

Roger Access Control System 5 v 2

Application note no. 034

Document version: Rev. A

Integration with Aperio wireless locks

Note: This document refers to RACS 5 v2.0.8 or higher

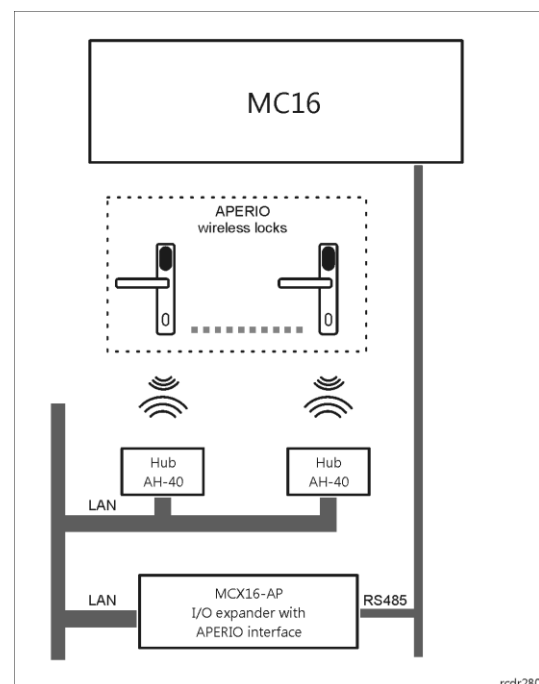
Introduction

Aperio (ASSA ABLOY) wireless locks are battery supplied devices with internal locking mechanism and built-in reader for Mifare® or other proximity cards. These devices can be installed on doors and connected to RACS 5 system to offer access control. In order to connect them to MC16 type (e.g. MC16-PAC) access controller it is necessary to use MCX16-AP expander as an intermediary device.

Integration principles

MC16 access controller can operate with multiple MCX16-AP expanders on RS485 bus (ID=100-115) in parallel with other MCT/MCX series devices. The expander can operate with two AH40 hubs, which can communicate wirelessly with up to 8 locks each. However the MC16 type controller depending on its version can control up to 16 doors (locks). Additionally the number of locks which can be operated by MCX16-AP depends on its license file stored on memory card.

The integration enables the use of Aperio locks as Access Terminals in RACS 5 access control system. It is possible to define users with their proximity cards and PINs and to assign them with Authorizations. Additionally MC16 controller can block particular locks or open them permanently using Door Modes. The state of batteries can be reported in RACS 5 system.

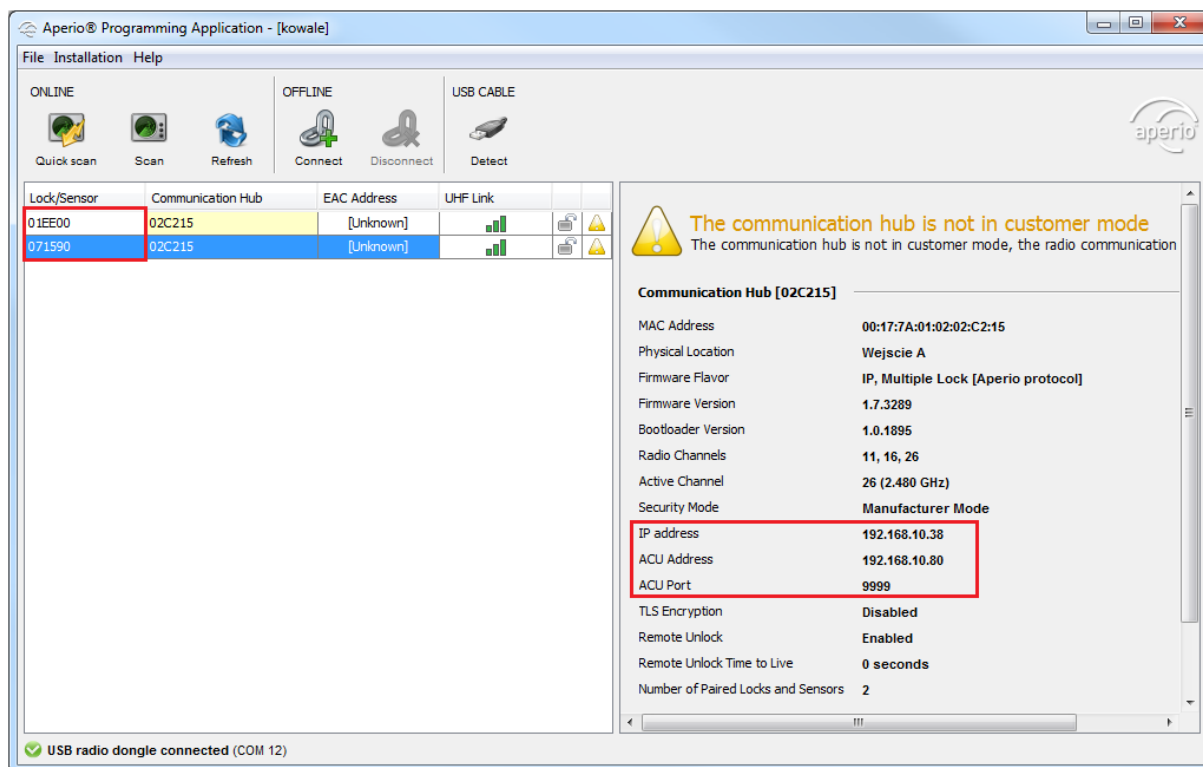


Aperio installation and configuration.

Install Aperio devices according to ASSA ABLOY guidelines. Locks and hubs as well as their logical connections are configured with Aperio Programming Application and Aperio USB Radio Dongle. More information on Aperio devices is given in manuals offered by their manufacturer (e.g. ST-001322-F).

