2N® LTE Verso

Modular LTE Intercom

Configuration Manual

Firmware: 2.32
Version: 2.32

www.2n.cz

The 2N TELEKOMUNIKACE a.s. is a Czech manufacturer and supplier of telecommunications equipment.

The product family developed by 2N TELEKOMUNIKACE a.s. includes GSM gateways, private branch exchanges (PBX), and door and lift communicators. 2N TELEKOMUNIKACE a.s. has been ranked among the Czech top companies for years and represented a symbol of stability and prosperity on the telecommunications market for almost two decades. At present, we export our products into over 120 countries worldwide and have exclusive distributors on all continents.

2N TELEKOMUNIKACE a.s. administers the FAQ database to help you quickly find information and to answer your questions about 2N products and services. On www.faq.2n.cz you can find information regarding products adjustment and instructions for optimum use and procedures „What to do if...".

2N TELEKOMUNIKACE a.s. hereby declares that the 2N product complies with all basic requirements and other relevant provisions of the 1999/5/EC directive. For the full wording of the Declaration of Conformity see the CD-ROM (if enclosed) or our website at www.2n.cz.

The 2N TELEKOMUNIKACE a.s. is the holder of the ISO 9001:2009 certificate. All development, production and distribution processes of the company are managed by this standard and guarantee a high quality, technical level and professional aspect of all our products.

Content:

1. Product Overview

T he 2N LTE door intercoms are a successful substitute for classic Speakerphone bell button panels and complex circuitry of bells and domestic phones where structured cabling cannot be deployed. The intercoms render more sophisticated and extensive services than standard domestic phones. The intercom is easy to install - all you have to do is insert a SIM card, connect a power supply and set necessary parameters via the My2N portal.

Thanks to the integrated SIP protocol, the intercom can make use of all VoIP services: call forwarding at absence (to another office, VoiceMail or a cellular phone) or call transfer (from the secretary's office to the required person, e.g.).

The intercoms are equipped with a programmable number of quick dial buttons for speed calling to the users whose numbers are included in the intercom Users list. Each of the quick dial buttons can be assigned up to three phone numbers, which can be dialled in parallel or sequentially. Thanks to an integrated time sheet it is possible to configure each of the buttons in such a way that the called party is always accessible and/or calls to selected phone numbers can be barred off the working hours.

Some 2N LTE intercom models are equipped with a numeric keypad, which can be used as a code.

The 2N LTE intercoms can be equipped with an RFID card reader for authorised access control and thus become a key part of your surveillance or attendance control systems.

The 2N LTE intercoms are equipped with a relay switch (and, optionally, other relays and outputs), which controls the electric lock or other equipment connected to the intercom. Its activation time and method can be programmed flexibly: it can be activated by a code, automatically by a call, by pressing a button, and so on. It is always recommended that the 2N® Security Relay (Part No. 9159010) is used for increased security.

The following symbols and pictograms are used in the manual:

Safety

- Always abide by this information to prevent persons from injury.

Warning

- Always abide by this information to prevent damage to the device.

Caution

- Important information for system functionality.

Tip

- Useful information for quick and efficient functionality.

Note

- Routines or advice for efficient use of the device.

2. Express Wizard for Basic Settings

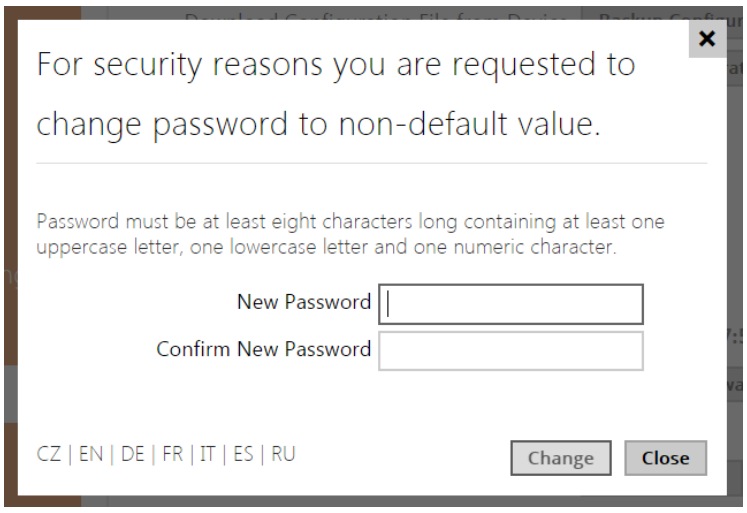
Device Setting

Make sure that your device is properly installed and connected to My2N before logging in to the intercom configuration interface. Log in to My2N at **https://my2n.com** and add your intercom to the **2N® Remote Configuration**. You have to enter your My2N security code during login - find the code in the card provided in the intercom package. Get access to the intercom web configuration interface via the 2N® Remote Configuration.

Use the name **admin** and password **2n** (i.e. default reset password) for your first login to the configuration interface.

We recommend you to change the default password upon your first login.

The intercom requires a password change upon the first login. Strong passwords are only accepted: eight characters at least including one capital letter, one small letter and one digit.



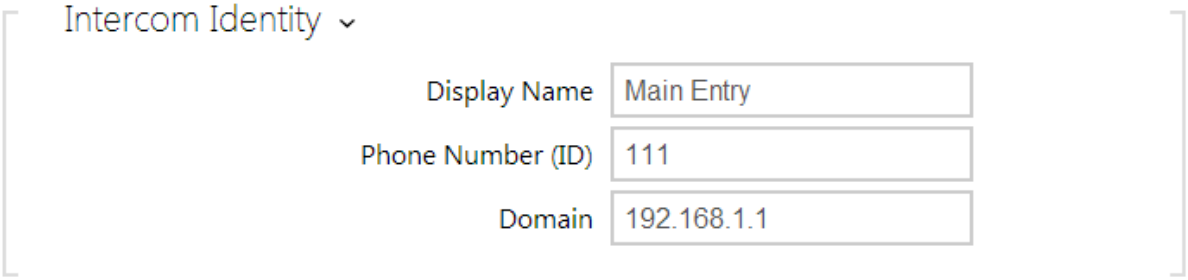
Remember the new password well or put it down just in case. Because if you forget the password, you will have to reset the intercom to default values (refer to the Installation Manual of your intercom model) and lose all your current configuration changes.

Firmware Update

We also recommend you to update your intercom firmware upon the first login to the intercom. Refer to **www.2n.cz** for the latest firmware version. Press the **Update Firmware** button in the **System / Maintenance** menu to upload firmware. The intercom will get restarted upon upload and only then the updating process will be complete. The process takes about 30 seconds.

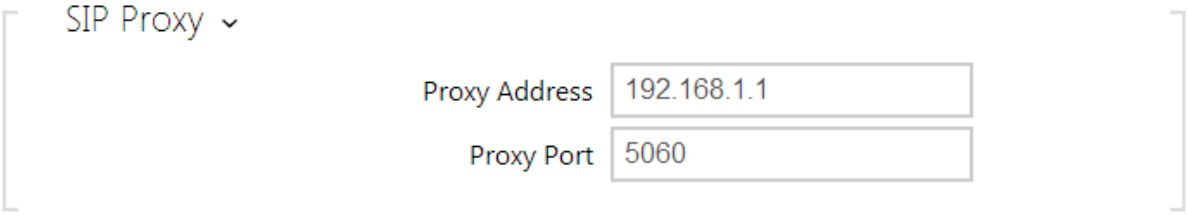
SIP Server Connection Setting

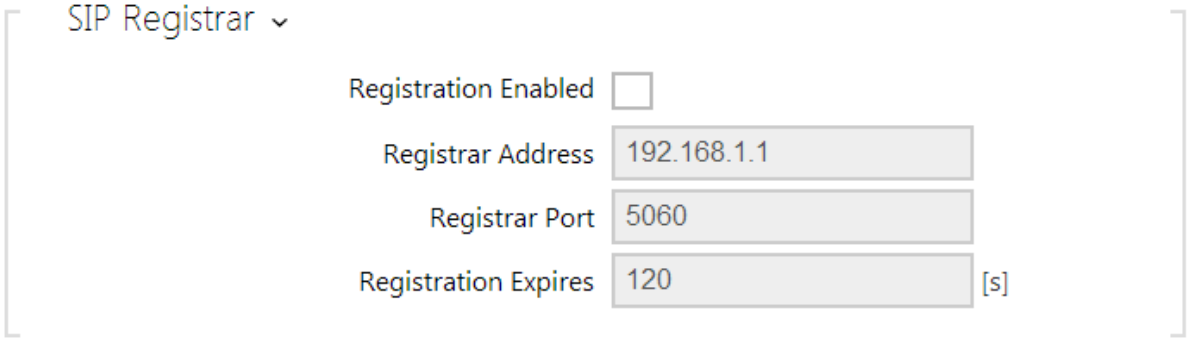
The intercom is automatically configured for making calls via the My2N 2N® Mobile Video service. To use another VoIP infrastructure, set the necessary parameters in the **Services / Phone / SIP** menu.



- **Display name** – set the name to be displayed as CLIP on the called party's phone, in the login window and on the web interface start page.
- **Phone number (ID)** – set the intercom phone number (or another unique ID composed of characters and digits) to identify the intercom uniquely in calls and registration.
- **Domain** – set the domain name of the service with which the intercom is registered. Typically, it is equivalent to the SIP Proxy or Registrar address. If you do not use a SIP Proxy in your intercom installation, enter the intercom IP address.

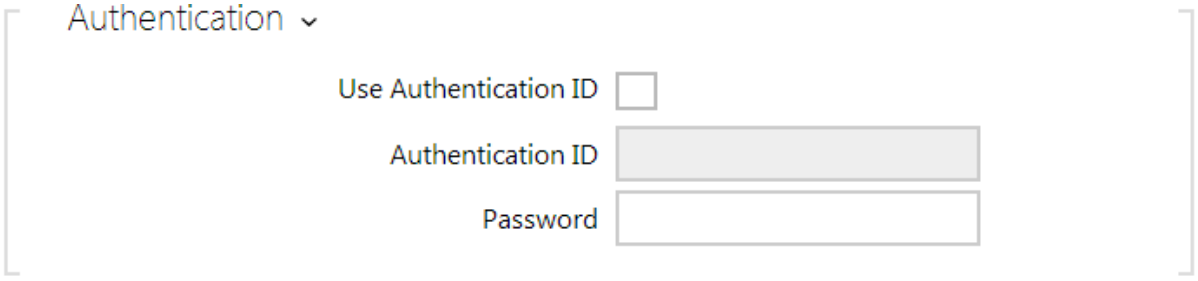
If you use a SIP server (Proxy, Registrar), set the addresses for the following network elements:





- **Proxy address** – set the SIP Proxy IP address or domain name.
- **Registrar address** – set the SIP Registrar IP address or domain name. The SIP Proxy and SIP Registrar addresses are usually identical.
- **Registration enabled** – enable intercom registration with the set SIP Registrar.

If your SIP server requires authentication of terminal equipment, enter the following parameters:



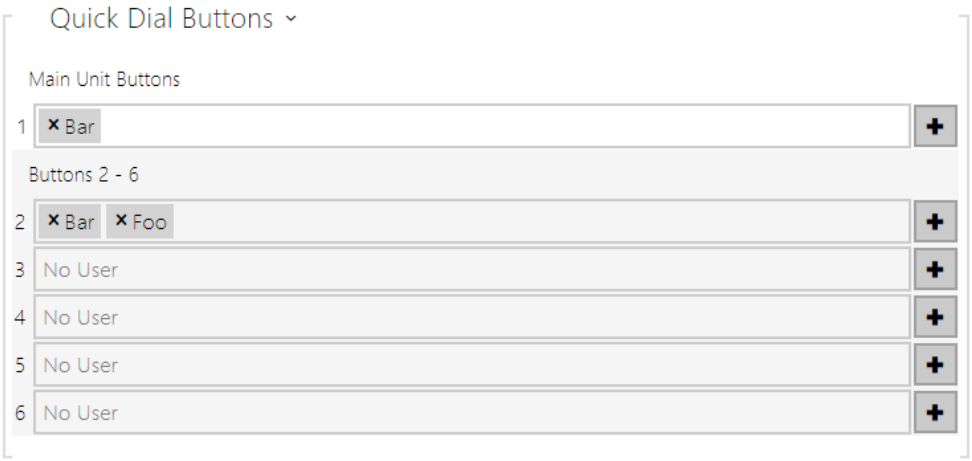
- **Password** – enter the password for intercom authentication.

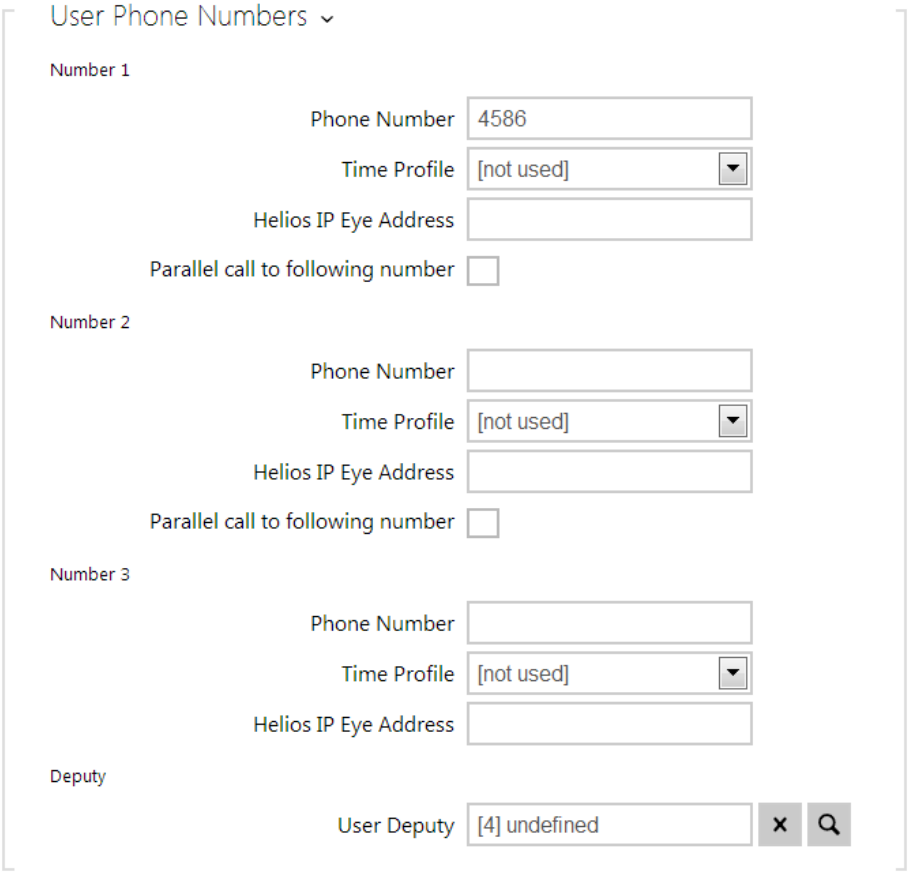
Quick Dial Button Settings

All the **2N LTE intercom** models are equipped with quick dial buttons. If you press a quick dial button, a call will be set up to the phone number assigned to the respective Users list position.

In the **Hardware / Buttons** menu is displayed the list of all potentially available intercom buttons including those physically absent. In some intercom models, the button list is divided into 8/5-item groups corresponding to the button extending modules. Click

, select the user and press Add to add a user to the editing field. To search a user in the list, use the fulltext field and the username. One quick dial button can be shared by multiple users.

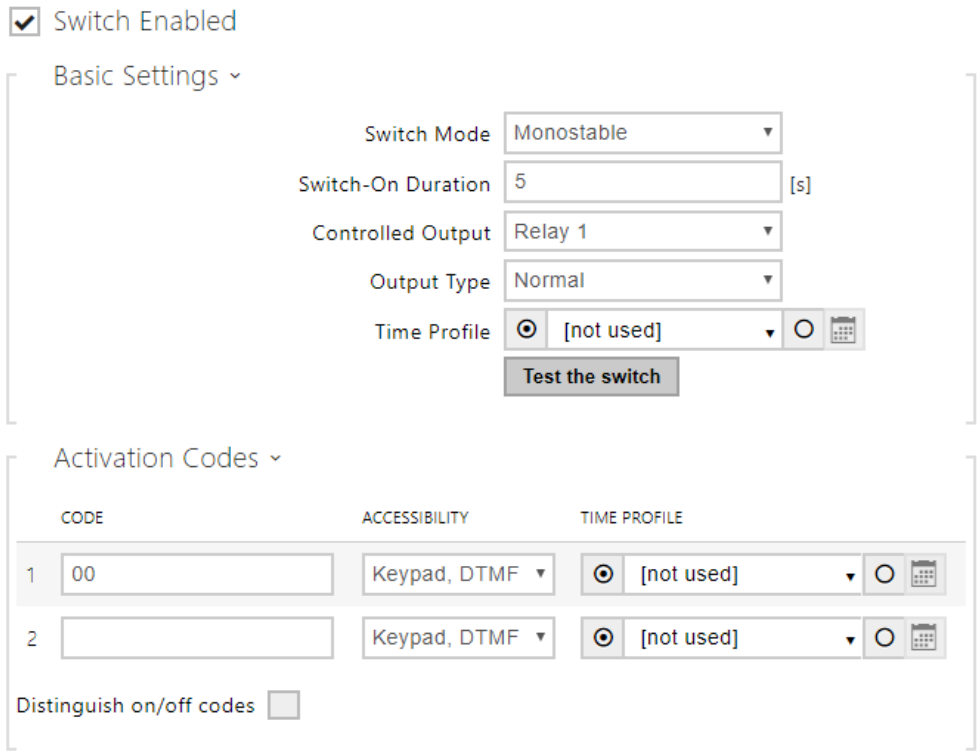




You can also use the **2N LTE intercom** with one or more IP phones without a SIP server. Use the **Direct SIP Call** for outgoing calls and enter the called phone SIP address (sip:phone_number@phone_ip_address) instead of the phone number.

Electric Lock Switching Settings

An electric lock can be attached to the **2N LTE** intercoms and controlled by a code from the intercom numeric keypad, or a code from the IP phone keypad during a call. Connect the electric lock as instructed in the Installation Manual of your intercom model.



Enable the switch in the **Switch Enabled** parameter in the **Hardware / Switches / Switch 1** tab, set the **Controlled Output** to the intercom output to which the electric door lock is connected. Now set one or more activation codes for the electric door lock switching.

3. Model Differences and Function Licensing

Here is what you can find in this section:

- 3.1 Function Licensing

License	Features	2N® IP Verso	2N® LTE Verso	2N® IP Solo	2N® IP Base	2N® IP Force	2N® IP Safety	2N® IP Vario	2N® IP Vario with display	2
Enhanced Audio (included in Gold)	User sounds	★	★	★	★	★	★	★	✓	
	Automatic audio test	★	★	★	★	★	★	★	✓	
	Noise detection	★	★	★	★	★	★	★	✓	
Enhanced Video (included in Gold)	Audio/video streaming (RTSP Server)	★	★*	★	★	★	★	★	✓	
	External camera support	★	★*	★	★	★	★	★	✓	
	ONVIF support	★	★*	★	★	★	★	★	✓	
	PTZ support	★	★	★	★	★	★	★	✓	
	Motion detection support	★	★	★	★	★	★	★	✓	
Enhanced Integration (included in Gold)	Advanced switch setting options	★	★	★	★	★	★	★	✓	
	HTTP API	★	★*	★	★	★	★	★	✓	
	Automation function	★	★	★	★	★	★	★	✓	
	E-mail sending (SMTP client)	★	★	★	★	★	★	★	✓	
	Automatic update (TFTP/HTTP client)	★	★	★	★	★	★	★	✓	
	FTP client	★	★	★	★	★	★	★	✓	
	SNMP client	★	★*	★	★	★	★	★	✓	
	TR-069	★	★	★	★	★	★	★	✓	
	Synergis	★	★*	★	★	★	★	★	✓	
Enhanced Security (included in Gold)	802.1x support	★	✗	★	★	★	★	★	✓	
	SIPS (TLS) support	★	★	★	★	★	★	★	✓	
	Switch Blocking by Tamper	★	★	★	★	★	★	★	✓	
	SRTP support	★	★	★	★	★	★	★	✓	
	Silent alarm	★	★	★	★	★	★	★	✓	
	Limit unsuccessful access attempts	★	★	★	★	★	★	★	✓	
	Anti-Passback	★	★	✗	★	★	✗	★	✓	
	Scrambled keypad	★	★	✗	✗	✗	✗	✗	✗	
NFC (included in Gold)	NFC support	★	★	✗	★	★	✗	✗	✗	
InformaCast	InformaCast support	★	★*	★	★	★	★	★	★	
Lift Module	Lift Control	★	✗	✗	✗	★	★	★	★	

– factory value

– licensed function to be purchased additionally

– unavailable

*) The service availability depends on the mobile provider's network configuration.

**) The scrambled keypad function is only available for 2N Access Unit 2.0.

Note

- The license overview does not apply to the US, Canada, Mexico, Caribbean, and Central and South America.

3.1 Function Licensing

Why are some features licensed?

Because we did not want every single customer who purchases our intercom, to pay for all the advanced features we offer. We believe that most applications can do with basic level, so the users do not need to pay for features they do not use.

Which features are licensed and what license types are there?

Some 2N IP intercom functions are unavailable until a valid license key is entered (refer to the License subsection). The following types of licenses are available:

- Enhanced Audio (Part No. 9137905, Axis Part No. 01376-001)
- Enhanced Video (Part No. 9137906, Axis Part No. 01377-001)
- Enhanced Integration (Part No. 9137907, Axis Part No. 01378-001)
- Enhanced Security (Part No. 9137908, Axis Part No. 01379-001)
- Gold (Part No. 9137909, Axis Part No. 01380-001)
- InformaCast (Part No. 9137910, Axis Part No. 01381-001)
- NFC (Part No. 9137915, Axis Part No. 01382-001)

The InformaCast license allows the SingleWire InformaCast protocol to be used.

Note

- The licenses are not available for the US, Latin America and Canada.

Info

- Codec G.729 can be used without a license key in SW versions 2.25 and higher.

The table below includes the functions that need to be activated by the license keys corresponding to the above mentioned licenses. The licenses can be combined arbitrarily.

Property /License	Enhanced Audio	Enhanced Video	Enhanced Integration	Enhanced Security	NFC	InformaCast	Gold (Profi)
User sounds	•						•
Automatic audio test	•						•
Noise detection	•						•
Audio/video streaming (RTSP Server)		•					•
External IP camera support		•					•
ONVIF support		•					•
PTZ function support		•					•
Motion detection support		•					•
Extended switch setting options			•				•

Property /License	Enhanced Audio	Enhanced Video	Enhanced Integration	Enhanced Security	NFC	InformaCast	Gold (Profi)
HTTP API (see note below)			•				•
Automation functions			•				•
E-mail sending (SMTP Client)			•				•
Automatic update (TFTP /HTTP Client)			•				•
FTP client			•				•
SNMP client			•				•
TR-069			•				•
802.1x support				•			•
SIPS (TLS) support				•			•
SRTP support				•			•
Silent Alarm				•			•

Property /License	Enhanced Audio	Enhanced Video	Enhanced Integration	Enhanced Security	NFC	InformaCast	Gold (Profi)
Limit unsuccessful access attempts				•			•
Switch Blocking				•			
Scrambled keypad				•			
NFC support					•		•
InformaCast support						•	
Anti-passback				•			
Genetec Synergis			•				

What other products follow this license scheme?

2N IP intercoms, 2N® SIP Audio Converter, 2N® SIP Speaker and 2N® SIP Speaker Horn, which already come with preloaded Gold license, so the only possible upgrades is InformaCast.

2N® Access Unit, which already comes with preloaded Security and Integration licenses, so the only upgrade is NFC license. Other licenses are not applicable to 2N® Access Unit. Please note that the NFC license has a different ordering number for 2N® Access Unit: 916012.

Note

- *Full **HTTP API** function is available with the Gold or Enhanced Integration license only. Only Camera API and Switch API are available without this license.*

Note

- Extended switch setting options – quick dial button switch activation, switch time profile.

How do I get the license?

Licenses are generated by 2N according to the particular serial number. After you decide which license you want, you need to get the serial number of your unit and contact your distributor for the license key.

The license itself comes as a key, alphanumeric string, so it can be easily sent via email and copied and pasted into the intercom.

Licenses are not limited in time. Once you have a license, you have it for good.

In order to activate the license, you need to log in to the intercom web interface and paste the license key into the System / License field. When you click Save, the licensed features are immediately activated.

Licenses can be downloaded automatically in the System / License menu.

Tip

FAQ: Lisense for 2N IP/LTE intercoms – How to get it

Can I have a demo lisence?

Yes, there is an option for an 800-hour trial Gold license period during which you can try the licensed features. By default, this demo is disabled - enable it via the web interface of the particular intercom in the System / License menu. There is a countdown timer showing the remaining time after which all the licensed features will be disabled again.

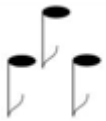
4. Signalling of Operational Statuses

2N LTE intercom generates sounds to signal switching and changes of operational statuses. Each status change is assigned a different type of tone. See the table below for the list of signals.

Note

- *Signalling of some of the above mentioned statuses can be modified; refer to the User Sounds subsection.*

Tone	Meaning
	User activated This tone signals entering of the user activation code. The activation code is used for user (user's position) activation. Refer to the Users subsection for the activation code settings.
	User deactivated This tone signals entering of the user deactivation code. The deactivation code is used for user (user's position) deactivation. A deactivated user may not be called but the call can, if necessary, be forwarded to a deputy if defined. Refer to the Users subsection for the deactivation code settings.
	Profile activated This tone signals profile activation. This function helps enable alerting of a user group in an office, for example. Refer to the Profile subsection for the activation code settings.

Tone	Meaning
	**Profile deactivated** This tone signals profile deactivation. This function helps, for example, disable alerting of a user group in an office and routing calls either to a pre-defined phone number (porter's lodge, e.g.) or user mobile phones. Refer to the Profile subsection for the deactivation code settings.
	**Call prolongation confirmation signalling** Calls are time-limited in **2N LTE intercoms** for security reasons (protection against blocking). Refer to the Miscellaneous subsection for details.
	**Internal application launched** The internal application is launched upon **2N LTE intercom** power up or restart. A successful launch is signalled by this tone combination.
	**Connected to data network, IP address received** **2N LTE intercom** logs in upon the internal application launch. A successful network login is signalled by this tone combination.
	**Disconnected from network, IP address lost** This tone signals data network disconnection from **2N LTE intercom**. Disconnection is signalled by this tone combination.
	**Invalid telephone number or invalid switch activation code** **2N LTE intercom** allows the user to dial an extension number directly using the keypad or enter the door unlocking code. An invalid code is signalled by this tone sequence.
	**Default reset of network parameters** Upon power up, a 30 s timeout is set for the default reset code entering. Refer to the Device Configuration subsection in the **2N LTE intercom** Installation Manual for details.

Tone	Meaning
	**Call end signalling** **2N LTE intercom** enables the user to set a call end timeout to avoid call blocking. Press a key on your VoIP phone to extend the call time during this timeout.
	**Connected VoIP phone** This short tone signals successful connection between a VoIP phone and **2N LTE intercom**.

5. Intercom Configuration

Start Screen

The start screen is an introductory overview screen displayed upon login to the intercom web interface. Use the back arrow  in the left-hand upper corner of the following web interface pages to return to this screen anytime.

The screen header includes the intercom name (refer to the **Display Name** parameter in the **Services / Phone / SIP** menu). Select the web interface language with the **CZ** and **EN** buttons. Press the **Log out** button in the right-hand upper corner to log out.

The start screen is also the first menu level and quick navigation (click on a tile) to selected intercom configuration sections. Some tiles also display the state of selected services.

Configuration Menu

The 2N LTE intercom configuration includes 5 main menus: State, Directory, Hardware, Services and System including submenus; see below.

Status

- Device – essentials on the intercom
- Services – information on active services and their states
- Licence – current states of licences and available intercom functions

Directory

- Users – settings for user phone numbers, quick dial buttons, access cards and switch control user codes
- Time Profiles – time profile settings
- Holidays – holiday settings

Hardware

- Switches – electric lock, lighting, etc. settings
- Audio – audio, signalling, etc. volume control, microphone parameters
- Camera – internal camera, external IP camera settings
- Keypad – button and keypad settings
- Buttons - user speed dial settings
- Display – basic display settings
- Card Reader – card reader, Wiegand interface settings
- Extenders – 2N® LTE Verso extender settings

Services

- Phone – telephone and SIP connection settings
- Streaming – audio/video streaming settings (ONVIF, RTSP, Multicast, etc.)
- Onvif – Onvif settings
- E-Mail – E-mail sending and SMTP connection settings
- Automation – flexible intercom settings according to the user's requirements
- HTTP API – HTTP API authorisation settings
- User Sounds – user sound settings and upload
- Web Server – web server and access password settings

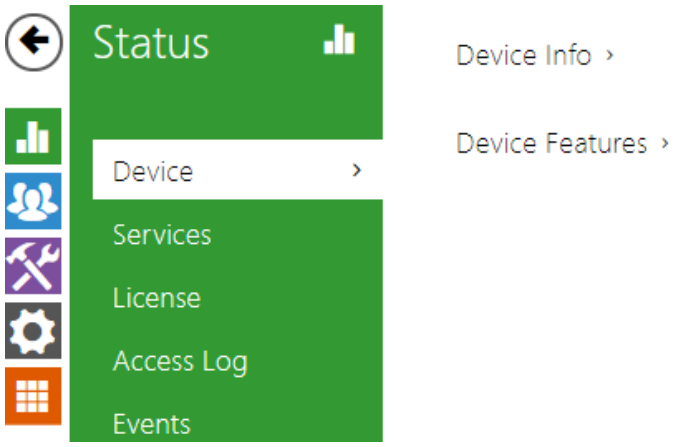
- Audio Test – automatic audio test settings
- SNMP – SNMP settings

System

- Network – LTE network connection settings, 802.1x, packet capturing
- Date and Time – real time and time zone settings
- Licence – licence settings, trial licence activation
- Certificates – certificate and private key settings
- Auto provisioning – automatic firmware and configuration update settings
- Syslog – syslog message sending settings
- Maintenance – backup and configuration reset, firmware update

- 5.1 Status
- 5.2 Directory
- 5.3 Hardware
- 5.4 Services
- 5.5 System
- 5.6 Used Ports

5.1 Status



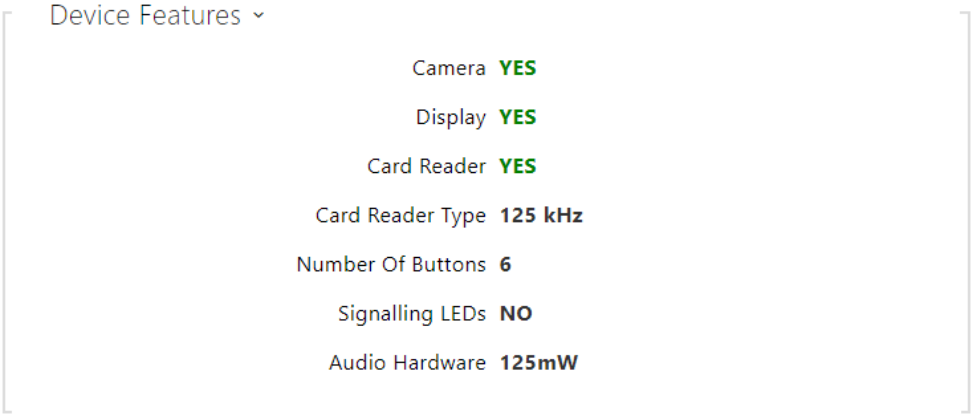
The **Status** menu provides clear status and other essential information on the intercom. The menu is divided into five tabs: **Device**, **Services, Licence, Access Log** and **Events**.

Locate device – optical and acoustic signalling of a device. Note: Optical signalling is possible only if the device is equipped with control backlight (Verso, Base, Vario, Force, Safety and Uni). If a speaker is not integrated in the device, make sure than an external speaker is connected (Audio Kit and Video Kit) to use sound signalling.

Device

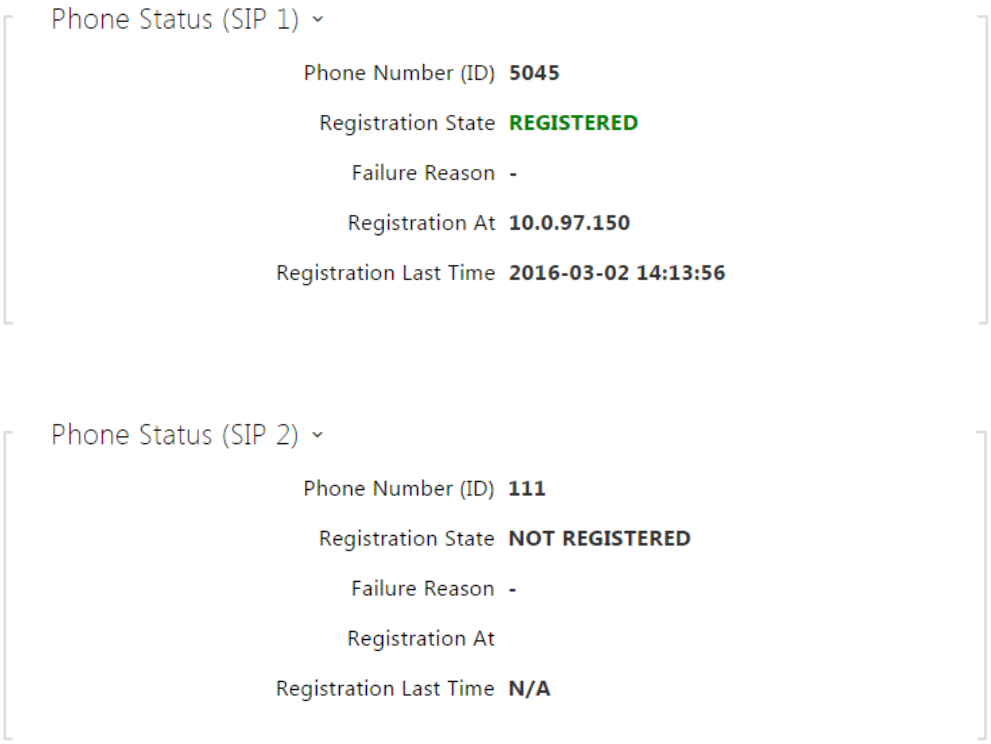
The **Device** tab displays basic information on the intercom model, its features, firmware and bootloader versions and so on.

- **Factory Certificate Installed** – specify the user certificate and private key to validate the intercom right to communicate with the ACS
- **Locate device** – optical and acoustic signalling of a device. Optical signalling is possible only if the device is equipped with control backlight (**2N® IP Verso**, **2N® IP Solo**, **2N® IP Base**, **2N® IP Vario**, **2N® IP Force**, **2N® IP Safety** a **2N® IP Uni**). If a speaker is not integrated in the device, make sure than an external speaker is connected (**2N® IP Audio Kit** and **2N® IP Video Kit**) to use sound signalling.



Services

The **Services** tab displays the status of the network interface and selected services.

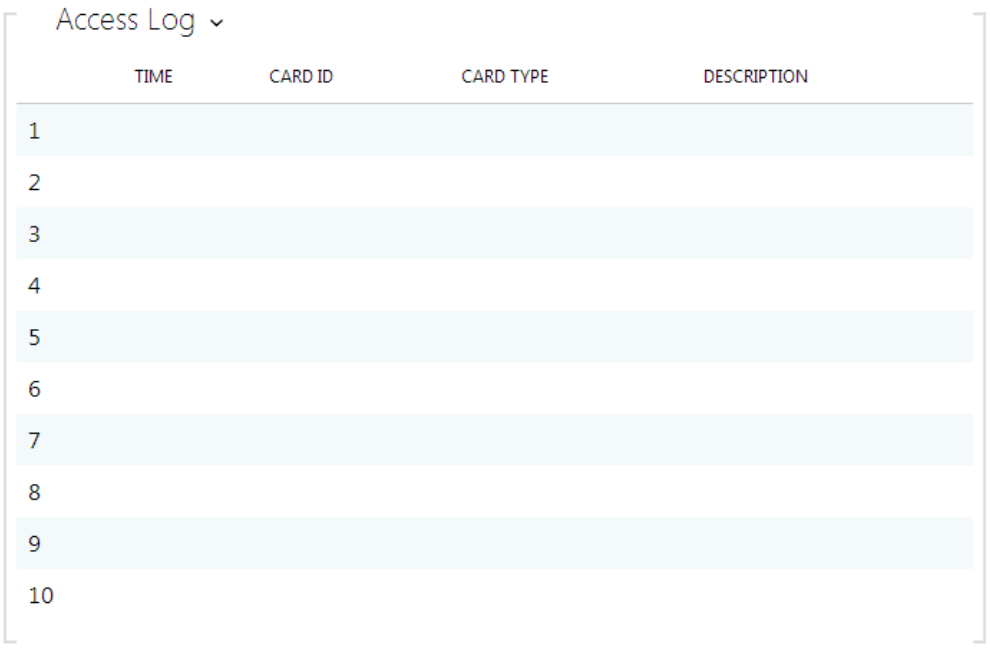


Licence

The **Licence** tab displays the list of licensed functions of the intercom including their current availability (on the basis of a valid licence key entered in the **System | Licence** menu).

