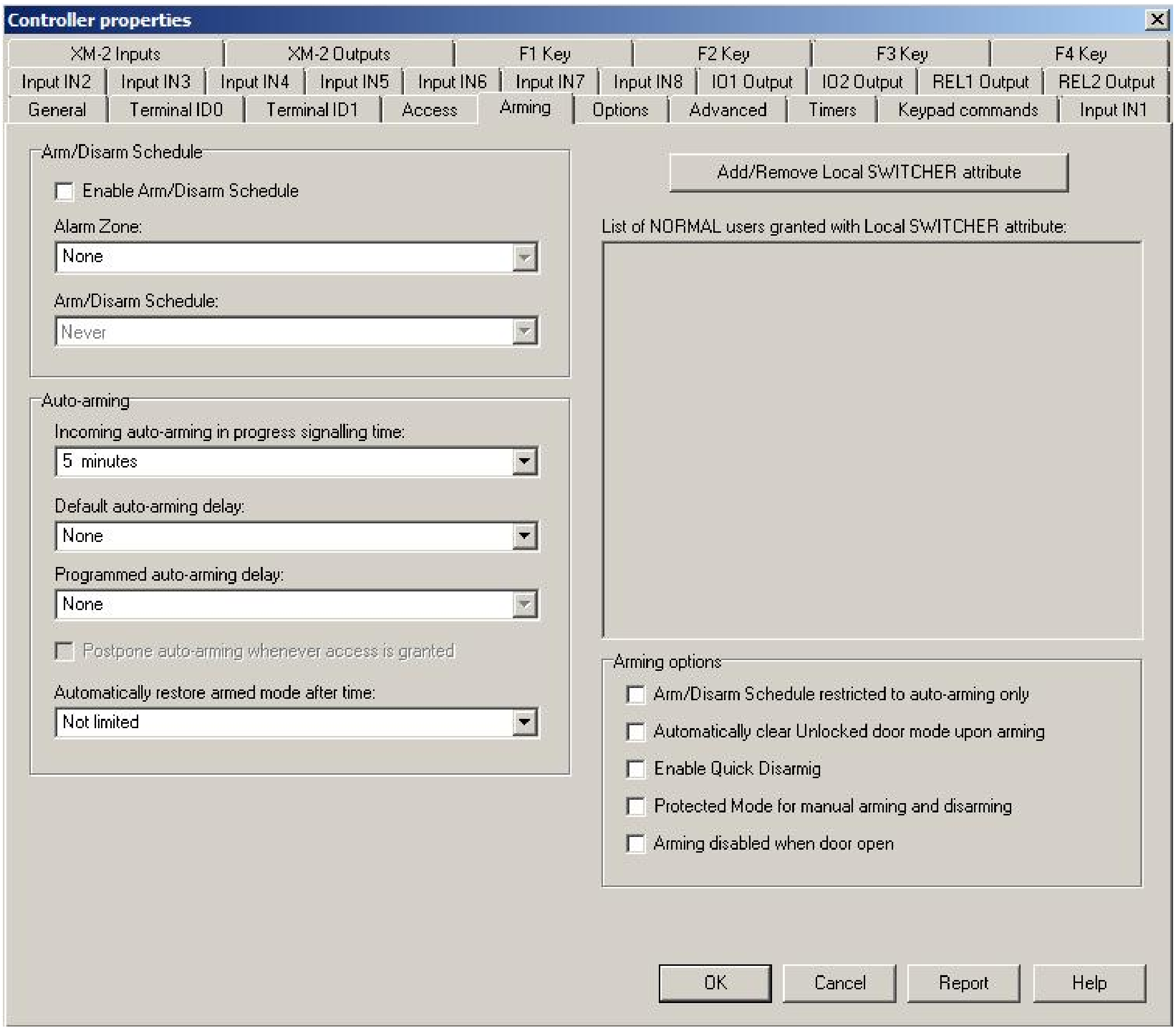
Area: Door Mode

In this area, the administrator can select the option **Door Mode controlled by schedule** (see 2.5 Door Modes) and assign predefined Schedule i.e. Always in Normal Door Mode or assign own Schedule, which can be defined by means of the option **Schedules** in the main window of PR Master software.

Area: Two User Mode

In this area, the administrator can activate Two User Mode (see 2.17.1 Two User Mode) by selection of predefined Schedule i.e. Always or by selection of own Schedule specified by means of the option **Schedules** in the main window of PR Master software. The activation of Two User Mode can also depend on Auxiliary Condition (see 2.16 Schedules and Auxiliary Conditions).

3.5 Arming tab



Arm/Disarm Schedule

□ Enable Arm/Disarm Schedule

Alarm Zone: None

Arm/Disarm Schedule: Never

Auto-arming

Incoming auto-arming in progress signalling time: 5 minutes

Default auto-arming delay: None

Programmed auto-arming delay: None

□ Postpone auto-arming whenever access is granted

Automatically restore armed mode after time: Not limited

List of NORMAL users granted with Local SWITCHER attribute:

Arming options

□ Arm/Disarm Schedule restricted to auto-arming only

□ Automatically clear Unlocked door mode upon arming

□ Enable Quick Disarmig

□ Protected Mode for manual arming and disarming

□ Arming disabled when door open

Fig. 15 Arming tab

Area: Arm/Disarm Schedule

Option: Enable Arm/Disarm Schedule – this option is used for switching Arm/Disarm Schedule on/off (see 2.6 Armed/Disarmed Modes). Arm/Disarm Schedule can be used in the integration of RACS4 system with intruder alarm systems.

Option: Alarm Zone – the option is used for assigning the controller to particular Alarm Zone (see 2.12 Alarm Zones). Alarm Zones are created by means of the option **Alarm Zones** in the main window of PR Master software. The controller assigned to particular Alarm Zone switches to Armed/Disarmed Mode concurrently with other controllers belonging to the same Alarm Zone (see 2.6 Armed/Disarmed Modes) and in accordance with the Schedule assigned to that Alarm Zone. Two predefined Schedules i.e. Always and Never are already available and the administrator can also specify own Schedule by means of the option **Schedules** in the main window of PR Master software. The Schedule can be assigned to particular Alarm Zone by means of the option **Alarm Zones** in the main window of PR Master software. Arm/Disarm feature can be used in the integration of RACS4 system with intruder alarm systems.

Option: Arm/Disarm Schedule – the option is used for assigning Arm/Disarm Schedule directly to the controller and not to Alarm Zone with group of controllers (see 2.6 Armed/Disarmed Modes). Two predefined Schedules i.e. Always and Never are already available and the administrator can also specify own Schedule by means of the option **Schedules** in the main window of PR Master software. The schedule is configured by means of From… and To… parameters and the first parameter signifies the moment when controller becomes disarmed while the second parameter signifies the moment when the controller becomes armed. Selection of predefined Always Schedule results in controller getting disarmed after each reset of the controller or configuration upload. Arm/Disarm feature can be used in the integration of RACS4 system with intruder alarm systems.

Area: Auto-arming

Parameter: Incoming auto-arming in progress signalling time – the parameter is used for specifying how many minutes prior to controller arming in accordance with Arm/Disarm Schedule, the controller shall signal such incoming auto-arming (see 2.6 Armed/Disarmed Modes). The signalling can be acoustic one at reader/controller buzzer or it can be electric one at the output line of controller with the function **[33]: Incoming auto-arming in progress (steady)** and/or **[34]: Incoming auto-arming in progress (pulsed)** (see 2.14 Outputs). The purpose of such signalling is to warn in advance all persons inside the premises that scheduled arming of controller shall occur soon. The range of possible settings is from 1 to 99 minutes.

Parameter: Default auto-arming delay – this parameter is used for specifying the delay (in minutes) for controller, which attempts to arm in accordance with Arm/Disarm Schedule (see 2.6 Armed/Disarmed Modes). The delay is activated if in the moment of scheduled arming, the controller input line with the function **[13]: Arming disabled** (see 2.13 Inputs) is activated. The delay is repeated till the input line with function **[13]** is not active or the arming is no longer required by the Schedule. The purpose of the delay is to enable automatic postpone of controller arming by external device/system. The range of possible settings is from 5 to 99 minutes.

Parameter: Programmed auto-arming delay – this parameter is used for specifying the delay (in minutes) for controller, which attempts to arm in accordance with Arm/Disarm Schedule (see 2.6 Armed/Disarmed Modes). The functioning of this delay is the same as in case of parameter **Default auto-arming delay** but this delay is activated not by the input line of the controller with the function **[13]: Arming disabled** (see 2.13 Inputs) but by the input line with the function **[58]: Postponed Auto-arming delay ON**, by the function key with the function **[58]: Set Postponed auto-arming delay ON** or by the Keypad command **F18: Set Postponed auto-arming delay ON (default delay)**. The delay is repeated as long as the user activates it by means of one the mentioned above methods or the arming is no longer required by the Schedule. The purpose of the delay is to enable manual postpone of controller arming by the user. The range of possible settings is from 5 to 99 minutes.

Option: Postpone auto-arming whenever access granted – when this option is selected then **Programmed auto-arming delay** (see above) can be activated not only by three mentioned above methods (input line, function key and Keypad Command) but also by access granting (use of card and/or PIN by user with access rights).

Parameter: Automatically restore armed mode after time – the parameter is used for specifying the delay (in minutes) for automatic rearming of the controller according to Arm/Disarm Schedule. The purpose of the delay is to arm the controller automatically if the user disarmed the controller manually (see 2.6 Armed/Disarmed Modes) and according to the Schedule the controller should be armed at that moment. Such rearming can be delayed by the user based on the parameter **Programmed auto-arming delay** (see above). The range of possible settings is from 5 to 99 minutes.

Area: Local SWITCHER

In this area, the administrator can assign Local Switcher attribute to NORMAL users (IDs in range of 100 – 3999) in order to allow them to arm and disarm the controller (see 2.6 Armed/Disarmed Modes). As opposed to MASTER user , SWITCHER Full user and SWITCHER Limited user (see 2.3 Users), the NORMAL user with Local SWITCHER attribute can only arm and disarm these controllers, where the attribute is assigned and not all controllers in RACS4 system.