Notes:

- Write down 6 character identifiers of detected locks. It is necessary to enter them later when MC16-AP expander is configured with RogerVDM software.
- According to the figure below, *IP address* is AH40 hub IP address, *ACU address* is MCX16-AP expander IP address while *ACU port* is port used for communication of expander with hub.
- Do not switch hub into Customer Mode and do not enable TLS encryption as it is not supported currently.



RACS 5 preliminary configuration

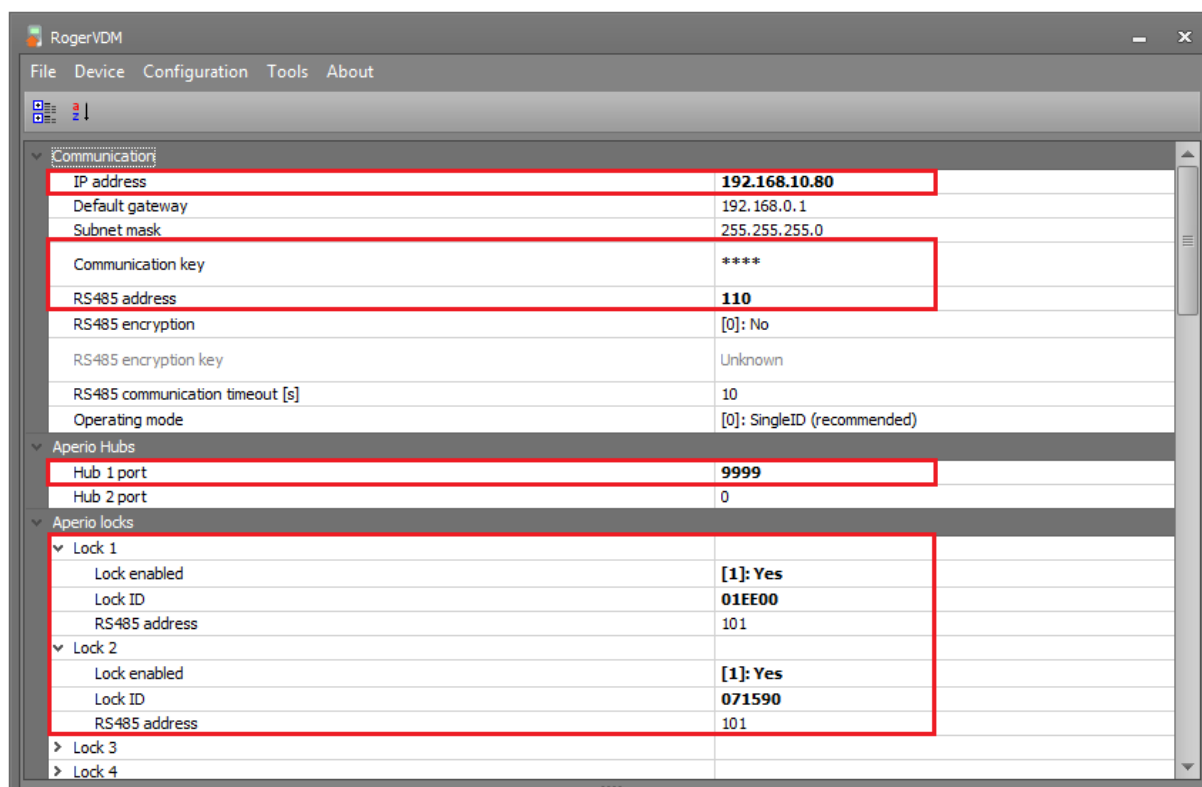
Low level configuration (RogerVDM)

It is necessary to make low level configuration of MC16 controller and MCX16-AP expander before RACS 5 system is started. Low level configuration of MC16 controller is explained in AN006 application note which is available at www.roger.pl. Such configuration mainly concerns IP address and communication key.

Note: Low level configuration of MCX16-AP expander cannot be made in VISO v2 program and it requires RogerVDM program.

In case of expander low level configuration it is necessary to define:

- Expander IP address for communication with AH40 hub(s) (equivalent of *ACU address* parameter in Aperio Programming Application).
- Communication key for securing communication between expander and RogerVDM.
- Expander address on RS485 bus in range of 100-115.
- Ports for communication of expander with hub(s) (equivalent of *ACU Port* parameter in Aperio Programming Application).
- 6 character identifiers of locks operated by expander.
- Comments can be put for locks to make their further identification in VISO software more convenient.



High level configuration (VISO)

Make preliminary configuration of RACS 5 system according to AN006 Application note in regard of connection with database, configuration of RogerSVC servers and detection of controller and its peripheral devices. The expander does not require specific configuration in VISO software. It is enough to detect it along with its MC16 controller.

Access Doors and Authorizations

The logical connections of outputs, Access Terminals, Access Points and Access Doors can be done step by step in VISO software in the same way as in case of MC16 access controller and MCT readers. Nevertheless the most simple and convenient method is to use *Add Access Door* wizard selecting *Wizards* command in the top menu of VISO software. This wizard enables also to configure access Authorizations in RACS 5 system and such Authorizations can be assigned to users. If the Authorization is supposed to enable access in defined periods (e.g. 8:00AM till 4:00 PM) then it is necessary to define schedule(s) in advance, selecting *Schedules* command in the navigation tree of VISO software.

Add Access Door wizard is described in AN006 application note which is available at www.roger.pl. Following guidelines must be considered when Access Door with Aperio lock is configured:

- Doors with Aperio locks are read-in doors.
- *Read-in Access Terminal* and *Door Lock Output* are located in APERIO objects on the list.
- Lock opening time after access granted is defined within configuration of lock with Aperio Programming Application using *Lock open time* parameter. The time configured with parameter *Lock Open Pulse* is ineffective.