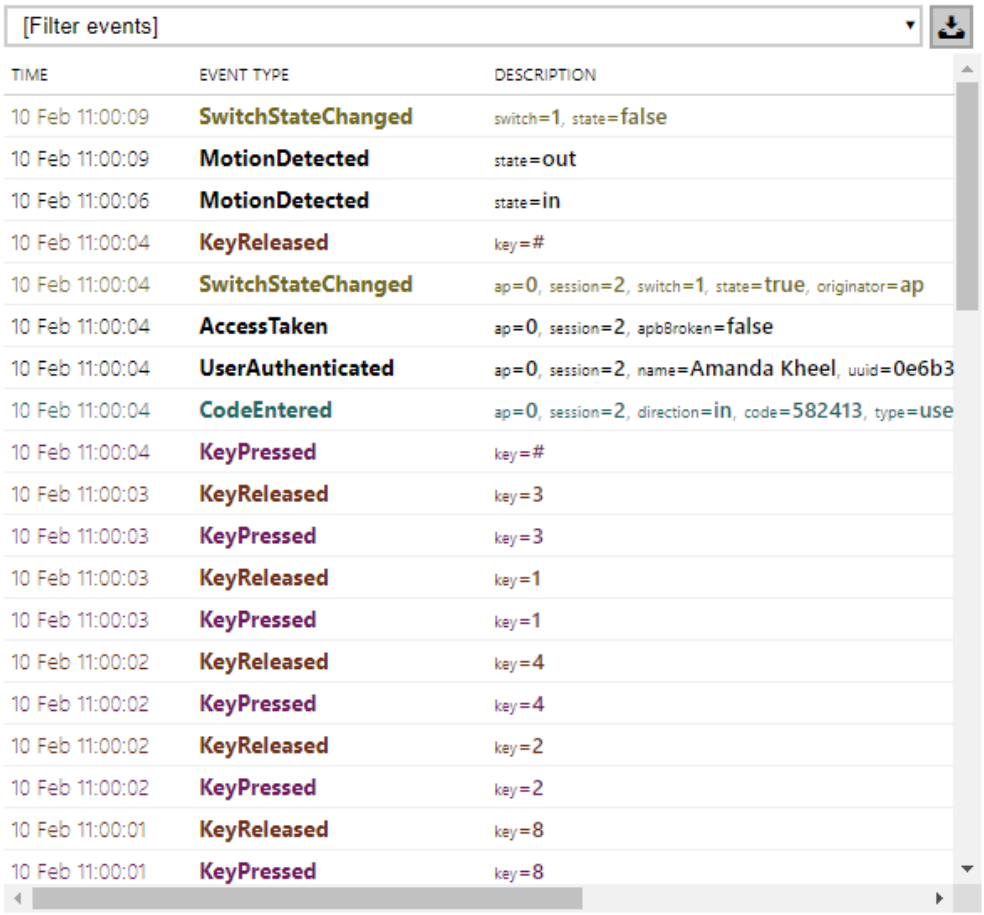
Access Log

The **Access Log** tab displays the last 10 records on applied cards. Each record includes the card tapping time, card ID and type and description details (validity, card owner, etc.).



Events

The **Events** tab displays the last 500 logged events. Every event contains time and date, event type and description specifying the event. The events can be filtered by type in a dropdown menu, above the event log.



-  – tlačítko slouží k exportu všech zaznamenaných událostí do CSV souboru.

Event	Description
AccessLimited	Event generated after 5 unsuccessful user authentication atttempts (card, code, fingerprint). The access module gets blocked for 30 seconds even if the subsequent authetication is correct.
AccessTaken	Card tapping in Anti-passback area.
AudioLoopTest	Generated after the audio test indicating the test result.
CallSessionStateChanged	Event describing the call direction/state, address, session number and call sequence number.
CallStateChanged	Indicates a call state change (ringing, connected, terminated) including call direction (incoming, outgoing) and number.
CapabilitiesChanged	Indicates a change in the list of available functions.
CardHeld	Indicates that an RFID card has been held for more than 4s.
CardEntered	Indicates that an RFID card has been tapped.
CodeEntered	Generated whenever a code ending with * is entered via the numeric keyboard.
DeviceState	Device state indication, startup of the device, for example.
DisplayTouched	Event generated whenever the display is touched.
DirectoryChanged	Change in the directory.
DirectorySaved	Change saved in the directory.
DoorOpenTooLong	Detection of a too-long opened door, settings in Hardware / Door / Door.
DoorStateChanged	Door open/closed state detection. Settings can be made in Hardware / Door / Door.
DtmfPressed	DTMF code pressing during a call.

Event	Description
DtmfEntered	DTMF code receiving during a call.
FingerEntered	Fingerprint authorisation.
FingerEnrollState	Finger enrolment on a reader for fingerprint loading.
HardwareChanged	Change of extending module connection.
InputChanged	Signals a state change of the logic input.
KeyPressed	Generated whenever a button is pressed (numeric keypad digits are 0,1,2...,9 and quickdial buttons are %1,%2 ...).
KeyReleased	Generated whenever a button is released (numeric keypad digits are 0,1,2...,9 and quickdial buttons are %1,%2 ...).
LiftConfigChanged	Indicates a lift configuration change.
LiftFloorsEnabled	Floor access via lift enabled.
LiftControlStatusChanged	Detection of Lift Control module connection/disconnection.
LoginBlocked	Event generated after 3 wrong logins to the web interface. Contains information about IP address.
MobKeyEntered	Bluetooth authorisation.
MotionDetected	Generated after motion detection, settings can be made in Hardware / Camera / Internal Camera.
NoiseDetected	Generated after noise detection, settings in Hardware / Audio.
OutputChanged	Signals a state change of the logic output.
PairingStateChanged	Change of Bluetooth pairing states: Inactive, Paired, Waiting for pairing.
RegistrationStateChanged	Change of the SIP Proxy registration state.

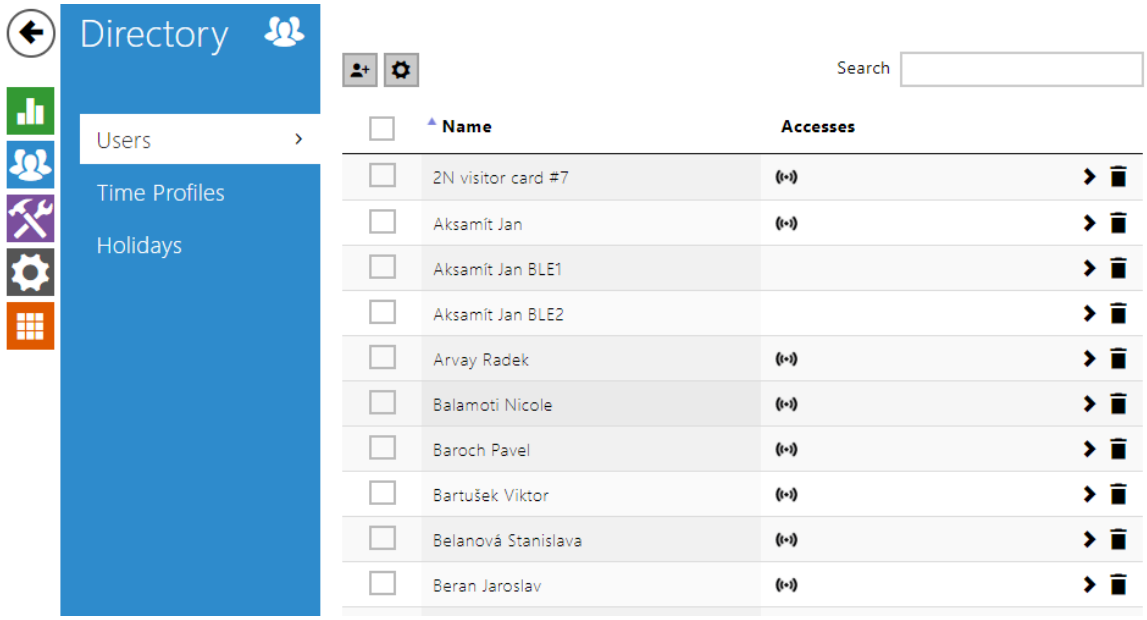
Event	Description
RexActivated	Event at input activation set for the REX button.
SilentAlarm	Silent alarm event generated whenever a code higher by one than the correct one is entered. With access code 123, the silent alarm code is 124.
SwitchesBlocked	Switches blocked by invalid access attempt.
SwitchOperationChanged	Switch function change (indicates the locked and held states), settings in Hardware / Switches.
SwitchStateChanged	Change of the switch state, settings in Hardware / Switches.
TamperSwitchActivated	Signals tamper switch activation - device cover opening. Make sure that the tamper switch function is configured in the Digital Inputs | Tamper Switch menu.
UnauthorizedDoorOpen	Unauthorised door opening indication, settings in Hardware / Door / Door.
UserAuthenticated	User authentication.
UserRejected	Signals user authentication and subsequent door opening.
VirtualInput	Virtual input change.
VirtualOutput	Virtual output change.

5.2 Directory

Here is what you can find in this subsection:

- 5.2.1 Users
- 5.2.2 Time Profiles
- 5.2.3 Holidays

5.2.1 Users



The Users list is one of the crucial parts of the intercom configuration. It contains user information relevant for such intercom functions as quick dialling, RFID card/code door unlocking, missed call e-mails and so on.

The Users list contains up to 1999 users (variable in the **2N LTE intercom** models) – typically, each user is assigned just one item (position 1 to 1999).

The Users list includes the users that can be called via the quick dial buttons and the users that are assigned the RFID card, code, etc. access to the building.

If your external card reader is connected to the intercom via the Wiegand interface, the card ID is shortened to 6 or 8 characters for transmission (depending on the transmission parameters). If you apply a card to the reader, you will receive a complete ID, which is typically longer (8 chars or more). The last 6 or 8 characters, however, are identical. This is useful for comparing card IDs with the intercom database: if the IDs to be compared have different lengths, they are compared from the end and match has to be found in 6 characters at least. If they have identical lengths, all the characters are compared. This ensures mutual compatibility of the internal and external readers.

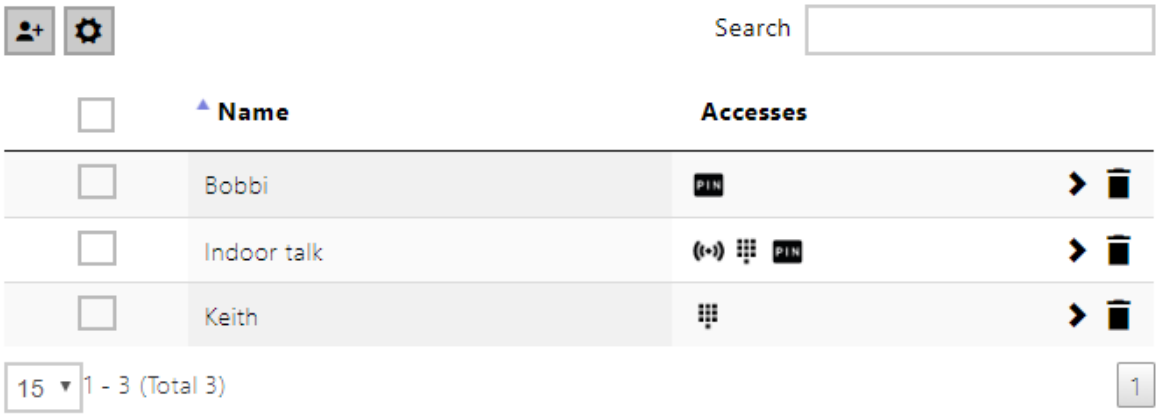
All cards applied via the reader or the Wiegand interface are recorded. Refer to the **Status / Access Log** menu for the last 10 cards including the card ID/type, card tapping time and other information if necessary. With small systems, you can make a trick to enter card IDs: tap the card on the intercom reader and find it in the **Access Log**. Double-click to select the card ID and push CTRL+C. Now that you have the card ID in your box, you can insert it with CTRL+V in any intercom setting field.

Having been read, the card ID is compared with the intercom card database. If the card ID matches any of the cards in the database, the appropriate action will be executed: switch activation (door unlocking, etc.). To change the switch number to be activated, use the **Associated Switch** parameter in the **Hardware / Modules** menu of the card reader module (**2N® LTE Verso** model).

Use the **Hardware / Buttons** menu to assign the quick dial users. By default, button 1 is assigned to position 1 in the user list, button 2 to position 2 in the phone book, etc. You can change the user and button settings as necessary. Most of the **2N LTE intercoms** are equipped with one or more quick dial buttons. Refer to the Installation Manual of your intercom model for the quick dial button count and extending options.

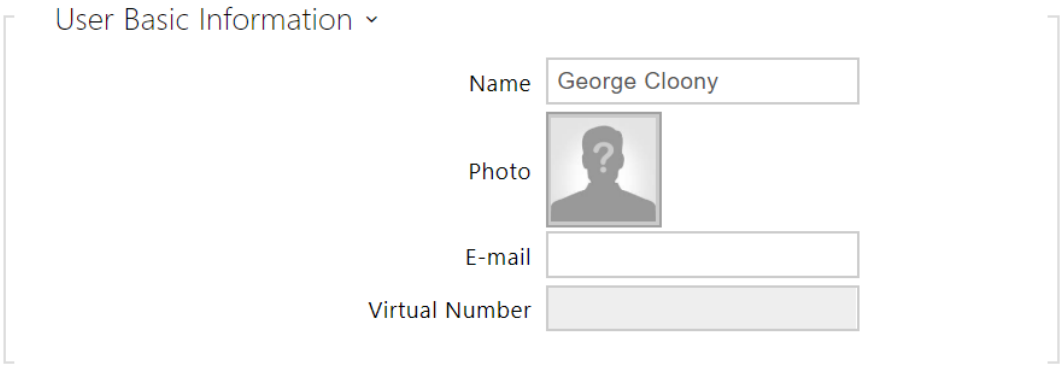
Warning

- You are not advised to edit the device directory that is managed by **2N® Access Commander** via the device web interface. Due to synchronization with **2N® Access Commander** the directory changes made via the web interface will be lost.



The Search in directory function works as a fulltext search in user names, phone numbers and e-mail addresses. It searches for all matches in the list. Click to create a new user and to show the user details. Click to set the table column display; the default table setting displays the user name, e-mail and assigned accesses. Press to remove a user and delete its details. The icons in the access column describe the active user authentications. The user's position in the list is sorted alphabetically.

Every record in the Users list includes the following parameters:



- **Name** – mandatory parameter for easier user search, for example.
- **Photo** – load the user photo. Click the photo adding frame to display the Photo editor to load a photo from a file or create a user photo using an integrated camera. The supported photo formats are .jpg, .png and .bmp. This function is only available in display-equipped models: **2N® LTE Verso** .

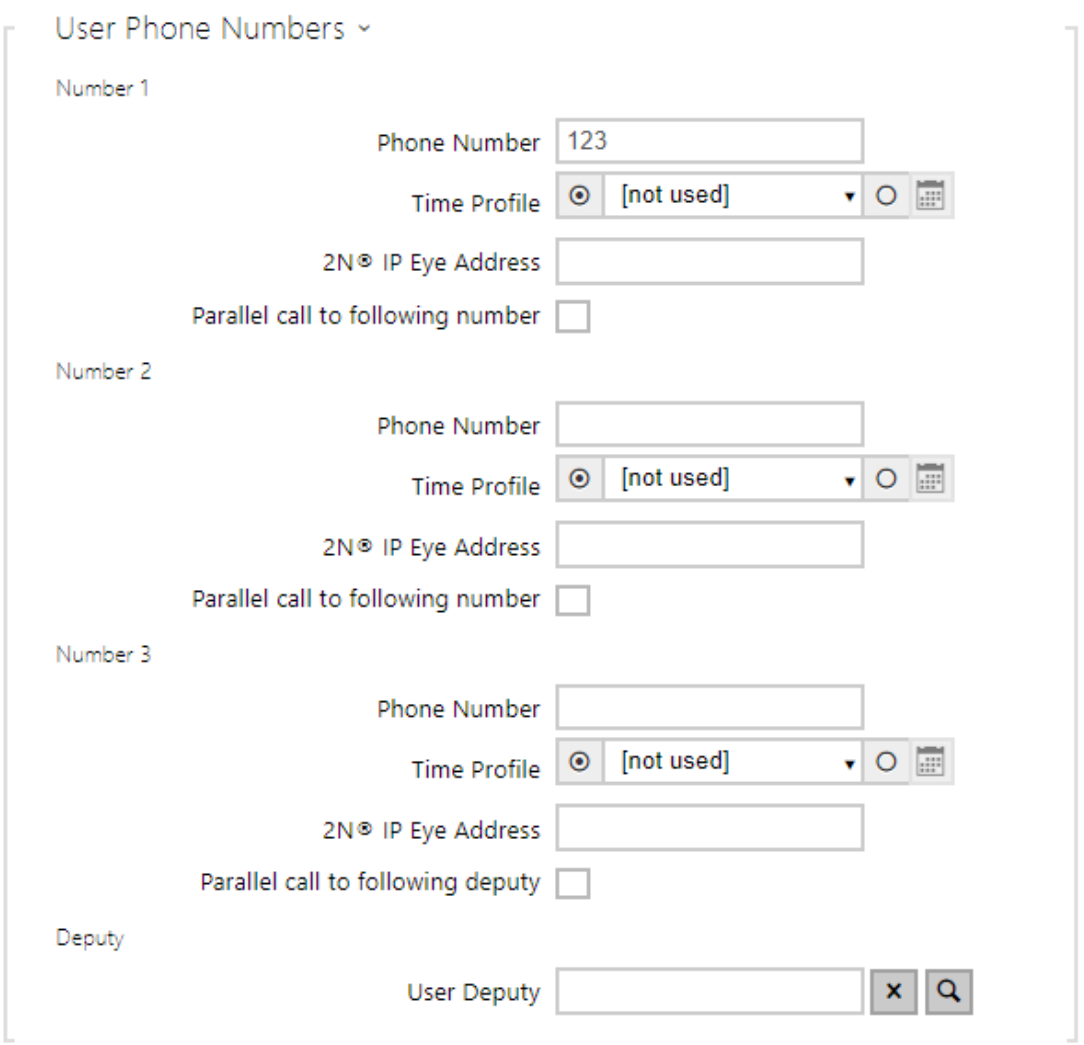
- **E-mail** – user e-mail address for sending missed call information. You can enter more e-mail addresses separated with commas.
- **Virtual number** – number to be used for user calling via a numeric keypad. The number can have 2 to 4 digits. Virtual numbers are not associated with user telephone numbers. They are included in an independent numbering plan allowing you to withhold user telephone numbers, especially in installations where the quick dial button count is insufficient. The visitor enters a virtual

number via the numerical keypad and presses the * key. You are recommended to place a clear user/virtual number list nearby including simple instructions for use to facilitate this type of user calls. Enable this function in the **Dial by Numeric Keypad** in the **Hardware / Keypad** menu. The number may include 1–7 digits.

- **Position within a Phonebook** – the root directory is only created by default to which users from the directory can be added directly. The root directory cannot be deleted or renamed. One user can be assigned to up to 5 root directory subgroups.
- **Call group** – enter a user group name to be displayed in the directory. By dialling the group you make calls to all of its users at the same time. When one call is answered, the other calls will be terminated automatically.

Caution

- The <, > and / characters are not allowed for the Name, Position within a Phonebook and Call group parameters.



You can assign up to three user phone numbers to each user position. In case the user is inaccessible on one number, the following number will be dialled after a ringing timeout. Enable the **Parallel call to following number** to enable dialling multiple numbers simultaneously. The phone number validity can also be time profile-limited.

- **Phone number** – enter the phone number of the station to which the call shall be routed. Enter the address sip:[user_id@]domain[:port] for Direct SIP calling, e.g.: sip:200@192.168.22.15 or **sip:name@yourcompany** . Enter device:device_name for calls to the **2N® IP Mobile** application. Set the device name in the mobile application. For calls to Crestron enter RAVA:device_name. Enter **/1** or **/2** behind the phone number to specify which SIP account shall be used for outgoing calls (account 1 or 2). Enter **/S** or **/N** to force an encrypted or unencrypted call respectively. Enter **/B** to activate door opening via Callback. Combine account selection, encryption and Callback door opening by e.g. /1S, /1B. etc. The parameter can contain up to 255 characters.

- **Time profile** – assign a time profile to each phone number to define the number validity. If the profile in inactive, the phone number is not used and the following phone number is dialled if defined.
- **IP Eye address** – set the address of the PC to be sent a special UDP message on each active user phone number call. With the aid of this message, the **2N® IP Eye** application displays the camera image screen for those users who are not provided with a display-equipped videophone. Enter the address as follows: domain[:**port1**][:**port2**], e.g.: **computer.yourcompany.com** or 192.168.22.111. The **port1** and **port2** parameters are optional and are used in case there is Network Address Translation (NAT) between the PC and intercom and the addresses have to comply with the router or another NAT-executing device. The port1 (default value: 8003) parameter defines the destination port for the UDP messages sent to **2N® IP Eye**. The port2 (default value: 80) parameter defines the destination port for the **2N® IP Eye** – intercom HTTP communication.

Note

*The 'IP Eye Address' function is available in selected **2N LTE intercom** models only (refer to the model and licence overview).*

*When Enhanced Integration is not licensed on a device, it is possible to control the locks only when a call is in progress. If a call with user, who has **2N® IP Eye** address filled in, is in progress, no licence is needed to control the locks.*

Tip

FAQ: **2N® IP Eye – How to set**

Tip

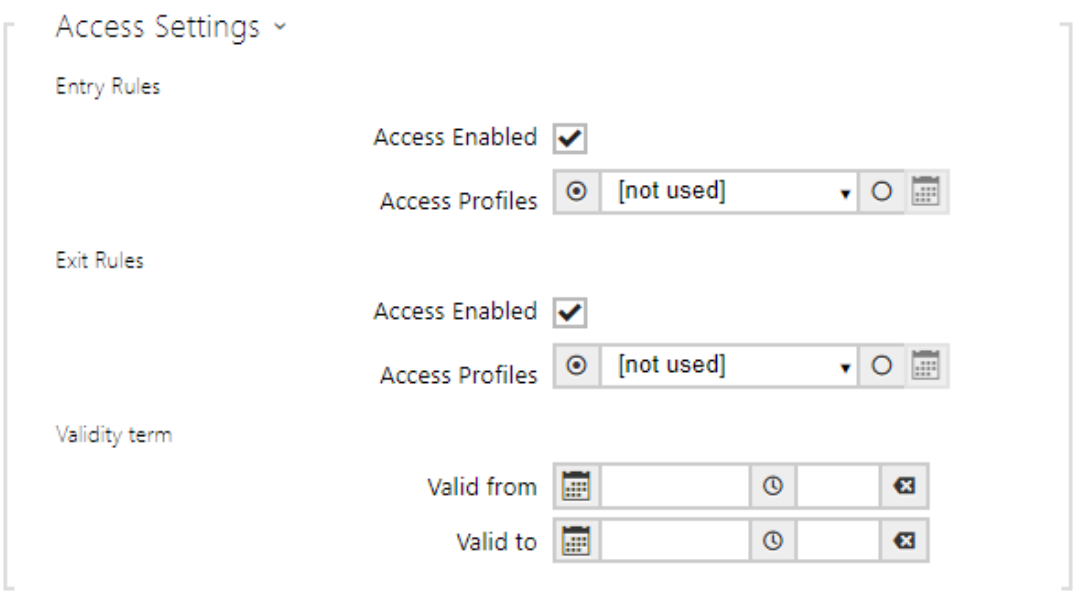
Video Tutorial: **SW application for IP/LTE intercoms – 2N® IP Eye**

- **Parallel call to following number** – enable group calling, i.e. calling to more phone numbers at the same time. You can call the first two numbers, the last two numbers, or all of the three user numbers in parallel. Answering one call automatically terminates the other calls.

- **Parallel call to following deputy** – enable group calling, i.e. calling to more phone numbers at the same time. You can call the firs two numbers, the last two numbers, ar all of three user numbers in parallel. Once one of the calls is answered, the other calls are automatically terminated.The maximum total count of numbers to be dialled in parallel is 16, which can occur when group calling and multiple numbers assigned to a speed dial button are used simultaneously.
- **User deputy** – select a user to which the user calls will be routed in the event of inaccessibility. Enter user position number or use search button. The maximum total count of numbers to be dialled in parallel is 16, which can occur when group calling and multiple numbers assigned to a speed dial button are used simultaneously.

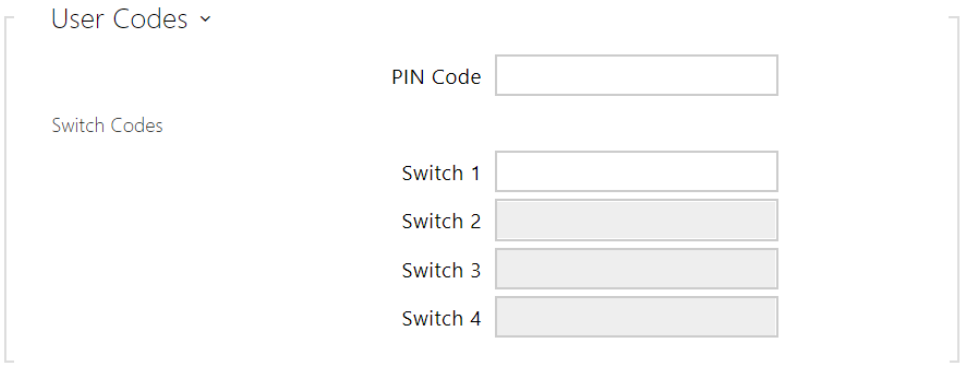
Note

- *The User Deputy function is available in selected **2N LTE intercom** models only (refer to the model and licence overview).*



- Entry Rules
  - **Access Enabled** – enable authentication via this access point.
  - **Access Profiles** – select one of the profiles pre-defined in Directory / Time profiles or set the time profile for this element manually.
- Exit Rules
  - **Access Enabled** – enable authentication via this access point.
  - **Access Profiles** – select one of the profiles pre-defined in Directory / Time profiles or set the time profile for this element manually.
- Validity term
  - **Valid from** – set the beginning of the mode validity term.

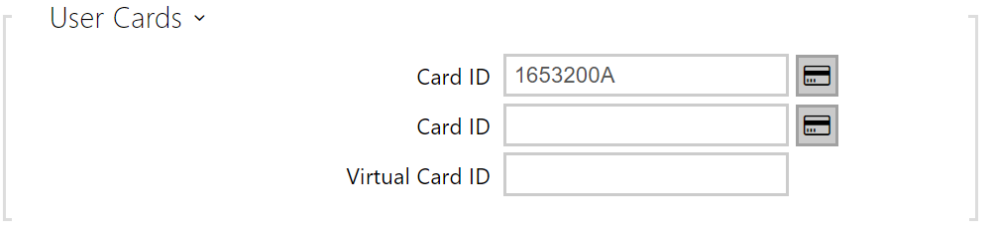
- **Valid to** – set the end of the mode validity term.



Each user can be assigned a private switch activation code. The user switch codes can be arbitrarily combined with the universal switch codes defined in the **Hardware | Switches** menu. If the codes are identical with the codes already defined in the intercom configuration, the

mark will appear at the colliding codes.

- **PIN Code** – set the user's Personal Identification Number. The code must include 2 characters at least.
- **Switch1–4** – set a private user switch activation code: up to 16 characters including digits 0–9 only. The code must include at least two door unlocking characters via the intercom keypad and at least one door unlocking character via DTMF.



Each of the intercom users can be assigned two access RFID card.

- **Card ID** – set the user access card ID: 6–32 characters including 0–9, A–F. Each user can be assigned up to two access cards. When a valid card is tapped on the reader, the switch associated with the card reader gets activated. If the double authentication mode is enabled, the switch can only be activated using both a card and numeric code.

- **Virtual card ID** – set the user virtual card ID for user identification in the devices that are integrated with the **2N IP intercoms** via a Wiegand interface. Each user can be assigned just one virtual card. The virtual card ID is a sequence of 6–32 characters: 0–9, A–F. After the user is validated via the Bluetooth/biometric reader, the identifier is sent to the device integrated with the **2N IP intercom** via Wiegand.

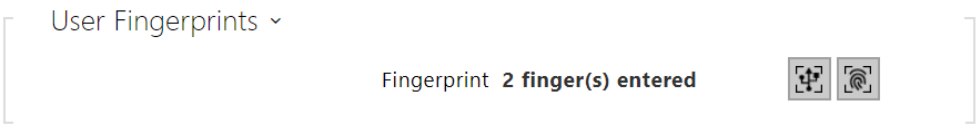
- **Auth ID** – set a unique mobile device/user identifier. The parameter value is automatically generated for pairing. You can move Auth ID to another user or copy it to another device in the same location.
  - pair via USB reader
  - pair via this device
  - delete Auth ID
- **Pairing state** – display the current pairing state (Inactive, Waiting for pairing, PIN validity expired or Paired).
- **Pairing valid until** – display the date and time of the generated authorisation PIN validity end.

Pairing via Bluetooth Module in Intercom

To pair a mobile phone with the user:

- Click at Auth ID to start pairing for the selected user account.
- A dialogue window with the PIN code is displayed.
- Find the appropriate reader in the **2N® Mobile Key** application and press Start pairing.
- Enter the code from item 2 into the input field.
- Pairing is completed.

Refer to **5.4.5 Mobile Key** for Mobile Key configuration details.



- **User Fingerprints** – display the set count of fingerprints; up to 2 different fingerprints can be set. This section is displayed only if the biometric reader module is available.
  - enrol via USB reader
  - enrol via Fingerprint scanner module 3

Caution

- The fingerprint loading capacity is up to 2000 per device.

Refer to Subs. **5.2.1.1 User Fingerprint Setting Instructions** for user fingerprint loading details.

2N LTE intercom helps you use the recognized license plates sent in the HTTP request by the AXIS cameras equipped with additional VaxALPR to api/lpr/licenseplate (refer to the **HTTP API manual for 2N IP intercoms**).

The function can be disabled or enabled whenever the license plate is recognized for a user who has currently valid access rights (parameters: ***Entry rules***, ***Exit rules***, ***Validity term*** in Subs. **5.3.2 Door**).

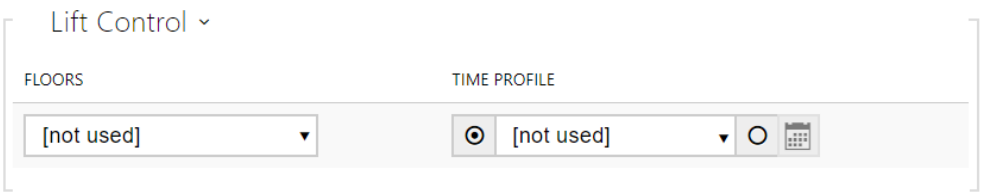
Door (gate etc.) opening after a valid license plate is detected **works independently** of the other Authentication ways set in the Access profiles.

In case the function is on, the event is recorded into the LicensePlateRecognized history when a valid HTTP request has been received.

If an image is sent within the HTTP request (photo part or whole photo of the license plate detecting scene), it is saved. The last five photos are stored in the device memory and can be retrieved via an HTTP request sent to api/lpr/image available in **2N® Access Commander**.

The door is unlocked if the entry in the directory with the recognized license plate has currently the entry/exit right. Therefore, it is advisable that each license plate should be assigned to just one entry in the directory. Multiple license plate assignments may result in the inability to assign a license plate to an entry in the directory unambiguously (the first entry assigned the specified license plate is selected and given the access rights).

- **License Plates** – set the car license plates for the selected record in the directory. A record can be assigned multiple license plates separated with commas (up to 20). The set license plates are used for recognizing license plates from external camera images (refer to the Interoperability manual for details). One license plate may include up to 10 characters. The set string length is limited to 255 characters.



- **Floors** – select the floors available to the user.
- **Time Profile** – select one or more time profiles to be applied. Set the time profiles in the Directory / Time Profiles section.
  - 

    mark the selection from predefined profiles or manual setting of a time profile for the given element.
  - 

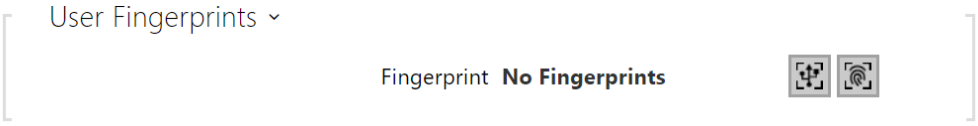
    

    set a time profile for the given element.

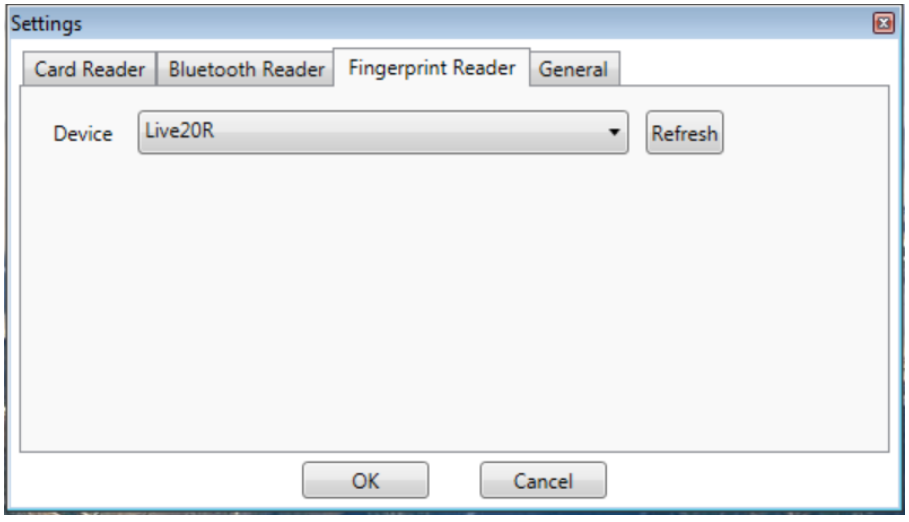
5.2.1.1 User Fingerprint Setting Instructions

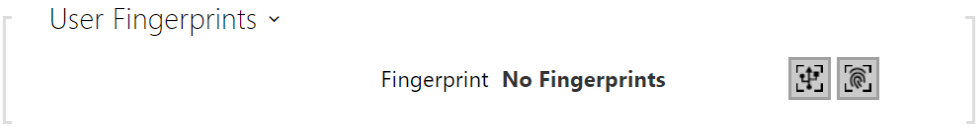
To load fingerprints, use the **2N® LTE Verso** (Part No. 9155045) fingerprint reader or an external USB fingerprint scanner (Part No. 9137423E) as follows:

1a) To load fingerprints via the **2N® LTE Verso** reader, use the web interface at the selected user and click  Load via fingerprint reader module in Directory / Users/ User fingerprints.

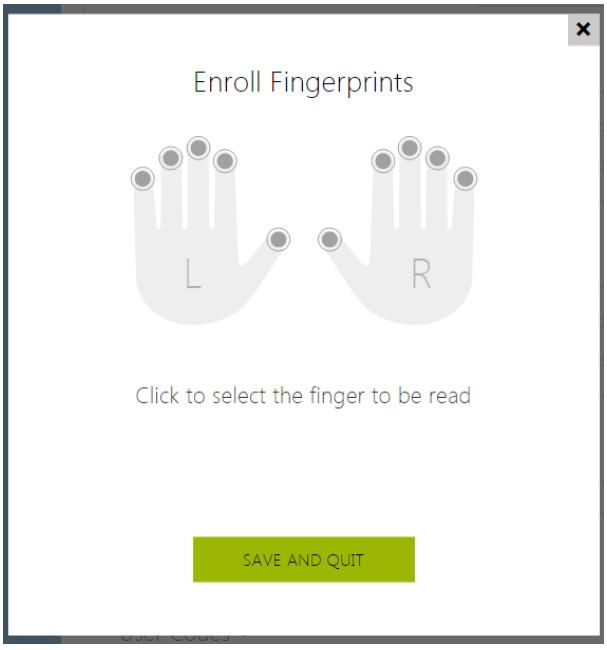


1b) To load fingerprints via an external USB fingerprint scanner, use the **2N® IP USB Driver** and select Fingerprint reader in the Settings and press OK for confirmation. Click  Load via fingerprint reader module in Directory / Users/ User fingerprints via the web interface at the selected user.



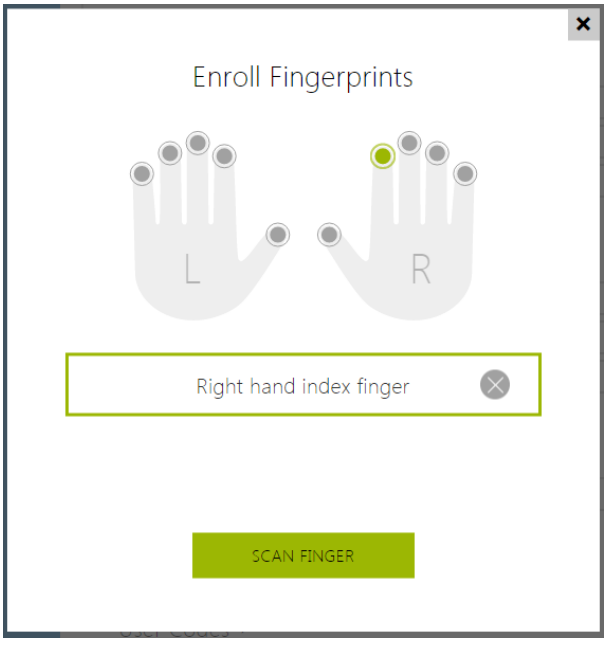


2) Click to select a finger for fingerprint loading.

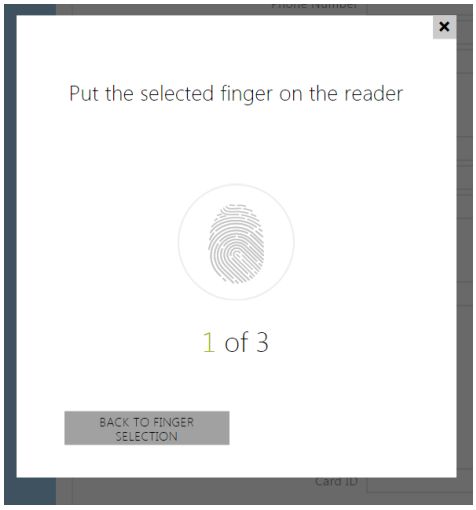


Up to two fingerprints may be saved for each user.