Area: Arming options

Option: Arm/Disarm Schedule restricted to auto-arming only – when this option is selected then Arm/Disarm Schedule can only arm the controller (see 2.6 Armed/Disarmed Modes) while disarming must be conducted manually or remotely.

Option: Automatically clear Unlocked door mode upon arming – when the option is selected then the Unlocked Door Mode is switched to Normal Door Mode (see 2.5 Door Modes) when the controller becomes armed (see 2.6 Armed/Disarmed Modes). The purpose of this option is to prevent such situation that controller is armed and at the same time door lock is released because of the Unlocked Door Mode.

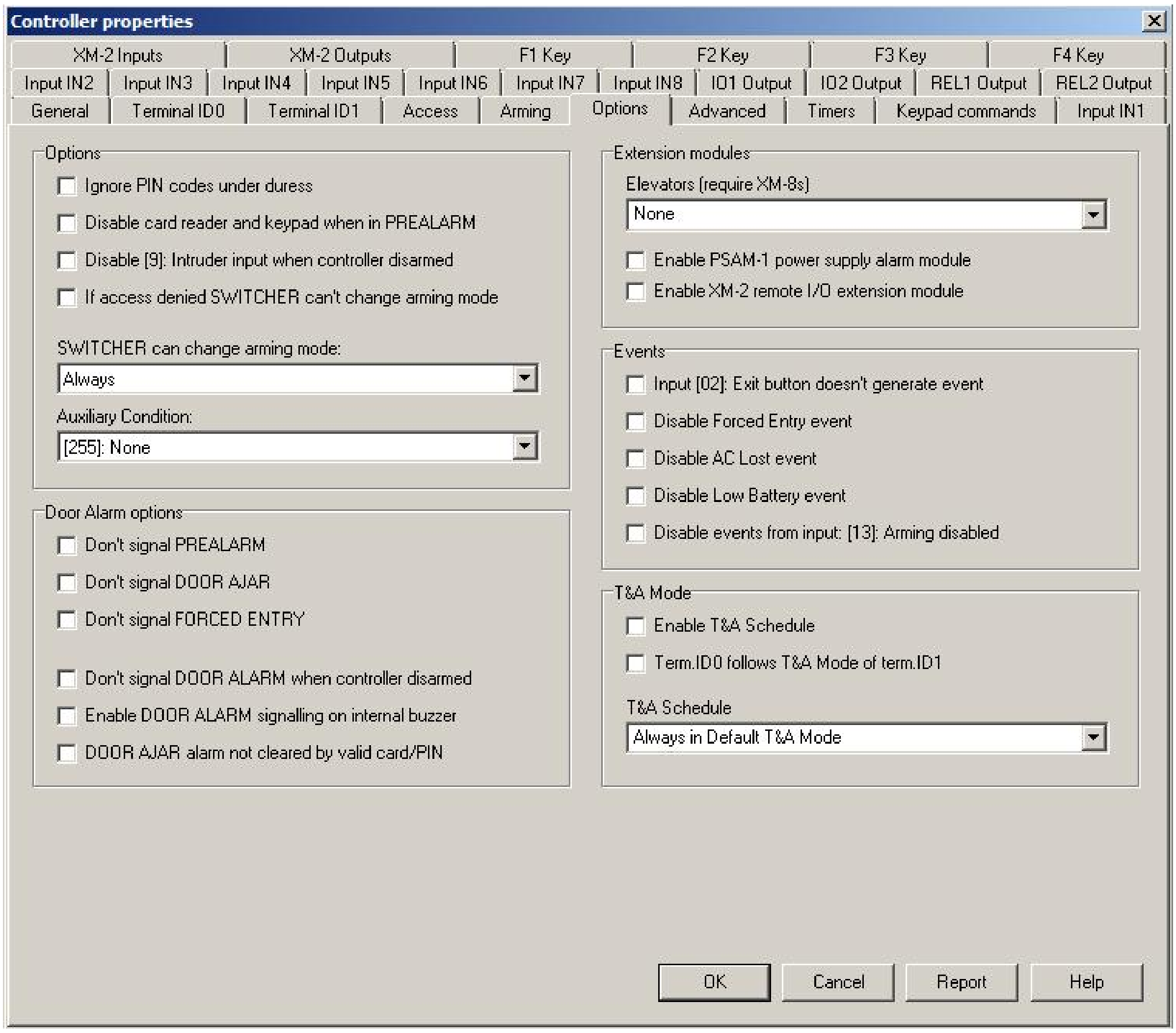
Option: Enable Quick Disarming – when this option is selected then MASTER and SWITCHER Full users as well as NORMAL users with Local Switcher attribute (see 2.6 Armed/Disarmed Modes) can disarm the controller with single card swipe and/or PIN entering. Arming still requires double card swipe and/or PIN entering. Switcher Limited user always arms and disarms with single card swipe and/or PIN entering regardless of that option.

Option: Protected mode for manual arming and disarming – when this option is selected then SWITCHER Limited user (see 2.3 Users) must use his identifier (card and/or PIN) five times in order to arm/disarm the controller (see 2.6 Armed/Disarmed Modes). MASTER and SWITCHER Full users as well as NORMAL users with Local SWITCHER attribute must actually use their identifiers six times in order to arm/disarm the controller as the first use is related to door lock opening. Identifier must be used in short breaks when the orange LED SYSTEM is on.

Note: If the Card and PIN Identification Mode is selected for the terminal (see 2.4 Identification Modes) then the PIN must be entered once and then the card must be swiped five times in order to arm/disarm the controller.

Option: Arming disabled when door open – when the option is selected then arming of controller is blocked if the door contact connected to the controller signals that the door is opened. Door contact must be connected to one of controller input lines with the function **[01]: Door contact**. The option can block manual arming (by means of card/PIN, function key, Keypad Command) but cannot block Arm/Disarm Schedule and if automatic arming is configured then it works in the same way as input line of the controller with the function **[13]: Arming disabled**, which affects the parameter **Default auto-arming delay** (i.e. auto-arming is repeatedly delayed till the door is closed or the arming is no longer required by the Schedule).

3.6 Options tab



Options

☐ Ignore PIN codes under duress

☐ Disable card reader and keypad when in PREALARM

☐ Disable [9]: Intruder input when controller disarmed

☐ If access denied SWITCHER can't change arming mode

SWITCHER can change arming mode: Always

Auxiliary Condition: [255]: None

Door Alarm options

☐ Don't signal PREALARM

☐ Don't signal DOOR AJAR

☐ Don't signal FORCED ENTRY

☐ Don't signal DOOR ALARM when controller disarmed

☐ Enable DOOR ALARM signalling on internal buzzer

☐ DOOR AJAR alarm not cleared by valid card/PIN

Extension modules

Elevators (require XM-8s): None

☐ Enable PSAM-1 power supply alarm module

☐ Enable XM-2 remote I/O extension module

Events

☐ Input [02]: Exit button doesn't generate event

☐ Disable Forced Entry event

☐ Disable AC Lost event

☐ Disable Low Battery event

☐ Disable events from input: [13]: Arming disabled

T&A Mode

☐ Enable T&A Schedule

☐ Term.ID0 follows T&A Mode of term.ID1

T&A Schedule: Always in Default T&A Mode

Fig. 16 Options tab

Area: Options

Option: Ignore PIN codes under duress – when this option is selected then entering of PIN that differs +/-1 from correct (authorized) PIN is interpreted by the controller as wrong PIN and access is denied. When the option is not selected then entering of PIN, which differs +/-1 from correct (authorized) PIN results in granting the access by the controller but the alarm called FORCED ENTRY is also raised (see 2.9 Door Alarm and 2.10 System Flags (Timers).

Example:
*When the option **Ignore PIN codes under duress** is selected and the correct PIN is [4569][#] then entering of [4568]]#] or [4570][#] is interpreted as wrong PIN. When the option is not selected then entering of [4568][#] or [4570][#] results in the access granting by the controller and Door Alarm called FORCED ENTRY is raised.*

Option: Disable card reader and keypad when in PREALARM– when the option is selected then the controller rejects card reading and PIN entering as long as the Door Alarm called PREALARM is activated (see 2.9 Door Alarm) i.e. as long as flag PREALARM is on (see 2.10 System Flags (Timers). PREALARM is raised when the unknown identifier (card or PIN) is used 5 times in a row at the controller.

Option: Disable [9]: Intruder input when controller disarmed – when the option is selected then the controller ignores the activation of its input line with the function **[09]: Intruder** (see 2.13 Inputs) and consequently the system flag INTRUDER is not activated (see 2.10 System Flags (Timers) when the controller is disarmed (see 2.6 Armed/Disarmed Modes).

Option: If access denied SWITCHER can't change arming mode – when the option is selected then SWITCHER Full and SWITCHER Limited users as well as NORMAL users with Local SWITCHER attribute (see 2.3 Users) cannot arm/disarm controller if they are not assigned with access rights at that controller. The option does not affect MASTER user.

Option: SWITCHER can change arming mode – the option is used for assigning Schedule for SWITCHER full and SWITCHER Limited users as well as for NORMAL users with Local SWITCHER attribute (see 2.3 Users) in order to enable or disable their arming/disarming rights. Two predefined Schedules i.e. Always and Never are already available and the administrator can also specify own Schedule by means of the option **Schedules** in the main window of PR Master software.

Option: Auxiliary Condition – the option is used for assigning Auxiliary Condition (see 2.16 Schedules and Auxiliary Conditions) for SWITCHER full and SWITCHER Limited users as well as for NORMAL users with Local SWITCHER attribute (see 2.3 Users) in order to make their arming/disarming rights dependant on that condition.