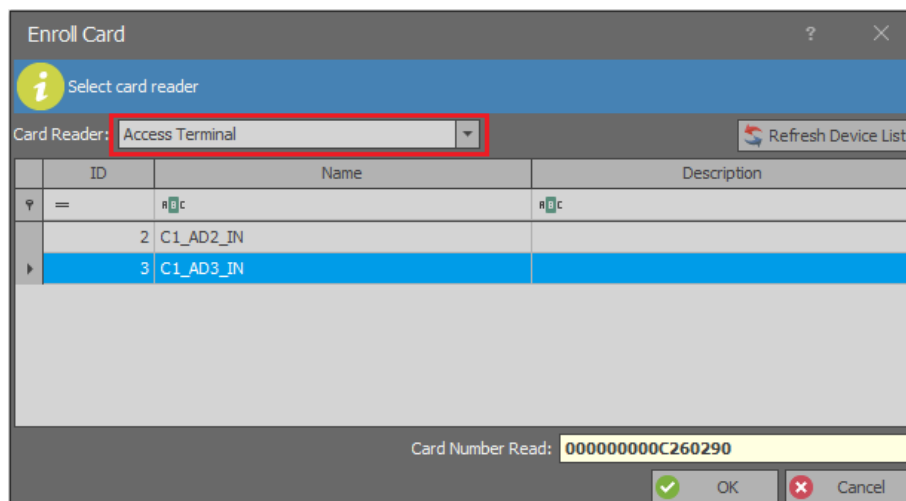
Access Door Hardware Configuration	
Read-in Access Terminal:	SDV_1_192.168.10.85_110_READER T1
Lock Open Pulse [s]:	2
Door Lock Output:	SDV_1_192.168.10.85_110_LOCK T1
Door Bell Output:	None
Door Alarm Output:	None
Door Contact Input:	None
Exit Button Input:	None

When the configuration with Add Access Door wizard is completed then it is necessary to manually modify function of Access Door output used for door opening.

- In the navigation tree of VISO software within particular MC16 access controller double click Access Doors.
- In the opened window select recently created door with Aperio lock.
- In the bottom select Outputs tab and then Edit.
- Change the function [31]: *Door lock*, which was applied by wizard into the function [39]: *Wireless Door Lock*.
- Upload settings to controller.

Users management

The most convenient method to enrol Users and assign them with Authorization(s) is to use *Add Person Online* wizard which is available after selection of *Wizards* command in the top menu of VISO software. Alternatively *Add Person Quickly* wizard can also be used by selection of *Configuration->Access User Persons->Add*. If Access Point with Aperio lock is defined in the system then such lock can be used to read card number when user's Authentication Factor is defined.



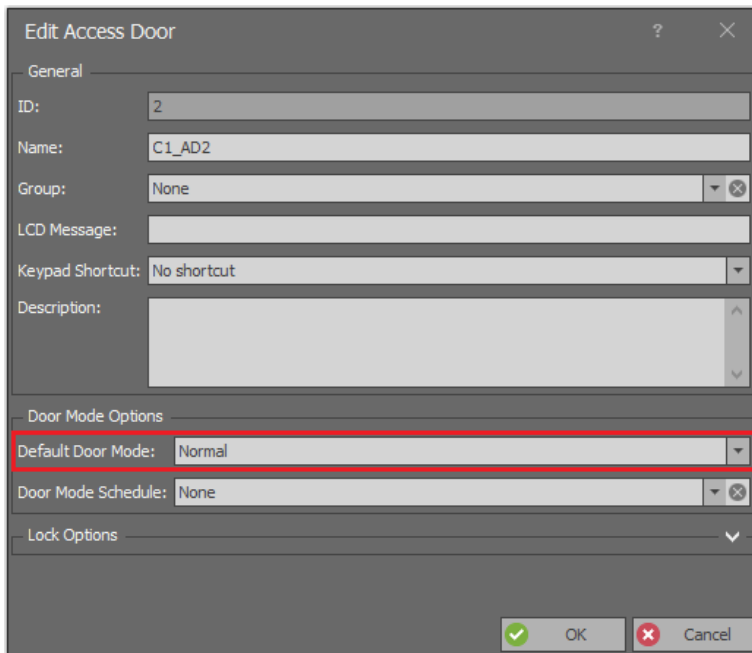
Door Modes

Door Modes can be used for additional control of doors with Aperio locks. Following modes are available in RACS 5 system:

- Normal – default Door mode for which Authorization is required to open the door
- Unlocked –door is completely opened so it is enough to use handle as no user identification is required
- Conditional Unlocked –door is in Normal mode and when access is granted for user with access Authorization then it switches to Unlocked mode
- Locked –door is completely locked for all users regardless of their Authorizations

Door Mode can be controlled by schedule, input, function key or Authentication Factor (card, PIN, etc.) and Remote command. Default Door Mode is assigned within Access Door properties with respective parameter.

Note: In case of Aperio locks V3 their responsiveness for remote commands has been significantly improved. The actual execution of command usually takes up to 10 s and it can be modified using the parameter *Polling Interval* (10 s by default). It must be also noted that the greater the responsiveness of a lock the quicker its battery is discharged.