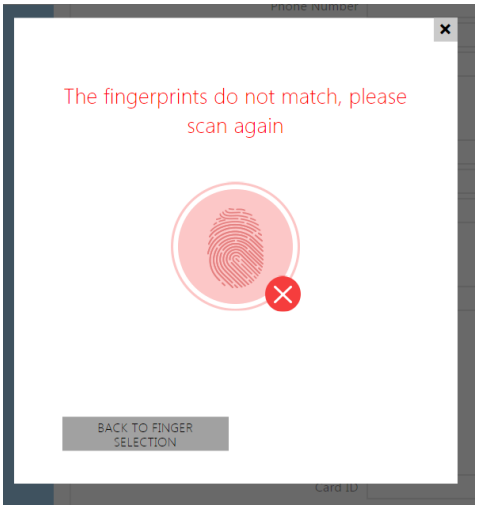
3) Click SCAN FINGER to load a fingerprint.



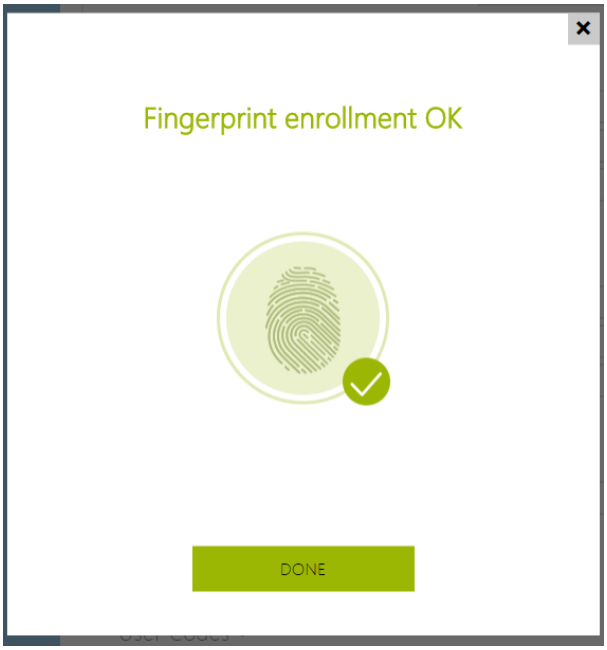
4) Place the selected finger on an external USB reader. This process is repeated three times for greater precision.



Repeat the process if any inconsistency occurs during fingerprint reading.



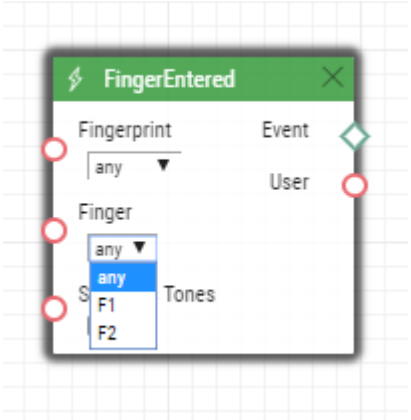
5) If fingerprint scanning is successful, click DONE to confirm the settings.



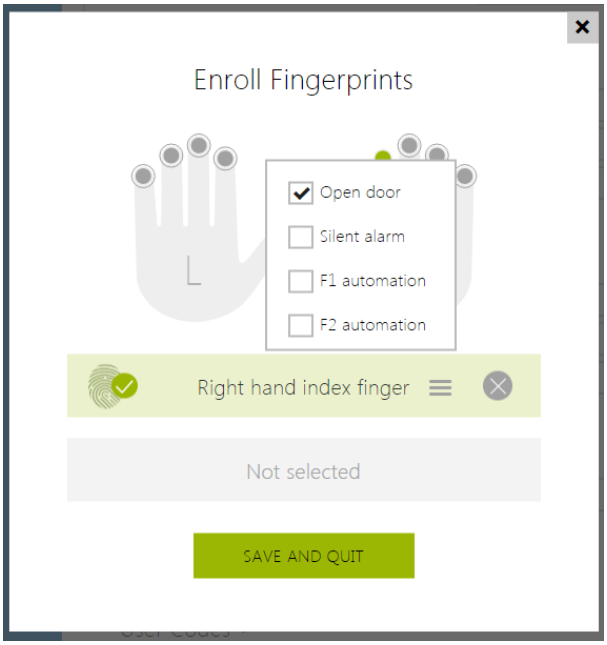
To set the finger function, click the

icon to display the list of available functions:

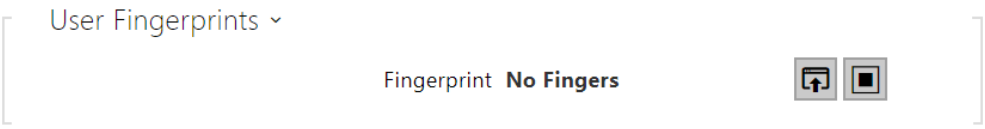
- Door opening
- Silent alarm; configurable only if Door opening is active
- Automation F1 – generate the FingerEntered event in Automation. F1 helps distinguish the applied finger in Automation.
- Automation F2 – generate the FingerEntered event in Automation. F2 helps distinguish the applied finger in Automation.



Click SAVE AND QUIT to confirm the fingerprint enrolment and selected functions.



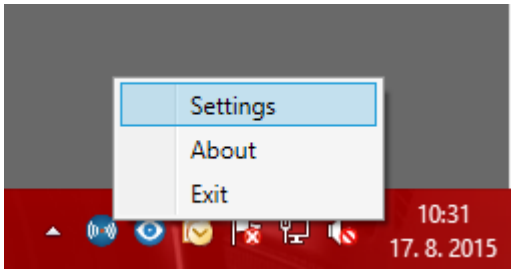
6) You can check the current settings in the User tab.



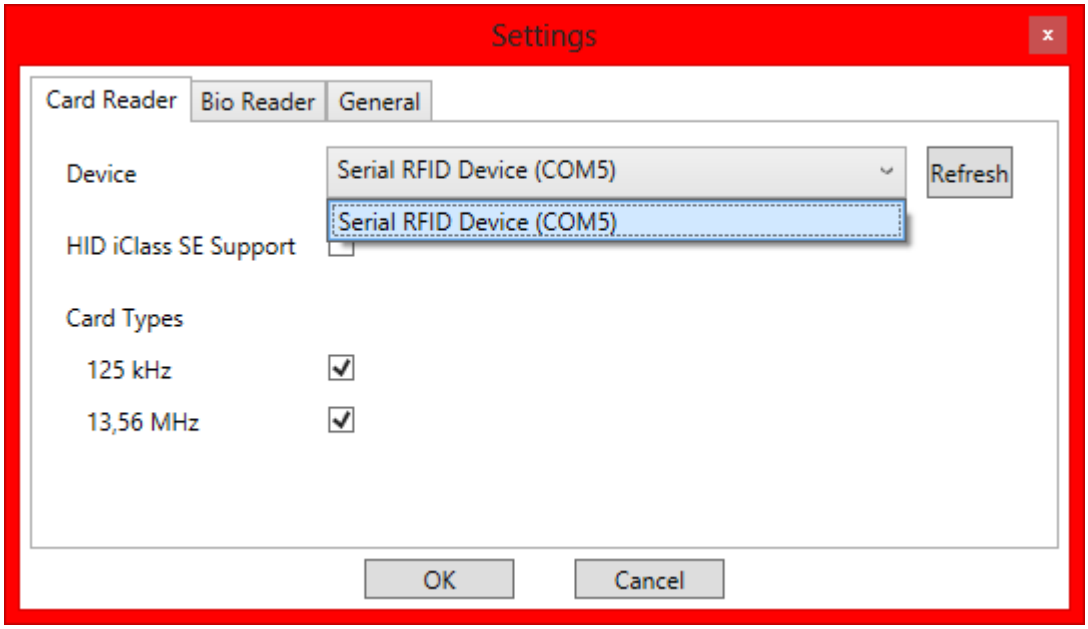
5.2.1.2 USB RFID Card Reader

It is possible to read the card ID via an RFID card reader. Proceed as follows:

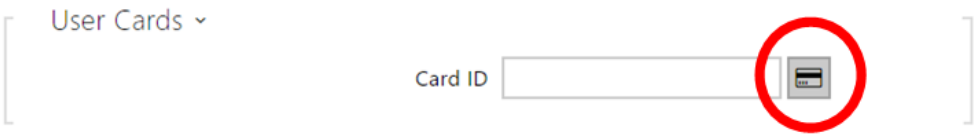
- Go to the **2N USB Driver** settings.



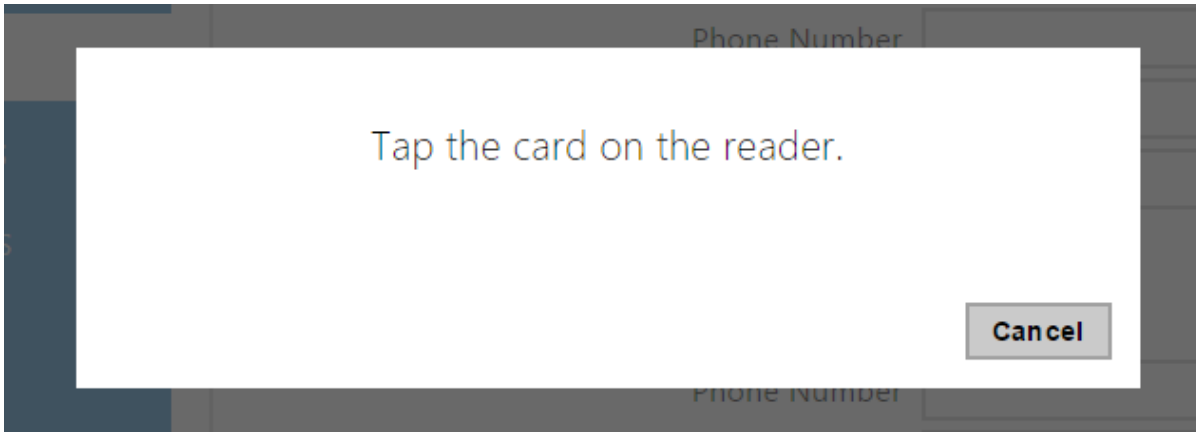
- Set up the COM port for the connected reader.



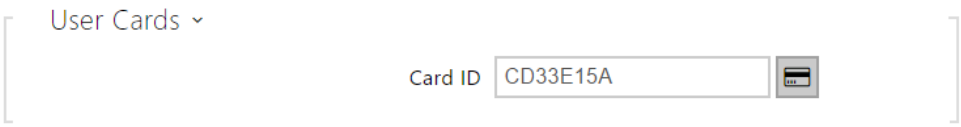
- Press the Read button via the **2N LTE intercom** web interface.



- Tap the card on the card reader.

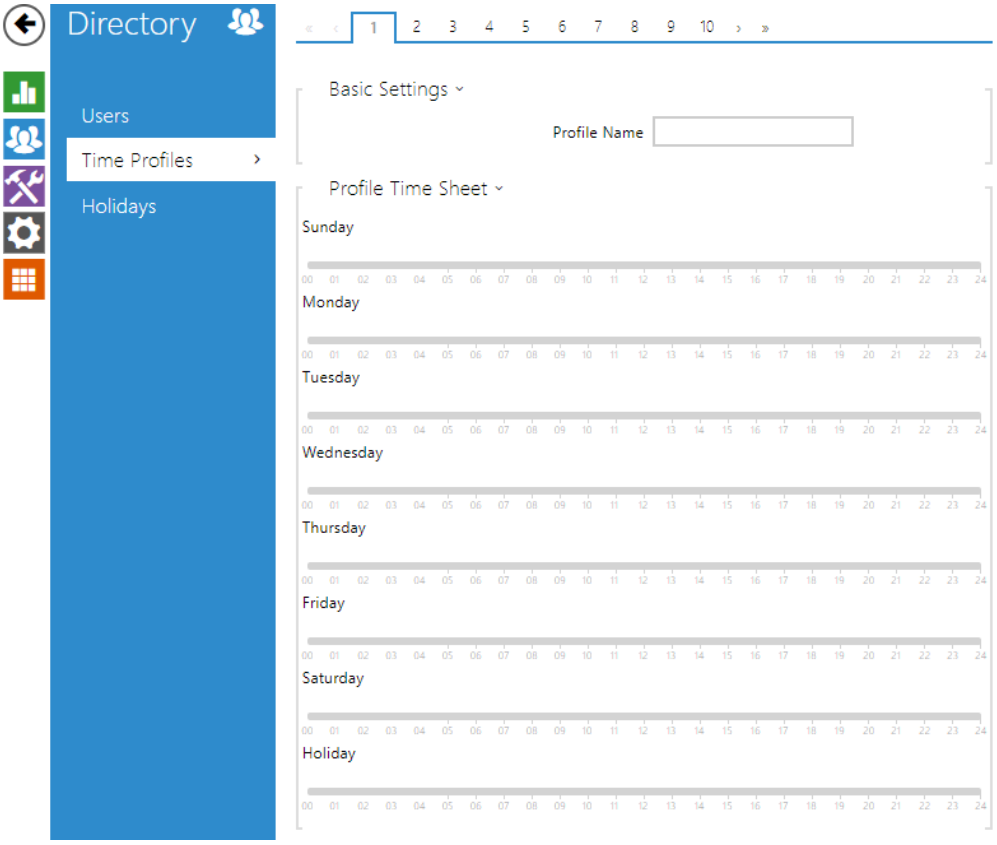

Phone Number
Tap the card on the reader.
Cancel
Phone Number

- The card ID is successfully read.



- Do not forget to save the configuration.

5.2.2 Time Profiles



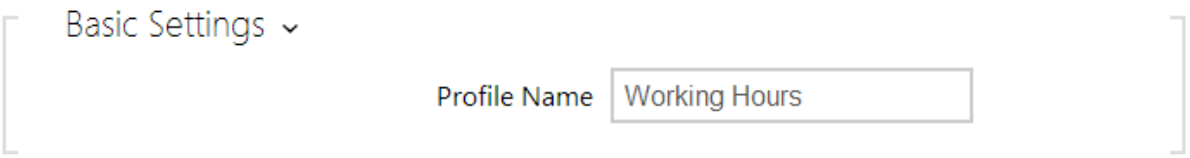
Such intercom functions as outgoing calls and RFID card/numeric code access, for example, can be time-limited by being assigned a **time profile**. By assigning a time profile you can:

- block all calls to a selected user beyond the set time interval
- block calls to selected phone numbers beyond the set time interval
- block RFID access for a user beyond the set time interval
- block numeric code access for a user beyond the set time interval
- block switch activation beyond the set time interval

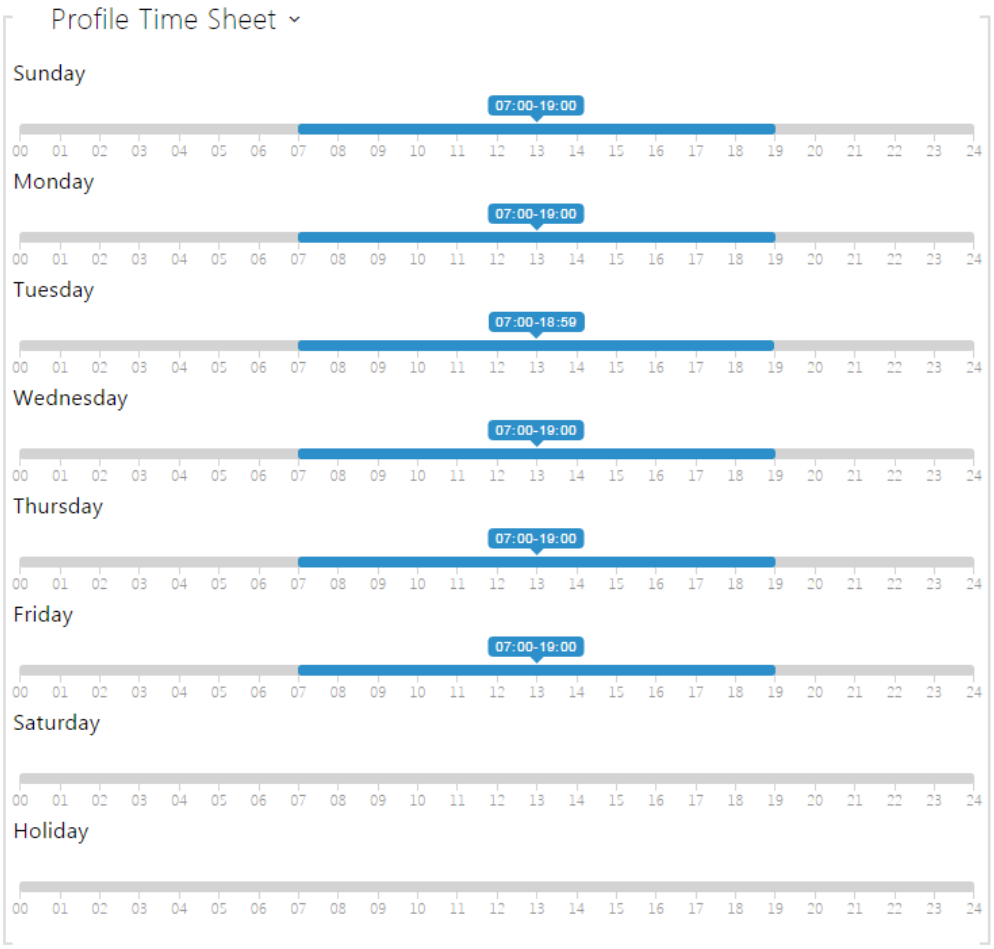
Assign a time profile according to a week time sheet to define availability of the selected function. Just set from-to or days in the week on which the function shall be available. **2N LTE intercom** helps you create up to 20 time profiles (depending on the **2N LTE** model) that can be assigned to the function; refer to the Users, Access Cards and Switches settings.

The time profiles are defined not only using the week time sheet but also manually with the aid of special activation/deactivation codes that you can assign to them after arriving in/before leaving your office, for example. Enter the activation/deactivation codes using the numeric keypad of your intercom or phone (during the intercom call). Refer to the **Directory** / **Time Profiles** menu for the time profile settings.

List of Parameters



- **Profile name** – enter a profile name. This parameter is optional and helps you find items in the time profile list and select profiles in the switch, card and phone number settings more easily.



This parameter helps you set time profiles within a week period. A profile is active when it matches the set intervals.

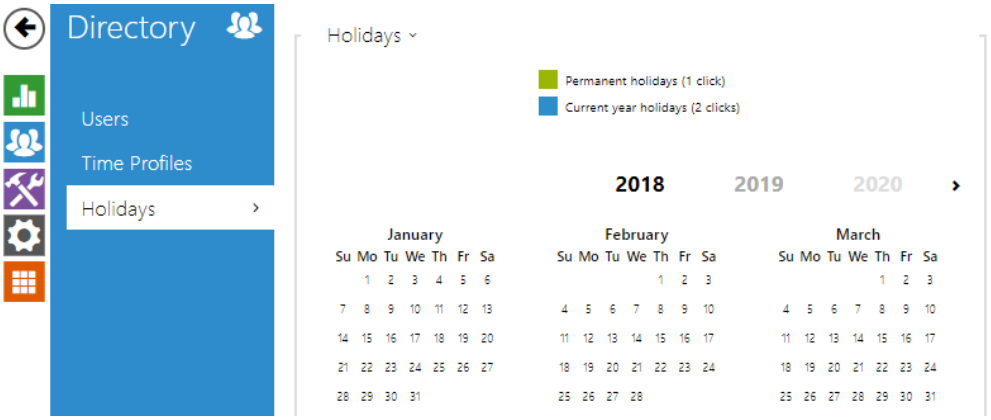
If a day is marked as holiday (refer to **Directory** ▸ **Holidays**), the last table row (Holiday) is applied regardless of the day in a week.

Make sure that the real time settings are correct (refer to the Date and Time subsection) to make this function work properly.

Note

- *You can set any number of intervals within a day: 8:00–12:00, 13:00–17:00, 18:00–20:00, e.g.*
- *To make a profile active for the whole day, enter one day-covering interval: 00:00–24:00.*

5.2.3 Holidays



Here select the bank holidays (including Sundays). You can assign them different time intervals than to working days in their time profiles.

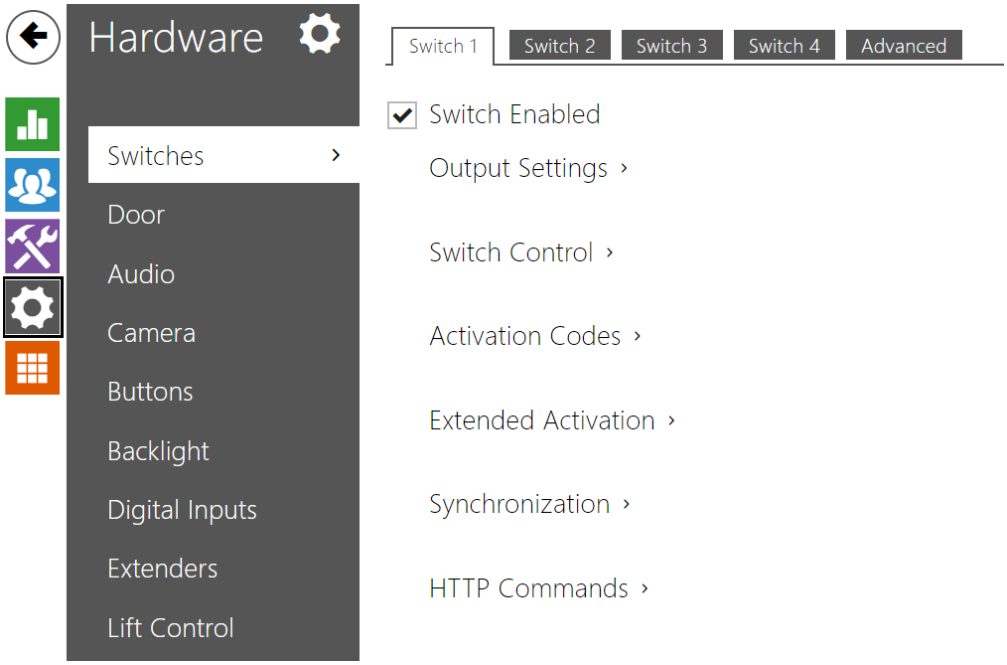
You can set holidays for the coming 10 years (click the year number at the top of the screen to select a year). A calendar is displayed for you to select/unselect a holiday. Fixed (annual) holidays are marked green and variable holidays (valid for the particular year only) are blue. Click a date once to select a fixed holiday, click twice to select a variable holiday and click for the third time to remove the holiday from the holiday list.

5.3 Hardware

Here is what you can find in this section:

- 5.3.1 Switches
- 5.3.2 Door
- 5.3.3 Audio
- 5.3.4 Camera
- 5.3.5 Buttons
- 5.3.6 Backlight
- 5.3.7 Display
- 5.3.8 Digital Inputs
- 5.3.9 Extenders

5.3.1 Switches



Switches provide a very flexible and efficient control of such intercom peripherals as electric door locks, lighting, additional ringing signalling, and so on. 2N LTE intercoms allows you to configure up to 4 (depending on model types) independent all-purpose switches.

A switch can be activated:

- by entering the valid code via the intercom numeric keypad or receiving a DTMF sequence during a call,
- by tapping a valid RFID card on the reader,
- with a predefined delay after another switch activation,
- by an incoming or outgoing call *),
- by pressing a quick dial button *),
- by a time profile *),
- by receiving the HTTP command from another LAN device *),
- via Automation using the Action.ActivateSwitch action *).

Switch activation can be blocked by an appropriately selected time profile if necessary.

Caution

- The options marked with *) require their respective active licences.

Switch locking and hold

The switch activation conditions are modified using two functions: switch locking and switch hold. If a switch is locked, it is permanently deactivated and cannot be operated until unlocked (locked has a higher priority than held – in case the switch is locked and held simultaneously, locking is applied). If held, the switch is in the activated state and cannot be operated until released. Switch locking and holding can be controlled by time profiles among others. It is not recommended that a time profile be used for the locking function (the time-profile based lock control is present in the device for legacy switch compatibility reasons) because this case results in switch unlocking at the end of the time profile despite manual switch locking.

The current combination of these two functions is shown by the **Current switch function** parameter (Normal – lock and hold are off; Held – lock is off and hold is on; Locked – lock is on regardless of the hold setting). Check after restart whether or not the lock/hold is controlled by a time profile. If so, the given function is activated/deactivated according to the time profile setting. If not, the last locking state before the device power off is set, or hold is set to inactive (the switch is not held).

If a switch is active, you can:

- activate any logical output of the intercom (relay, power output).
- activate the output to which the **2N® IP/LTE Intercom – Security Relay** module is connected.
- send an HTTP command to another device.

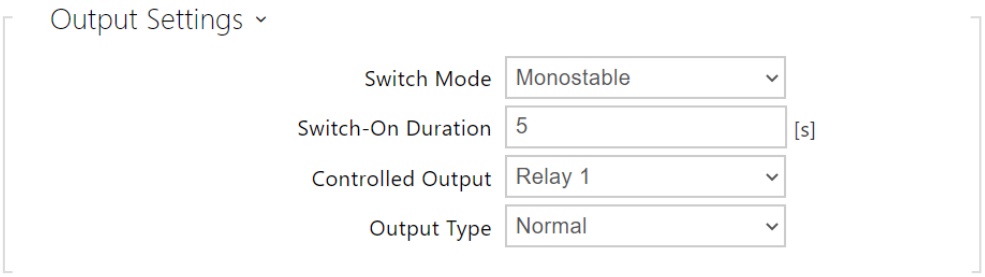
The switch can work in the monostable or bistable mode. The switch is switched off after a timeout in the monostable mode, and switched on with the first activation and off with the next activation in the bistable mode.

The switch signals its state:

- by a programmable beep or a predefined user sound.
- by a LED indicator if available in the intercom model.
- by an open-door icon on the display if available in the intercom model.

Switch 1–4

- **Switch enabled** – enable/disable the switch globally. When disabled, the switch cannot be activated by any of the available codes (including user switch codes), by a call or quick dial button.



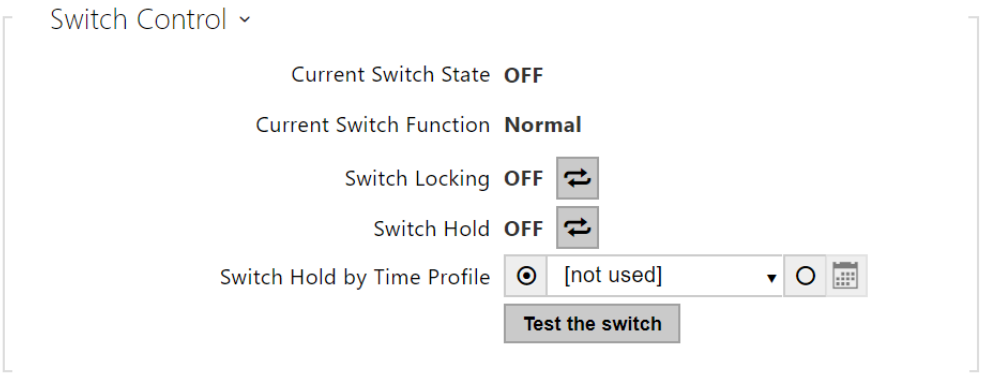
- **Switch mode** – set the monostable/bistable mode for the switch. The switch is switched off after a timeout in the monostable mode and switched on with the first activation and off with the next activation in the bistable mode.
- **Switch-on duration** – set the switch-on time for a monostable switch. This value is not applied in the bistable mode.
- **Controlled output** – assign an electric output to the switch. Choose one of the available intercom outputs: relay, power output, extender output. If you select **None**, the switch will not control any electric output but can control external equipment via HTTP commands.
- **Output type** – if you use the **2N® IP/LTE Intercom – Security Relay** module, set the output type to **Security**. In the **Security** mode, the output works in the inverse mode, i.e. remains closed and controls the **2N® IP/LTE Intercom – Security Relay** module using a specific pulse sequence. If you use the inverse mode (i.e. the door is locked when voltage is applied), set the **inverse** output type. In case multiple switches are set to the same output but different output types, the following priority will be applied: 1. security, 2. inverse, 3. normal.

Info

- *A switch activation value higher than 1 s can be set for the **security** output type. A value equal to or higher than 0.1 s can be set for the **normal** and **inverse** output types.*

Security

- The 12V output is used for lock connection. If, however, the unit (2N IP Intercom, 2N Access Unit) is installed where unauthorized tampering may happen, we strongly recommend that the 2N® Security Relay (Part No. 9159010) be used for enhanced installation security.

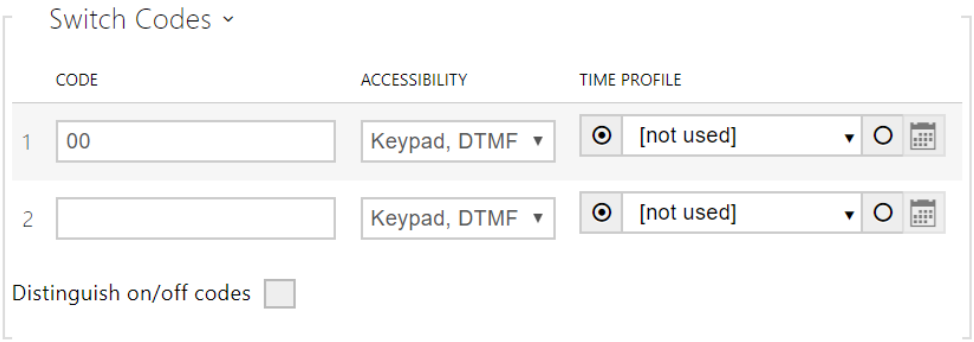


- Current Switch State – display the current switch state (On/Off).
- Current Switch Function – Display the current switch function.
  - Normal: the switch is not locked or held.
  - Held: the switch is held and unlocked.
  - Locked: the switch is locked (locking has priority over holding, the holding state is irrelevant in this case).
- Switch Locking – on: the switch is permanently in position 0 and cannot be controlled until unlocked.Off: the switch is unlocked.
- Switch Hold – on: the switch is permanently in position 1 and cannot be controlled until released (if the switch hold and lock are active at the same time, the switch is locked).Off: the switch not held in position 1.
- Switch Hold by Time Profile – assign a predefined time profile to the switch or set a time profile manually that allows for switch activation. If the assigned time profile is not active, the switch cannot be activated by a code, call or quick dial button.

- **Test the switch** – activate the switch manually to test its function, e.g. an electric lock or another device connected.

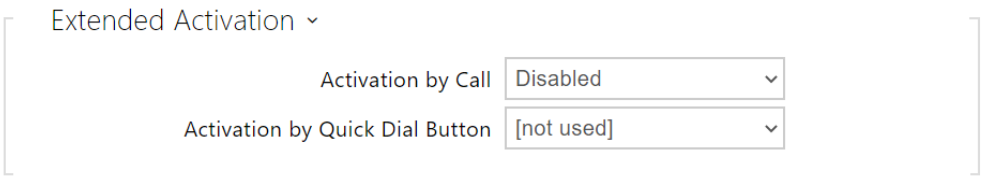
Caution

- In case the switch is locked and the device is turned off and on, the switch will be locked after the device is turned on again. The same is true when the switch is disabled and enabled again.
- In case the switch is held and the device is turned off and on, the switch will not be held after the device is turned on again. The switch is held after power on only if a switch hold time profile is set and active at the moment of the power on. The same is true when the switch is disabled and enabled again.



The table above includes a list of universal codes that help you activate switches from the phone or intercom keypad. Up to 10 universal codes can be defined for each switch (depending on the particular intercom model).

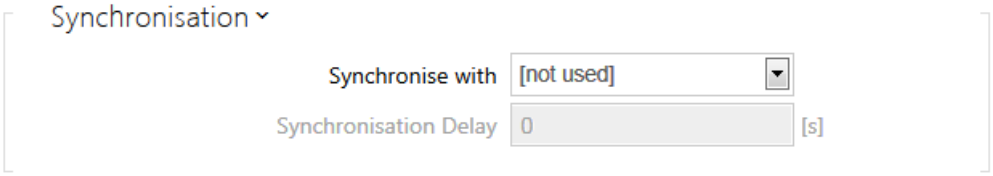
- **Code** – enter the numerical code for the switch. The code must include at least two door unlocking characters via the intercom keypad and at least one door unlocking character via DTMF. We recommend you to use four characters at least. Codes 00 and 11 cannot be entered and are not accepted from a numeric keypad; they are reserved for opening doors via DTMF. Confirm the code with *. The code length is up to 16 characters.
- **Accessibility** – block the switch activation code entering from the intercom numeric keypad or your phone.
- **Time profile** – assign a time profile to the switch code for validity control.
- **Distinguish on/off codes** – set a switch code mode in which odd codes (1, 3 ....) are used for switch activation and even codes (2, 4 ...) are for switch deactivation. This mode can only be used if the switch is set to the bistable mode.



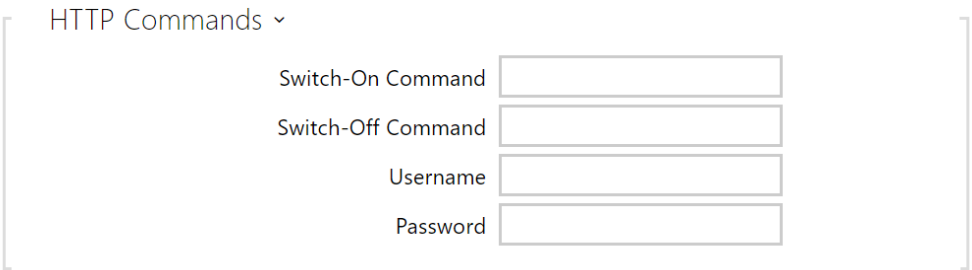
- **Activation by call** – enable switch activation by an incoming or outgoing call, for example. During an outgoing call the switch is activated after SIP message 180 Ringing is received. The called party confirms ringing by this message. The switch is active during the whole call in the bistable mode, and activated by the call beginning and deactivated after the predefined switch-on duration in the monostable mode.
- **Activation by quick dial button** – assign a quick dial button to the switch. The switch is activated whenever the button is pressed.

Note

- *Activation by a quick dial button is available with the Gold or Enhanced Integration licence only.*



- **Synchronise with** – set switch synchronisation to enable automatic switch activation after another switch activation with a predefined delay. Define the delay in the **Synchronisation delay** parameter.
- **Synchronisation delay** – set the time interval between synchronised activations of two switches. The parameter will not be applied if the **Synchronise** function is disabled.



- **Command sent upon activation** – set the command to be sent to the external device (WEB relay, e.g.) upon switch activation. The command is sent via the HTTP (GET request) and must be as follows: **http://ip_address/path**. E.g.: **http://192.168.1.50/relay1=on**.
- **Command sent upon deactivation** – set the command to be sent to the external device (WEB relay, e.g.) upon switch deactivation. The command is sent via the HTTP (GET request) and must be as follows: **http://ip_address/path**. E.g.: **http://192.168.1.50/relay1=off**
- **Username** – enter the username for the external device (WEB relay, e.g.) authentication. The parameter is obligatory only if the external device requires authentication.
- **Password** – enter the external device (WEB relay, e.g.) authentication password. The parameter is obligatory only if the external device requires authentication.

Note

- *The HTTP command sending is available with the Gold or Enhanced Integration licence only.*

Tip

The HTTP commands do not add URL encoding. If, e.g., you enter **http://10.27.24.6/message.cgi?action=9%3A%2F** , the following is sent: **http://10.27.24.6/message.cgi?action=9%3A%2F**.

To include URL encoding, enter, e.g.: **http://10.27.24.6/message.cgi?action=9%253A%252F** and the following is sent: **http://10.27.24.6/message.cgi?action=9%253A%252F**.

Tip

With an external relay, **Part No. 9137410E**, the following HTTP commands are used:

To turn on the switch – http://ip_address/state.xml?relayState=1 (e.g.: http://192.168.1.10/state.xml?relayState=1)

To turn on for pre-defined time (default value is 1.5 s) – http://ip_address/state.xml?relayState=2 (e.g.: http://192.168.1.10/state.xml?relayState=2)

To turn off -http://ip_address/state.xml?relayState=0 (e.g.: http://192.168.1.10/state.xml?relayState=0)

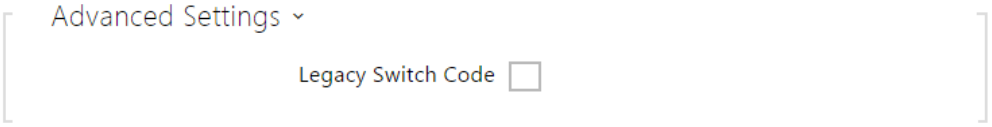
With an external relay, **Part No. 9137411E**, the following HTTP commands are used (replace the X symbol with the relay number):

To turn on the switch – http://ip_address/state.xml?relayXState=1 (e.g.: http://192.168.1.10/state.xml?relay1State=1)

To turn on for pre-defined time (default value is 1.5 s) – http://ip_address/state.xml?relayXState=2 (e.g.: http://192.168.1.10/state.xml?relay1State=2)

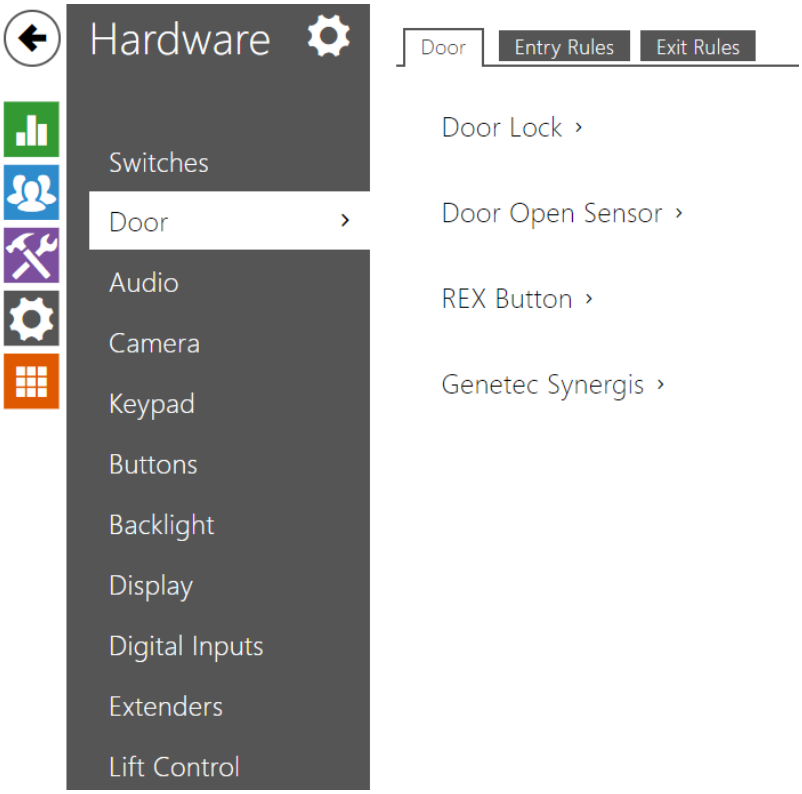
To turn off -http://ip_address/state.xml?relayXState=0 (e.g.: http://192.168.1.10/state.xml?relay1State=0)

Advanced

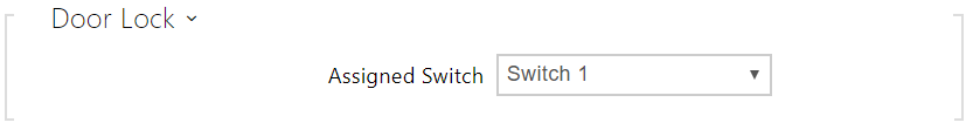


- **Legacy Switch Code** – enable the option to activate the **first-listed switch code** from the phone without being confirmed with *. When this box is checked, first code does not require confirmation by *. This setting does not apply to other switch codes listed and to numeric keypad code activation, those must be always confirmed by *. The Legacy switch code helps you keep back compatibility with earlier 2N intercom models.