Area: Door Alarm options

Option: Don't signal PREALARM – when the option is selected then the controller does not signal the alarm called PREALARM at its output line with the function **[256]: Door alarm** (see 2.9 Door Alarm and 2.14 Outputs). The option does not block other methods for raising the PREALARM, in particular, it does not block the output line of controller with the function **[29]: PREALARM** and PREALARM System Flag (see 2.10 System Flags (Timers)). The option does not block also other Door Alarms associated with the function **[256]** i.e. DOOR AJAR and FORCED ENTRY. The event related to PREALARM is recorded in event history and it is displayed in Online Monitoring mode of PR Master software.

Option: Don't signal DOOR AJAR – when the option is selected then the controller does not signal the alarm called DOOR AJAR at its output line with the function **[256]: Door alarm** (see 2.9 Door Alarm and 2.14 Outputs). The option does not block other methods for raising the DOOR AJAR alarm in particular, it does not block the output line of controller with the function **[30]: DOOR AJAR** and DOOR AJAR System Flag (see 2.10 System Flags (Timers)). The option does not block also other Door Alarms associated with the function **[256]** i.e. PREALARM and FORCED ENTRY. The event related to DOOR AJAR is recorded in event history and it is displayed in Online Monitoring mode of PR Master software.

Option: Don't signal FORCED ENTRY – when the option is selected then the controller does not signal alarm called FORCED ENTRY at its output line with the function **[256]: Door alarm** (see 2.9 Door Alarm and 2.14 Outputs). The option does not block other methods for raising the DOOR AJAR alarm in particular, it does not block the output line of controller with the function **[28]: FORCED ENTRY** and FORCED ENTRY System Flag (see 2.10 System Flags (Timers)). The option does not block also other Door Alarms associated with the function **[256]** i.e. PREALARM and DOOR AJAR. The event related to FORCED ENTRY is recorded in event history and it is displayed in Online Monitoring mode of PR Master software.

Option: Don't signal DOOR ALARM when controller disarmed – when the option is selected then the controller blocks all possible Door Alarms at its output line with the function **[256]: Door alarm** (see 2.9 Door Alarm and 2.14 Outputs) if the controller is disarmed (see 2.6 Armed/Disarmed Modes). In such case, Door Alarms are also not signalled at output lines with functions **[29]: PREALARM, [30]: DOOR AJAR, [28]: FORCED ENTRY** and respective System Flags are not activated (see 2.10 System Flags (Timers), but events related to Door Alarms are recorded in event history and they are displayed in Online Monitoring mode of PR Master software.

Option: Enable DOOR ALARM signalling on internal buzzer – when the option is selected then Door Alarms (see 2.9 Door Alarm) can be additionally signalled acoustically by internal buzzer of controller (PR602LCD, PR612, PR622 and PR302) or by the buzzer of reader connected to the controller (PR102DR, PR402).

Option: DOOR AJAR alarm not cleared by valid card/PIN – when the option is selected then Door Alarm called DOOR AJAR (see 2.9 Door Alarm) and respective DOOR AJAR System Flag (see 2.10 System Flags (Timers)) cannot be cleared by use of authorized card and/or PIN.

Area: Extension modules

Option: Elevators (requires XM-8s) – this option is used for assigning elevator to the controller. The option is used in configuration of access control in elevators based on XM-8 modules. More information on such application is provided in 2.2.5 XM-8 – I/O extension module and in XM-8 installation guide, which is available at www.roger.pl

Option: Enable PSAM-1 power supply alarm module – when this option is selected then operation of the controller with PSAM-1 module is enabled. More information on power supply supervision is provided in 2.2.6 PSAM-1 and in PSAM-1 installation guide, which is available at www.roger.pl

Option: Enable XM-2 remote I/O extension module – when the option is selected then operation of the controller with XM-2 module is enabled, including assigning of functions to XM-2 inputs and outputs in respective tabs (see 3.13 XM-2 Inputs tab and 3.14 XM-2 Outputs tab). More information on XM-2 module is provided in 2.2.4 XM-2 – I/O extension module and in XM-2 installation guide, which is available at www.roger.pl

Area: Events

Option: Input [02]: Exit button doesn't generate event – when this option is selected then the event **[001]: Access granted** is not recorded in log and is not displayed in Online Monitoring mode of PR Master software when the access is granted based on function key with the function **[02]: Release door**, input line with the function **[02]: Exit button** or input line with the function **[47]: Entry button**. For all other methods (card and/or PIN), **[001]** event is recorded in the Event history.

Option: Disable Forced Entry event – when this option is selected then the event **[005] Forced Entry** related to Door Alarm called FORCED ENTRY (see 2.9 Door Alarm) is not recorded in log and is not displayed in Online Monitoring mode of PR Master software. The methods for raising this alarm are listed in 2.10 System Flags (Timers. The option does not block activation of FORCED ENTRY flag or activation of output lines with functions **[256]:Door alarm** or **[28]: FORCED ENTRY**.

Option: Disable AC Lost event – when this option is selected then the alarm related to power supply failure is not recorded in log and is not displayed in Online Monitoring mode of PR Master software but output line of the controller with the function **[37]: AC failure** can be activated. The option concerns both the power supply connected to the controller via 230VAC/18VAC transformer (PR402) and operation with PSAM-1 module (see 2.2.6 PSAM-1).

Option: Disable Low Battery event – when this option is selected then the alarm related to low voltage of battery connected to the controller is not recorded in the log and is not displayed in Online Monitoring mode of PR Master software but output line of the controller with the function **[38]: Low battery** can be activated. The option concerns the battery connected directly to the controller (PR402) and operation with PSAM-1 module (see 2.2.6 PSAM-1).

Option: Disable events from input: [13]: Arming disabled – when the option is selected then both events **[13]: Arming disabled -ON** and **[13]: Arming disabled -OFF** are not recorded in the log and are not displayed in Online Monitoring mode of PR Master software. The option does not affect the operation of input line with the function **[13]: Arming disabled** i.e. the option blocks only events and not input lines.

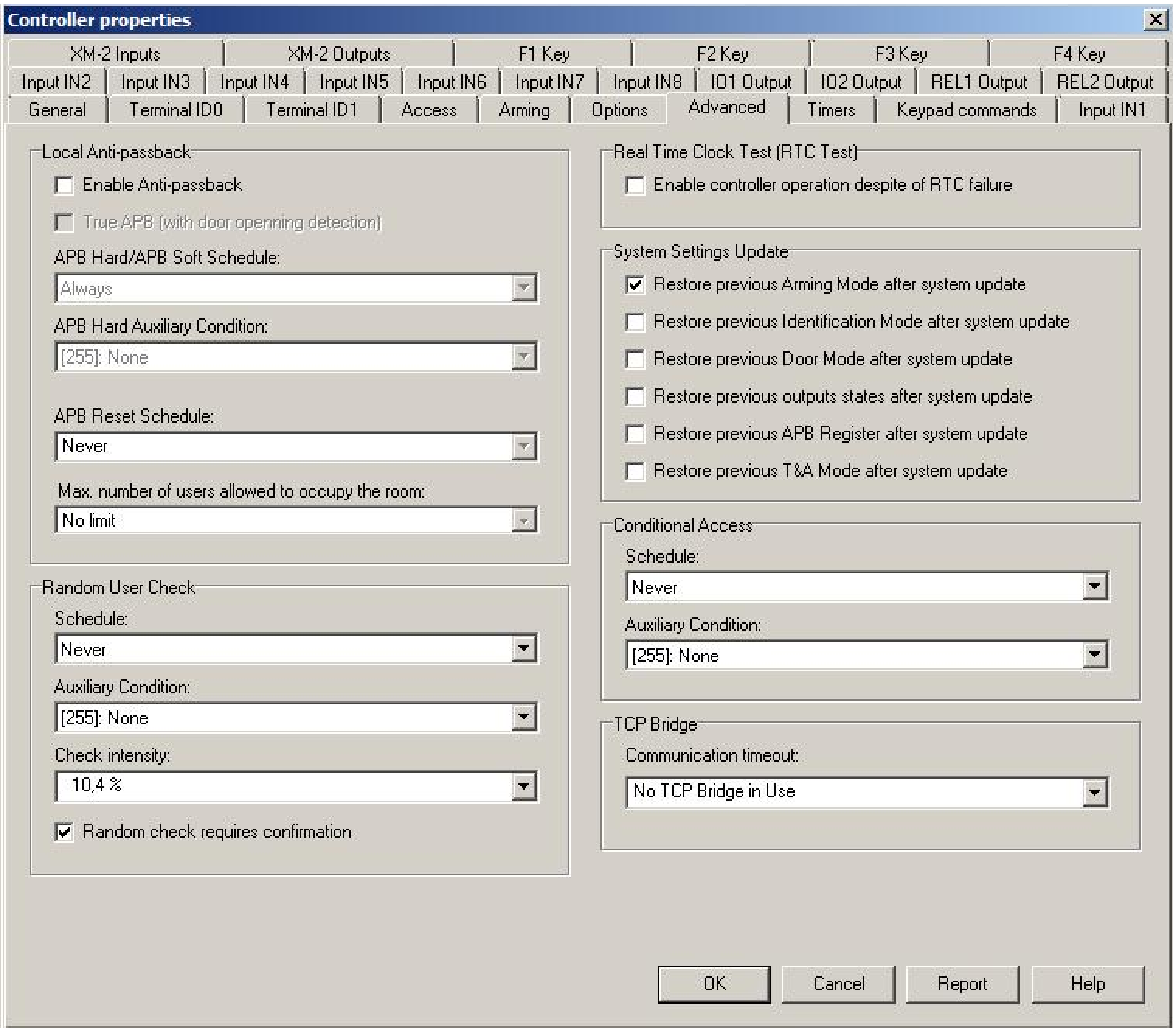
Area: T&A Mode

Option: Enable T&A Schedule – when the option is selected then T&A Mode at Terminal ID1 (see 1.2 Design and architecture) can be switched by T&A Schedule. In case of PR602LCD, PR612, PR622 and PR302 controllers, Terminal ID1 is the built-in reader. In case of PR402 and PR102DR controllers, Terminal ID1 is an external reader. The procedure for configuration of T&A Schedule is provided in 2.19.2 Time&Attendance based on RCP Master software.