The screenshot shows the 'Edit Access Door' dialog box with the following fields:

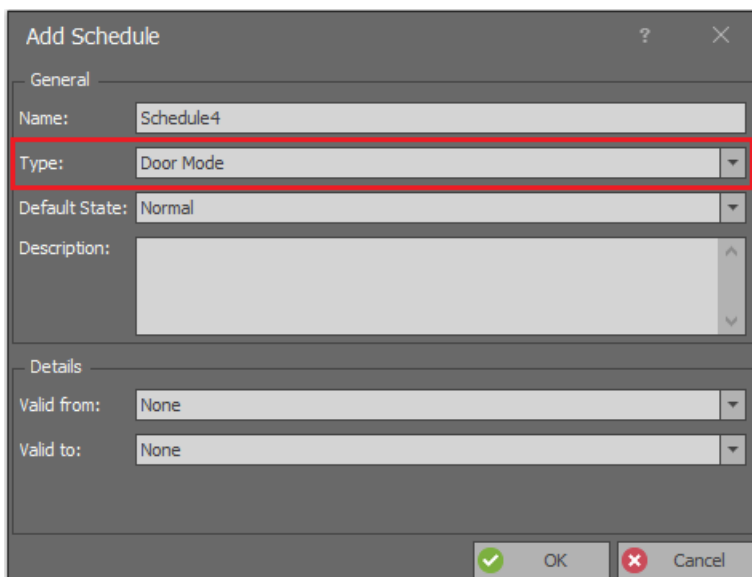
- General
 - ID: 2
 - Name: C1_AD2
 - Group: None
 - LCD Message:
 - Keypad Shortcut: No shortcut
 - Description:
- Door Mode Options
 - Default Door Mode: Normal (highlighted with a red box)
 - Door Mode Schedule: None
- Lock Options

Buttons: OK, Cancel

Door Mode control by schedule

Door Modes can be controlled by schedule defined as below:

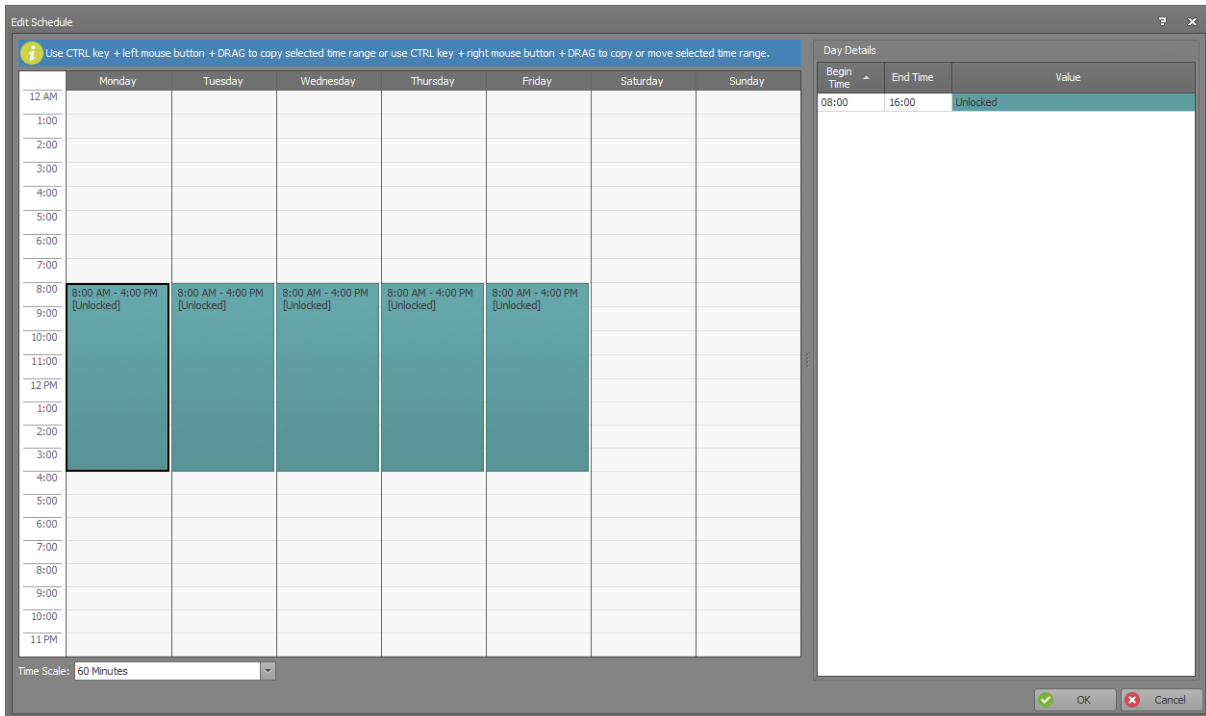
- In the navigation tree of VISO software double click *Schedules* command and select *Add* button.
- In the opened window name the schedule and select *Door Mode* in *Type* field.
- In the bottom select *Calendar Days* tab and *Edit* button to define periods with required Door Modes.
- Assign the schedule within Access Door properties in the field *Door Mode Schedule*.



The screenshot shows the 'Add Schedule' dialog box with the following fields:

- General
 - Name: Schedule4
 - Type: Door Mode (highlighted with a red box)
 - Default State: Normal
 - Description:
- Details
 - Valid from: None
 - Valid to: None

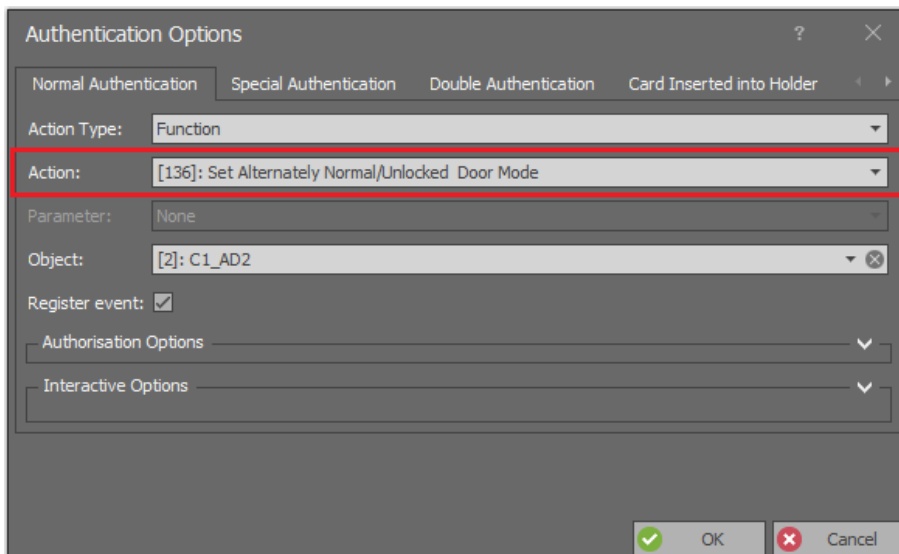
Buttons: OK, Cancel



Door Mode switching with card/PIN

Door Mode can be switched by user identification with Authentication Factor (card, PIN). In such case it is necessary to assign adequate function for Normal Authentication. In order to enable switching of Aperio lock from Normal Door Mode to Unlocked Door Mode (office mode) and vice versa:

- In the navigation tree of VISO software within particular MC16 access controller double click *Access Points* command and select the point with Aperio lock from the list.
- In the bottom select *Authentication Options* tab and then *Edit* button.
- Select *Normal Authentication* tab and assign the function *[136]: Set Alternately Normal/Unlocked Door Mode*.

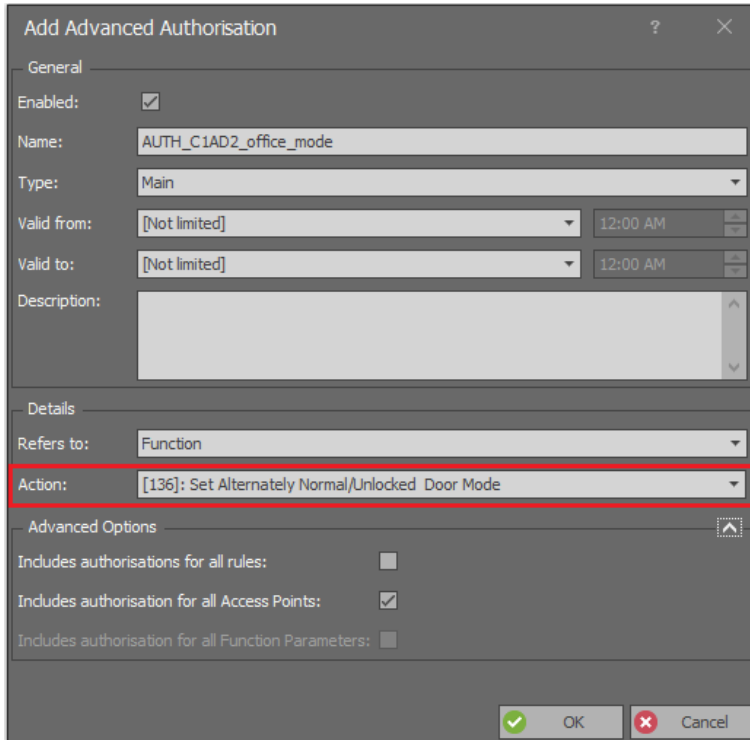


Note: In case of Aperio locks, only Normal Authentication is supported.

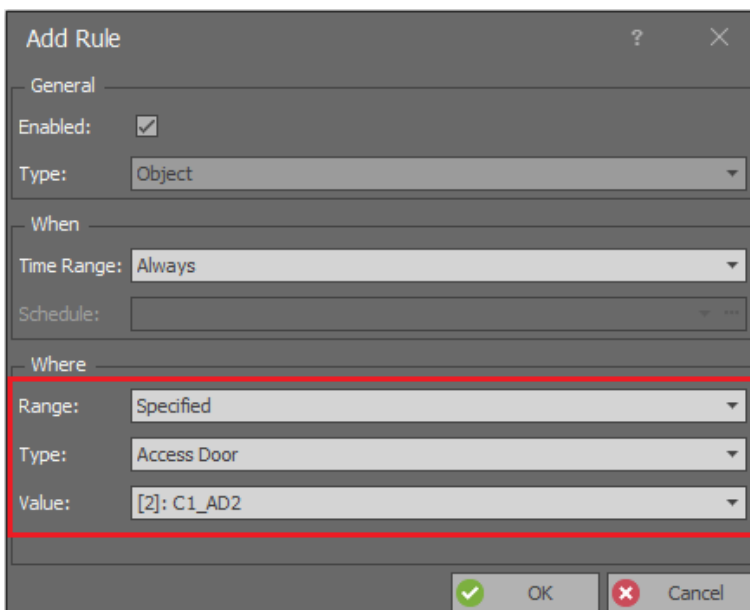
In order to use the function *[136]* it is necessary to create adequate Authorisation and assign it to a user. The Authorisation which is automatically created with Add Access Door wizard concerns the

function [151]: *Grant Door Access with Normal Lock Pulse*. In order to create Authorisation for function [136]:

- In the navigation tree of VISO software expand *Authorisations* command, double click *Advanced Authorisations* command and in the opened window select *Add* button.
- In the opened window name the Authorisation and assign the function [136]. Close the window with *OK* button.




- In the bottom select *Positive Rules* tab and then *Add* button.
- In the opened window in *Range* field select *Specified* and in indicate Access Door with the exemplary name *C1_AD2*. If the Authorisation is supposed to be limited in time then in *Time Range* field select *Specified* and in *Schedule* field assign any previously created General Purpose Maintained schedule. Close the window with *OK* button.