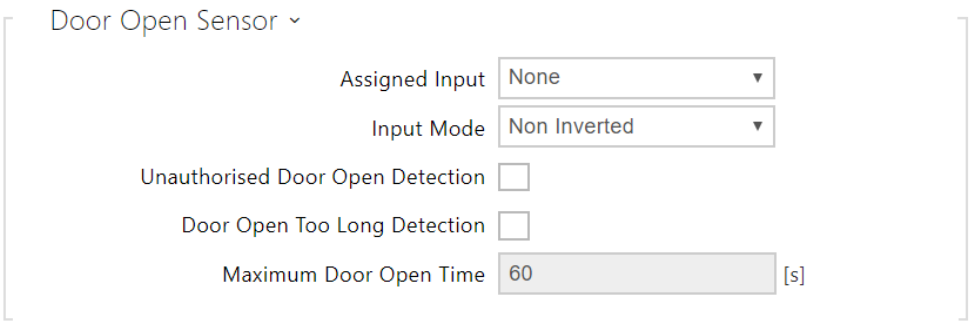
5.3.2 Door



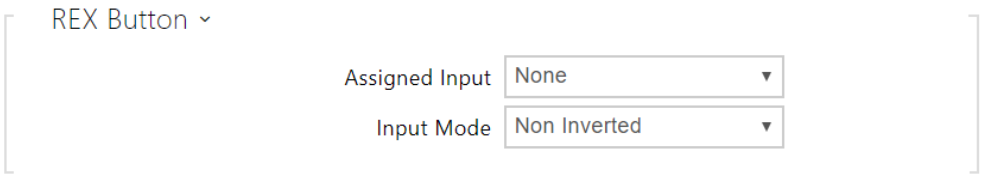
Door



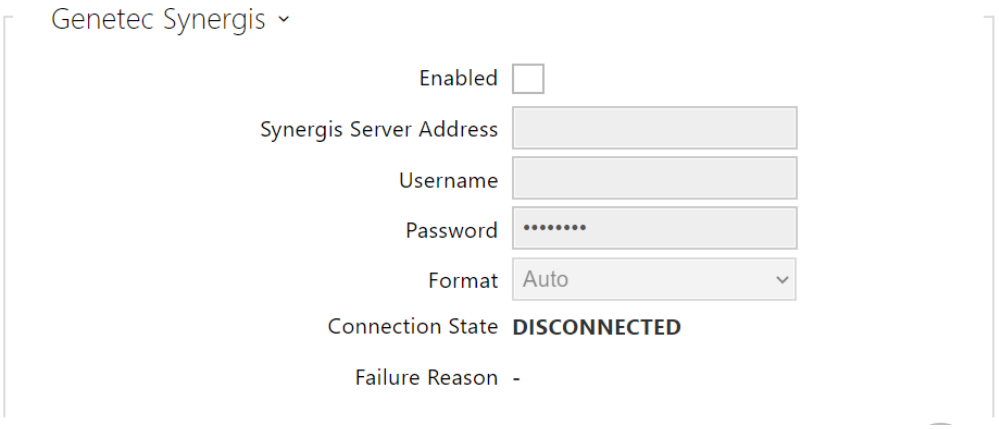
- **Assigned Switch** – Select a switch for electromagnetic door lock control. The switch state controls the door unlocking signalling (green door symbol, green LED).



- **Assigned Input** – Define one (or none) of the logical inputs for open door detection.
- **Unauthorised Door Open Detection** – Detect if the door was open when switch has been locked.
- **Door Open Too Long Detection** – Door open to long detection.
- **Maximum Door Open Time** – Maximal permitted duration of open door in seconds.

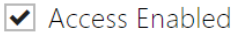


- **Assigned Input** – Select one (or none) of the logic inputs for the departure button function. Activation of the departure button input activates the selected switch. The activation time and mode are set by the selected sitch parameters.
- **Input mode** – Set the active input mode (polarity).

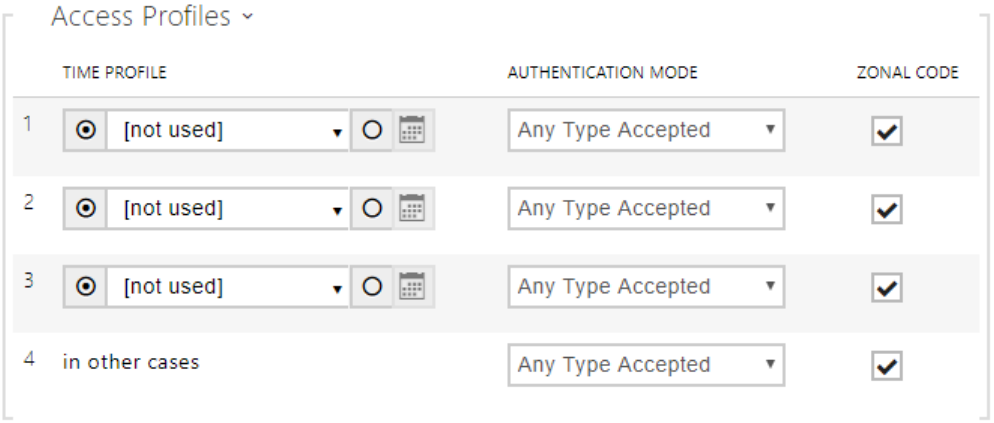


- **Enabled** – Enable connection with the Genetec Synergis external security system.
- **Synergis Server Address** - Synergis Server IP address or domain name.
- **Username** – Authentication user name.
- **Format** – set the card reading format for sending card IDs to Genetec Synergis.
- **Connection state** – display the current Synergis server connection state or error state description if necessary.
- **Failure reason** – display the failure reason of the last Synergis server connection attempt – the last error response, 404 Not Found, for example.

Entry Rules



- **Access Enabled** – Enable access in a direction (entry, exit). If access is disabled, the door cannot be opened from the selected side.

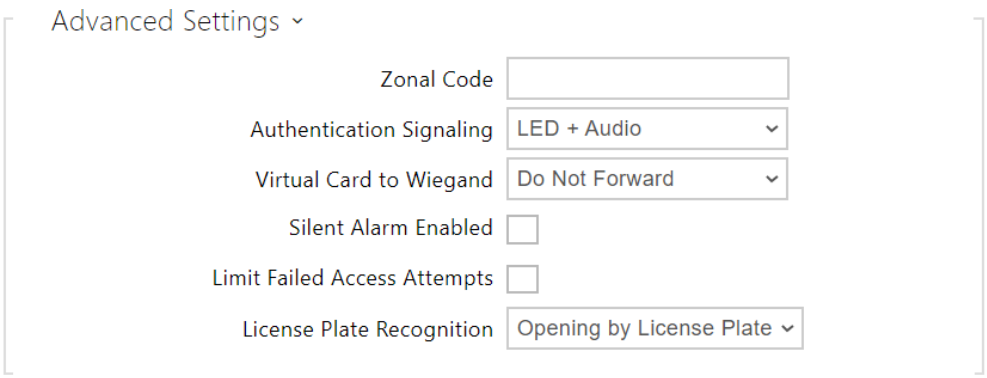


- **Time profile** – choose one or more time profiles to be applied. Set the time profiles in Directory / Time profiles.
  - 

    – select one of the pre-defined profiles or set the time profile for the given element manually.
- **Authentication Mode** – Set the authentication mode for the time profile in this row including multiple authentication for enhanced security. Select Access denied to ban access.
- **Zonal Code** – Enable the zonal code for time profile and authentication combintion in this row. You can use the zonal code instead of the user PIN.

Caution

- If the time profile is unset, the authentication mode is ignored on the given row.

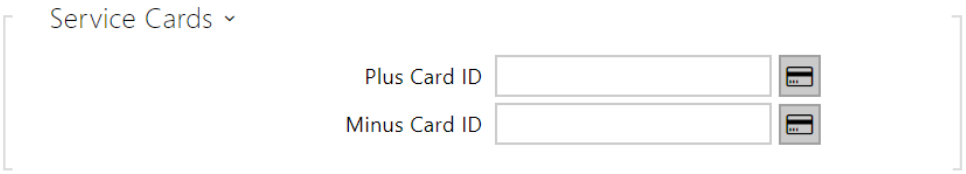


- **Zonal Code** – Enter the switch numeric zonal code consisting of two character at least. However, four characters at least are recommended.
- **Authentication Signalling** – choose the way of signalling a used card or another identifier. The options are Only LED (light signalling) or LED + Audio (light and acoustic signalling) whenever a card or another identifier has been applied (both invalid – denying beep, and valid – short beep). A distinct acoustic manifestation is only heard when an invalid card or another identifier has been used. In the case of a valid access, the acoustic signal of the switch is typically played making the short valid authentication beep almost inaudible. For switch sound settings refer to **5.4.8 User Sounds**.
- **Virtual Card to Wiegand**– Select a group of Wiegand outputs to which the Virtual user card No. shall be sent after successful authentication. Can be combined with any authentication method, including codes, fingerprints, etc.
- **Silent Alarm Enabled**– A virtual code higher by 1 than the access code is assigned to each access code and used for silent alarm activation. For example, if the access code is 0000, then the silent alarm activation code is 0001. It means, for instance, that silent alarm is 0000 for access code 9999 and so on. Set the silent alarm action in the Automation section.

Caution

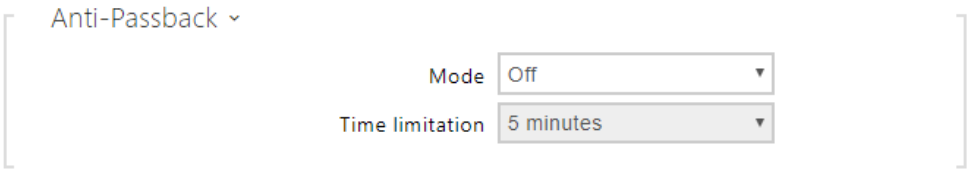
- In case the user authenticates itself and activates the silent alarm that is deactivated, the user access will be denied and the alarm will not be activated.

- **Limit Failed Access Attempts**– Enable the maximum count of unsuccessful authentication attempts. After five unsuccessful attempts (wrong numeric code, invalid card, etc.), the access module will be blocked for 30 seconds even if authentication is valid.
- **License Plate Recognition** – choose the scenario after the license plate is recognized. Refer to the manual for function details. Refer to Subs. **5.2.1 Users** for function details.



The plus/minus cards are used for user card administration. When a plus card is tapped on the card reader, any other tapped card is added to the Directory list as a new user with an access card assigned. The user !Visitor #card_ID is automatically created in the device. When a minus card is tapped on the card reader, any other tapped card and its user are deleted from the Directory list.

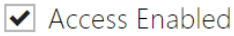
- **Plus Card ID** - Enter the service card ID for adding cards to the Installed cards: a sequence of 6 to 32 characters including 0-9, A-F.
- **Minus Card ID** - Enter the service card ID for removing cards from the Installed cards: a sequence of 6 to 32 characters including 0-9, A-F.



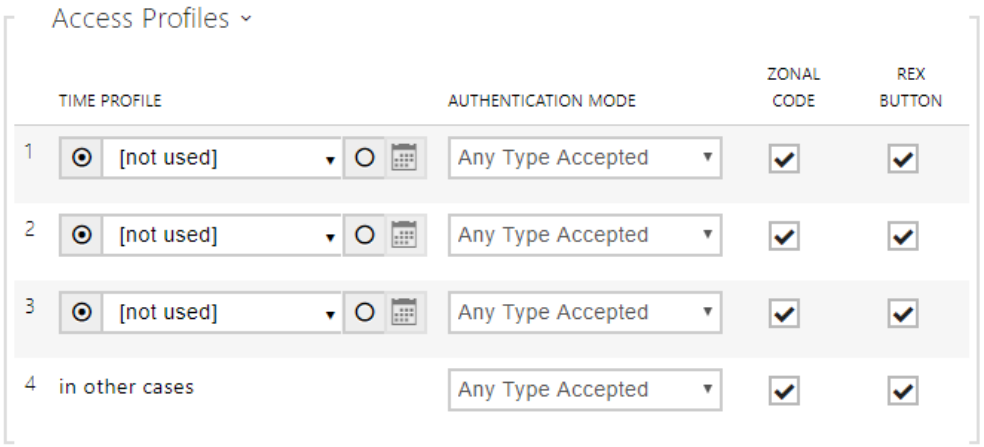
Anti-Passback is a security function preventing users to use their access cards or other identifiers to re-enter an area without leaving it before (i.e. preventing users from sharing cards).

- **Mode** – enable/disable the Anti-Passback mode:
- - **Off** – the function is Off by default allowing the user to use the access card or another identifier to re-enter an area without leaving it before.
  - **Soft** – the user is allowed to use the access card or another identifier to re-enter an area without leaving it before. A new **AccessTaken** record is made in Status / Events.
  - **Hard** – the user is not allowed to use the access card or another identifier to re-enter an area without leaving it before. A new **UserRejected** record is made in Status / Events.
- **Time limitation** – select an Anti-Passback timeout during which the user cannot re-enter an area using the given authentication method (card, code, etc.) in the same direction.

Exit Rules



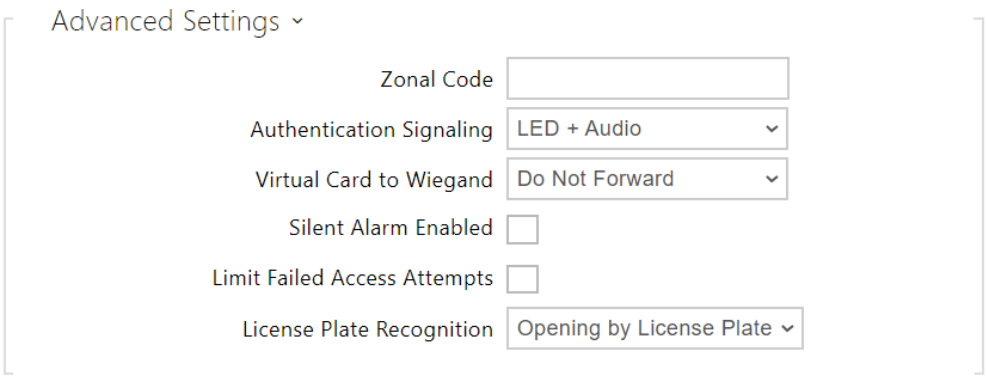
- Access Enabled – Enable access in a direction (entry, exit). If access is disabled, the door cannot be opened from the selected side.



- Time profile – choose one or more time profiles to be applied. Set the time profiles in Directory / Time profiles.
- Authentication Mode – Set the authentication mode for the time profile in this row including multiple authentication for enhanced security. Select Access denied to ban access.
- Zonal Code – Enable the zonal code for time profile and authentication combintion in this row. You can use the zonal code instead of the user PIN.
- REX Button – choose one or more time profiles to be applied. Set the time profiles in Directory / Time profiles.

Caution

- If the time profile is unset, the authentication mode is ignored on the given row.

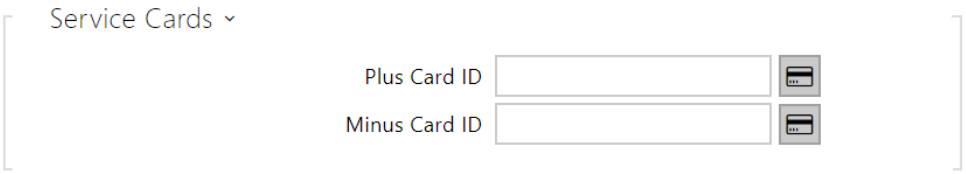


- **Zonal Code** – Enter the switch numeric zonal code consisting of two character at least. However, four characters at least are recommended.
- **Authentication Signalling** – choose the way of signalling a used card or another identifier. The options are Only LED (light signalling) or LED + Audio (light and acoustic signalling) whenever a card or another identifier has been applied (both invalid – denying beep, and valid – short beep). A distinct acoustic manifestation is only heard when an invalid card or another identifier has been used. In the case of a valid access, the acoustic signal of the switch is typically played making the short valid authentication beep almost inaudible. For switch sound settings refer to **5.4.8 User Sounds**.
- **Virtual Card to Wiegand**– Select a group of Wiegand outputs to which the Virtual user card No. shall be sent after successful authentication. Can be combined with any authentication method, including codes, fingerprints, etc.
- **Silent Alarm Enabled**– A virtual code higher by 1 than the access code is assigned to each access code and used for silent alarm activation. For example, if the access code is 0000, then the silent alarm activation code is 0001. It means, for instance, that silent alarm is 0000 for access code 9999 and so on. Set the silent alarm action in the Automation section.

Caution

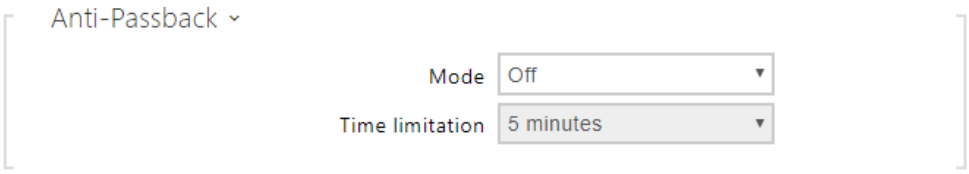
- In case the user authenticates itself and activates the silent alarm that is deactivated, the user access will be denied and the alarm will not be activated.

- **Limit Failed Access Attempts**– Enable the maximum count of unsuccessful authentication attempts. After five unsuccessful attempts (wrong numeric code, invalid card, etc.), the access module will be blocked for 30 seconds even if authentication is valid.
- **License Plate Recognition** – choose the scenario after the license plate is recognized. Refer to the manual for function details. Refer to Subs. **5.2.1 Users** for function details.



The plus/minus cards are used for user card administration. When a plus card is tapped on the card reader, any other tapped card is added to the Directory list as a new user with an access card assigned. The user !Visitor #card_ID is automatically created in the device. When a minus card is tapped on the card reader, any other tapped card and its user are deleted from the Directory list.

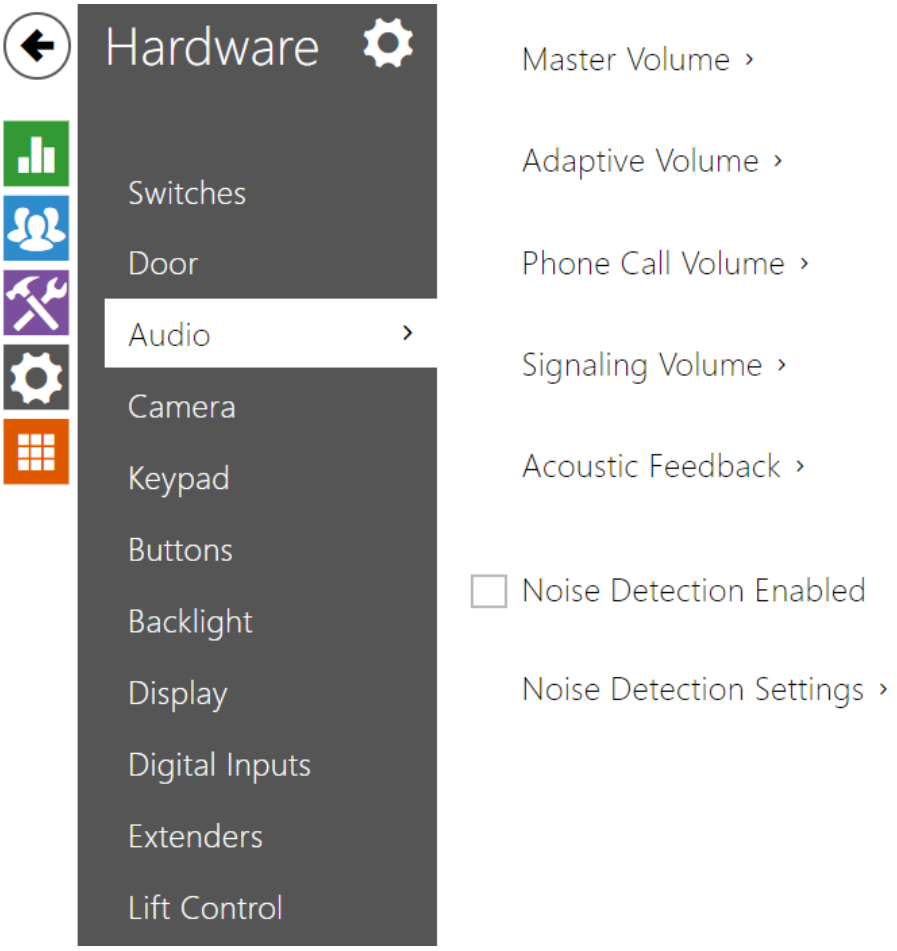
- **Plus Card ID** - Enter the service card ID for adding cards to the Installed cards: a sequence of 6 to 32 characters including 0-9, A-F.
- **Minus Card ID** - Enter the service card ID for removing cards from the Installed cards: a sequence of 6 to 32 characters including 0-9, A-F.



Anti-Passback is a security function preventing users to use their access cards or other identifiers to re-enter an area without leaving it before (i.e. preventing users from sharing cards).

- **Mode** – enable/disable the Anti-Passback mode:
  - **Off** – the function is Off by default allowing the user to use the access card or another identifier to re-enter an area without leaving it before.
  - **Soft** – the user is allowed to use the access card or another identifier to re-enter an area without leaving it before. A new **AccessTaken** record is made in Status / Events.
  - **Hard** – the user is not allowed to use the access card or another identifier to re-enter an area without leaving it before. A new **UserRejected** record is made in Status / Events.
- **Time limitation** – select an Anti-Passback timeout during which the user cannot re-enter an area using the given authentication method (card, code, etc.) in the same direction.

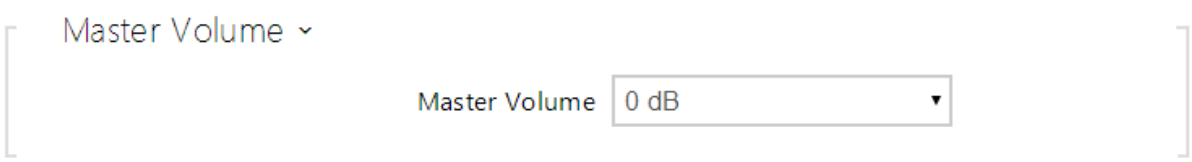
5.3.3 Audio



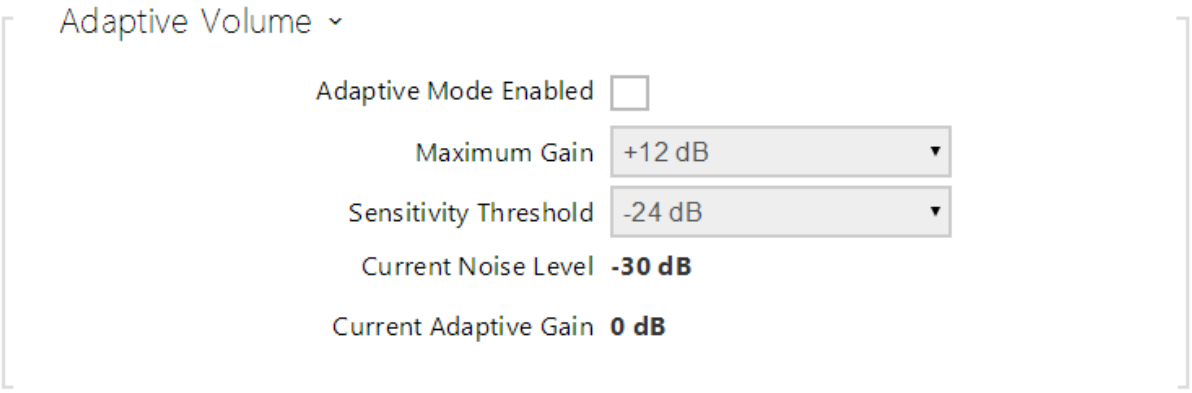
All the **2N LTE intercom** models are equipped with a speaker or power amplifier output to which an external loudspeaker can be connected. Set the phone call and state signalling volume control in this configurat ion section. Set the **Master volume** to control the master volume of the device: volum e of calls, signalling tones, etc. Set this parameter according to the ambient noise level. If the noise level is not constant, use the Adaptive mode to increase the master volume temporarily depending on the ambient noise level.

Model	Master Volume
2N® LTE Verso	-8 dB .. +8 dB (2W)

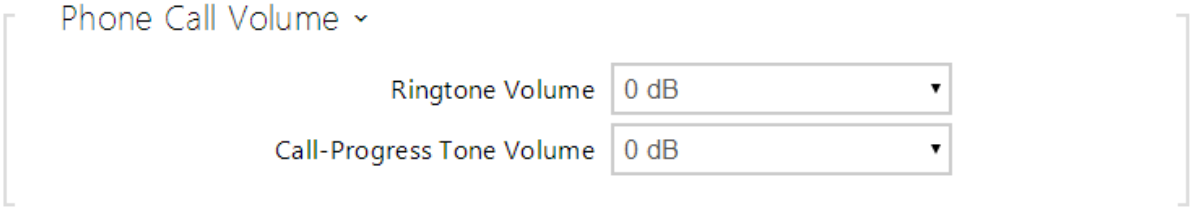
List of Parameters



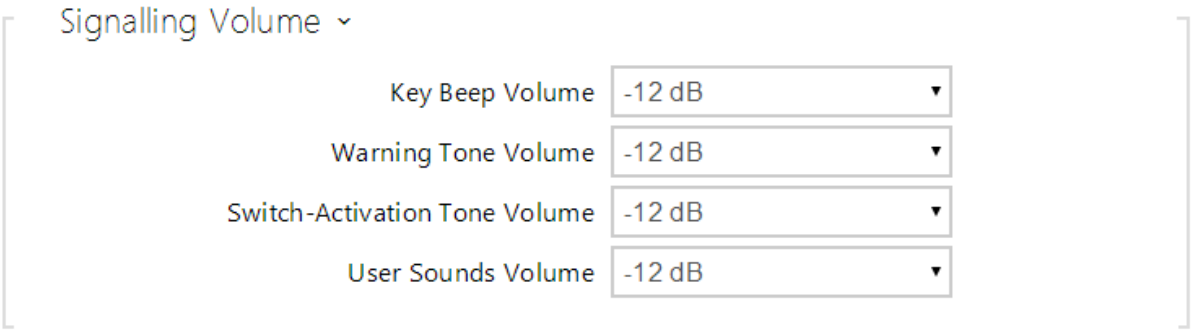
- **Master volume** – set the master volume for the entire system. This setting affects the volume of phone calls and all signalling tones.



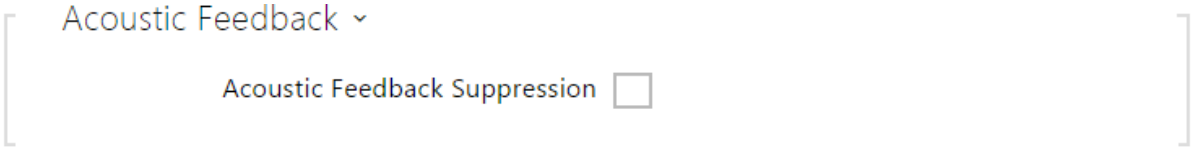
- **Adaptive volume** – enable the adaptive volume mode in which the speaker volume is adjusted automatically depending on the noise level of the intercom installation site.
- **Maximum gain** – set the maximum gain to be applied to the master volume in the adaptive mode.
- **Sensitivity threshold** – set the ambient noise threshold at which adaptive gain is applied.
- **Current noise level** – display the current ambient noise level.
- **Current adaptive gain** – display the current adaptive gain of the master volume. The value is determined by the difference of the Current noise level and Sensitivity threshold and never exceeds the Maximum gain value.



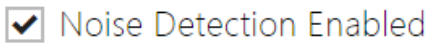
- **Ringtone volume** – set the incoming call signal loudness.
- **Call-progress tone volume** – set the dial, ring and busy tone volume. In case the call-progress tones are automatically generated by the PBX, this setting will not be applied.



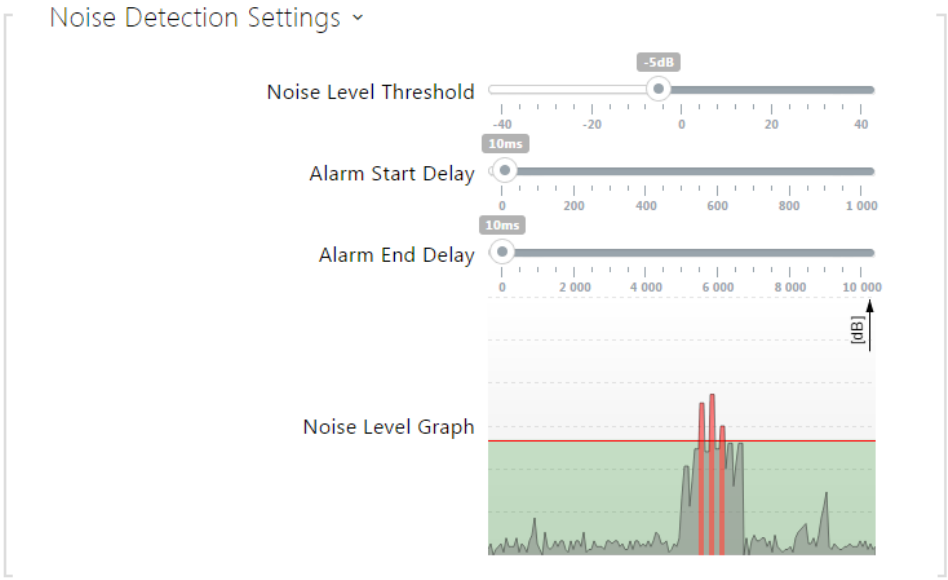
- **Key beep volume** – set the key beep volume. The volume values are relative against the set master volume.
- **Warning tone volume** – set the volume of warning and signalling tones described in the **Signalling of Operational Statuses** section. The volume values are relative against the set master volume.
- **Switch activation tone volume** – set the volume of the switch activation tone. The volume values are relative against the set master volume.
- **User sounds vol ume** – set the volume of the user sounds to be played. The volume values are relative against the set master volume.



- **Acoustic feedback filter** – set automatic suppression of acoustic feedback (typically whistling) between the intercom speaker and phone handset if located in close proximity to the intercom. This mode is disabled by default.

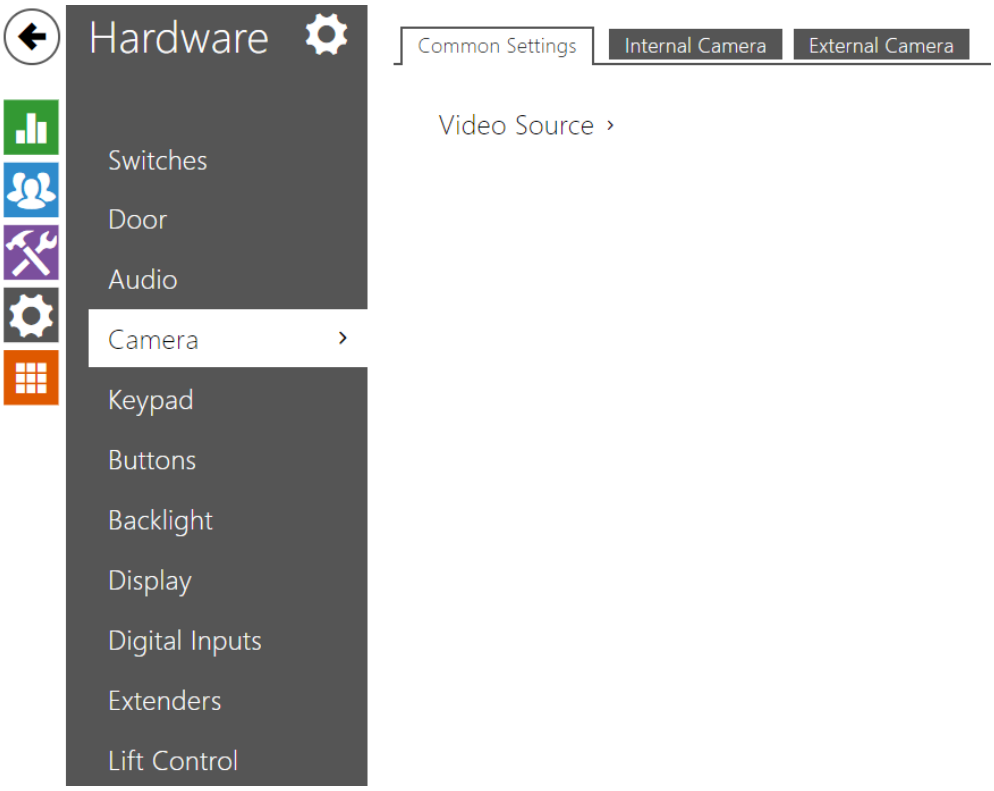


- **Noise Detection Enabled** – s witch on automatic detection of noise or microphone noise level threshold exceeding. Process the threshold exceeding alarm using **Event.NoiseDetected** and assign it to other user actions.



- **Noise Level Threshold** – set the microphone noise level threshold for alarm setting.
- **Alarm Start Delay** – set the time interval during which the signal must be above the threshold to start alarm.
- **Alarm End Delay** – set the time interval during which the signal must be below the threshold to stop alarm.
- **Noise Level Graph** – display the signal level history. Red designates alarm activation.

5.3.4 Camera



This menu is only available in the **2N LTE intercom** models that are equipped with an internal camera or can be connected to an external camera. The camera signal can be streamed directly into the call via a videophone, sent by E-mail, streamed via ONVIF /RTSP to another device (a video surveillance device, e.g.), or simply HTTP downloaded from the intercom in the JPEG format.

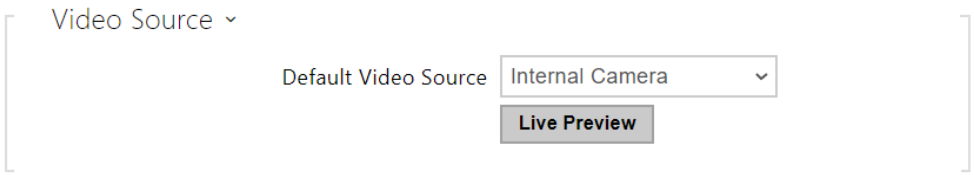
The following video signal sources can be used:

- a standard external IP camera supporting RTSP stream with codecs MJPEG (640 x 480 max resolution) or H.264 (640 x 480 Base Line Profile max resolution). The recommended framerate is 15 frames per second in either case. Higher frame rates may result in undesired effects (less smooth playing).

The **Camera** menu helps you set such camera parameters as brightness, colour saturation and external IP camera login data if necessary. Refer to the **Services / Phone, Services / Streaming** and **Services / E-Mail** menus for the video call/streaming parameters.

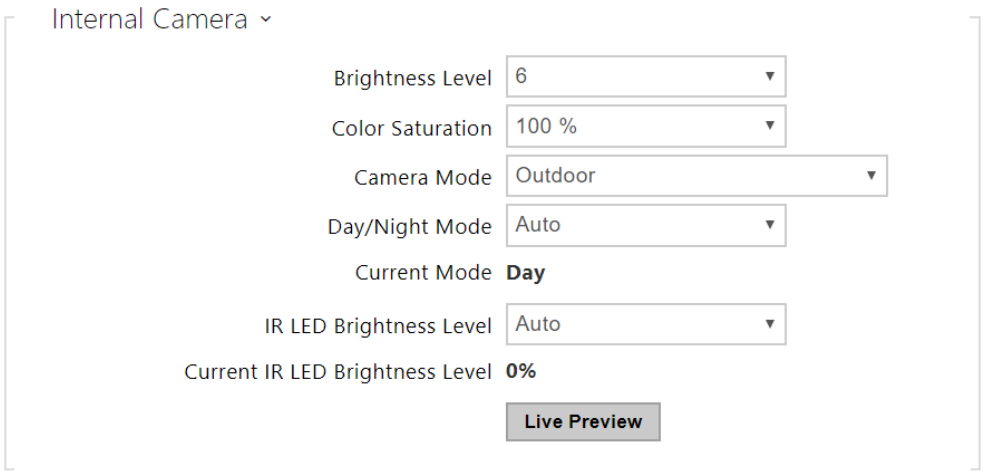
List of Parameters

Common Settings



- Default video source – set the default video signal source. Choose Internal camera (or an analogue camera connected to the intercom) or External IP camera. The change of the default video signal source is applied to the RTSP stream and HTTP API. In 2N® IP Eye it is required to enable the external camera manually, even when there is no internal camera present in the device. If no internal camera is connected to the intercom, External IP camera can only be selected. If the external camera is not connected or configured properly, N/A is displayed on a blue background.
- Live Preview – display a live preview from a 2N IP intercom camera.