Option: Term. ID0 follows T&A Mode of term. ID1 – when this option is selected then T&A Mode at Terminal IDO (see 1.2 Design and architecture) is the same as T&A Mode at Terminal ID1. Generally, T&A Mode at Terminal ID0 is static while T&A Mode at Terminal ID1 can be switched dynamically. The option enables indirect control of T&A mode at Terminal ID0. The methods for switching T&A Mode at Terminal ID1 are listed in 2.19.2 Time&Attendance based on RCP Master software.

Option: T&A Schedule – this option is used for assigning T&A Schedule to Terminal ID1 of the controller. The procedure for configuration of T&A Schedules is described in 2.19.2 Time&Attendance based on RCP Master software.

3.7 Advanced tab



Local Anti-passback

□ Enable Anti-passback

□ True APB (with door openning detection)

APB Hard/APB Soft Schedule: Always

APB Hard Auxiliary Condition: [255]: None

APB Reset Schedule: Never

Max. number of users allowed to occupy the room: No limit

Random User Check

Schedule: Never

Auxiliary Condition: [255]: None

Check intensity: 10,4 %

☑ Random check requires confirmation

Real Time Clock Test (RTC Test)

□ Enable controller operation despite of RTC failure

System Settings Update

☑ Restore previous Arming Mode after system update

□ Restore previous Identification Mode after system update

□ Restore previous Door Mode after system update

□ Restore previous outputs states after system update

□ Restore previous APB Register after system update

□ Restore previous T&A Mode after system update

Conditional Access

Schedule: Never

Auxiliary Condition: [255]: None

TCP Bridge

Communication timeout: No TCP Bridge in Use

Fig. 17 Advanced tab

Area: Local Anti-passback

Option: Enable APB – it is necessary to select this option in order to enable Local or Global Anti-passback and proceed with further APB settings (see 2.11 Anti-passback).

Option: True APB (with door opening detection) – this option is available if the option **Enable APB** (see above) is selected. This option activates so called True APB (see 2.11 Anti-passback., which requires connection of door contact to controller's input line with the function **[01]: Door contact**

Option: APB Hard/APB Soft Schedule – this option is used for assigning the Schedule for Soft and Hard APB (see 2.11 Anti-passback). Two predefined Schedules i.e. Always and Never are already available and the administrator can also specify own Schedule by means of the option **Schedules** in the main window of PR Master software. Within the periods defined by the Schedule, Hard APB is applied and for the rest of time Soft APB is applied. Therefore selection of Always Schedule results in constant Hard APB, while selection of Never Schedule results in constant Soft APB.

Option: APB Hard Auxiliary Condition – this option is used for assigning Auxiliary Condition (see 2.16 Schedules and Auxiliary Conditions) to APB Hard/APB Soft Schedule. If the condition is not satisfied then Soft APB is applied and if the condition is satisfied then APB Hard/ APB Soft Schedule is applied.

Option: APB Reset Schedule – this option is used for assigning Schedule to Anti-pass back Register reset (see 2.11 Anti-passback). Predefined Never Schedule is already available and the administrator can also specify own Schedule by means of the option **Schedules** in the main window of PR Master software.

Parameter: Max. number of users allowed to occupy the room – this option is used for limiting the maximum number of users in particular room with single door. The option concerns Local Anti-passback (see 2.11 Anti-passback). In case of Global APB, the maximum number of users in the room is defined when APB Zone is created by means of the option **APB Zones** in the main window of PR Master software. The range of possible settings is from 1 to 3999 users.

Area: Random User Check

In this area, the administrator can configure random selection of users for inspection. When it is activated then the controller randomly denies the access for users with access rights. These users can then be inspected by guardsmen. Such access denial is signalled acoustically on the at reader/controller buzzer or by means of message displayed at controller LCD (only PR602LCD). Additionally it can also be signalled at controller output line with the function **[39]: Random check request** (see 2.14 Outputs). The signalling lasts for 2 sec. and the controller denies the access for such time. Random User Check concerns only NORMAL user types (see 2.3 Users).
The function is activated by selection of Schedule. Two predefined Schedules i.e. Always and Never are already available and the administrator can also specify own Schedule by means of the option **Schedules** in the main window of PR Master software. The period defined by means of parameters From… and To… signifies the time, when Random User Check is activated, in the remaining time the function is disabled. Activation of the function (its Schedule) can also depend on Auxiliary Condition (see 2.16 Schedules and Auxiliary Conditions).

Parameter: Check intensity – this option is used for specifying average number of users (in percents) subject to inspection. The range of possible settings is from 0,4% to 99,6% with 0,4% resolution. The higher the value of parameter the more frequently the inspection is signalled. For example, if the intensity equals to 10% then statistically every tenth person shall be indicated for inspection.

Option: Random check requires confirmation – when this option is selected then the controller based on Random User Check denies the access until its input line with the function **[46]: Random check confirm** is activated (see 2.13 Inputs) or function key with the function **[46]: Random check confirm** is pressed (see 2.15 Function keys).

Area: Real Time Clock Test (RTC Test)

Option: Enable controller operation despite of RTC failure – when this option is selected then the controller shall operate even if it own RTC is not operating correctly.

Area: System Settings Update

Option: Restore previous Arming Mode after system update – when this option is selected then after configuration update, the controller shall restore the same Armed/Disarmed Mode (see 2.6 Armed/Disarmed Modes) as it was before configuration update. If the option is not selected then the controller by default assumes Armed Mode after configuration upload unless it is against Arm/Disarm Schedule, which has higher priority.

Option: Restore previous Identification Mode after system update – when this option is selected then after configuration update, the controller shall restore the same Identification Mode (see 2.4 Identification Modes) as it was before configuration update. The option has higher priority than scheduled Identification Mode and default Identification Mode (see 3.2 Terminal ID1 tab).

Option: Restore previous Door Mode after system update – when this option is selected then after configuration update, the controller shall restore the same Door Mode (see 2.5 Door Modes) as it was before configuration update. The option has higher priority than scheduled Door Mode and default Door Mode (see 3.4 Access tab).

Option: Restore previous output states after system update – when this option is selected then after configuration update, the controller shall restore ON/OFF states of its output lines as they were before the configuration update. The controller restores its output lines with following functions:

- **[08]: PC Command** if the line was activated remotely from PR Master software
- **[13]: Schedule or PR Command** if the line was activated remotely from PR Master software
- **[64]: LIGHT**
- **[66]: AUX1**
- **[67]: AUX2**

Option: Restore previous APB Register after system update – when this option is selected then after configuration update, the controller shall restore APB Register (see 2.11 Anti-passback) as it was before the configuration update.

Option: Restore previous T&A Mode after system update – when this option is selected then after configuration update, the controller shall restore T&A Mode (see 2.19.2 Time&Attendance based on RCP Master software) as it was before configuration update. The option has higher priority than scheduled T&A Mode (see 3.6 Options tab) or default T&A Mode (see 3.2 Terminal ID1 tab).

Area: Conditional Access

In this area, the administrator can configure Conditional Access Mode (see 2.17.2 Conditional Access) by assigning Schedule and Auxiliary Condition (see 2.16 Schedules and Auxiliary Conditions). Two predefined Schedules i.e. Always and Never are already available and the administrator can also specify own Schedule by means of the option **Schedules** in the main window of PR Master software. The period defined by means of parameters From… and To… signifies the time, when Conditional Access Mode is activated, in the remaining time the mode is disabled. Activation of the mode (its Schedule) can also depend on Auxiliary Condition. In order to use Conditional Access Mode it is necessary to select the option **Enable Anti-passback** in the same tab.

Area: TCP Bridge

In this area, the administrator can select communication timeout for the controller connected to RS485 bus via TCP bridge consisting of two UT-4 interface in LAN/WAN network. The range of possible settings is from 20ms to 5 sec. with 20ms resolution.