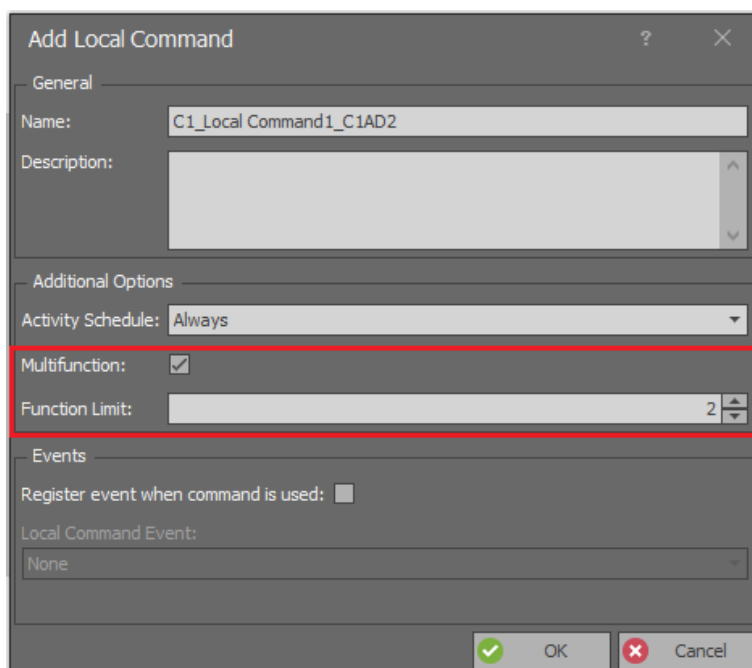


- Upload settings to controller.
- Assign the Authorisation to user(s) with a wizard or manually.

Composite control of Access Door

In RACS 5 system it is possible to assign more than one function for particular Authentication Option. Therefore card reading or PIN entering may start a series of functions or only selected functions depending on Authorisations assigned to particular user. In order to define Local command that would enable normal access granting based on the function [151] and switching to Unlocked Door mode based on the function [136]:

- In the navigation tree of VISO software within particular MC16 access controller double click Access Door command and select C1_AD2 door.
- In the bottom select *Local Commands* tab and then *Add* button.
- In the opened window select the button  to create the command.
- In the next window in the *Name* field of *General* area enter exemplary name *C1_Local Command1_C1AD2* and select the option *Multifunction* with *Function Limit = 2* so two individual functions could be included within the command i.e. temporary door opening and permanent door opening. Close the window with *OK* button.
- In the opened window assign the function [136]: *Set Alternately Normal/Unlocked Door Mode*. Additionally select options *Authorisation for Access Point required* and *Authorisation for Object required*. Close the window with *OK* button.



The screenshot shows the 'Add Local Command' dialog box. The 'Name' field contains 'C1_Local Command1_C1AD2'. The 'Description' field is empty. Under 'Additional Options', 'Activity Schedule' is set to 'Always'. The 'Multifunction' checkbox is checked, and the 'Function Limit' is set to 2. The 'Events' section has 'Register event when command is used' unchecked and 'Local Command Event' set to 'None'. The 'OK' and 'Cancel' buttons are at the bottom.

The screenshot shows the 'Add Local Command' dialog box with the following settings:

- Local Command: C1_Local Command1_C1AD2
- Function: [136]: Set Alternately Normal/Unlocked Door Mode
- Parameter: None
- Register event:
- Logic Function: None
- Authorisation Options:
 - User authentication required:
 - Authorisation for Access Point required:
 - Authorisation for Object required:
 - Authorisation for Function Parameter required:

- In the navigation tree of VISO software within particular MC16 access controller double click *Access Points* command and select point with default name *C1_AD2_IN*.
- In the bottom select *Local Commands* tab and then *Add* button.
- In the opened window select previously created *C1_Local_Command1_C1AD2*, assign the function *[151]* and select options *Authorisation for Access Point required* and *Authorisation for Object required*. Close the window with *OK* button.

The screenshot shows the 'Add Local Command' dialog box with the following settings:

- Local Command: C1_Local Command1_C1AD2
- Function: [151]: Grant Door Access with Normal Lock Pulse (detailed)
- Parameter: All
- Register event:
- Logic Function: None
- Authorisation Options:
 - User authentication required:
 - Authorisation for Access Point required:
 - Authorisation for Object required:
 - Authorisation for Function Parameter required:

- In the bottom select *Authentication Options* tab and then *Edit* button.
- In the opened window select *Normal Authentication* tab and for *Action Type* select *Local Command* while for *Action* select already created command with the name *C1_Local_Command1_C1AD2*. Close the window with *OK* button.
- Upload settings to controller.

The screenshot shows a dialog box titled "Authentication Options" with four tabs: "Normal Authentication", "Special Authentication", "Double Authentication", and "Card Inserted into Holder". The "Normal Authentication" tab is selected. The "Action Type" dropdown menu is set to "Local Command", and the "Action" dropdown menu is set to "C1_Local Command1_C1AD2". Below these are fields for "Parameter" (set to "None") and "Object" (set to "None"). There is a "Register event" checkbox which is unchecked. At the bottom, there are two dropdown menus: "Authorisation Options" and "Interactive Options". The "Interactive Options" dropdown has a checkmark icon. At the very bottom, there are "OK" and "Cancel" buttons.

To use both function of Local command it is necessary define Authorisations for each function. The Authorisation for function [151] is created automatically when Add Access Door wizard is used but it can also be created manually in VISO navigation tree. Authorisation for function [136] is created in accordance with description given in section 'Door Mode switching with card/PIN'. In case of Local command created as above it is not practical to assign both Authorisation to single user but it can be arranged in such way that one user is assigned with the first Authorisation while the other user is assigned with the second Authorisation. In such case both user can start the Local command but only in such extent as it is enabled by their Authorisations. The other approach could be such that one user is assigned two Access Credentials, one with card and Authorisation for function [151] and the other with PIN and Authorisation for function [136]. In this scenario the card opens door temporary while PIN opens door permanently.

Remote control of Door Mode

Remote control of Door Mode is available from the level of VISO software. Remote commands can be started from the navigation tree, from the list of such objects as Access Doors, Access Points, etc. as well as from the level of map.

Remote command can be used only by VISO operator with proper rights. Such rights are defined by assignment of operator to user with Credential(s) including proper Authorisation(s) (e.g. for function [136]) at particular Access Door. Such association of user and operator is done in the properties of Person in the tab *Remote Management* in the field *Operator*. The most simple method to grant all Authorisations to operator is to assign such operator to user with Access Credentials with enabled *Master exemption* option. More information on this subject is given in AN040 application note.