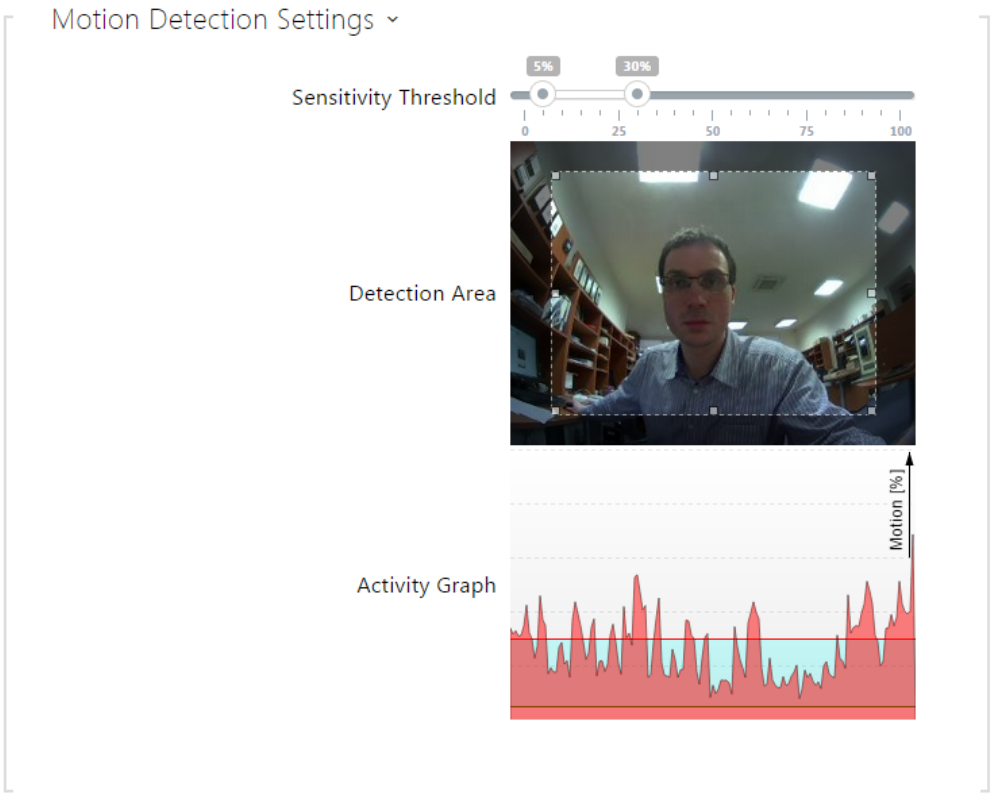
Internal Camera



- Brightness level – set the camera image brightness level.
- Colour saturation – set the camera image colour saturation.
- Camera mode – select suitable camera modes according to the current intercom installation conditions (indoor/outdoor use). Choose variable image flicker cancellation modes for indoor sites illuminated by artificial light. Or, set direct sunshine suppression for outdoor applications.

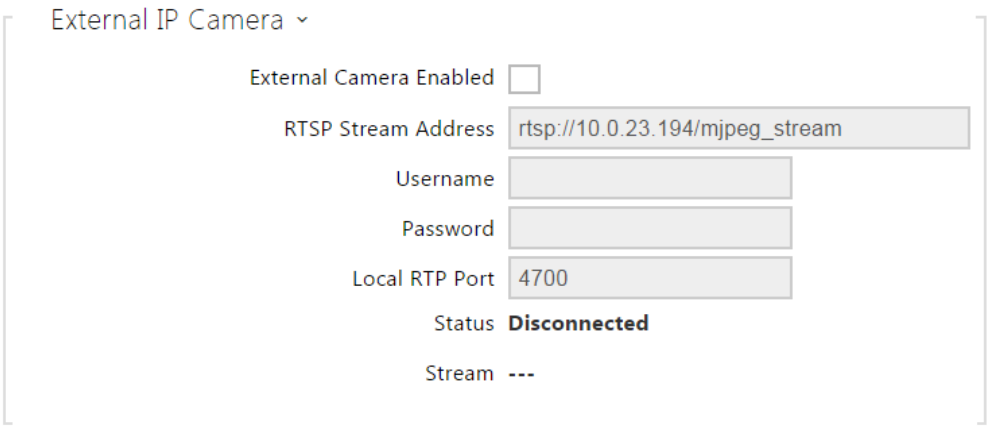
- Automatic framerate decreasing – enable automatic frame rate decreasing under worsened illumination conditions to improve image quality by lowering the frame rate.
- Day/Night mode – set the camera day/night mode. The options are automatic (controlled by the ambient light level), or permanently day or night mode.
- Current mode – display the currently selected camera mode (day/night). in the day mode, the camera uses an IR suppressing filter and infrared illumination is disabled. In the night mode, the IR suppressing filter is disabled and infrared illumination is on .
- IR LED brightness level – set the infrared LED brightness level in the range of 0-100% in several steps. Infrared illumination is automatically activated in night mode.
- Current IR LED brightness level – display the current IR LED brightness level percentage. The level can automatically be decreased below the set value so that the maximum power consumption cannot be exceeded (typically, when multiple extenders are connected and PoE supply is used).
- Live Preview – display a live preview from a 2N IP intercom camera.

- Motion detection enabled – enable automatic motion detection via an internal camera. Motion is detected by monitoring of a brightness change in the selected image section in time. When objects move within the camera range, the selected part of the image detects an activity, which can be expressed in percentage. If the activity exceeds the upper limit, motion is detected and indicated as long as the activity drops below the lower limit. Select the sensitivity thresholds and detection area according to the requirements and installation site conditions.



- **Sensitivity threshold**– set the lower and upper sensitivity and hysteresis limits for the motion detecting algorithm.
- **Detection area** – set the rectangular detection area in the image.
- **Activity graph** – display the activity history (image brightness changes) including the upper/lower sensitivity thresholds.

External Camera

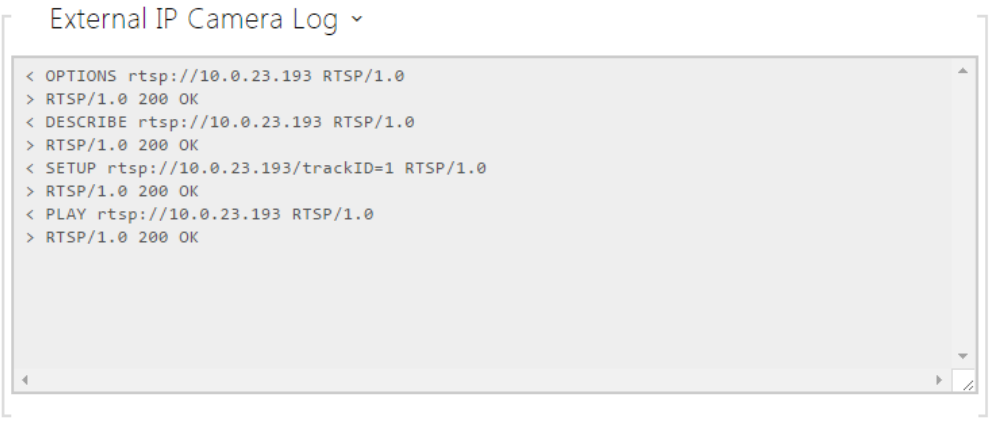


- **External camera enabled** – enable RTSP stream download from the external IP camera. Complete the valid RTSP stream address or the username and password to make the function work properly.
- **RTSP stream address** – enter the IP camera RTSP stream address: **rtsp://camera_ip_address/parameters**. The parameters are specific for the selected IP camera model. If you choose another **2N LTE intercom** for the external camera, enter **http://ip_address/mjpeg_stream** or **http://ip_address/h264_stream**.
- **Username** – enter the username for the external IP camera authentication. The parameter is obligatory only if the external IP camera requires authentication.
- **Password** – enter the external IP camera authentication password. The parameter is obligatory only if the external IP camera requires authentication.
- **Local RTP port** – set the local UTP port for RTP stream receiving.

Tip

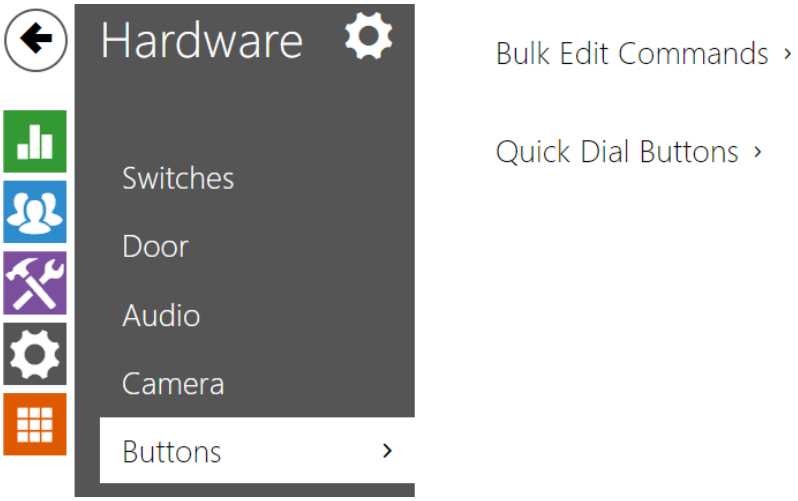
- FAQ: **External camera - How to set it in 2N IP/LTE intercom**

The Camera Preview window displays the current image received from an external camera. If the external camera is disconnected or configured incorrectly, the N/A characters are displayed on a blue background.



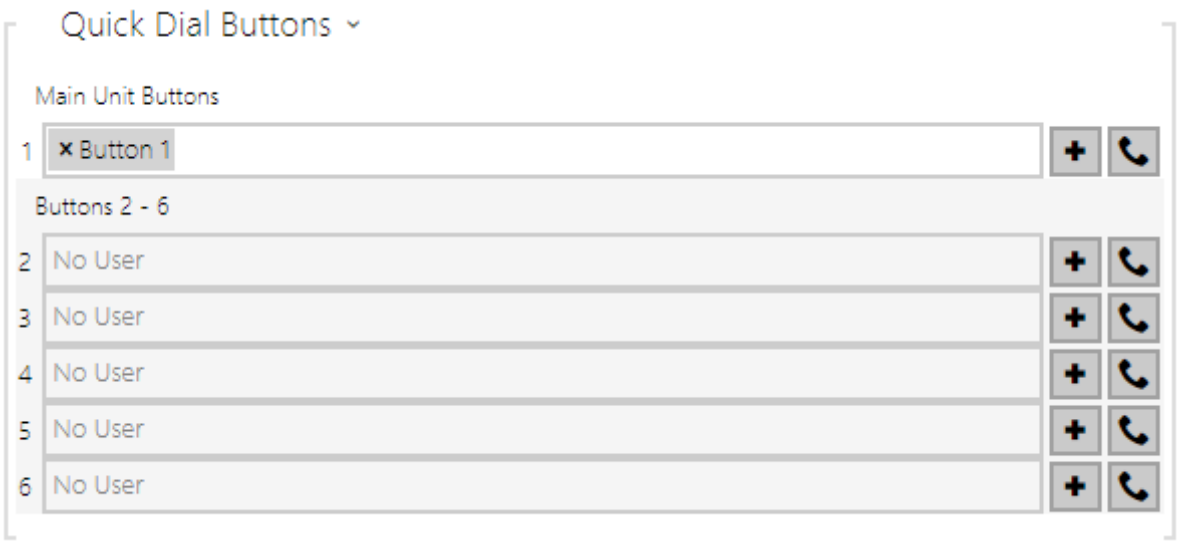
The External IP Camera Log displays the RTSP communication with the selected external IP camera including failures and error states if any.

5.3.5 Buttons



Assign the **Directory** / **Users** users to the quick dial buttons. By default, all available intercom buttons are assigned to the listed users. A non-assigned button can be used for automation or switch activation, for example.

- **Clear Button Assignment** – clear all assignments of buttons to users.

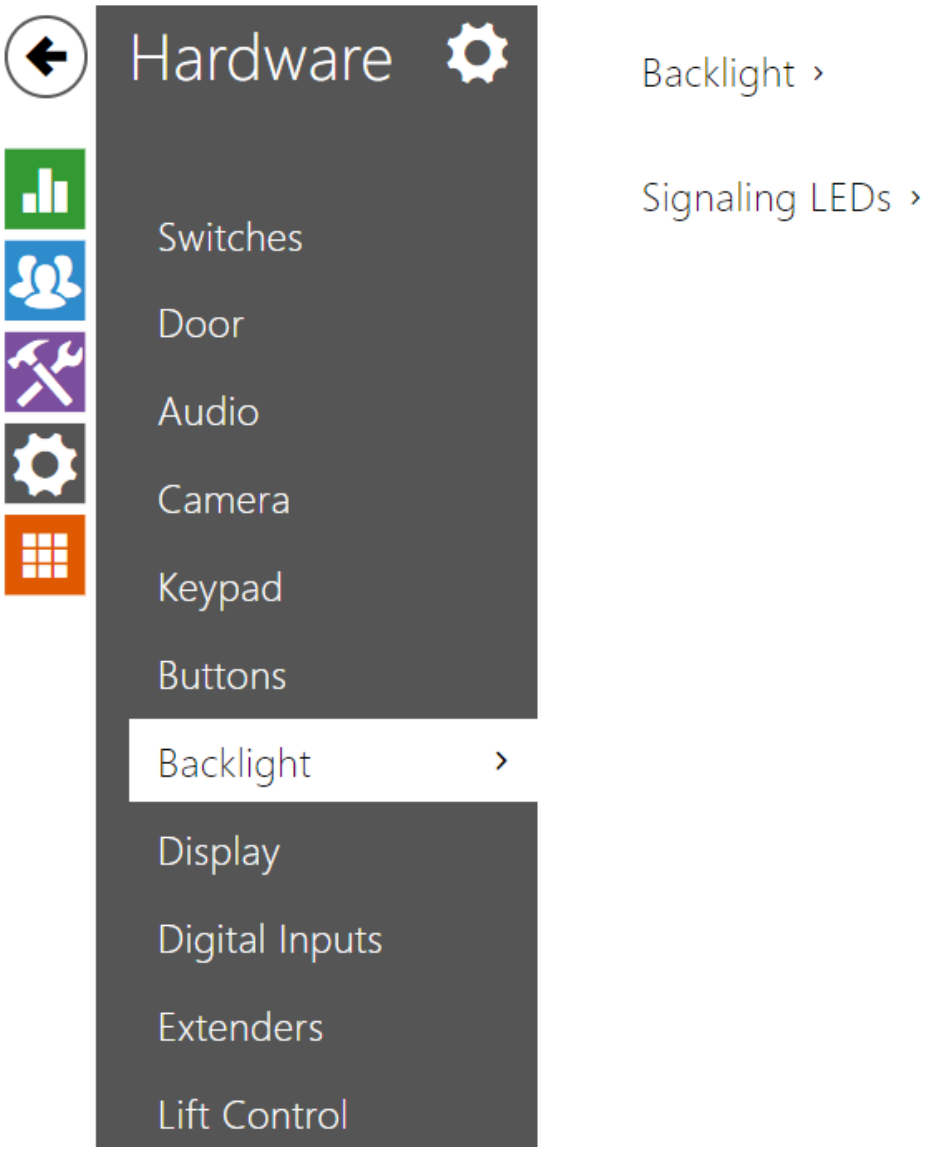


Display the list of all potentially available intercom buttons including those physically absent. In some 2N® IP Verso models , the button list is divided into 8/5-item groups corresponding to the button extending modules. Click  , select the user and press Add to add a user to the editing field. To search a user in the list, use the fulltext field and the username. One quick dial button can be shared by multiple users. Click  to test the set quick dial button. A dialogue window is displayed including detailed information on the ongoing call (user, call direction, state, reason and last event time).

Info

- Up to 16 users can be assigned to one speed dial button.
- Maximmum total count of numbers called in parallel is 16. This can occur in the case of group call and multiple called users on one quick dial button.

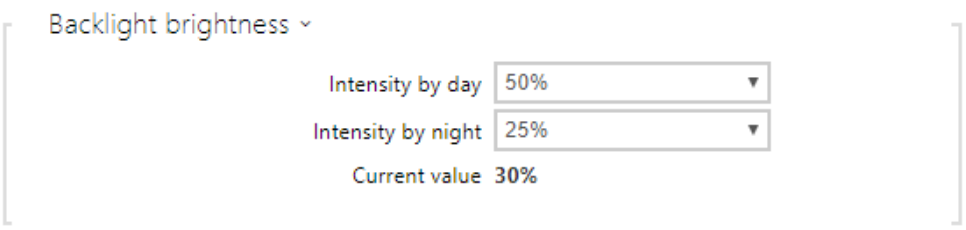
5.3.6 Backlight

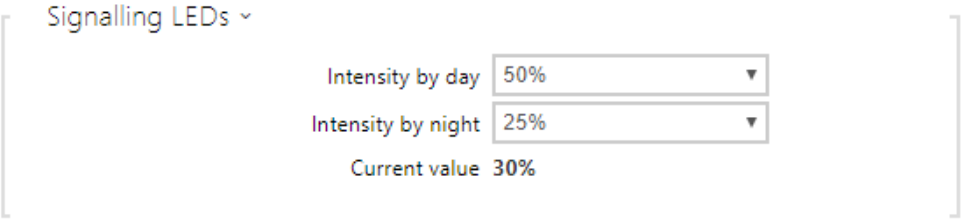


This tab helps you control the backlight level of nametags, buttons and brightness of signalling LEDs.

If equipped with an ambient light level sensor, the intercom automatically chooses the suitable backlight level within the set range of values. The selected intercoms allow you to control the backlight brightness of name tags (buttons) and signalling LEDs (illuminated pictograms). Refer to the table below:

Property/Model	2N® LTE Verso
Backlight level control	Yes
Ambient light level sensor	Yes
Independent name tag and LED backlight level control	Yes



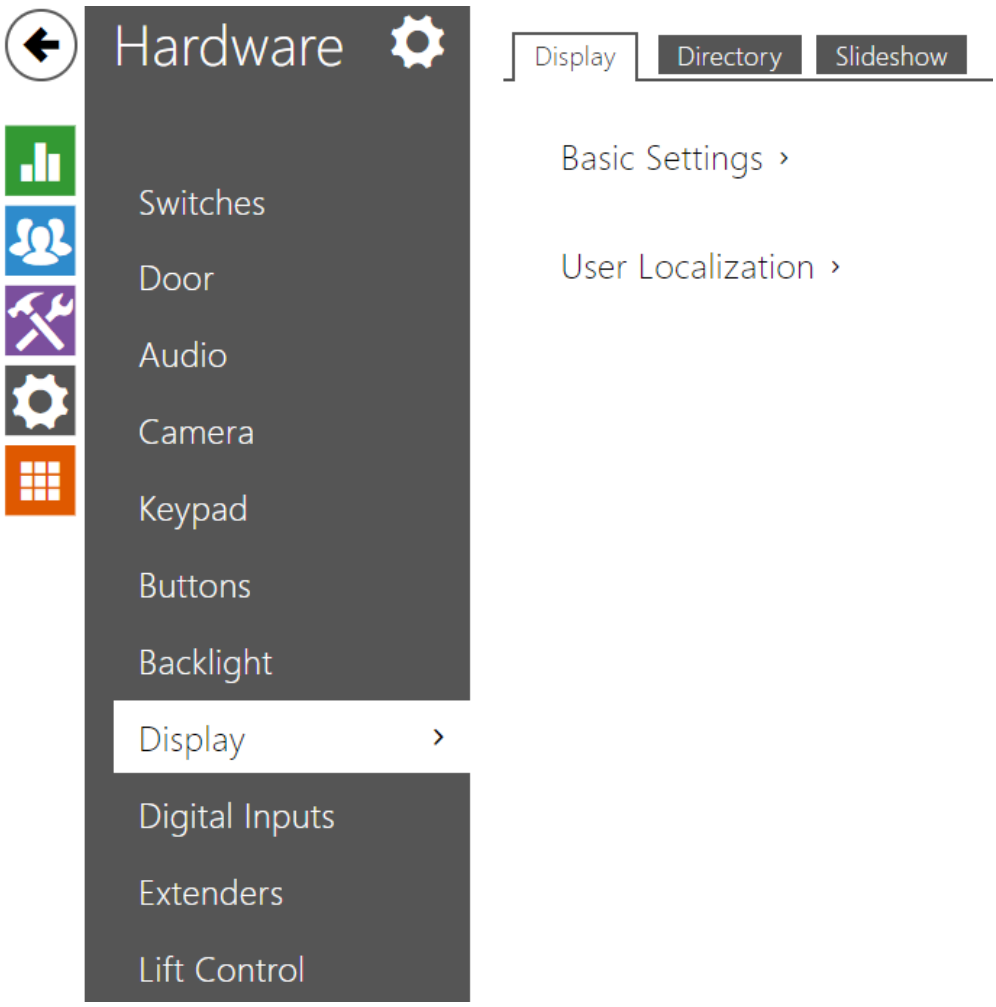


- **Intensity by day** – set the LED intensity percentage value for the day mode.
- **ntensity by night** – set the LED intensity percentage value for the night mode . If the Intensity by day and Intensity by night are set to one and the same value, the ambient light level is ignored.
- **Current brightness** – display the current LED intensity value automatically selected according to the ambient daylight level.

Note

- The brightness parameters affect the function, power consumption and general appearance of your device. A high nametag and button backlight value may, if the ambient light level is low, dazzle the persons standing in front of the intercom and, in general, increase the power consumption of the device. A low LED intensity value, on the other hand, may, if the intercom is placed in direct sun, result in a lower LED on/off contrast and potential LED state identification problems.

5.3.7 Display



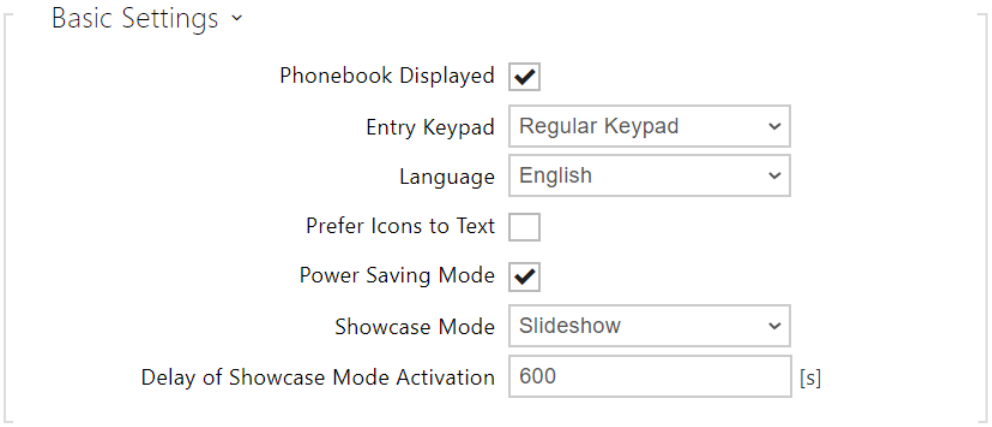
Some intercom models 2N® LTE Verso can be equipped with a colour LCD display. The device state is displayed (call progress, door opening, etc.) and the following modes are available:

Displej – enable the display and language settings for 2N® LTE Verso.

Phonebook – display a configurable list of users. Use the numeric keypad buttons (arrows) to go through the user list. You can create practically any count of nested groups within the user list and add any count of users to each group.

Slideshow – display a slideshow showing a set of recorded images after a defined idle time. The automatic switching time can be configured.

Display



- **Phone book displayed** – enable/disable display of the phone book function.
- **Entry Keypad** – enable the keypad/keypad type.
  - **Disabled** – disable the keypad.
  - **Regular keypad** – set the regular keypad type.
  - **Scramble keypad** – enable/disable keypad button scrambling (random button transposing) before every new display to prevent other persons from watching the code entered (**Enhanced Security** licence required).
- **Language** – set the language for the texts to be displayed. Choose one of the seven pre-defined languages: **English, Spanish, German, French, Russian, Italian** and **Czech**.
- **Prefer Icons to Text** – the icons on the dosplay will be preferred to the text.
- **Power saving mode** – activate the power saving mode in which the display brightness is reduced. If no event occurs during two Slideshow screen activation timeouts, the power saving mode activation has been successful. Set 0 in the Slideshow screen activation timeout to disable the power saving mode. Any movement in front of the intercom camera or any display event (such as door lock activation or display touch) restores the full brightness of the display.
- **Showcase Mode** – set whether the device shall go into the showcase mode when idle. Choose various options in the showcase mode (Slideshow, Company Logo, Address).
- **Delay of Showcase Mode Activation** –set the idle timeout in the range of 1 to 600 seconds after which the device goes into the mode of representation.

- Original language – download the localisation file template for own translation. It is an XML file with all the texts to be displayed.
- Custom language – remove, download and upload a localisation file of your own.

Note

If none of the pre-defined languages is convenient for you, proceed as follows:

- Download the original language file (English).
- Modify the file using a text editor (replace the English texts with your own ones).
- Upload the modified localisation file to the intercom.
- Set Language Settings | Language to Custom.
- Check and correct if necessary the texts on the intercom display.

Directory

This tab helps you configure a structured user list to be displayed. Create any count of groups and add any count of phonebook users to groups. No user can be assigned more times to a group, but one user can be added to multiple groups at the same time.

The created folders and users are displayed to the left. Click to add a folder. Click to remove a directory including users and groups. Click to rename a group. Click to move a user from the main tree to a folder.

The users assigned to the selected group are displayed to the right. Click to add a user to the group; yet the user remains in the phonebook main tree. Click to remove a user.

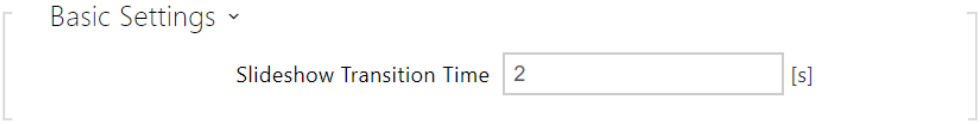
The groups and users are arranged in the alphabetical order on the display. Click ☆ to assign a priority. A prioritized contact is superior to an unprioritized folder, a prioritized folder is superior to a prioritized contact and multiple prioritized folders and prioritized contacts are arranged in alphabetical order. Multiple unprioritized folders and contacts are arranged in alphabetical order.

Caution

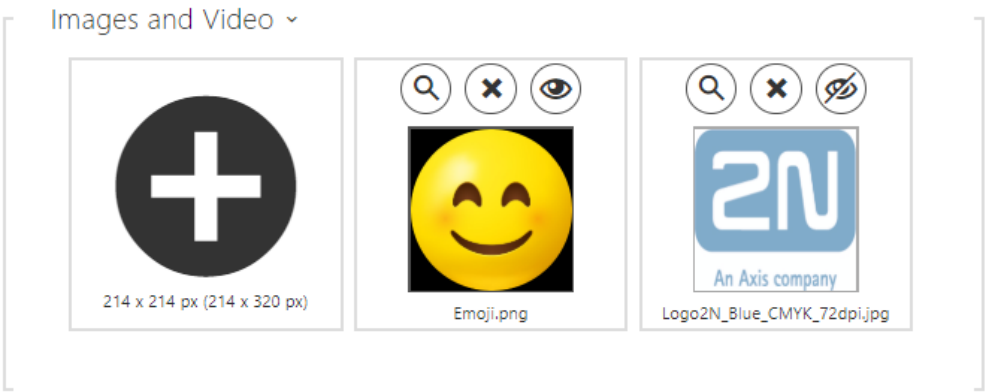
- Remember to save the phonebook changes.

Slideshow

This tab helps you configure a list of images to be displayed in the Slideshow mode. Upload up to 8 images to be shown with a preset delay.



- Slideshow Transition Time – set the image displaying time in a slideshow.



Valid for 2N® IP Verso

Make sure that the image resolution is 214 x 214 pixels for 2N® LTE Verso. Other sizes will be adjusted to the display resolution automatically.

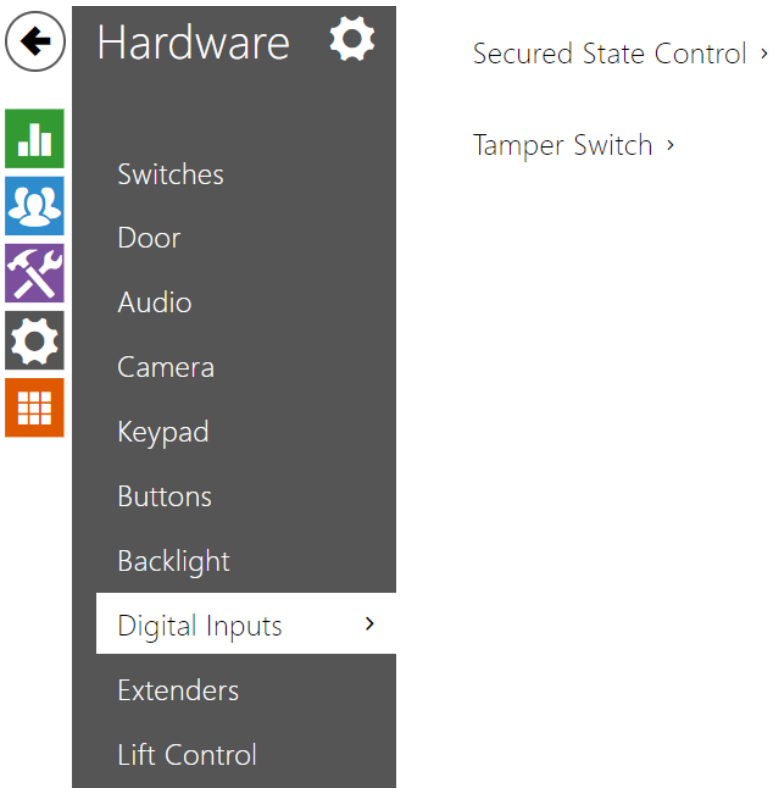
Click the magnifier icon  to view the loaded image, press  to delete an image and click  to hide a selected image/video on the device display.

If no image is loaded, the Slideshow mode will never be activated.

Tip

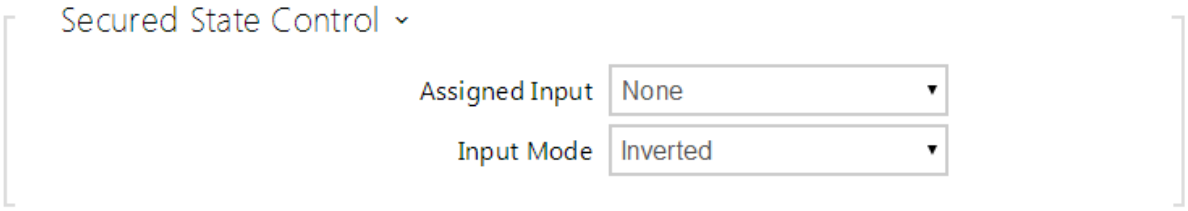
- To hide the "Start with touch" display on the 2N® IP Verso model display, load an image of the resolution of 214 x 320 pixels.

5.3.8 Digital Inputs



In this configuration section set the parameters associated with digital inputs and their interconnections with other intercom functions.

List of Parameters

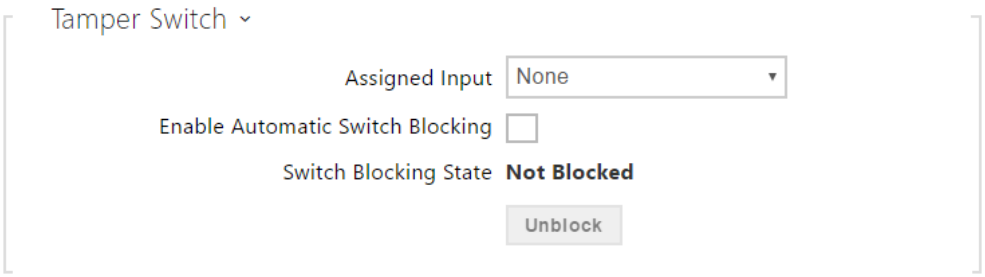


- **Assigned input** – define one (or none) of the logical inputs for secured state detection. The secured state is then signalled by a LED on the intercom, whose location may vary in different intercom types.
- **Input mode** – set the active input mode (polarity).

Note

- *Secured state signalling is typically used with a access control controller connected to one of the intercom digital inputs. The wire leading from the PBX is connected to the intercom directly or via an extending module. The secured state LED location is variable depending on the intercom type:*

  The 2N® LTE Verso intercoms are equipped with a red padlock pictogram in the left-hand upper corner of the basic module.

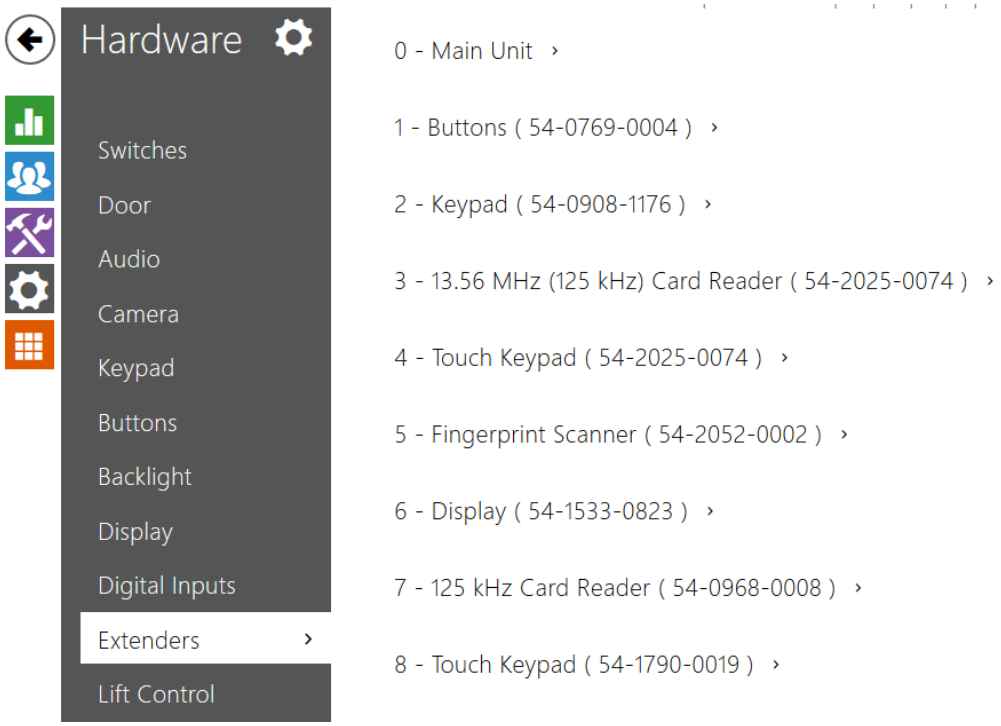


The tamper switch equipped models help detect opening of the device cover and signal this event as TamperSwitchActivated. The events are written into a log and read out via HTTP API (refer to the HTTP API manual).

If the function is enabled, all the switches get blocked for 30 minutes whenever the tamper is activated. Blocking is active even after the device restart. Each port can be controlled via Automation. Press the UNBLOCK button, disable the function or reset the configuration factory values to unblock the switches.

- Assigned input – select the logical input to which the tamper switch is to be connected. TamperSwitchActivated signals the tamper switch activation.
- Enable Automatic Switch Blocking – Blocks the switches by tamper activation for 30 minutes.
- Switch Blocking State – display and make switch blocking settings.

5.3.9 Extenders



The 2N® LTE Verso intercoms can be enhanced with extending modules connected to the intercom basic unit. The following modules are available:

- Five-button module
- Keypad module
- Infopanel module
- Card reader module
- Bluetooth module
- I/O module
- Wiegand module
- Inductive loop module
- Display module
- Fingerprint reader
- Touch keypad
- Touch keypad & RFID reader 125 kHz, 13.56 MHz
- Bluetooth & RFID reader 125 kHz, 13.56 MHz

The modules are chain-like interconnected. Each of the modules has its number depending on the chain position (the first module has number 1). The basic unit is a special type of module and has number 0.

You can configure each module separately. The parameters are specific for the given module type.