Area: Keypad function keys

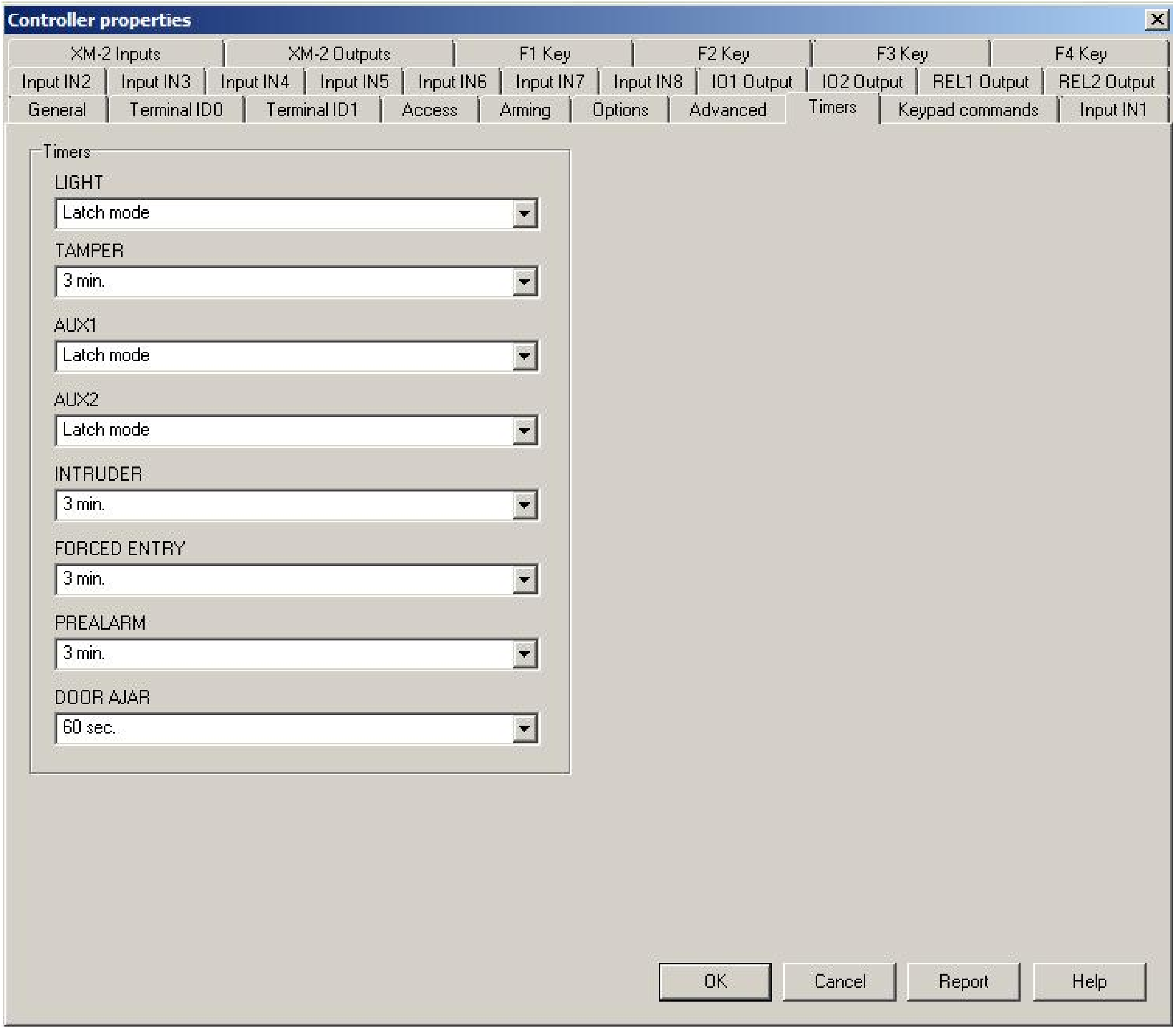
This area is available only in case of PR602LCD, PR612 and PR302 controllers, which are equipped with keypad. By means of the option **Allow controller's keypad to operate as function key input**, the administrator enables use of numeric keys as function keys. Numeric keys from 1 to 4 correspond to function keys from F1 to F4 at Terminal ID1 while numeric keys from 5 to 8 correspond to function keys from F1 to F4 at Terminal ID0 (see 1.2 Design and architecture and 2.15 Function keys).

3.8 Timers tab

In this tab, the administrator can configure Timers (see 2.10 System Flags (Timers)). Timer can be set in Latch mode and then it triggers infinitely to opposite state (on or off). The other setting for Timer is assigning of time which denotes how long the Timer can be switched on. The last possible setting is None, which means complete turning off the Timer.

Example:
*Activation of LIGHT Timer in Latch mode, by means of controller input line with the function **[68]: Set LIGTH** results in activation of controller output line with the function **[64]: LIGHT**. As the Timer was in Latch mode then the output line with the function **[64]** shall be activated till the controller input line with the function **[69]: Clear LIGTH** is activated*

If time is assigned to Timer then respective System Flag can activated for that time. The range of possible settings is from 1 second to 120 minutes.



Timers

LIGHT: Latch mode

TAMPER: 3 min.

AUX1: Latch mode

AUX2: Latch mode

INTRUDER: 3 min.

FORCED ENTRY: 3 min.

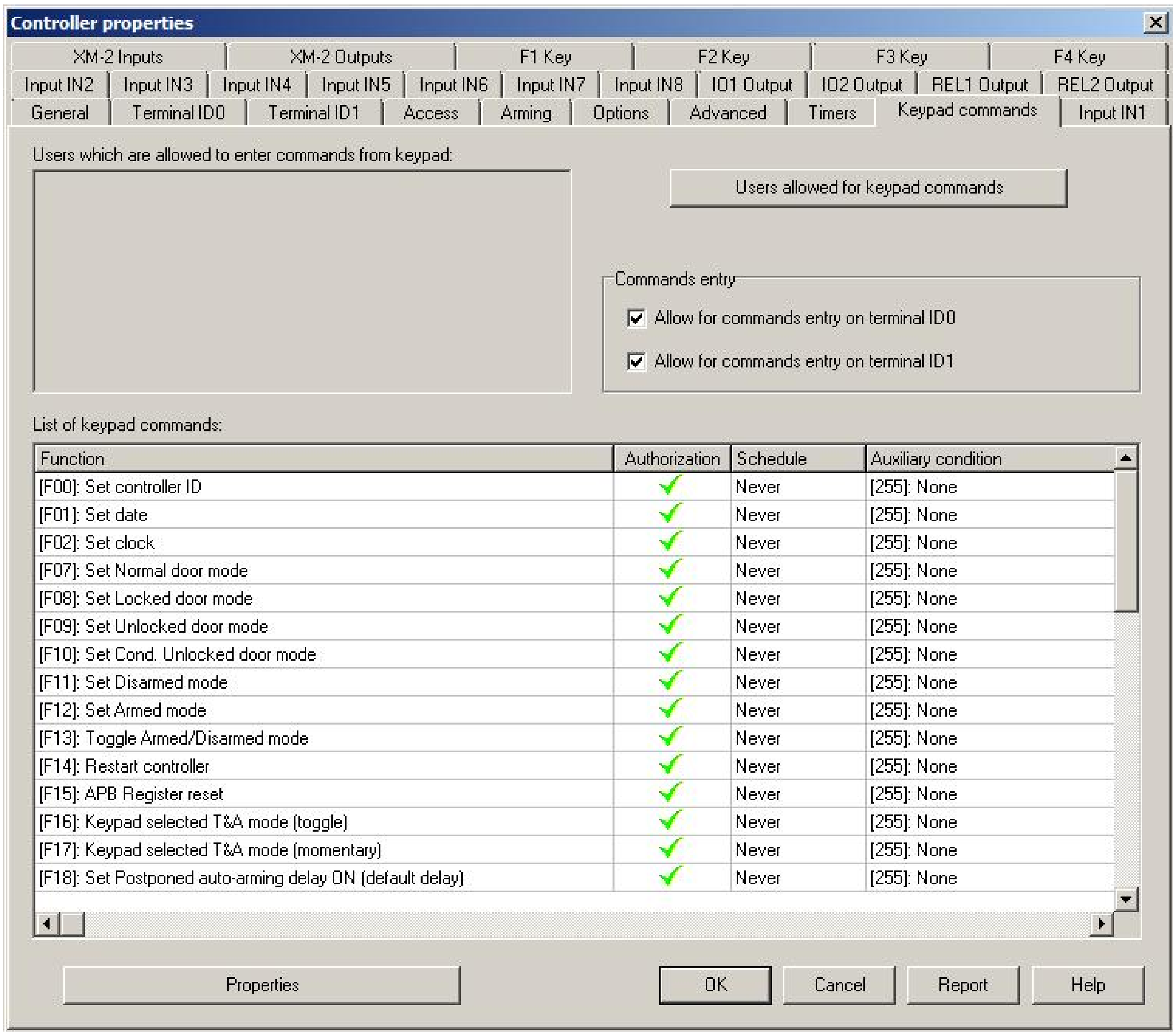
PREALARM: 3 min.

DOOR AJAR: 60 sec.

Fig. 18 Timers tab

3.9 Keypad commands tab

In this tab, the administrator can configure rules regarding use of Keypad Commands at controller/reader (see 2.18 Keypad Commands and 1.2 Design and architecture). It is possible to get the information on command syntax be selection of **Properties option**. In the newly opened window, the administrator can assign Schedule and Auxiliary Condition to Keypad Commands (see 2.16 Schedules and Auxiliary Conditions). Two predefined Schedules i.e. Always and Never are already available and the administrator can also specify own Schedule by means of the option **Schedules** in the main window of PR Master software. The period defined by means of parameters From… and To… signifies the time, when Keypad Command can be used but it still may require authorization. When the Never Schedule is selected then the command is disabled. In the same window, the administrator can select the option **Authorization required**. When the option is activated then every entering of particular Keypad Command requires authorization by means of proximity card and/or PIN. The list of authorized users is configure by means of the option **Users allowed for keypad commands** in the main window of tab.



☑ Allow for commands entry on terminal ID0

☑ Allow for commands entry on terminal ID1

Function	Authorization	Schedule	Auxiliary condition
[F00]: Set controller ID	✓	Never	[255]: None
[F01]: Set date	✓	Never	[255]: None
[F02]: Set clock	✓	Never	[255]: None
[F07]: Set Normal door mode	✓	Never	[255]: None
[F08]: Set Locked door mode	✓	Never	[255]: None
[F09]: Set Unlocked door mode	✓	Never	[255]: None
[F10]: Set Cond. Unlocked door mode	✓	Never	[255]: None
[F11]: Set Disarmed mode	✓	Never	[255]: None
[F12]: Set Armed mode	✓	Never	[255]: None
[F13]: Toggle Armed/Disarmed mode	✓	Never	[255]: None
[F14]: Restart controller	✓	Never	[255]: None
[F15]: APB Register reset	✓	Never	[255]: None
[F16]: Keypad selected T&A mode (toggle)	✓	Never	[255]: None
[F17]: Keypad selected T&A mode (momentary)	✓	Never	[255]: None
[F18]: Set Postponed auto-arming delay ON (default delay)	✓	Never	[255]: None