Battery status reporting

RACS 5 system enables centralized monitoring of Aperio locks batteries. Battery status is reported with such events as:

- [713]: Low battery
- [715]: Low battery returned
- [717]: Battery failure
- [719]: Battery failure returned

In order to configure logic object in RACS 5 system to enable battery monitoring:

- In the navigation tree of VISO software within particular MC16 access controller double click *Power Supplies* command and then *Add* button.
- In the opened window select battery of particular Aperio lock. Close the window with *OK* button.

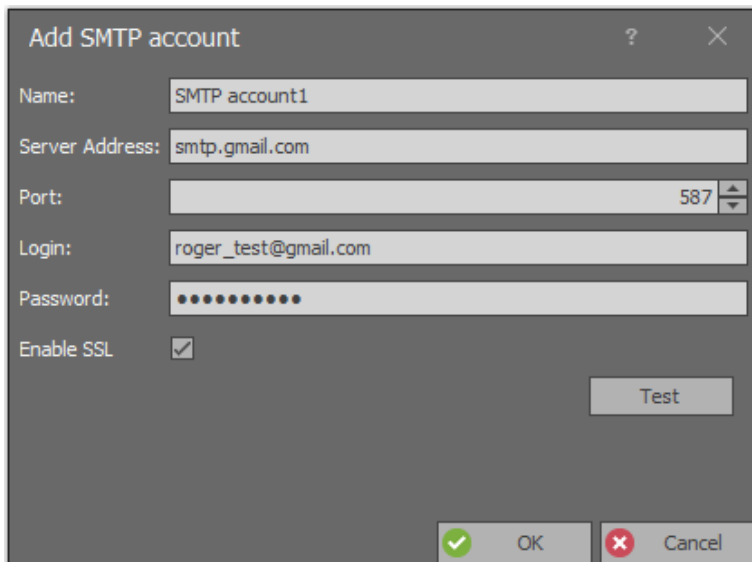
The screenshot shows the 'Add Power Supply' dialog box. The 'Object' field under 'Device Group' is highlighted with a red border. The dialog contains the following fields and values:

Field	Value
Name	C1_110_BATTERY T1
Description	
Object (Device Group)	SDV 1_192.168.10.85_110_BATTERY T1
Device	APERIO 1
Name	BATTERY T1
Comment	Lock battery
Type	PWR 1/Unknown
IP Address	192.168.10.85
RS Address	110

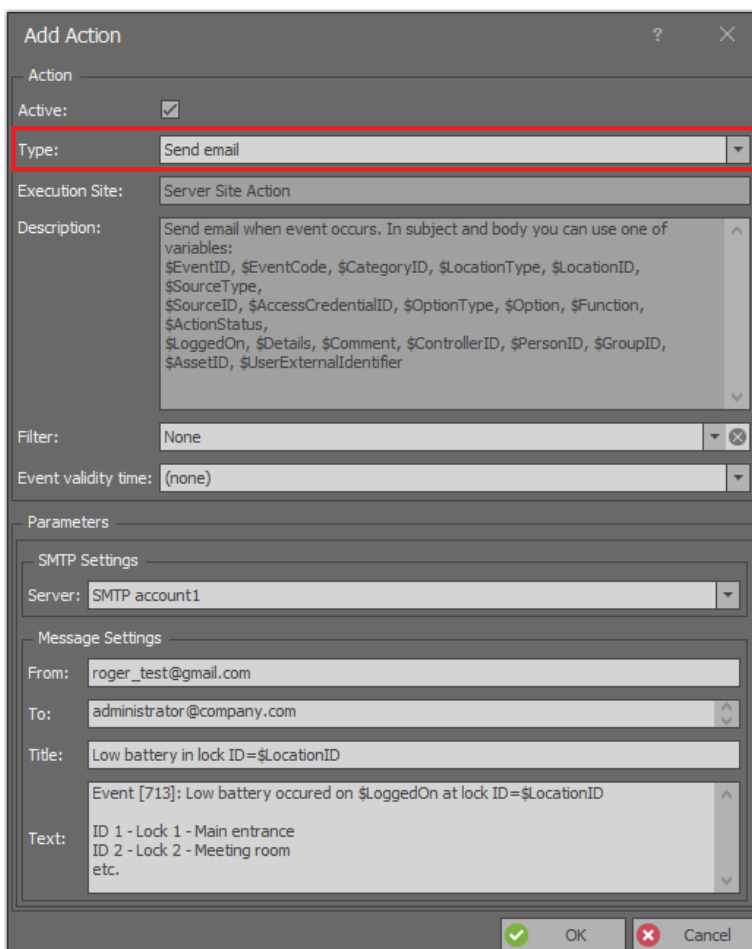
- Create similar objects for remaining Aperio locks.
- Upload settings to controller.

When object are created then battery statuses are signalled not only locally at locks but also by events in RACS 5 database. Such events can be viewed after selection of *Event log* command and then *Event Log* icon in the top menu of VISO software. Additionally it is possible to define actions such as for example email sending for selected events in RACS 5 system. In order to define e-mail sending when the event [713]: *Low battery* occurs:

- In the top menu of VISO software select *Tools* command and then *SMTP Accounts* icon. In the opened window select *Add* button.
- In the next window define parameters of SMTP account which can be used by RACS 5 system for e-mail sending (example below). Account settings can be verified with *Test* button. Close the window with *OK* button.




- In the top menu of VISO software select *Event Log* command and then *Event Types* icon.
- In the opened window select on the list event type for which action is to be generated i.e. [713]: *Low battery*.
- In the bottom select *Actions* tab and then *Add* button.
- In the opened window select *Send email* as *Type*, indicate previously created SMTP account, enter email recipient and other parameters. Close the window with *OK* button.