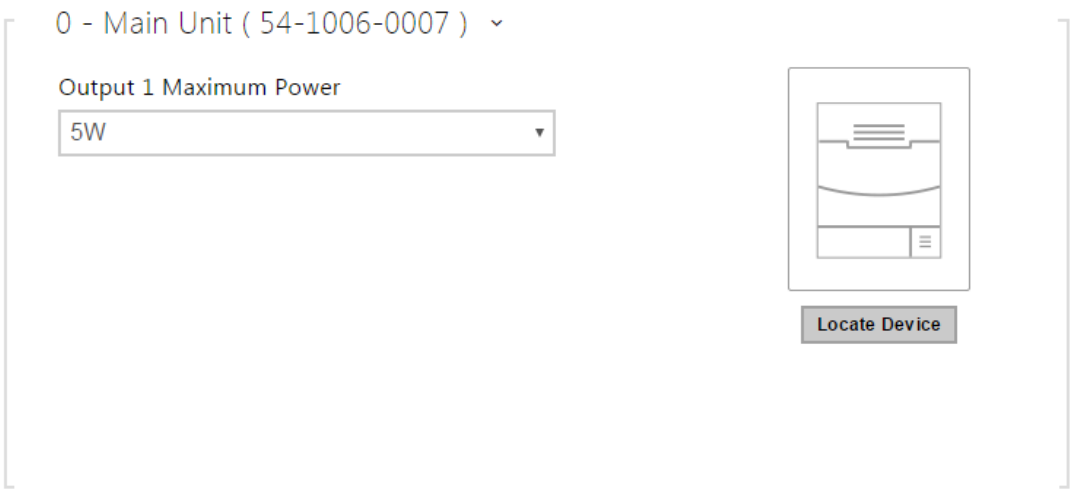
Note

- *The extending modules are displayed in the order corresponding to their interconnection. The modules connected further from the basic unit are listed below. If more modules of the same type are connected to one intercom, it may be difficult to assign a setting to a particular module. In this case, identify the modules connected using the* ***Locate Module*** *button. The module will flash shortly several times when you press the button.*

Caution

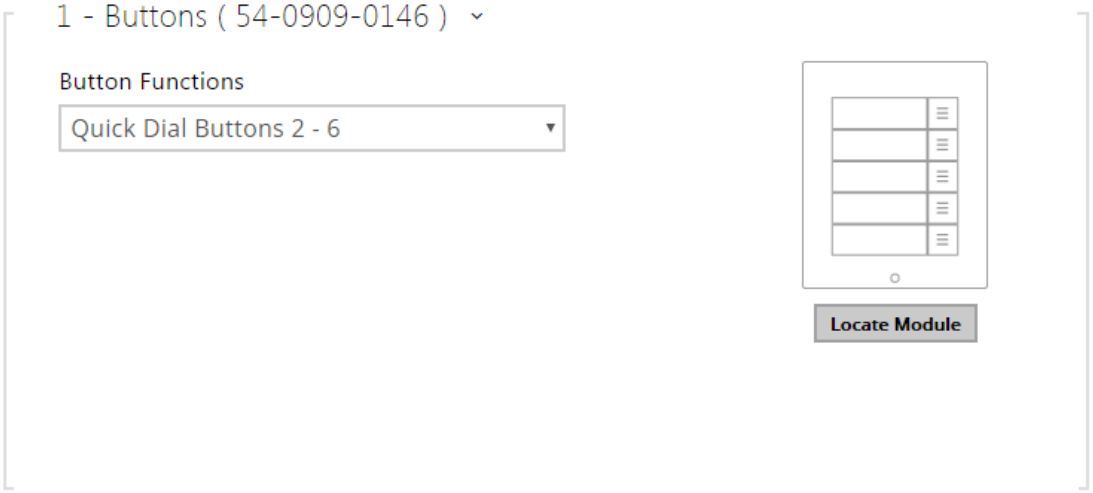
- Module Name has to be unique.
- Unnameable modules can be addressed via ext <module_position>.

Main Unit Module Configuration



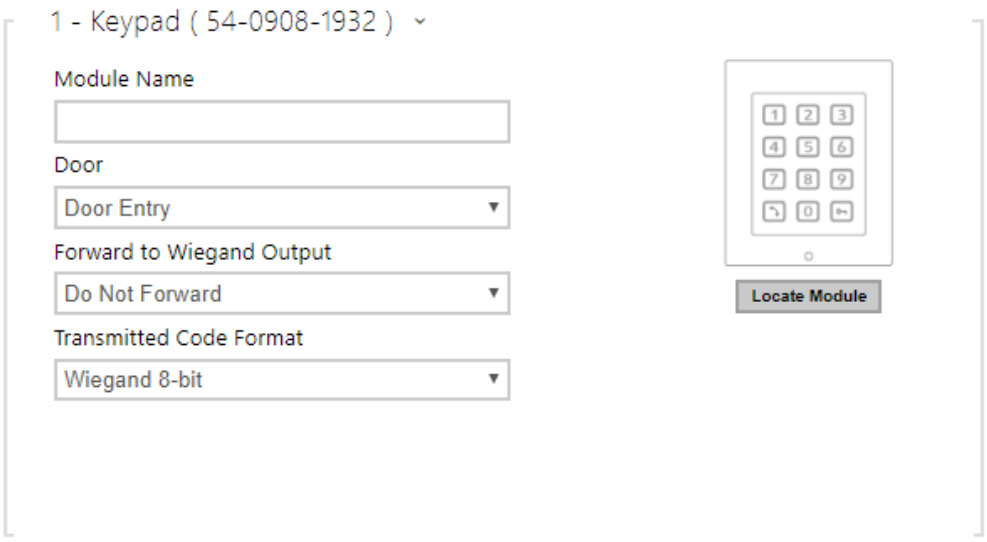
- Output 1 maximum power – set the maximum load to be connected to the power output available on the basic unit. When the output is active, the consumption of the other modules (backlight level, etc.) can be adjusted automatically in order that the maximum allowed consumption of the intercom cannot be exceeded.
- Locate device – optical and acoustic signalling of a device. Note: Optical signalling is possible only if the device is equipped with control backlight (Verso, Base, Vario, Force, Safety and Uni). If a speaker is not integrated in the device, make sure than an external speaker is connected (Audio Kit and Video Kit) to use sound signalling.

Button Module Configuration



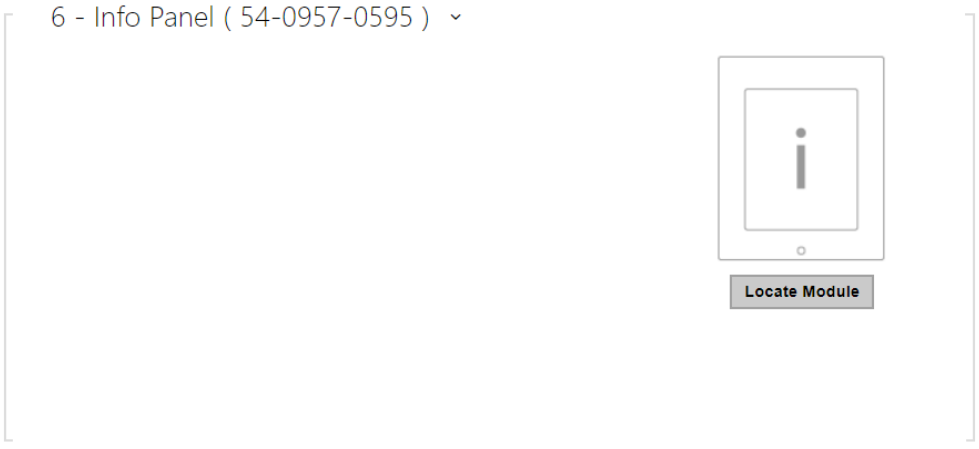
- Button function – assign user positions to the buttons.

Keypad Module Configuration



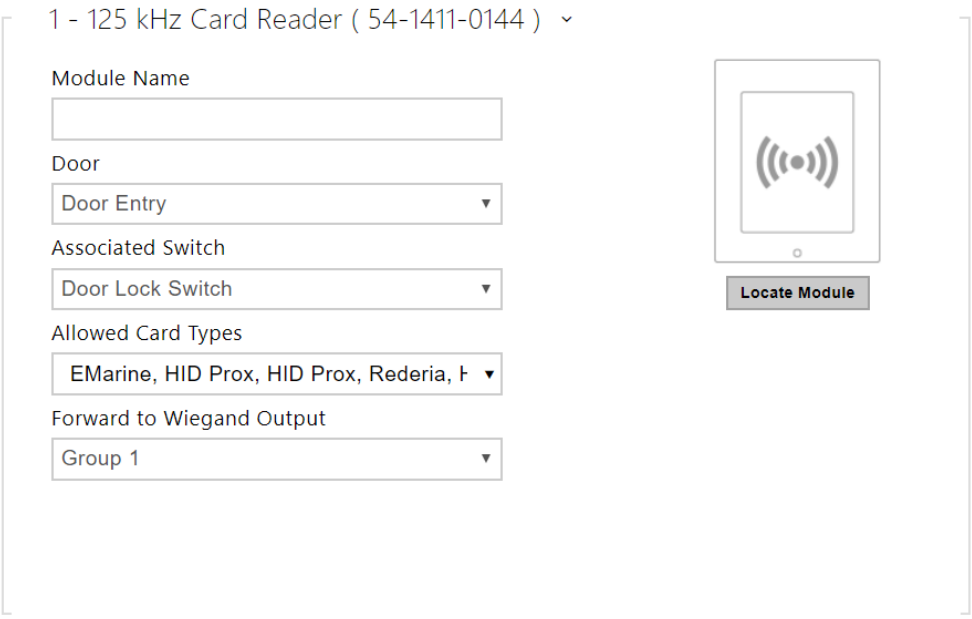
- Module Name – set the module name for logging events from the keypad.
- Door – set the reader direction (Door Entry, Door Exit) for the Attendance system purposes.
- Forward to Wiegand Output – set a group of Wiegand outputs to which all pressed keys are to be forwarded.
- Transmitted Code Format – select a 4bit or 8bit (higher security) format for the codes to be transmitted.

Infopanel Module Configuration



- No parameters are available to the public at present.

125 kHz Card Reader Module Configuration

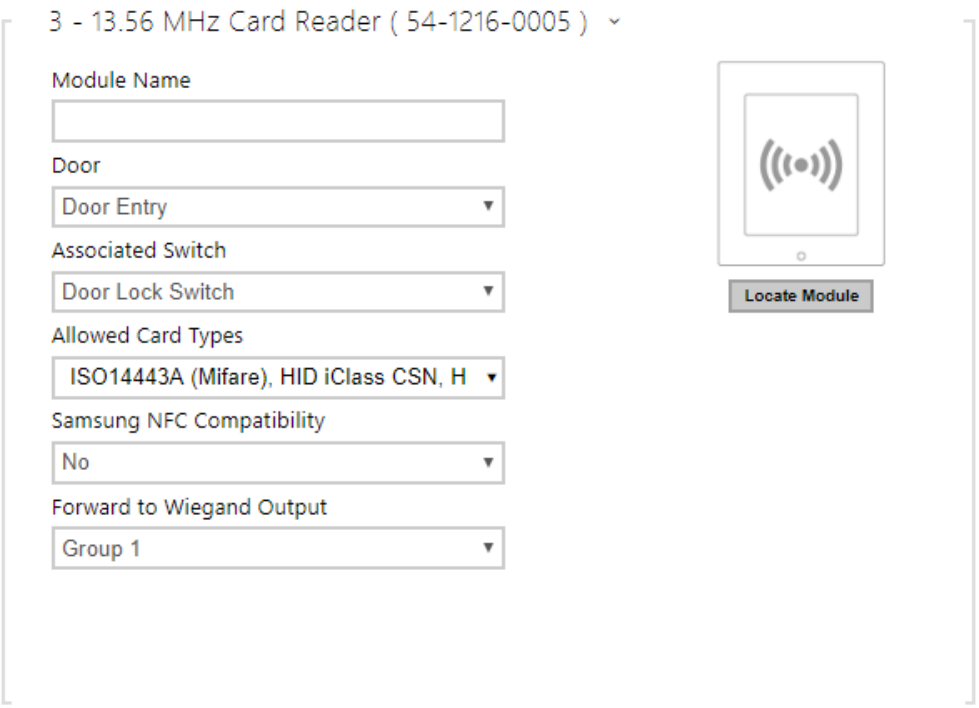


- Module Name – set the module name for card reader logging purposes.
- Door – set the reader direction (Door Entry, Door Exit) for the Attendance system purposes.
- Associated Switch – set the switch to be activated after user authentication via this module. If you set Door Lock Switch, the authentication rules specified in Hardware / Door will be used.
- Allowed Card Types – set the type of a card to be accepted by the card reader. The card reader supports just one card type at an instant.
- Forward to Wiegand Output – set a group of Wiegand outputs to which all the received RFID card IDs will be resent.

Tip

- To accelerate card reading, you are recommended to select the card types used by the user in the module settings.

13.56 MHz Card Reader Module Configuration

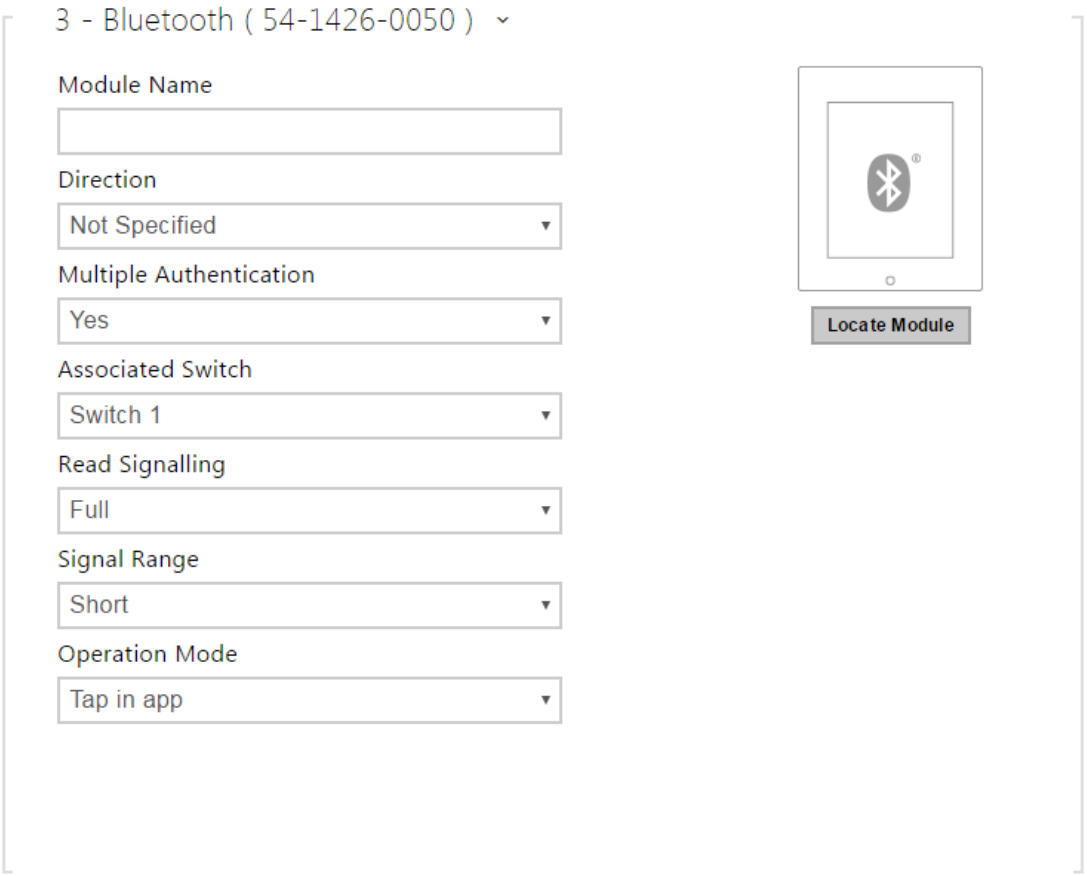


- Module Name – set the module name for card reader logging purposes.
- Door – set the reader direction (Door Entry, Door Exit) for the Attendance system purposes.
- Associated Switch – set the switch to be activated after user authentication via this module. If you set Door Lock Switch, the authentication rules specified in Hardware / Door will be used.
- Allowed Card Types – set the type of a card to be accepted by the card reader. The card reader supports just one card type at an instant.
- Samsung NFC Compatibility – enable NFC compatibility with the Samsung phones.
- Forward to Wiegand Output – set a group of Wiegand outputs to which all the received RFID card IDs will be resen

Tip

- To accelerate card reading, you are recommended to select the card types used by the user in the module settings.

Bluetooth Module



- Module name – set the module name for logging events from the Bluetooth module.
- Direction – set the reader direction (Not specified, Arrival, Departure) for the Attendance system purposes.
- Multiple authentication – enable multiple user authentication via this module (or, authentication is controlled by the user card settings; refer to Directory / Users). Multiple authentication can be disabled for each reader connected to the intercom.
- Associated switch – set the switch to be activated after user authentication via this module. If you set Door Lock Switch, the authentication rules specified in Hardware / Door will be used.
- Read signalling – set one of the sound signalling modes for the module:
  - Full – valid and invalid accesses are distinguished by sound signalling
  - Single beep – valid and invalid accesses are signalled by a single beep
  - None – module use is not signalled by any sound
- Signal range – set the maximum signal range, i.e. the distance within which the Bluetooth module can communicate with the mobile phone:
  - Short – less than 2 m for most phones

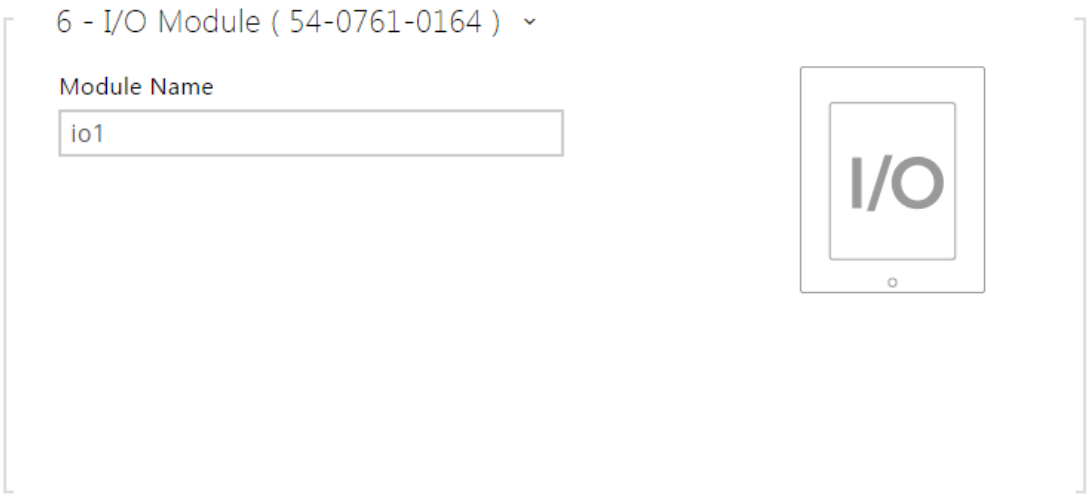
- Long – maximum possible range

- Operation mode – set the authentication method for a mobile phone:
  - Tap in app – authentication has to be confirmed by tapping on an icon in the application running in a mobile phone.
  - Touch mode – touch the card reader having a phone with paired 2N® Mobile Key to confirm authentication.

Warning

- An upgrade to version 2.30 is followed by upgrades in the Bluetooth modules. A downgrade to version 2.29 and lower may make the Bluetooth modules non-functional.

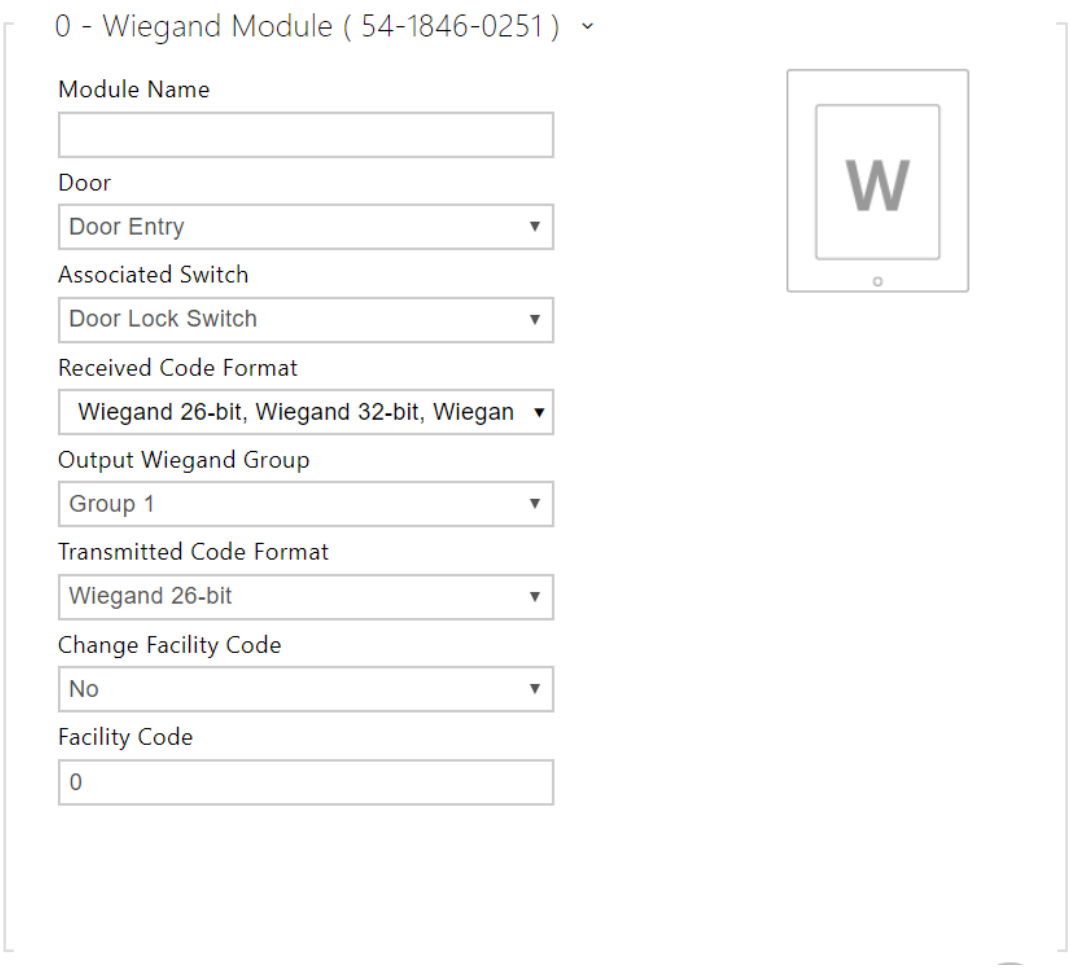
I/O Module Configuration



- Module name – set the module name for input/output specification in the SetOutput, GetInput and InputChanged objects in Automation.

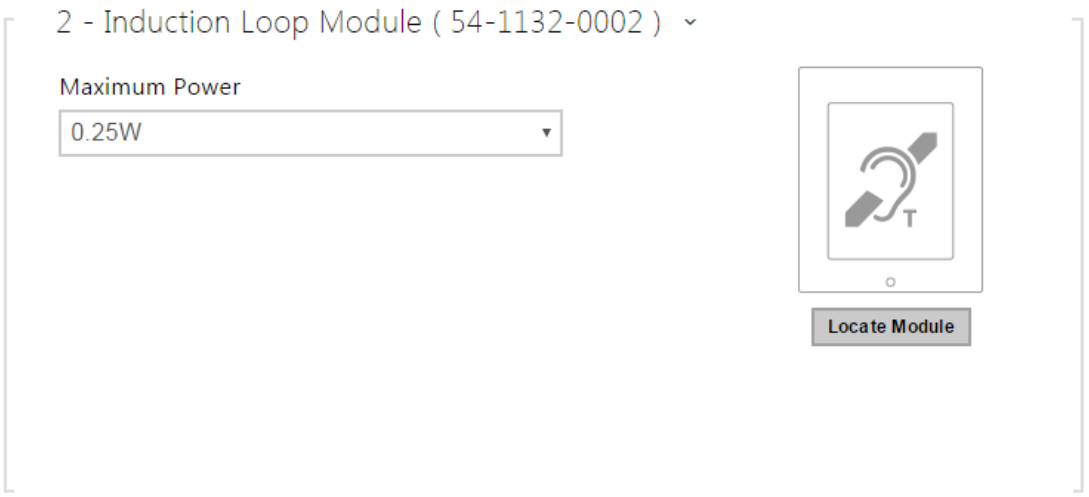
Wiegand Module Configuration

The Wiegand module is equipped with the input and output Wiegand interfaces, which are mutually independent, have separate settings and can receive and send codes at the same time. The Wiegand input helps you connect such equipment as RFID card readers, biometric readers and so on. With the Wiegand output, you can connect the intercom to the security system in your building, for example (to send IDs of the RFID cards tapped on the RFID reader or codes received on any Wiegand input). The 2N® Wiegand Isolator is also equipped with one logical input and one logical output, which can be controlled via Automation .



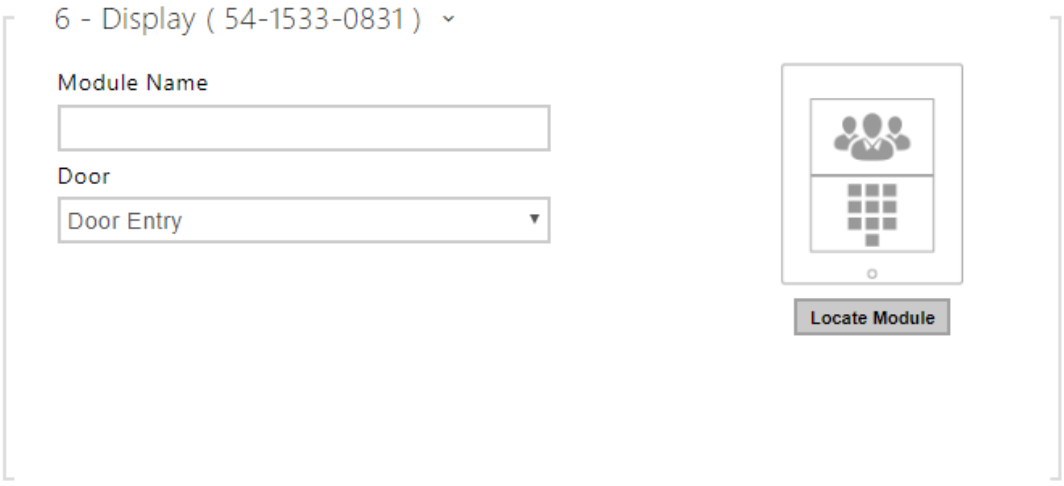
- **Module Name** – set the module name for input/output specification in the SetOutput, GetInput and InputChanged objects in the **2N Automation**.
- **Door** – set the reader direction (Arrival, Departure) for the Attendance system purposes.
- **Associated Switch** – set the switch to be activated after user authentication via this module. If you set Door Lock Switch, the authentication rules specified in Hardware / Door will be used.
- **Received Code Format** – set the format for the codes to be received (Wiegand 26, 32, 37 and RAW).
- **Output Wiegand Group** – assign the output Wiegand to a group to which the codes from the connected card readers or Wiegand inputs can be resent.
- **Transmitted Code Format** – set the format for the codes to be transmitted (26-bit, 32-bit, 37-bit and RAW format, 35-bit, Corp. 1000, 48-bit, Corp. 1000 and Auto).
- **Change Facility Code** – set the first code part via Wiegand. This applies to Wiegand OUT for 26-bit code format. Contact your security system supplier to know if the Facility Code is requested.
- **Facility Code** – define the 2N IP device location in the security system. Enter a decimal value for the location (0–255).

Induction Loop Module Configuration



- Maximum power – set the maximum transmission power for the induction loop antenna. A higher transmission power means a wider range, but less power for other intercom functions. The convenient default value is 0.25 W under normal circumstances.

Display Module Configuration



- Module Name – set the module name for input/output specification in the SetOutput, GetInput and InputChanged objects in the 2N Automation.
- Door – set the reader direction (Arrival, Departure) for the Attendance system purposes.

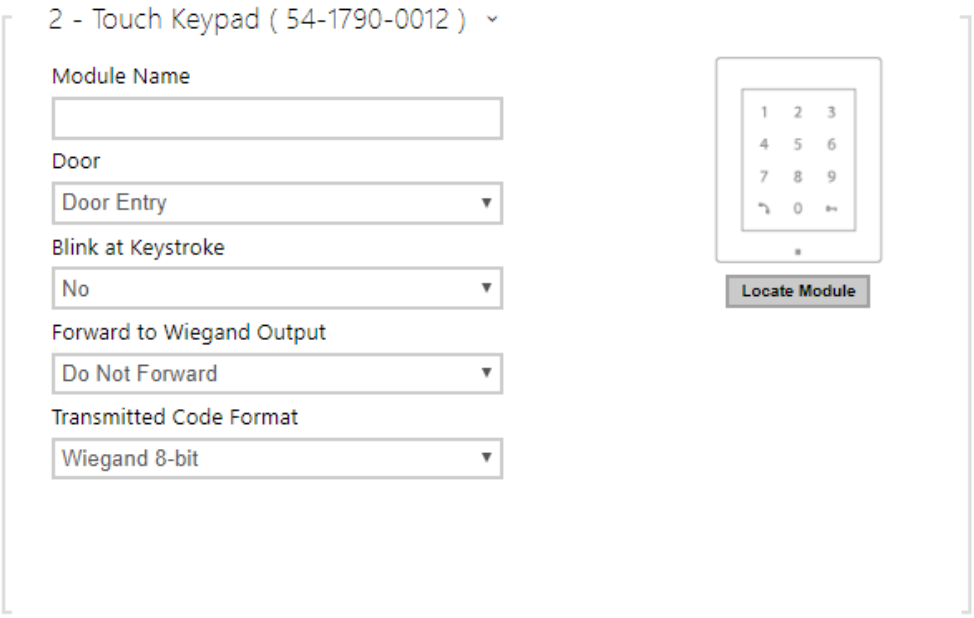
Fingerprint Reader Module Configuration

- Module Name – set the module name for logging events from the Fingerprint reader.
- Door – set the reader direction (Arrival, Departure) for the Attendance system purposes.
- Associated Switch – set the switch to be activated after user authentication via this module. If you set Door Lock Switch, the authentication rules specified in Hardware / Door will be used.

Caution

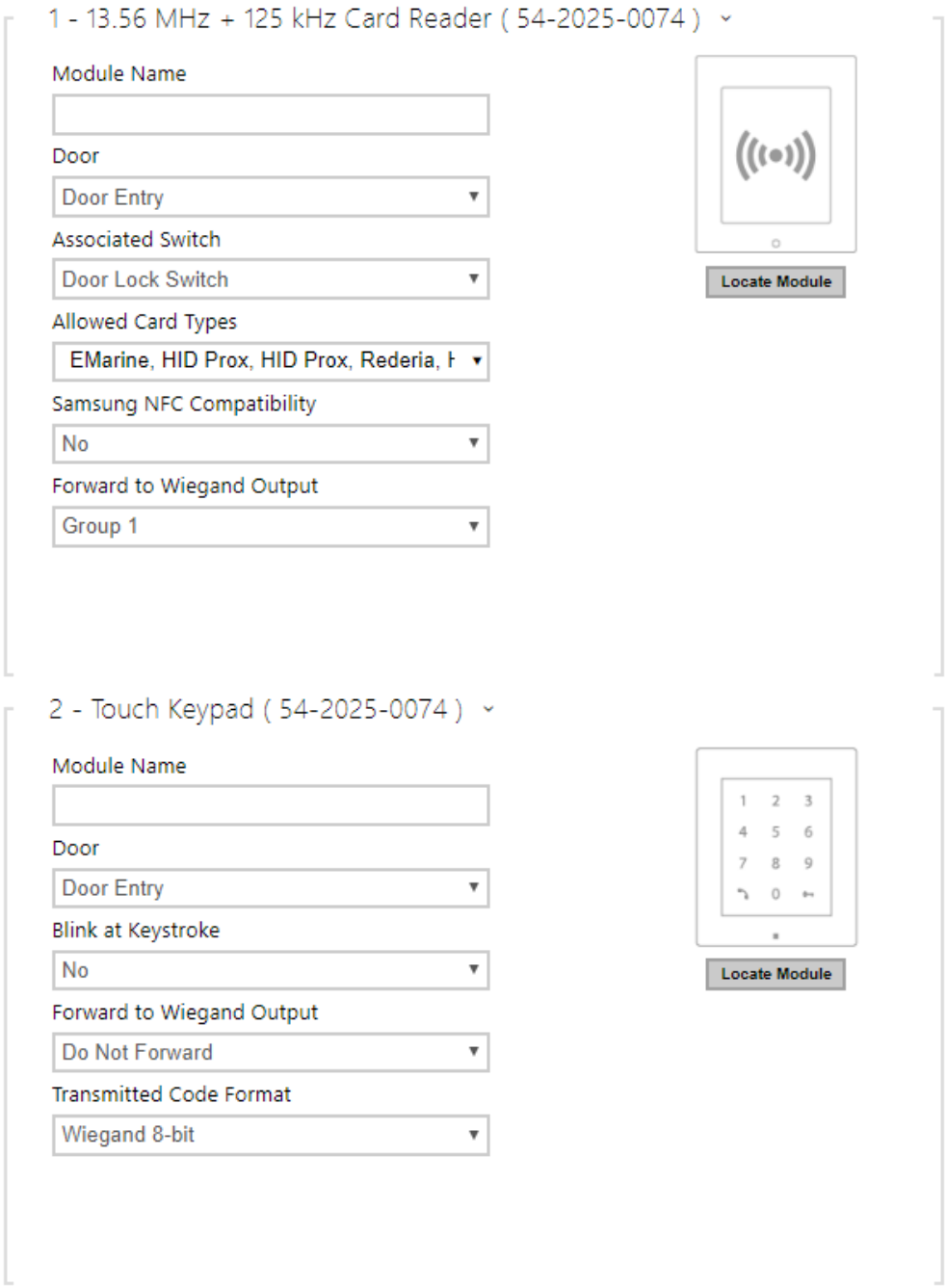
- Whenever the fingerprint reader is disconnected, the User fingerprints will be hidden in the user profile after restart. This section displays how many user fingerprints have been uploaded to the intercom memory. Once a fingerprint reader is reconnected, the User fingerprints will be displayed again.

Touch Keypad



- Module Name – set the module name for logging events from the keypad.
- Door – set the reader direction (Door Entry, Door Exit) for the Attendance system purposes.
- Blink at Keystroke – set keystroke light signalling for noisy environments where acoustic signals are difficult to hear.
- Forward to Wiegand Output – set a group of Wiegand outputs to which all pressed keys are to be forwarded.
- Transmitted Code Format – select a 4bit or 8bit (higher security) format for the codes to be transmitted.

Touch keypad & RFID reader 125 kHz, 13.56 MHz



13.56 MHz (125 kHz) Card Reader (serial number)

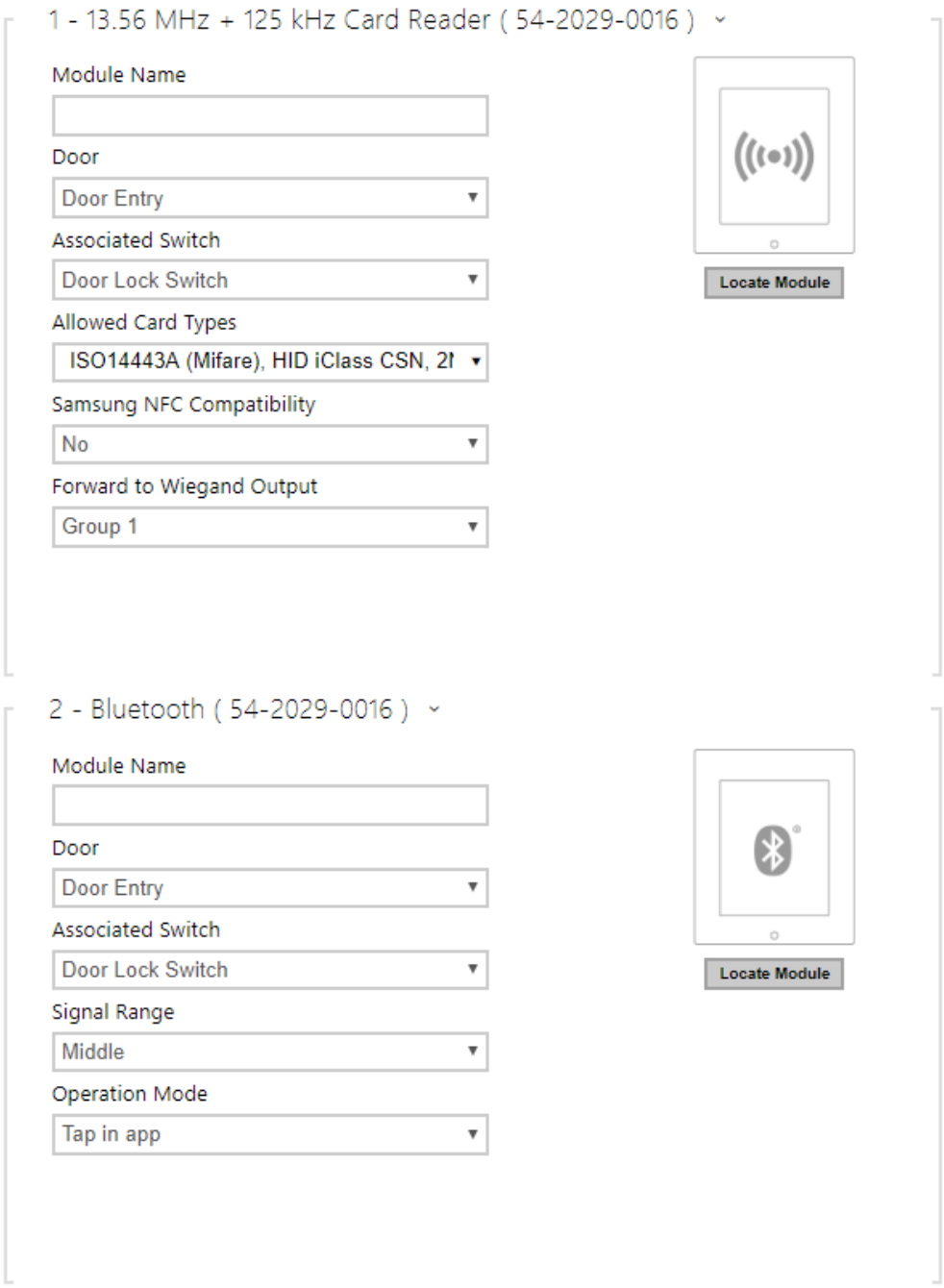
- Module Name – set the module name for card reader logging purposes.
- Door – set the reader direction (Not specified, Arrival, Departure) for the Attendance system purposes.
- Associated Switch – set the switch to be activated after user authentication via this module. If you set Door Lock Switch, the authentication rules specified in Hardware / Door will be used.

- Allowed Card Types – set the type of a card to be accepted by the card reader. The card reader supports just one card type at an instant.
- Samsung NFC Compatibility – enable NFC compatibility with the Samsung phones.
- Forward to Wiegand Output – set a group of Wiegand outputs to which all the received RFID card IDs will be resent.

Touch keypad (serial number)

- Module Name – set the module name for logging events from the touch keypad module.
- Door – set the reader direction (Door Entry, Door Exit) for the Attendance system purposes.
- Blink at Keystroke – set keystroke light signalling for noisy environments where acoustic signals are difficult to hear.
- Forward to Wiegand Output – set a group of Wiegand outputs to which all pressed keys are to be forwarded.
- Transmitted Code Format – select a 4bit or 8bit (higher security) format for the codes to be transmitted.