Fig 19. Keypad command tab

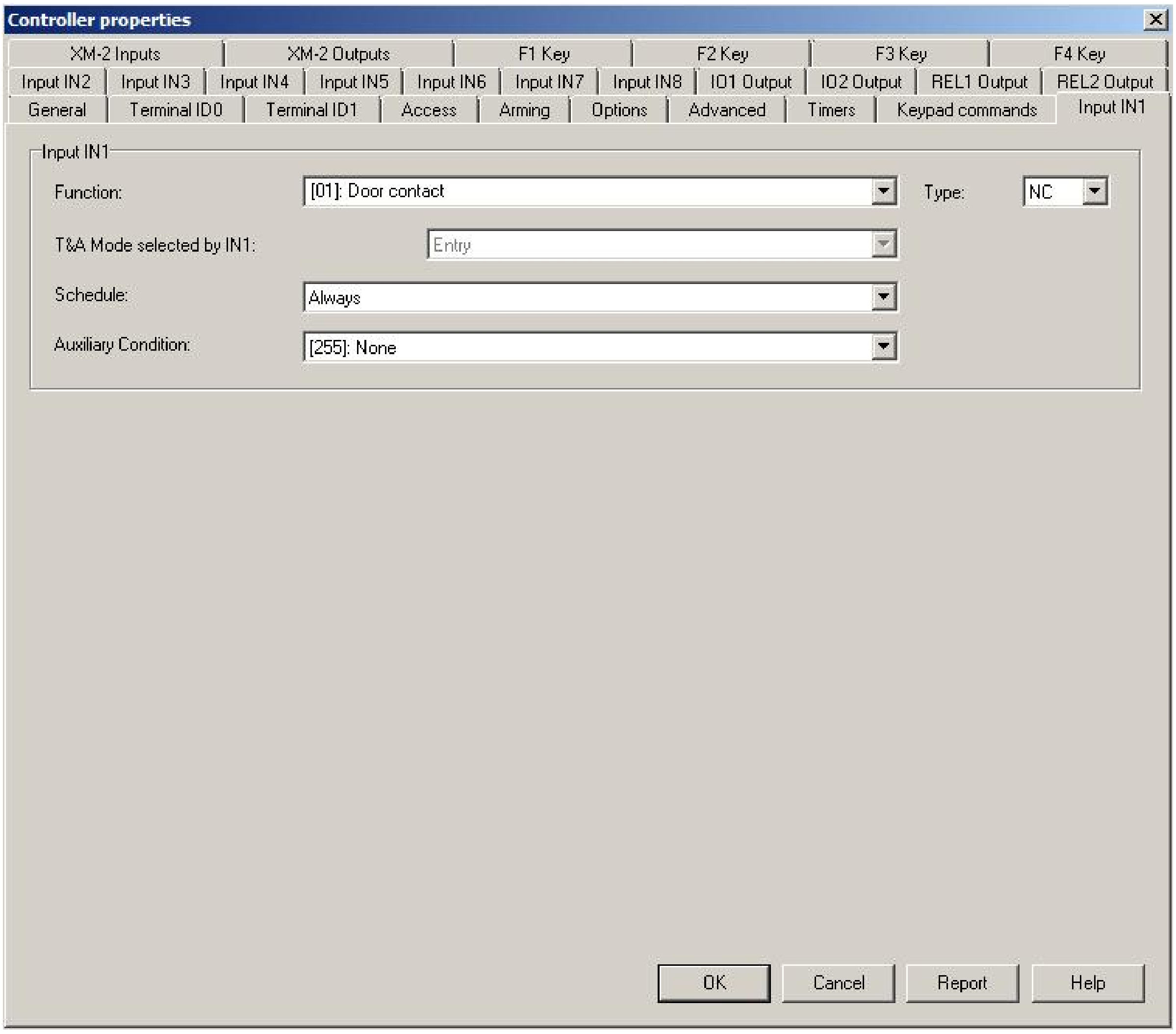
Option: Users allowed for keypad commands – this option is used for selecting users, who can use Keypad Commands when authorization is required.

Option: Allow for commands entry on Terminal ID0 – when this option is selected then Keypad Commands (see 2.18 Keypad Commands) can be entered by means of keypad at Terminal ID0 (see 1.2 Design and architecture).

Option: Allow for commands entry on Terminal ID1 – when this option is selected then Keypad Commands (see 2.18 Keypad Commands) can be entered by means of keypad at Terminal ID1 (see 1.2 Design and architecture).

3.10 Input IN1…IN8 tabs

Depending on the number of input lines in particular controller (see 1.2 Design and architecture), there could be from 2 to 8 tabs for input lines. In the tab Input IN1 and the remaining tabs, the administrator can assign the function (see 2.13 Inputs) to particular input line. Moreover, type of the line i.e. NC or NO can be assigned and in case of T&A functions (see 2.19.2 Time&Attendance based on RCP Master software) default T&A Mode can also be selected. Schedule and Auxiliary Condition (see 2.16 Schedules and Auxiliary Conditions) can also be assigned to the input line. Two predefined Schedules i.e. Always and Never are already available and the administrator can also specify own Schedule by means of the option **Schedules** in the main window of PR Master software. The period defined by means of parameters From… and To… signifies the time, when the input line can be used. In case of Always Schedule, the input line can be used all the time. The Schedule does not signify the time when the input is activated but only the time when the line can be used.



Input IN1

Function: [01]: Door contact

Type: NC

T&A Mode selected by IN1: Entry

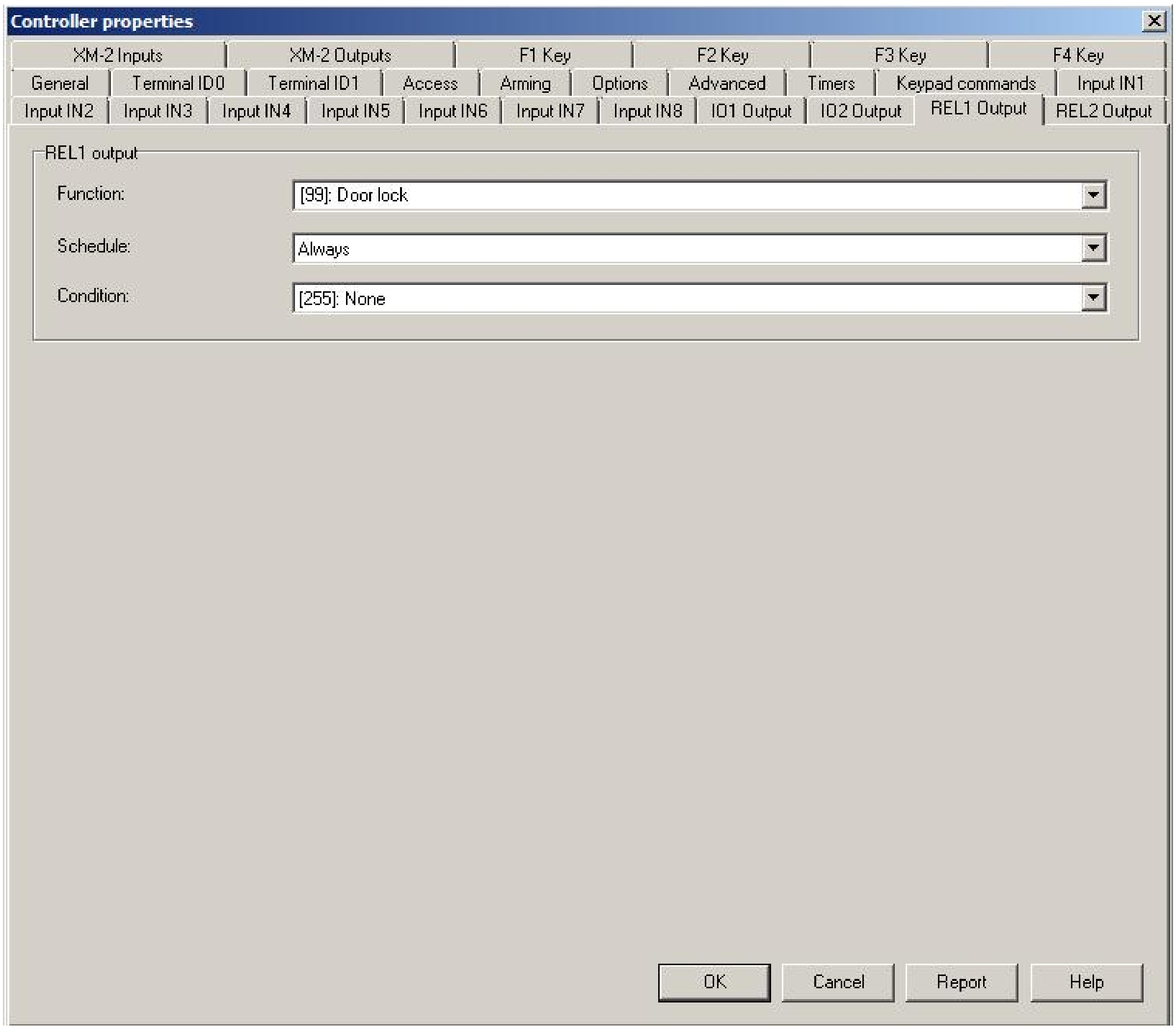
Schedule: Always

Auxiliary Condition: [255]: None

Fig. 20 Input IN1 tab

3.11 REL1…REL2 Output tabs

Depending on the number of relays in particular controller (see 1.2 Design and architecture), there could be 1 or 2 tabs for relays. In the tab REL1 Output or REL2 Output, the administrator can assign the function (see 2.14 Outputs) to particular relay output line. Schedule and Auxiliary Condition (see 2.16 Schedules and Auxiliary Conditions) can also be assigned to the relay output line. Two predefined Schedules i.e. Always and Never are already available and the administrator can also specify own Schedule by means of the option **Schedules** in the main window of PR Master software. The period defined by means of parameters From… and To… signifies the time, when the relay output line can be used. In case of Always Schedule, the relay output line can be used all the time. The Schedule does not signify the time when the relay output is activated but only the time when the line can be used. Default function for relay output REL 1 is **[99]: Door lock** and it is used for door opening.