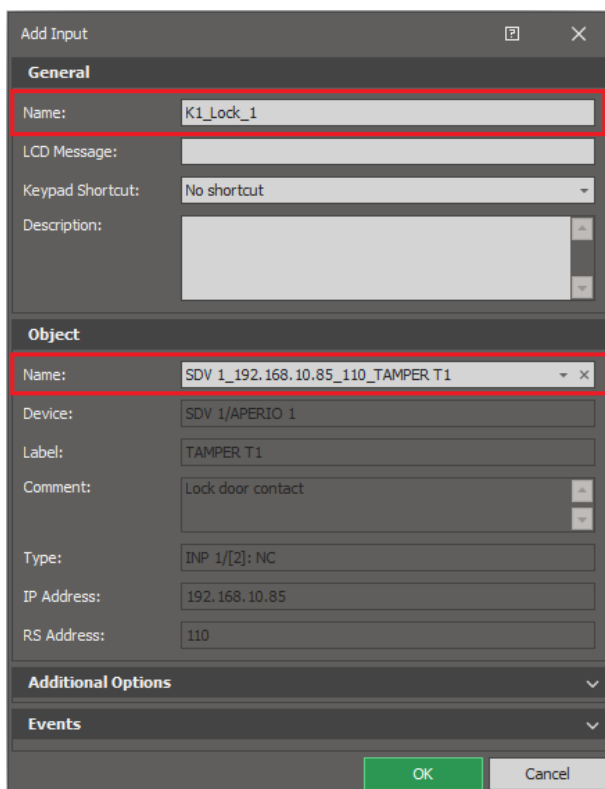


It is not necessary to start VISO software for the purpose of automatic e-mail sending when specific event(s) occurs. This functionality is ensured by Communication Server from RogerSVC software package.

Tamper reporting

Some Aperio locks such as L100 can report tampering. This status can be monitored by RACS 5 system after proper configuration as follows:

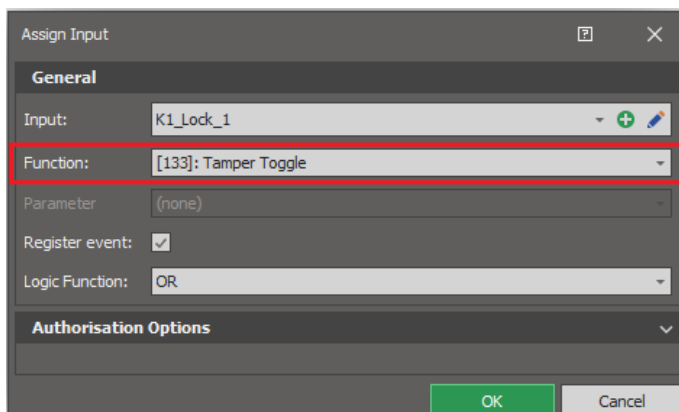
- In the navigation tree of VISO software within particular MC16 access controller double click *Mainboard* command, select *Inputs* tab and then *Add* button.
- In the opened window select the button  to indicate the input.
- In the next window name the input and indicate tamper object of Aperio lock. Close the window with *OK* button.



The screenshot shows the 'Add Input' dialog box with the following fields:

- General:** Name: K1_Lock_1; LCD Message: (empty); Keypad Shortcut: No shortcut; Description: (empty).
- Object:** Name: SDV 1_192.168.10.85_110_TAMPER T1; Device: SDV 1/APERIO 1; Label: TAMPER T1; Comment: Lock door contact; Type: INP 1/[2]: NC; IP Address: 192.168.10.85; RS Address: 110.
- Additional Options:** (collapsed)
- Events:** (collapsed)

- In the opened window select the function *[133]: TAMPER toggle*. Close the window with *OK* button.



The screenshot shows the 'Assign Input' dialog box with the following fields:

- General:** Input: K1_Lock_1; Function: [133]: Tamper Toggle; Parameter: (none); Register event: ; Logic Function: OR.
- Authorisation Options:** (collapsed)

- Similarly define inputs for remaining Aperio locks in the system.
- Upload settings to controller.

Similarly as in case of battery status reporting, actions on event can be defined for the event [760]: *Tamper Loop Violated*.

Other states reporting

Some Aperio locks such as L100 can report additional statuses such as internal handle use and lock blocking. These statuses can be monitored by RACS 5 system after proper configuration. In order to define reporting for internal handle use:

- In the top menu of VISO software *Event Log* and then *Event Types*.
- In the opened window select *Add* and then name new event type. Close the window with *OK* button.

- In the navigation tree of VISO software within particular MC16 controller double click *Inputs* and then select *Add*.
- In the opened window name the input, indicate handle object of Aperio lock and additionally enable event registration for input activation.

The screenshot shows the 'Add Input' configuration window with the following details:

- General:** Name: K1_Lock_1
- Object:** Name: SDV 1_192.168.10.85_110_HANDLE T1, Device: SDV 1/APERIO 1, Label: HANDLE T1, Type: INP 4/[1]: NO, IP Address: 192.168.10.85, RS Address: 110
- Events:** Register event when input is switched ON: ; Input ON Event: [1001]: Internal handle used; Register event when input is switched OFF:

- Similarly define inputs for remaining Aperio locks in the system.
- Upload settings to controller.

When Aperio internal handle is used then the event *[1001]* will be registered in Event Log and Online Monitoring. Similarly as in case of battery status reporting, actions on event can be defined for the event *[1001]*. In case of lock blocking status the configuration is done similarly but then Aperio internal lock object is selected instead of handle object.

Emergency door opening

Emergency door opening is used when the communication of lock(s) with master devices (hub, expander, controller) is lost. Cards and PINs for emergency door opening are defined when Aperio lock is configured with Aperio Programming Application.

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