Bluetooth & RFID reader 125 kHz, 13.56 MHz



13.56 MHz (125 kHz) Card Reader (serial number)

- Module Name – set the module name for card reader logging purposes.
- Door – set the reader direction (Not specified, Arrival, Departure) for the Attendance system purposes.
- Associated Switch – set the switch to be activated after user authentication via this module. If you set Door Lock Switch, the authentication rules specified in Hardware / Door will be used.

- Allowed Card Types – set the type of a card to be accepted by the card reader. The card reader supports just one card type at an instant.
- Samsung NFC Compatibility – enable NFC compatibility with the Samsung phones.
- Forward to Wiegand Output – set a group of Wiegand outputs to which all the received RFID card IDs will be resent.

Bluetooth (serial number)

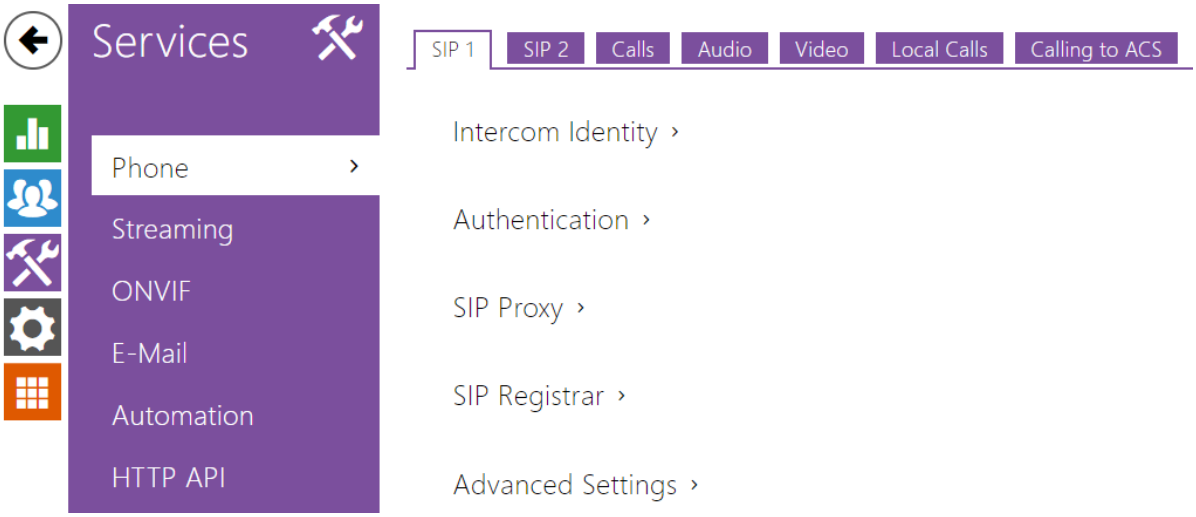
- Module Name – set the module name for logging events from the Bluetooth module.
- Door – set the reader direction (Not specified, Arrival, Departure) for the Attendance system purposes.
- Associated Switch – set the switch to be activated after user authentication via this module. If you set Door Lock Switch, the authentication rules specified in Hardware / Door will be used.
- Signal Range – set the maximum signal range, i.e. the distance within which the Bluetooth module can communicate with the mobile phone:
  - Short – less than 2 m for most phones
  - Long – maximum possible range
- Operation Mode – set the authentication method for a mobile phone:
- Tap in app – authentication has to be confirmed by tapping on an icon in the application running in a mobile phone.
- Touch Mode – touch the card reader having a phone with paired 2N® Mobile Key to confirm authentication.

5.4 Services

Here is what you can find in this section:

- 5.4.1 Phone
- 5.4.2 Streaming
- 5.4.3 ONVIF
- 5.4.4 E-Mail
- 5.4.5 Mobile Key
- 5.4.6 Automation
- 5.4.7 HTTP API
- 5.4.8 User Sounds
- 5.4.9 Web Server
- 5.4.10 Audio Test
- 5.4.11 SNMP

5.4.1 Phone



The Phone service is one of the basic functions of the intercom: helps you establish connections with other IP network terminal equipment. The **2N LTE intercoms** support the extended SIP and are compatible with and certified by the leading SIP PBX and terminal equipment manufacturers (CISCO, Avaya, Broadsoft, etc.).

The intercom supports up to five parallel calls: 1 outgoing and up to 4 incoming calls. Just one of the calls can be **active** – the audio stream is interconnected with the microphone and speaker and video stream with the camera. The other calls are always **inactive** – the microphone and speaker are muted, the intercom receives the DTMF characters for the opponent to control the intercom (activate/deactivate profiles, users, etc.).

Typically, the intercoms are used for outgoing calls and incoming calls are inactive – the microphone and speaker are muted. However, you can configure your intercom to make incoming calls active and ringing; refer to the **Calls** tab. Press the * and # keys on the numeric keypad to answer and terminate an incoming call.

The **2N LTE intercoms** use the **G.711**, **L16**, **G.722** and **G.729** protocols to encrypt or compress audio streams and the **H.263** or **H.264** codecs to compress video streams. Broadband codecs L16 and G.722 are available in selected **2N LTE intercom** models only. Choose your preferential codecs in the Audio or Video tab.

Explanation of IP Telephony Terms

- **SIP (Session Initiation Protocol)** – is a phone call signalling transmission protocol used in IP telephony. It is primarily used for setting up, terminating and forwarding calls between two SIP devices (the intercom and another IP phone in this case). SIP devices can establish connections directly with each other (Direct SIP Call) or, typically, via one or more servers: SIP Proxy and SIP Registrar.

- SIP Proxy – is an IP network server responsible for call routing (call transfer to another entity closer to the destination). There can be one or more SIP Proxy units between the users.
- SIP Registrar – is an IP network server responsible for user registration in a certain network section. As a rule, SIP device registration is necessary for a user to be accessible to the others on a certain phone number. SIP Registrar and SIP Proxy are often installed on one and the same server.
- RTP (Real-Time Transport Protocol) – is a protocol defining the standard packet format for audio and video transmission in IP networks. 2N LTE intercom uses the RTP for audio and video stream transmission during a call. The stream parameters (port numbers, protocols and codecs) are defined and negotiated via the SDP (Session Description Protocol).

The 2N LTE intercoms support three ways of SIP signalling:

- via the User Datagram Protocol (UDP), which is the most frequently used unsecured signalling method
- via the Transmission Control Protocol (TCP), which is less frequent, yet recommended unsecured signalling method
- via the Transaction Layer Security (TLS) protocol, where SIP messages are secured against third party monitoring and modification

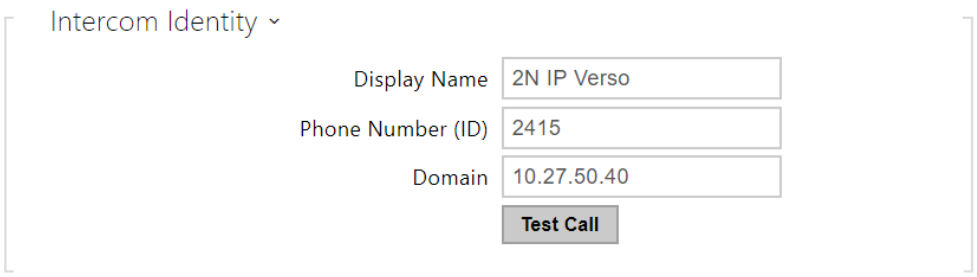
List of Parameters

The 2N LTE intercom Phone settings are arranged in five tabs:

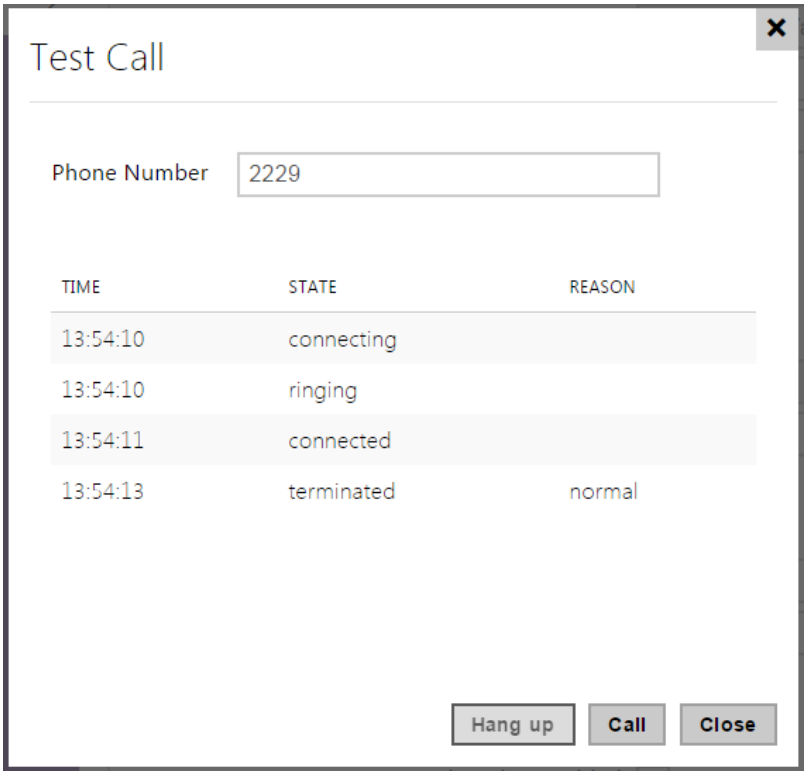
- SIP 1 and SIP 2 – complete SIP terminal settings
- Calls – incoming and outgoing call settings
- Audio – audio codec, DTMF transmission and other audio stream transmission settings
- Video – video codec, video resolution and other video stream transmission settings
- Local Calls – set the local calls including connections, video parameters
- Calling to ACS – set the Axis Camera Station calls

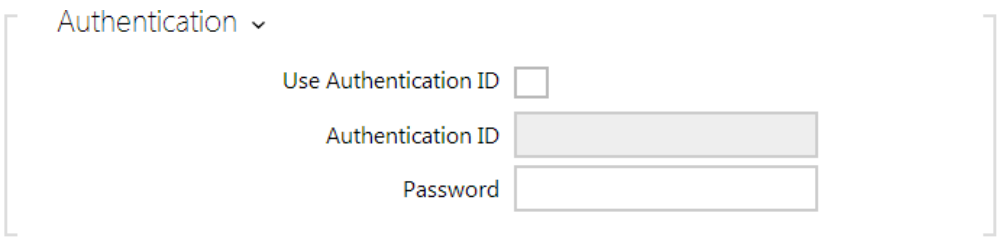
SIP 1 and SIP 2

The 2N LTE intercoms allow two independent SIP accounts (SIP 1 and SIP 2 tabs) to be configured. Thus, the intercom can be registered under two phone numbers, with two different SIP exchanges and so on. Both the SIP accounts process incoming calls equivalently. Outgoing calls are primarily processed by account 1, or, if account 1 is not registered (due to SIP exchange error, e.g.), by account 2. Select the account number for the phone numbers included in the phone directory to specify the account to be used for outgoing calls (example: 2568/1 - calls to number 2568 go via account 1, sip: 1234@192.168.1.1 calls to sip uri via account 2).

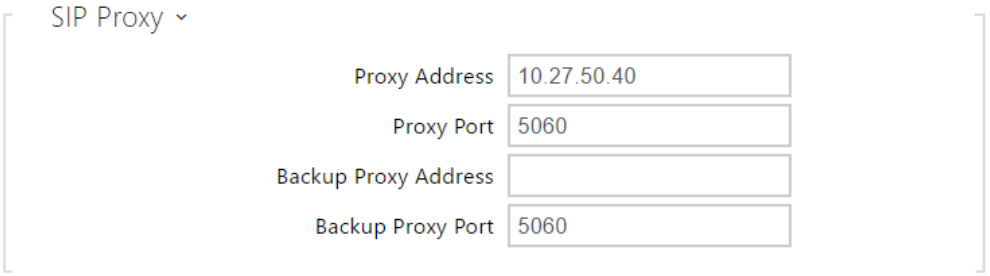


- **Display name** – set the name to be displayed as CLIP on the called party's phone.
- **Phone number (ID)** – set the intercom phone number (or another unique ID including characters and digits). Together with the domain, this number represents a unique intercom identification in calls and registration.
- **Domain** – set the domain name of the service with which the intercom is registered. Typically, it is identical with the SIP Proxy or Registrar address.
- **Test call** – display a dialogue window enabling you to make a test call to a selected phone number, see below.

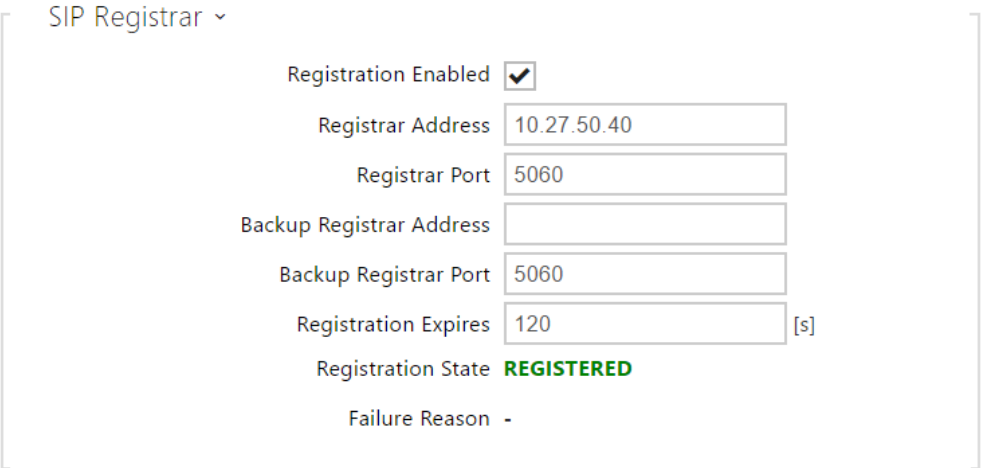




- **Use authentication ID** – enable the use of an alternative ID for intercom authentication. If disabled, the phone number defined above is used for authentication.
- **Authentication ID** – enter the alternative ID for authentication.
- **Password** – enter the password for authentication. The parameter is applied on if your PBX requires authentication.



- **Proxy address** – set the SIP Proxy IP address or domain name.
- **Proxy port** – set the SIP Proxy port (typically 5060).
- **Backup proxy address** – set the SIP Proxy IP address or domain name to be used where the main proxy fails to respond to requests.
- **Backup proxy port** – set the backup SIP Proxy port (typically 5060).

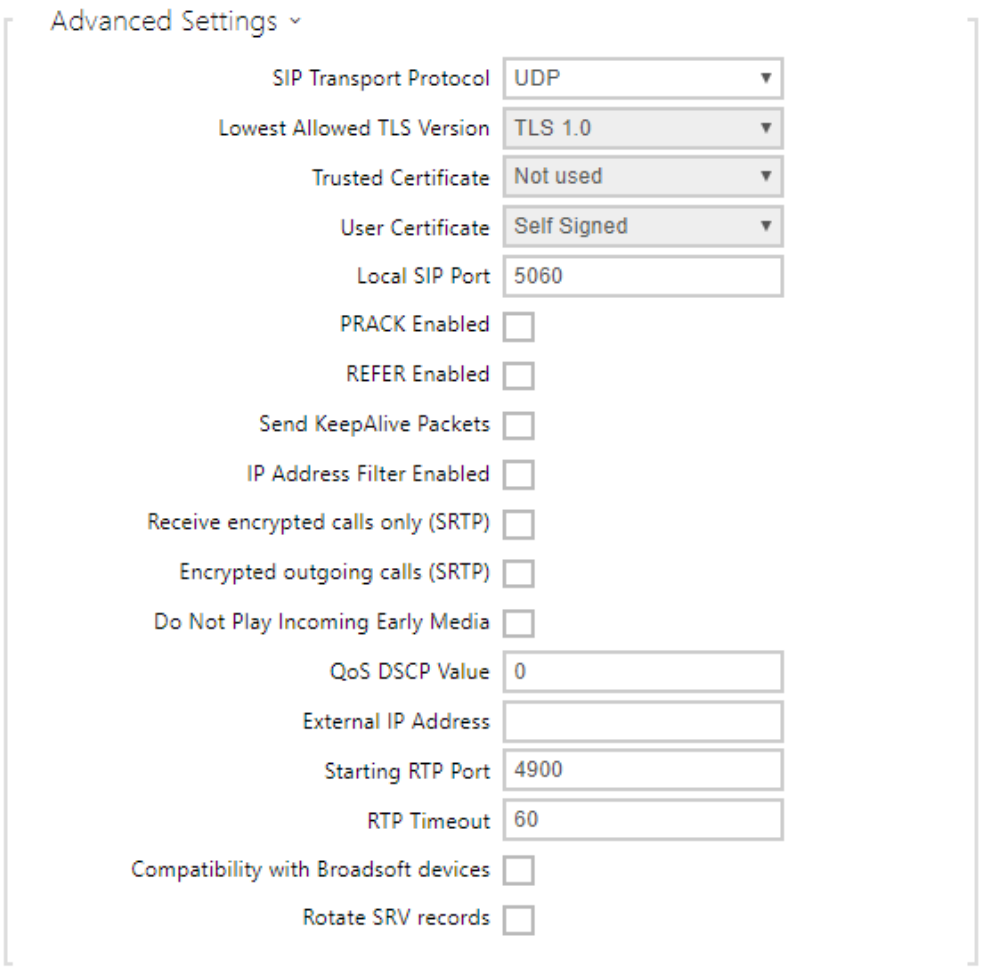


- **Registration enabled** – enable intercom registration with the set SIP Registrar.

- **Registrar address** – set the SIP Registrar IP address or domain name.
- **Registrar port** – set the SIP Registrar port (typically 5060).
- **Backup registrar address** – set the SIP registrar IP address or domain name to be used where the main registrar fails to respond to requests.
- **Backup registrar port** – set the backup SIP registrar port (typically 5060).
- **Registration expires** – define the registration expiry, which affects the network and SIP Registrar load by periodically sent registration requirements. The SIP Registrar can modify the expiry limit without letting you know.
- **Registration state** – display the current registration state (unregistered, registering..., registered, unregistering...).
- **Failure reason** – display the reason for the last registration attempt failure: the last error reply of the registrar, e.g. 404 Not Found.

Tip

- To set the Outbound Proxy complete the Outbound Proxy address into the Proxy address and Registrar address parameters. Domain = Registrar address.

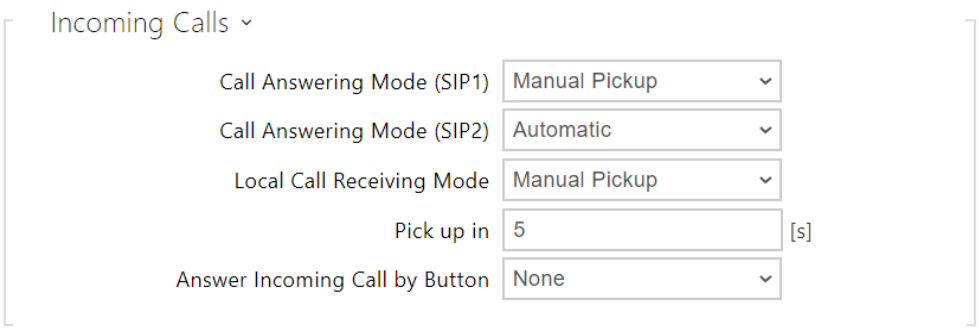


- **SIP transport protocol** – set the SIP communication protocol: UDP (default), TCP or TLS.
- **Minimum Allowed TLS Version** – define the lowest TLS version to be connected to the devices.
- **Trusted certificate** – specify one of the three sets of certificates issued by certification authorities to verify the SIP server public certificate validity, refer to the Certificates subsection. If none is included, the SIP server public certificate is not verified.
- **User certificate** – specify the user certificate and private key to verify the intercom authorisation to communicate with the SIP server. There are three sets of user certificates and private keys, refer to the Certificates subsection.
- **Local SIP port** – set the local port to be used for SIP signalling. The parameter is not applied until the intercom is restarted. The default value is 5060.
- **PRACK enabled** – enable the PRACK method for reliable confirmation of SIP messages with codes 101–199 .
- **REFER enabled** – enable call forwarding via the REFER method.
- **Send KeepAlive packets** – define whether the intercom shall, during a call, send periodical SIP OPTIONS requests to inquire about the state of the called station (to detect the station failure, e.g.).

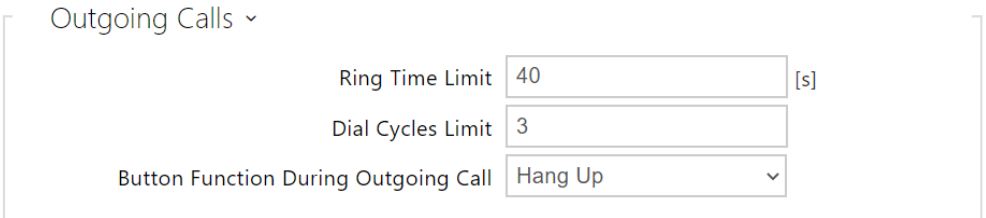
- **IP address filter enabled** – enable the blocking of SIP packet receiving from addresses other than SIP Proxy and SIP Registrar. The primary purpose of the function is to enhance communication security and eliminate unauthorised phone calls.
- **Receive encrypted calls only (SRTP)** – set that SRTP encrypted calls shall only be received on this account. Unencrypted calls will be rejected. At the same time, TLS is recommended as the SIP transport protocol for higher security.
- **Encrypted outgoing calls (SRTP)** – set that outgoing calls shall be SRTP encrypted on this account. At the same time, TLS is recommended as the SIP transport protocol for higher security.
- **Do Not Play Incoming Early Media** – disable playing of the incoming audio stream before call pick-up (early media), which is sent by some PBXs or other devices. A standard local ringtone is played instead.
- **QoS DSCP value** – set the SIP packet priority in the network. The set value is sent in the TOS (Type of Service) field in the IP packet header. Value is entered in decimal format. The parameter is not applied until the intercom is restarted.
- **Starting RTP port** – set the starting local RTP port in the range of the length of 60 ports to be used for audio and video transmissions. The default value is 5000 (i.e. the used range is 5060–5059). The parameter is only set for account 1 but applies to both the SIP accounts.
- **External IP address** – set the public IP address or name of the router to which your intercom is connected. If the intercom IP address is public, leave this field blank.
- **RTP timeout** – set the audio stream RTP packet receiving timeout during a call. If this limit is exceeded (RTP packets are not delivered), the call is terminated by the intercom. Set the parameter to 0 to disable this function. The parameter is only set for account 1 but applies to both the SIP accounts.
- **Compability with Braodsoft device** – Set the Broadsoft PBX compatibility mode. Having received re-invite from a PBX in this mode, the intercom replies by repeating the last sent SDP with currently used codecs instead of sending a complete offer.
- **Rotate SVR record** – Allow SRV record rotation for SIP Proxy and Registrar. This is an alternative method of transition to backup servers in the event of main server failure or unavailability.

Calls

- **Call Time Limit** – set the call duration limit after which the call is automatically terminated. The intercom signals termination with a beep 10 s before the call end. Enter any DTMF character into the call (# on your IP phone, e.g.) to extend the call time. If the call duration is set to 0 and SRTP is not used, the call is not time limited.

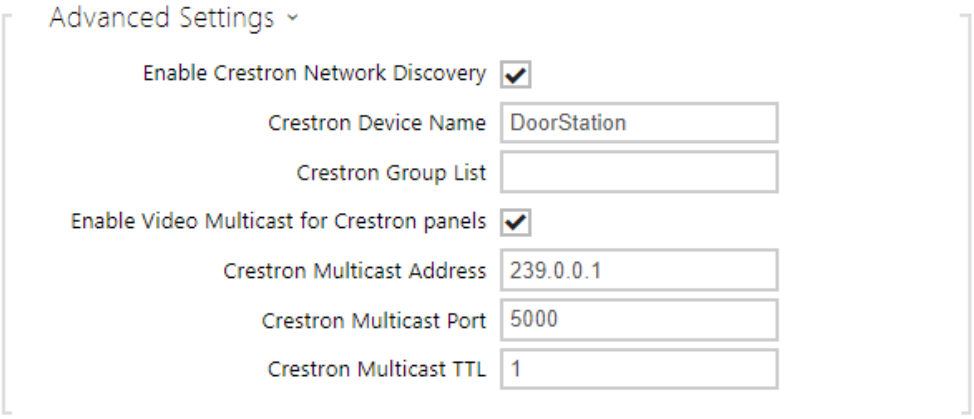


- Call Answering Mode(SIP1, SIP2) – set the incoming call receiving mode
  - Always busy – the intercom rejects incoming calls,
  - Manual – the intercom alerts incoming calls and the user answers them using a numeric keypad button, and
  - Automatic – the intercom answers incoming calls automatically. You can set the call receiving mode for each SIP account separately.
  - Automatic (DTMF only) – the intercom answers incoming calls automatically only if DTMF without connection to a microphone and speaker is received.
- Local Call Receiving Mode – set the incoming local call receiving mode
  - Always busy – the intercom rejects incoming calls,
  - Manual – the intercom alerts incoming calls and the user answers them using a numeric keypad button, and
  - Automatic – the intercom answers incoming calls automatically. You can set the call receiving mode for each SIP account separately.
  - Automatic (DTMF only) – the intercom answers incoming calls automatically only if DTMF without connection to a microphone and speaker is received.
- Pick up in – timeout after which the call is answered if the automatic call receiving mode is selected. Common for all SIP accounts.
- Answer Incoming Call by Button – pick up an incoming call via a selected speed dial button. Set to None to disable the function.



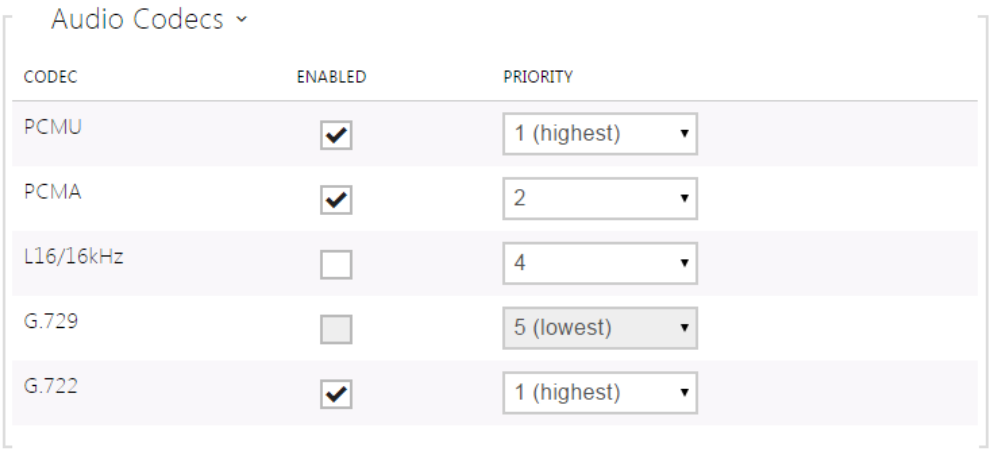
- Ring time limit – set the outgoing call setup and ringing time limit after which the calls shall be automatically terminated. If the calls are routed to the GSM network via GSM gateways, your are advised to set a value higher than 20 s. Minimum value 1 s, maximum value 600 s. Configure 0 to disable this time limit.

- **Dial Cycles Limit** – set the maximum count of user deputy dial cycles if the user dialled by the Phone Book position number is inaccessible. The function helps you avoid deadlock if the User Deputy is set to the same value in the Phone Book. Refer to Subs. **5.4.1.1 Dial Cycles Limit** for calling cycle limit settins options.
- **Button Function During Outgoing Call** – set the quick dial button function during an outgoing call. You can only set the button that initiated the call.



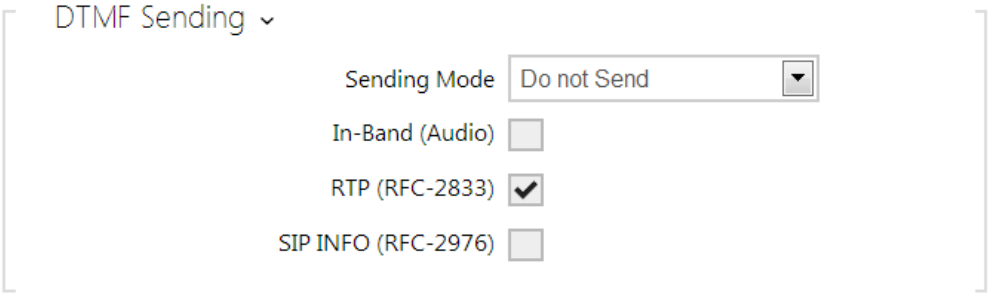
- **Enable Crestron Network Discovery** – enable 2N IP intercom identification within the Crestron network.
- **Crestron Device Name** – select the device name.
- **Crestron Group List** – select the group name list with comma as a separator.
- **Enable Video Multicast for Crestron panels** – enable video multicast for Crestron panels, allowing for multiple Crestron devices to receive the same video stream without wasting the local network bandwidth.
- **Crestron Multicast Address** – set the multicast address to be used for multicast video for Crestron devices.
- **Crestron Multicast Port** – set the multicast port to be used for multicast video for Crestron devices.
- **Crestron Multicast TTL** – set the Time To Live (TTL) value to be used for sending video early media for Crestron devices.

Audio



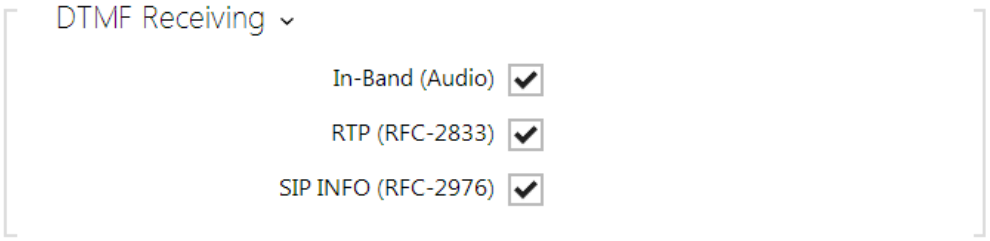
- Enable/disable the use of audio codecs for call setups and set their priorities . Broadband codecs L16 and G.722 are available in selected intercom models only . Codec G.729 is available for all the 2N IP intercoms.

The tab below helps you define how DTMF characters shall be sent from the intercom. Check the DTMF receiving options and settings of the opponent to make the function work properly.

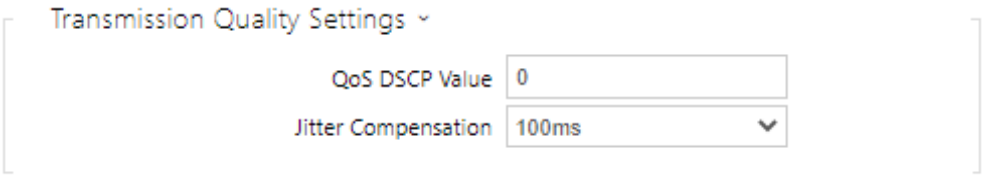


- **Sending mode** – define whether it will be possible to send DTMF during a call by pressing 0 through 9, * and # on the intercom numeric keypad. Set the sending mode for incoming/outgoing/all calls.
- **In-Band (Audio)** – enable classic DTMF dual tone sending in the audio band.
- **RTP (RFC-2833)** – enable DTMF sending via the RTP according to RFC-2833.
- **SIP INFO (RFC-2976)** – enable DTMF sending via SIP INFO messages according to RFC-2976.

The tab below helps you define how DTMF characters shall be received from the intercom. Check the DTMF receiving options and settings of the opponent to make the function work properly.

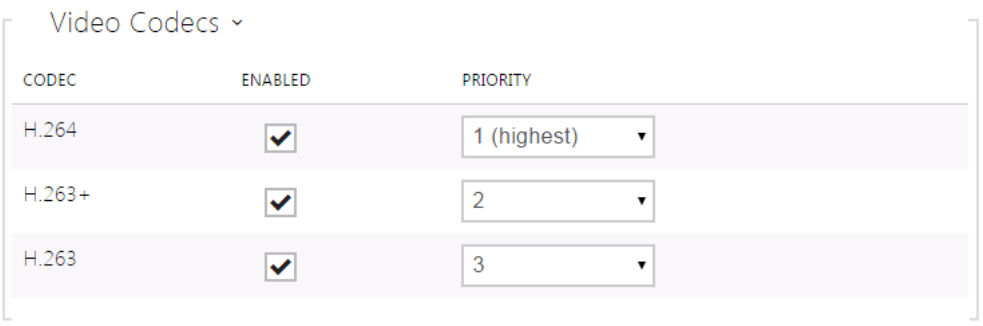


- In-Band (Audio) – enable classic DTMF dual tone receiving in the audio band.
- RTP (RFC-2833) – enable DTMF receiving via the RTP according to RFC-2833.
- SIP INFO (RFC-2976) – enable DTMF receiving via SIP INFO messages according to RFC-2976.

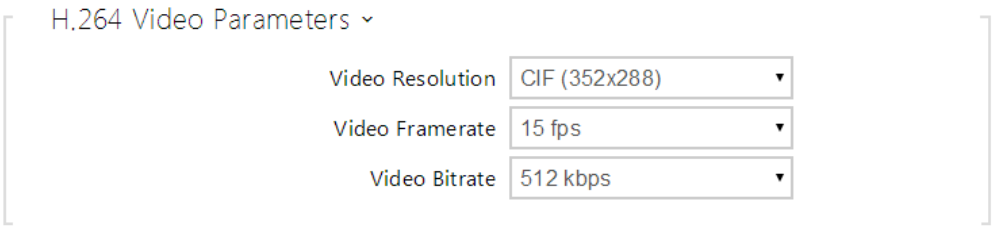


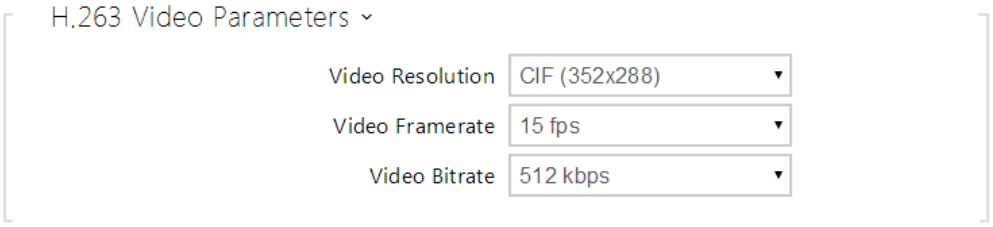
- QoS DSCP value – set the audio RTP packet priority in the network. The set value is sent in the TOS (Type of Service) field in the IP packet header. Value is entered in decimal format. The parameter is not applied until the intercom is restarted.
- Jitter compensation – set the buffer capacity for jitter compensation in audio packet transmissions. A higher capacity improves the transmission resistance at the cost of a greater sound delay.

Video

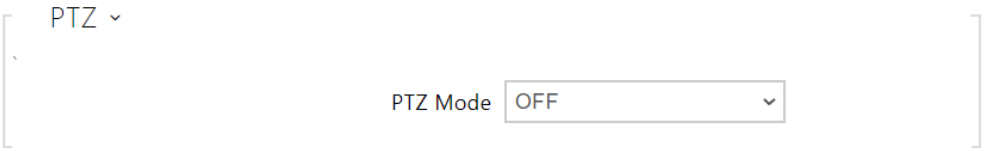


- Enable/disable the use of video codecs for call setups and set their priorities.





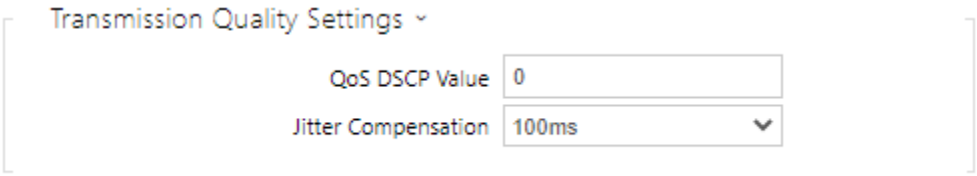
- **Video resolution** – set the video resolution for phone calls.
- **Video framerate** – set the video frame rate for phone calls.
- **Video bitrate** – set the video stream bit rate for phone calls.



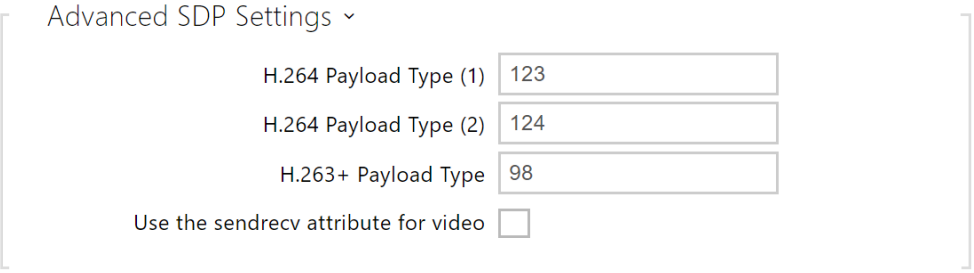
- **PTZ Mode** – enable the PTZ (Pan-Tilt-Zoom) function to control the camera display area during the call via DTMF (**Enhanced Video** license required) from your IP phone numeric keypad. Click the * key to enable/disable the PTZ mode. The meanings of the IP phone keys in the PTZ mode are as follows:

IP phone key	PTZ mode function
*	Enable/disable PTZ
1	Zoom in
3	Zoom out
2	Move zoom region up
4	Move zoom region to the left
6	Move zoom region to the right

IP phone key	PTZ mode function
8	Move zoom region down
5	Return to initial state



- **QoS DSCP value** – set the video RTP packet priority in the network. The set value is sent in the TOS (Type of Service) field in the IP packet header.
- **Jitter Compensation** – set the buffer capacity for jitter compensation in audio packet transmissions. A higher capacity improves the transmission resistance at the cost of a greater sound delay.