REL1 output

Function: [99]: Door lock

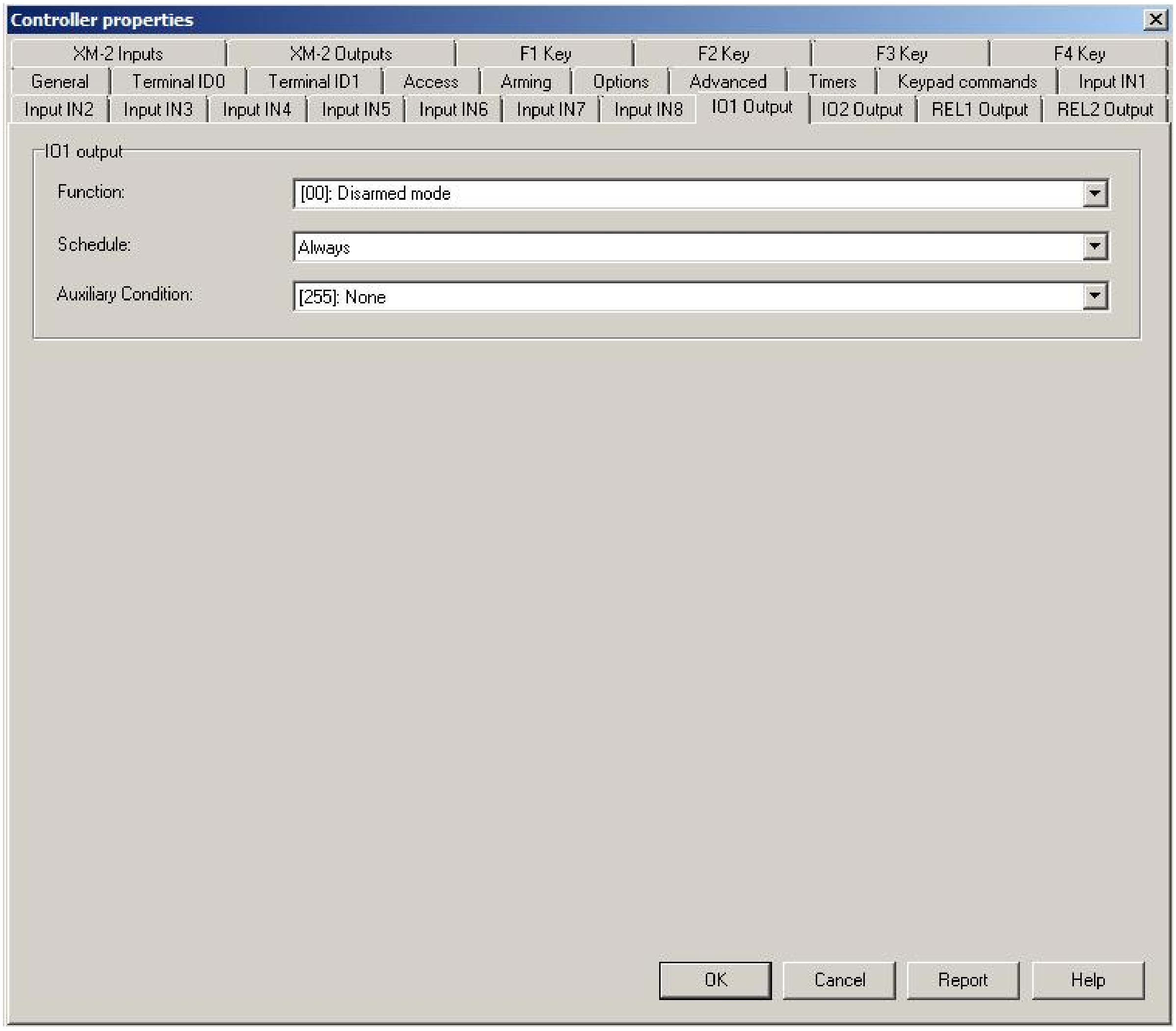
Schedule: Always

Condition: [255]: None

Fig. 21 REL1 Output tab

3.12 IO1…IO2 Output tabs

Depending on the number of output lines in particular controller (see 1.2 Design and architecture), there could be 1 or 2 tabs for such lines. In the tab IO1 Output or IO2 Output, the administrator can assign the function (see 2.14 Outputs) to particular output line. Schedule and Auxiliary Condition (see 2.16 Schedules and Auxiliary Conditions) can also be assigned to the output line. Two predefined Schedules i.e. Always and Never are already available and the administrator can also specify own Schedule by means of the option **Schedules** in the main window of PR Master software. The period defined by means of parameters From… and To… signifies the time, when the output line can be used. In case of Always Schedule, the output line can be used all the time. In general, the Schedule does not signify the time when the output is activated but only the time when the line can be used. The only exceptions are functions **[12]: Schedule** and **[13]: Schedule or PC commands**, which actually are activated by assigned Schedule.



IO1 output

Function: [00]: Disarmed mode

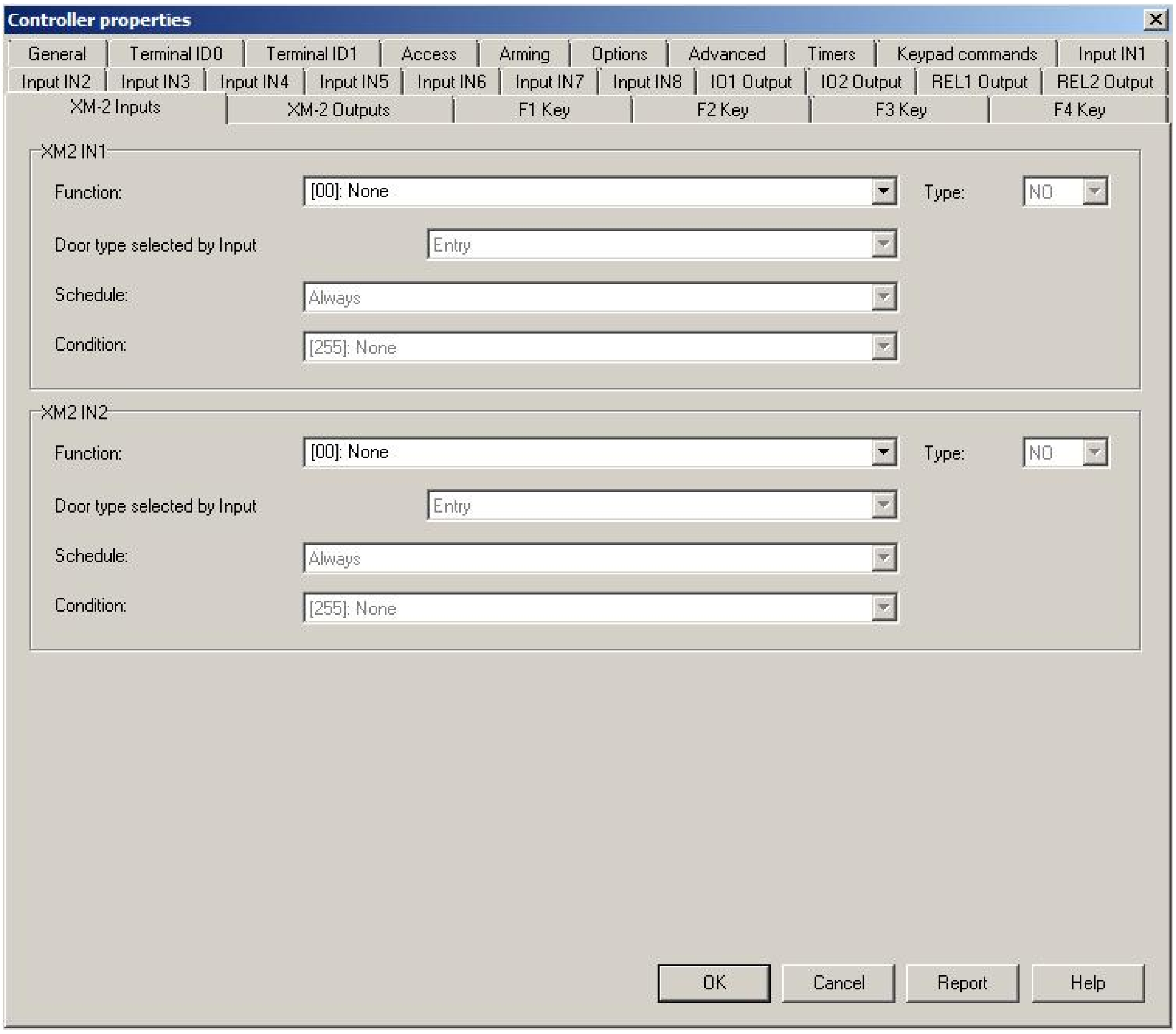
Schedule: Always

Auxiliary Condition: [255]: None

Fig. 22 IO1 Output tab

3.13 XM-2 Inputs tab

The XM-2 extension module can be connected to PRxx2 series controller (except for PR102DR) (see 2.2.4 XM-2 – I/O extension module), in order to increase the number of available input lines by two. The XM-2 module must be connected to the controller by means of RACS Clock&Data bus (see 2.2.3 RACS Clock & Data) and the option **Enable XM-2 remote I/O extension module** in the **Options** tab must be also selected. Input lines at XM-2 module are configured in the same way as input lines of the controller, which are available in **Input IN1…IN8** tabs (see 3.10 Input IN1…IN8)



XM2 IN1

Function: [00]: None
Type: NO
Door type selected by Input: Entry
Schedule: Always
Condition: [255]: None

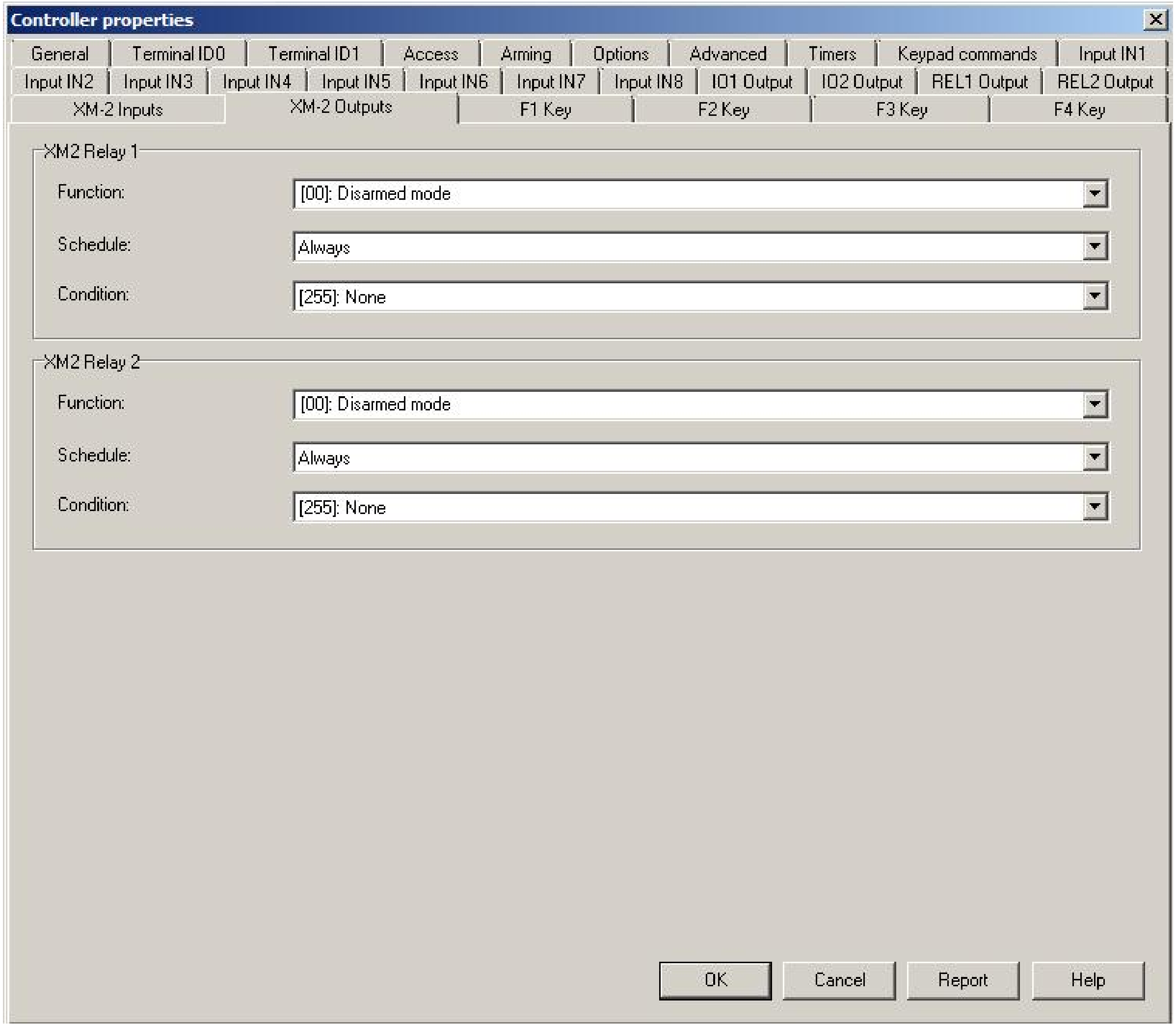
XM2 IN2

Function: [00]: None
Type: NO
Door type selected by Input: Entry
Schedule: Always
Condition: [255]: None

Fig. 23 XM-2 Inputs tab

3.14 XM-2 Outputs tab

The XM-2 extension module can be connected to PRxx2 series controller (except for PR102DR) (see 2.2.4 XM-2 – I/O extension module), in order to increase the number of available relay output lines by two. The XM-2 module must be connected to the controller by means of RACS Clock&Data bus (see 2.2.3 RACS Clock & Data) and the option **Enable XM-2 remote I/O extension module** in the **Options** tab must be also selected. Relay output lines at XM-2 module are configured in the same way as relay output lines of the controller, which are available in **REL1 ...REL2 Outputs** tabs (see 3.11 REL1…REL2 Output tabs)



XM2 Relay 1

Function: [00]: Disarmed mode

Schedule: Always

Condition: [255]: None

XM2 Relay 2

Function: [00]: Disarmed mode

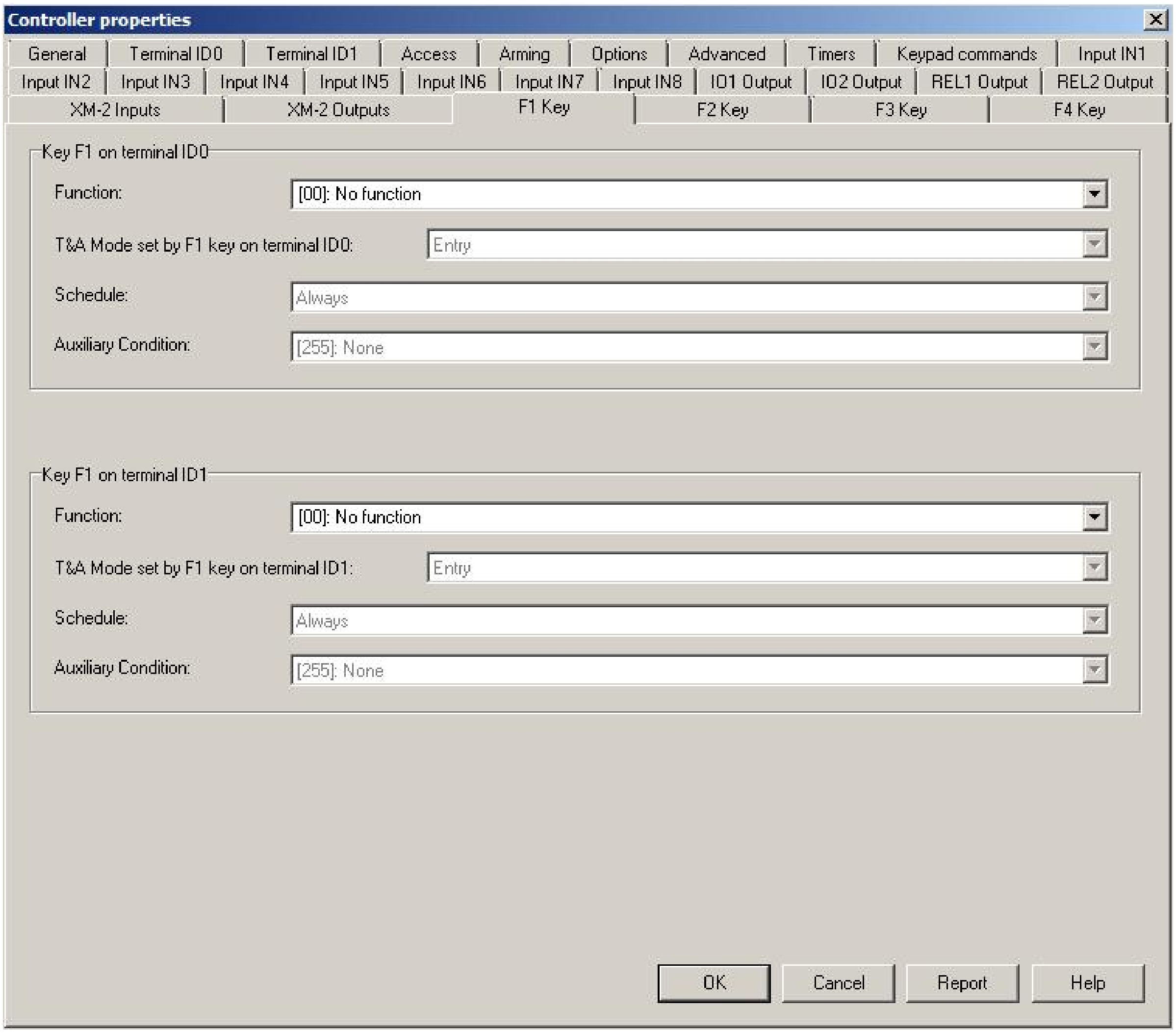
Schedule: Always

Condition: [255]: None

Fig. 24 XM-2 Outputs tab

3.15 F1…F4 keys tabs

Up to four function key tabs can be accessed in properties window of controller (PR Master software). Physically, the keypad with 4 function keys is available only in PR602LCD controller, but external readers with two function keys (PRT12LT) can be connected to all Roger controllers. In **F1…F4 key** tabs, the administrator can configure function keys at Terminal ID0 and ID1 (see 1.2 Design and architecture) selecting the function (see 2.15 Function keys) and assigning Schedule as well as Auxiliary Condition (see 2.16 Schedules and Auxiliary Conditions). Two predefined Schedules i.e. Always and Never are already available and the administrator can also specify own Schedule by means of the option **Schedules** in the main window of PR Master software. The period defined by means of parameters From… and To… signifies the time, when the function key can be used. In case of Always Schedule, the key can be used all the time. In general, the Schedule does not signify the time when the function key is activated but only the time when the key can be used. In case of T&A functions (see 2.19.2 Time&Attendance based on RCP Master software) default T&A Mode can also be assigned to the function key.



Key F1 on terminal ID0

Function: [00]: No function

T&A Mode set by F1 key on terminal ID0: Entry

Schedule: Always

Auxiliary Condition: [255]: None

Key F1 on terminal ID1

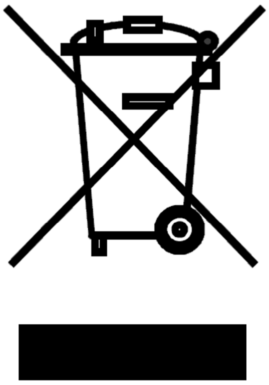
Function: [00]: No function

T&A Mode set by F1 key on terminal ID1: Entry

Schedule: Always

Auxiliary Condition: [255]: None

Fig. 25 F1 key tab



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.

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