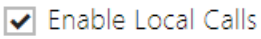
- **H.264 payload type (1)** – set the payload type for video codec H.264 (packetisation mode 1). Set a value from the range of 96 through 127, or 0 to disable this codec type.
- **H.264 payload type (2)** – set the payload type for video codec H.264 (packetisation mode 2). Set a value from the range of 96 through 127, or 0 to disable this codec type.
- **H.263+ payload type** – set the payload type for video codec H.263+ (packetisation mode 3). Set a value from the range of 96 through 127.
- **Use the sendrecv attribute for video** – the setting was earlier named Compatibility with Polycom phones. This setting provides compatibility with some third party devices (Polycom/Cisco and others). In this mode, the intercom sends sendrecv instead of sendonly in the SDP message in the codec offer for video.

Tip

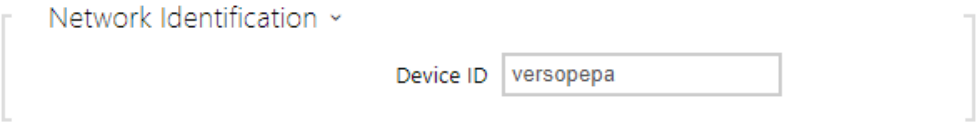
- For the Video Preview feature at the **Grandstream GXV 3275** phone (video transferred via Early Media) no configuration is needed. Check your PBX vendor whether this feature is supported by your PBX system.
- For the Video Preview feature at the **Gigaset Maxwell 10** phone (video transferred via jpg images) it is necessary to set **Connection Type** to **Unsecure** and **Authentication** to **None** at the **Camera API** in **HTTP API.**

Local Calls

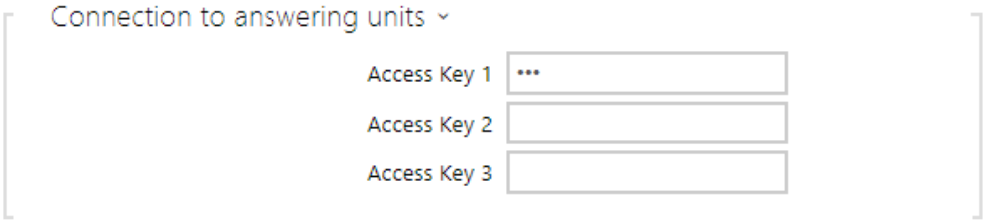
This tab contains settings for connection of the 2N answering units to the intercom. The main parameter is the access key, which secures the connection and enables you to create multiple independent groups of intercoms and 2N answering units within the local network. It also contains the video transmission settings.



- **Enable Local Calls** – enable calls between 2N devices in the LAN. With this function off, the other LAN devices cannot locate this device, i.e. cannot call the device in the device:device_ID format.

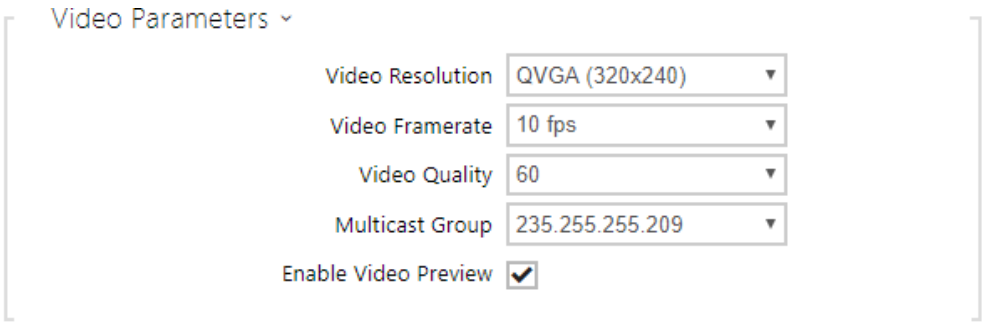


- **Device ID** – set the device ID to be displayed in the LAN device list in all the 2N devices in one and the same LAN. You can direct a call to this device by setting the user phone number as device:device_ID in these devices.

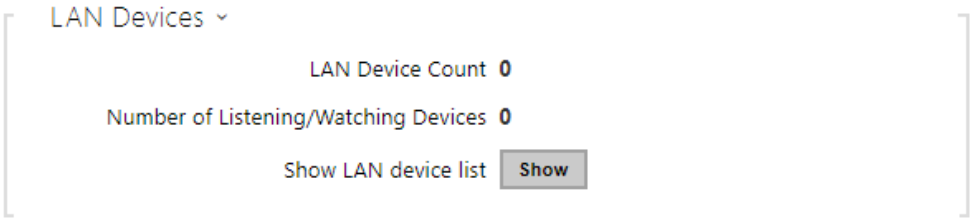


- **Access Key 1-3** – set the access key to be shared by the intercom and 2N answering unit . If the access keys do not match in the intercom and 2N answering unit , the intercom cannot call the 2N answering unit and the 2N

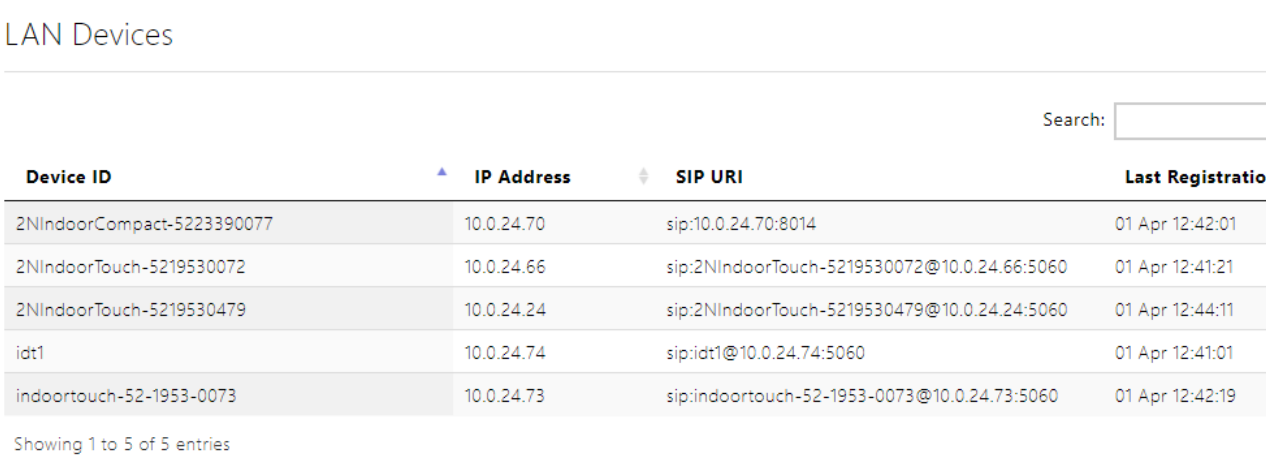
answering unit cannot receive video from the intercom. Each intercom can be assigned up to three access keys and thus become a member of up to three independent 2N answering unit groups. The Access key length is up to 63 characters.



- **Video Resolution** – set the resolution of the video stream to be sent to 2N answering unit.
- **Video Framerate** – set the framerate of the video stream to be sent to 2N answering unit.
- **Video Quality** – set the quality of the MJPEG video stream to be sent to 2N answering units.
- **Multicast Group** – set the multicast address to which the intercom video stream shall be sent. Select one of the 8 preset addresses or set the mode in which the intercom selects the address automatically.
- **Enable Video Preview** – enable video preview multicast transmission.

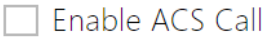


- **LAN Device Count**– display the current count of local 2N answering units connected to the intercom, i.e. those registered with the intercom.
- **Number of Listening/Watching Devices** – display the current count of 2N answering units watching video streams from the intercom.
- **Show LAN device list** – display the list of local 2N answering units.



ACS

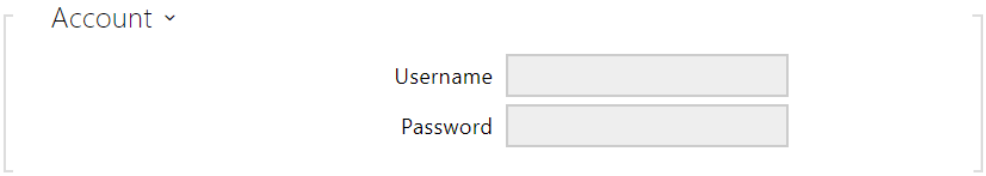
This function is used for integration of the Axis Camera Station service into the 2N LTE intercoms.



- **Enable ACS Call** – allow calling to the Axis Camera Station (ACS). Use a special URI in the vms:* format for the ACS calls.

Caution

- In case a **2N IP intercom** has already been added to the ACS, back up all of its records before upgrade, then remove the 2N IP intercom from the ACS, perform upgrade and add the intercom again.



- **Username** – ACS call authentication username.
- **Password** – ACS call authentication password.

5.4.1.1 Dial Cycles Limit

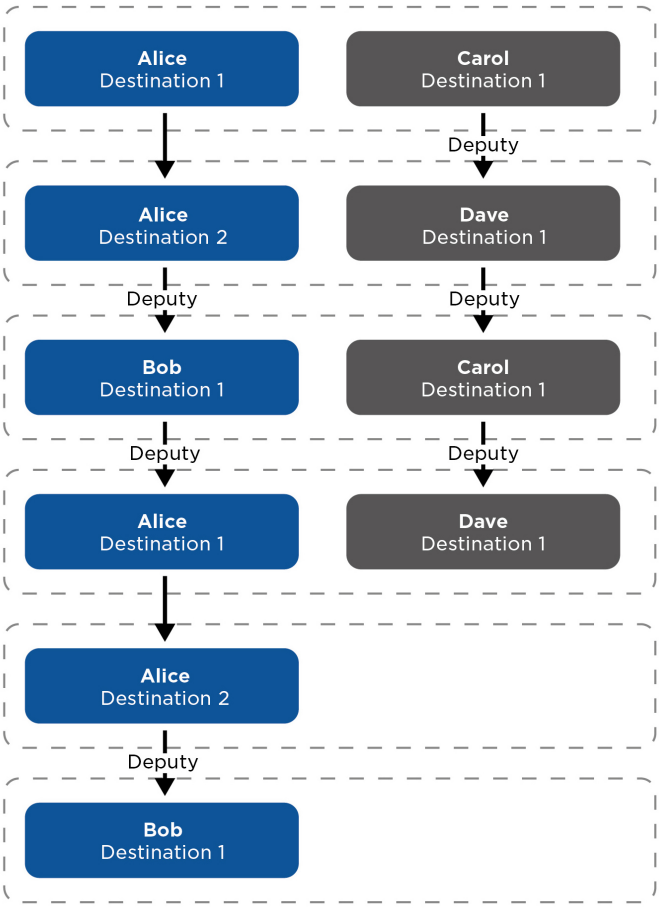
This parameter sets the maximum number of consecutive calls to a calling destination when there is a dialing cycle of deputies (the simplest example of a dialing cycle is when a user has configured itself as a deputy, another example is two users who are configured to be deputies of each other).

Example 1

The algorithm first resolves the branches independently of each other. There are users Alice and Carol configured to one button in the example below (by pressing the button two parallel calls are initiated together). The Dial Cycles Limit is set to 2. Alice has two phone numbers (calling destinations), the other users have only one calling destination. The deputies are configured as follows:

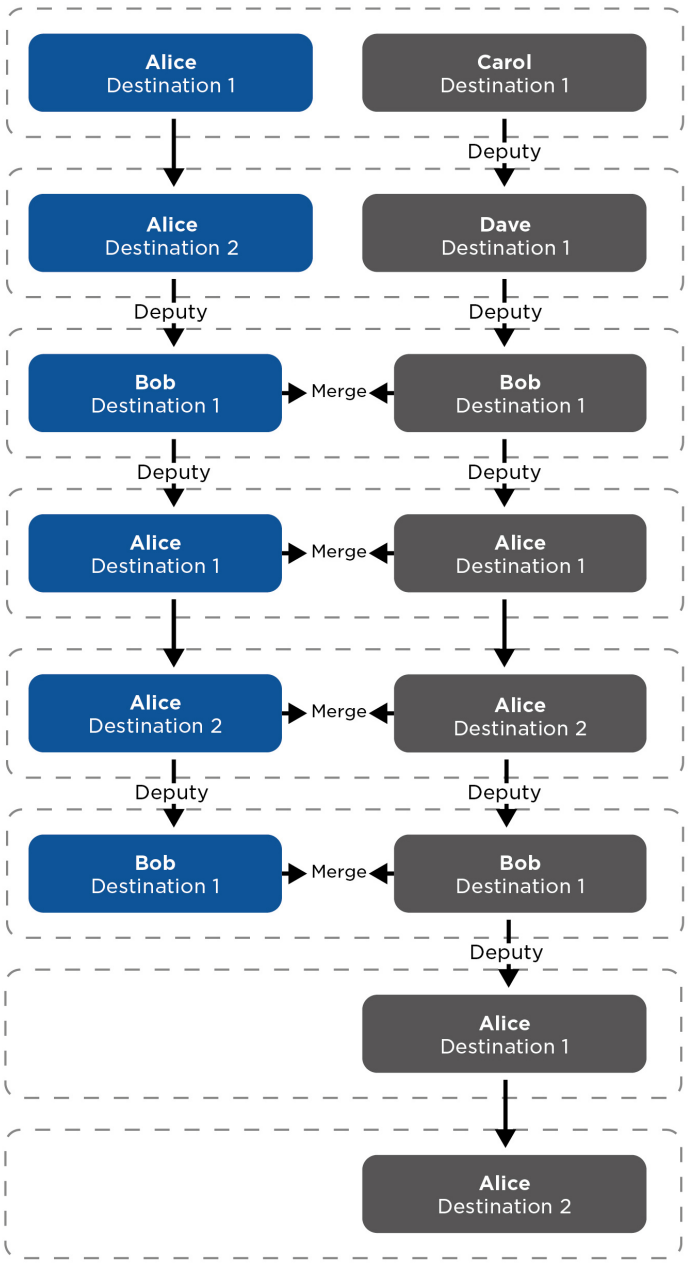
- Alice is the deputy of Bob
- Bob is the deputy of Alice
- Carol is the deputy of Dave
- Dave is the deputy of Carol

The resulting calling scheme looks like this (in case no one picks up or rejects the call):

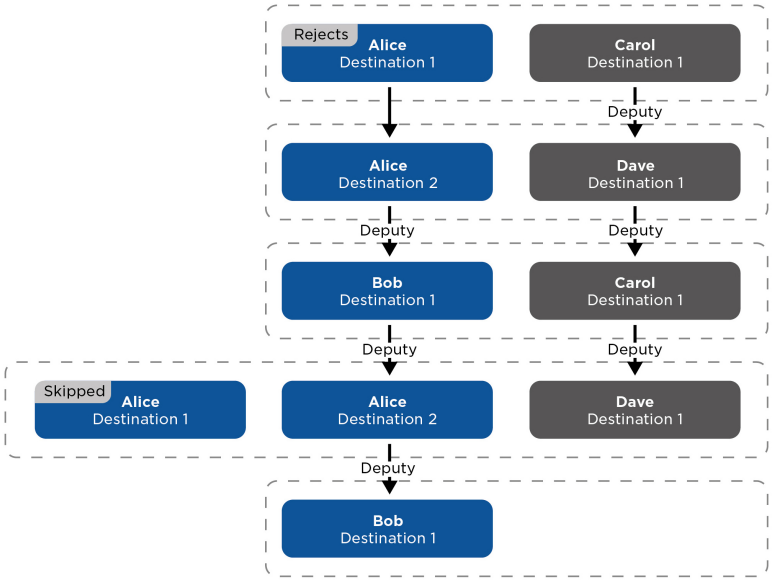


Example 2

Let's take the previous example and change the deputy of Dave to Bob. This way the two branches are merged (only one call takes place from step 3 further on). You can also see that Alice is eventually called three times. This is caused by the fact that the Dial Cycles Limit is applied to each branch individually and in fact Alice is called only twice in the blue branch and as well only twice in the purple branch.

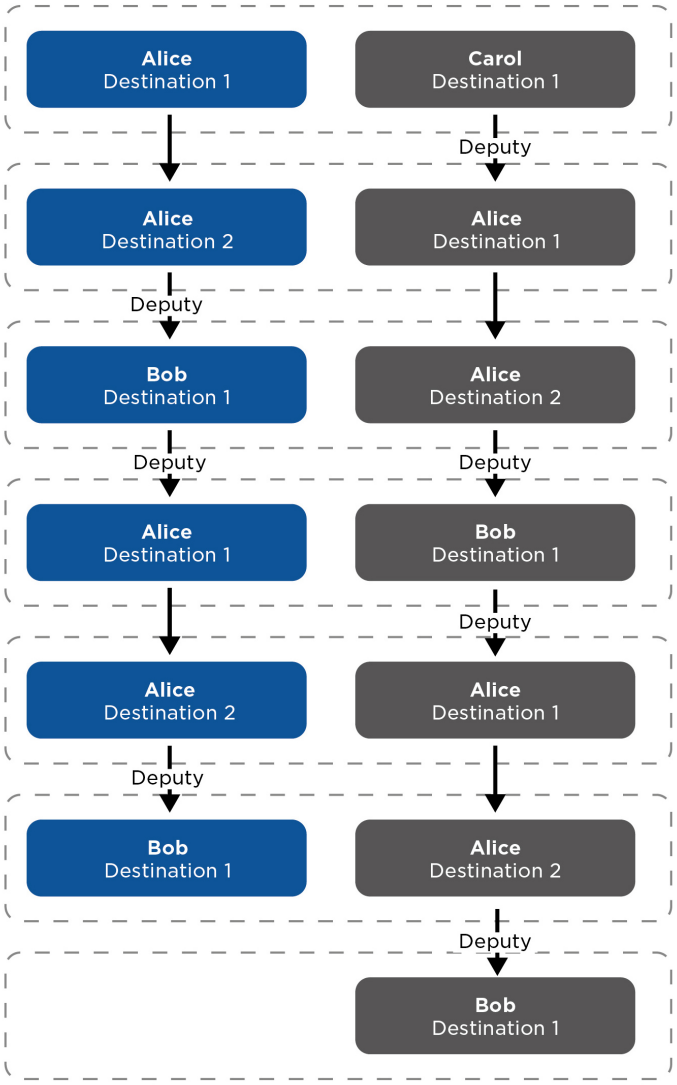


Example 3 Let's take the configuration from Example 1 and consider a situation that Alice rejects the call from her first destination. The algorithm skips dialing this destination further on (since the user actively rejected the call and it makes no sense to call them again). The calling groups in individual steps are therefore dynamically modified when one or more users reject the call from various calling destinations. Skipping of a calling destination that rejected the call applies to all branches regardless of in which branch the call was rejected.

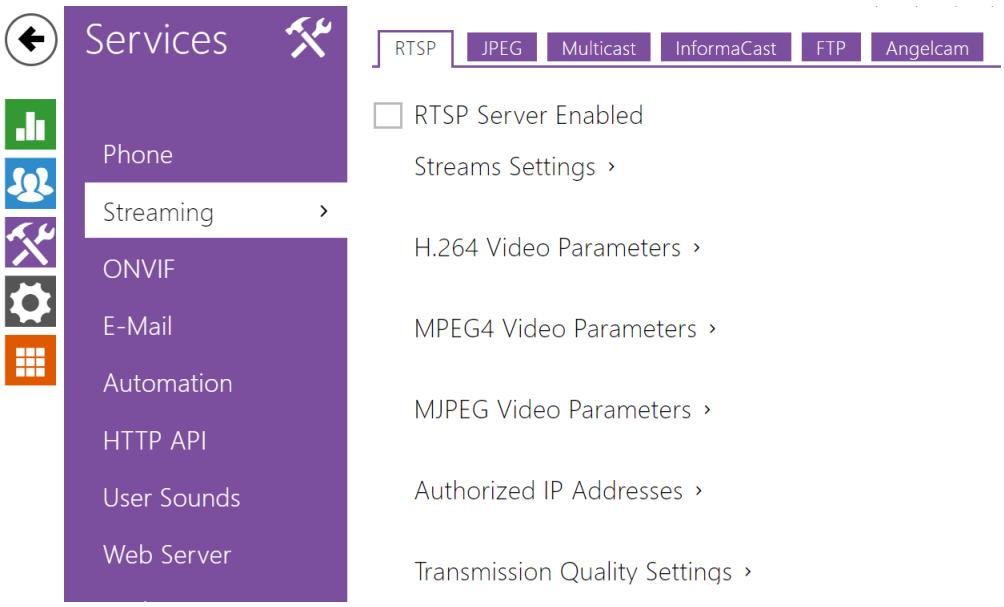


Example 4

It is possible that two calling destinations of a single user are called at once. This can be achieved by configuring the scheme similarly to the example below but this situation may also arise from skipping of the destinations that rejected the call previously.


Alice
Destination 1
Carol
Destination 1
Deputy
Alice
Destination 2
Alice
Destination 1
Deputy
Bob
Destination 1
Alice
Destination 2
Deputy
Deputy
Alice
Destination 1
Bob
Destination 1
Deputy
Alice
Destination 2
Alice
Destination 1
Deputy
Bob
Destination 1
Alice
Destination 2
Deputy
Bob
Destination 1

5.4.2 Streaming



The **2N LTE intercoms** provide several audio/video streaming methods; refer to the table below:

Transmission method	Description
JPEG/HTTP	Static JPEG image transmission. Refer to the JPEG tab below.
MJPEG /HTTP	A series of consecutive JPEG images, the Server Push - multipart/x-mixed-replace method. Refer to the JPEG tab below.
RTSP + RTP /UDP	RTSP with separate RTP/UDP audio and video streams. Supported both for audio (G.711) and video (H.264, H.263, MPEG-2 and MJPEG). Refer to the RTSP tab below.
RTP/RTSP	RTP tunnelling via RTSP. Supported both for audio (G.711) and video (H.264, H. 263, MPEG-2 and MJPEG). Refer to the RTSP tab below.
RTP/RTSP /HTTP	RTSP tunnelling via HTTP. Supported both for audio (G.711) and video (H.264, H. 263, MPEG-2 and MJPEG). Refer to the RTSP tab below.
RTP/UDP-Multicast	Uncontrolled RTP packet multicast. Supported for audio (G.711) only. Refer to the Multicast tab below.

Explanation of Terms

- RTP (Real-Time Transport Protocol) – is a protocol defining the standard packet format for audio/video transmission via IP networks. 2N LTE intercom employs this protocol for audio/video streaming. The RTP transport protocol is either UDP or also RTSP and HTTP.
- RTSP (Real-Time Streaming Protocol) – is a network protocol for streaming server control (controls setting up, launching and stopping of audio/video streams).
- HTTP (Hypertext Transfer Protocol) – helps transmit practically any contents and is used primarily by internet browsers for web server communication. 2N LTE intercom uses the HTTP to transmit static JPEG images or MJPEG streams via the HTTP Server Push.
- IP Multicast – is a way of parallel sending of IP packets from one source to multiple stations via IP networks. 2N LTE intercom uses IP multicast for sending and receiving audio streams.
- ONVIF (Open Network Video Interface Forum) – is a set of video camera search, configuration and administration specifications for the IP network. The 2N LTE intercoms are ONVIF compatible and fully implement the ONVIF Profile S.
- JPEG – is a standard method of lossy compression of images.
- MJPEG – is a video stream encoding format in which each image is compressed separately by JPEG. MJPEG encoding produces high-quality video at a significantly higher bit rate compared to the methods mentioned below.
- H.263 – is a video stream compression standard used in telecommunications. Unlike MJPEG, H.263 uses differences between consecutive images and provides a significantly higher level of compression to the detriment of the video stream quality.
- H.263+ – is like H.263, but supports a different bit stream packetisation method.
- MPEG-4 part 2 – is a video stream compression standard used mostly in areas other than telecommunications, but often supported by IP camera and video surveillance systems. In 2N LTE intercoms, the compression level and image quality are comparable with the H.263 standard.
- H.264 – is a video stream compression standard. Compared to H.263 and MPEG-4, H.264 provides an approximately identical level of video stream quality but a half bit rate. This type of compression is sometimes called MPEG-4 part 10.
- G.711 – is one of the most common audio transmission standards in telecommunications. It uses the sampling frequency of 8 kHz and data are compressed using logarithmic compression.

List of Parameters

RTSP

The 2N LTE intercoms integrate an RTSP server, which can be configured in this tab. The RTSP server allows for audio/video streaming. You can choose the data transmission method, video compression method/parameters and other parameters associated with transmission security and quality.

Enter the following RTSP Uri for connection to the intercom RTSP server:

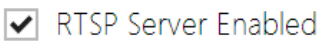
- rtsp://intercom_ip_address/

Set the video stream (video codec type, image resolution, frame rate and bit rate) parameters in the Video section.

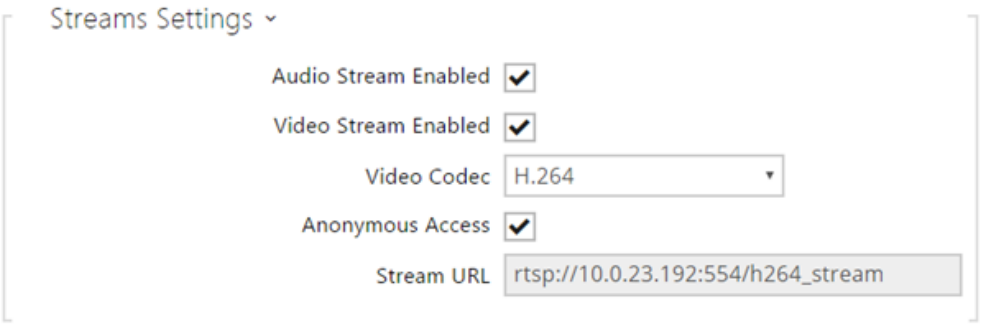
Or, use the following RTSP Uri and choose a codec type other than the currently set one:

1. a. rtsp://ip_intercom_address/h264_stream
   b. rtsp://ip_intercom_address/mpeg4_stream
   c. rtsp://ip_intercom_address/mjpeg_stream

Number of RTSP streams is limited to 4 parallel streams. This number includes both audio streams without video and audio return channel directed to the intercom.

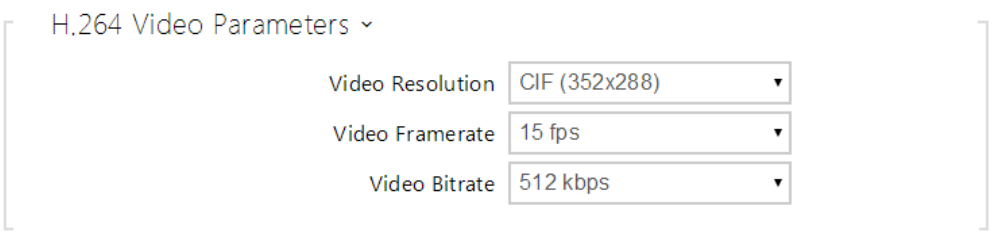


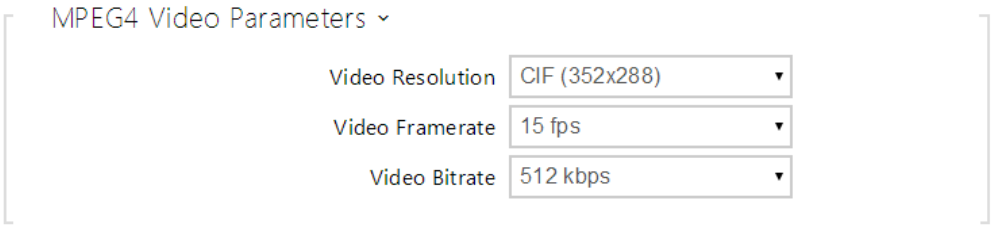
- RTSP server enabled – enable the RTSP server function in the intercom.

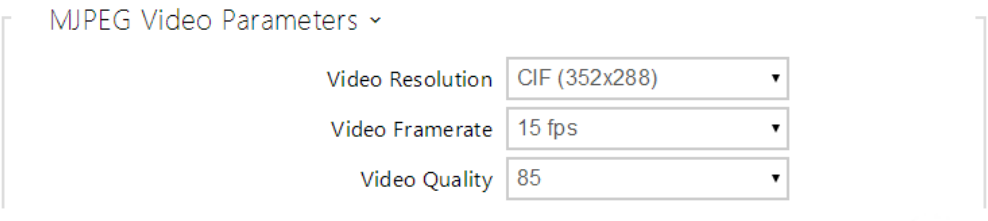


- Audio stream enabled – enable offering of audio stream while establishing connection with the RTSP server.
- Video stream enabled – enable offering of video stream while establishing connection with the RTSP server.

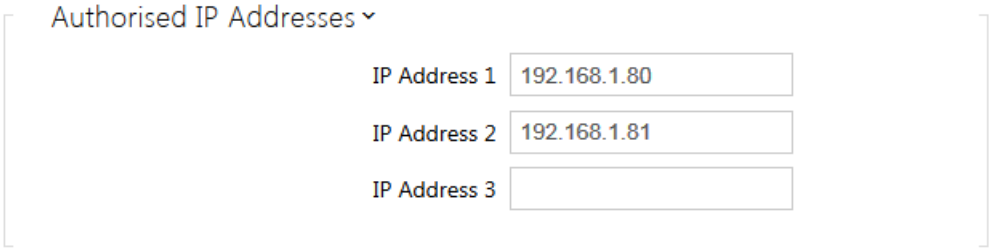
- **Video codec** – set the default video codec for RTSP streaming.
- **Anonymous Access** – enables access to the RTSP server without user authentication. If this field is unselected, the RTSP client must authenticate itself as one of the ONVIF users while accessing the server; refer to Account setting in the Services / ONVIF subsection.
- **Stream URL** – display the stream URL depending on the codec selection.



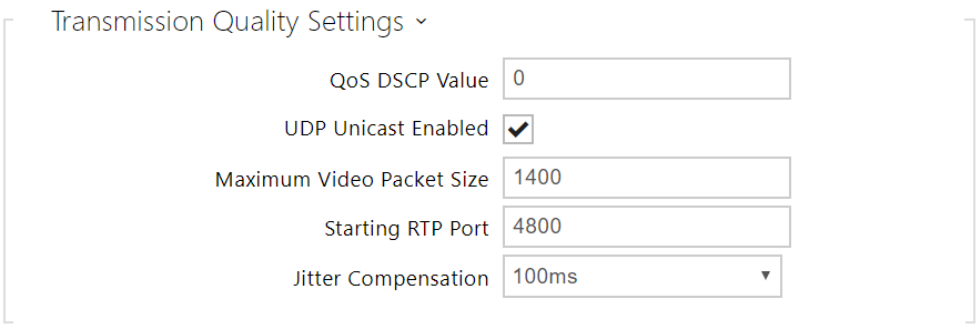




- **Video resolution** – set the default image resolution for RTSP streaming.
- **Video framerate** – set the default video frame rate for RTSP streaming.
- **Video bitrate** – set the default video bit rate for RTSP streaming.
- **Video quality**– set the video compression level (for MJPEG only) ranging between 10 (low quality, lowest bitrate) and 99 (top quality, highest bitrate).



- **IP address 1–4** – set up to 4 authorised IP addresses from which you can log in to the RTSP server. If none of the four fields is completed, any IP address can be used for login.



- **QoS DSCP value** – set the audio/video RTP packet priority in the network. The set value is sent in the TOS (Type of Service) field in the IP packet header.
- **UDP unicast enabled** – enable audio/video stream sending via the RTP/UDP. If this mode is off, the audio/video stream data are sent via the RTP/RTSP only.
- **Maximum video packet size** – set the maximum size of the video packets to be sent via the RTP/UDP.
- **Starting RTP port** – set the starting local RTP port in the range of the length of 60 ports to be used for audio and video transmissions. The default value is 4800 (i.e. the used range is 4800–4859).
- **Jitter Compenstantion** – set the buffer capacity for jitter compensation in audio packet transmissions. A higher capacity improves the transmission resistance at the cost of a greater sound delay.

Tip

- FAQ: **VLC Player - How to watch a video from 2N IP/LTE intercom RTSP server**
- FAQ: **VLC Player - How to record video from 2N IP/LTE intercom**

JPEG

Here configure the simplest way of video streaming: JPEG/HTTP and MJPEG/HTTP. Send the following GET address query to download images from the intercom:

- http://intercom_ip_address/api/camera/snapshot?width=W&height=H

or (for MJPEG, HTTP Server Push):

- http://intercom_ip_address/api/camera/snapshot?width=W&height=H&fps=N

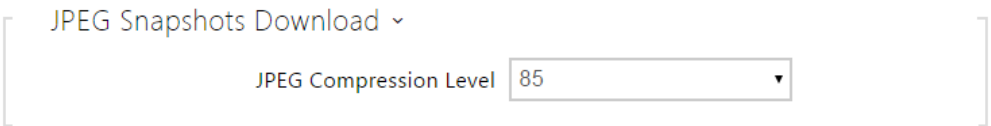
where W and H specify image resolution (supported resolutions: 160 x 120, 320 x 240, 640 x 480, 176 x 144, 322 x 272, 352 x 288, 1280 x 960 – for 1 MPix camera equipped models only) and N gives the count of snapshots per second (1 through 10).

The following table shows the maximum number of simultaneous MJPEG/HTTP streams in which the rate of outgoing frames using the default level of JPEG compression is not reduced.

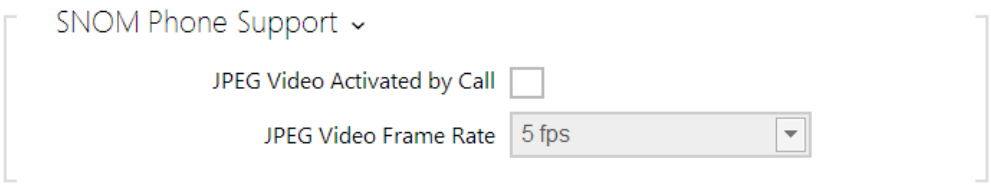
Type of intercom	Resolution	Number of streams
Force/Vario	640 x 480	15
Force HD	640 x 480	15
Force HD	1280 x 960	3
Verso	640 x 480	8
Verso	1280 x 960	2

Note

- *The HTTP Server Push method with the multipart/x-mixed-replace contents is not supported by all internet browsers. Test the function in the Firefox browser, for example.*



- **JPEG compression level** – set the JPEG compression level (1–99). The recommended value is 85. The parameter affects the image size and quality.

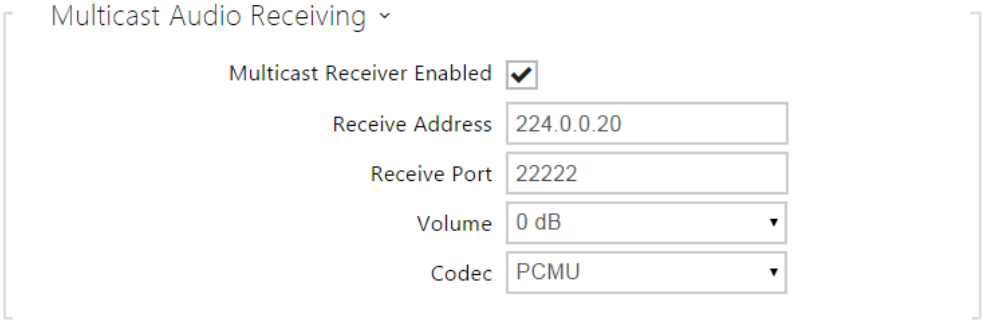


Some IP phones (SNOM 820/870) do not support video calls but are able to download and display JGEG snapshots from the predefined IP address during a call. The 2N LTE intercoms do support this function: set the parameters in this tab.

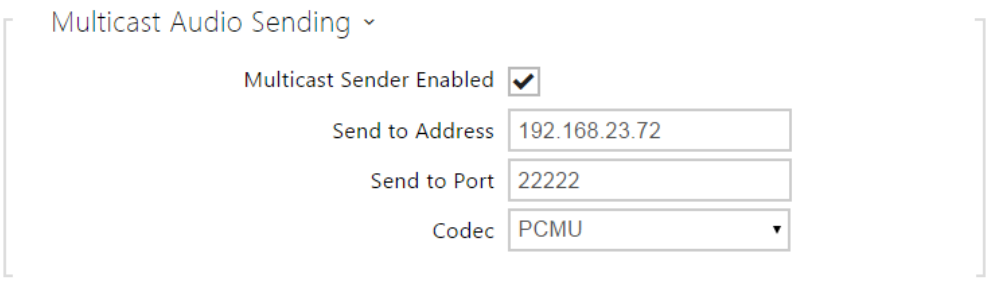
- **JPEG video activated by call** – enable camera snapshot downloading by Snom 820/870 phones during a call.
- **JPEG video frame rate** – set the frame rate or time periods for camera snapshot downloading by Snom 820/870 phones.

Multicast

The 2N LTE intercoms allow you to stream audio signals (from the microphone or another intercom audio input) via RTP packets sent to the multicast address and receive audio streams in the same format and play them via the integrated speaker or another intercom audio output. The audio stream is encoded by G.711 u-law.



- **Multicast receiver enabled** – enable receiving of RTP packets on the selected multicast address and port. The audio stream received is played during an active call too and the sounds from the two sources get mixed.
- **Receive address** – set the multicast IP address to receive multicast RTP packets.
- **Receive port** – set the local port to receive multicast RTP packets.
- **Volume** – set the received audio stream playing volume.
- **Codec**– set the audio codec for RTP packet decoding: PCMU, PCMA, G.722, L.16. The G.722 and L16 broadband codecs are available in selected intercom models only.



- **Multicast sender enabled** – enable RTP packet sending to the selected multicast address and port.
- **Send to address** – set the destination multicast IP address for the audio stream.
- **Send to port** – set the destination port for the audio stream.
- **Codec**– set the audio codec for RTP packet decoding: PCMU, PCMA, G.722, L.16. The G.722 and L16 broadband codecs are available in selected intercom models only.

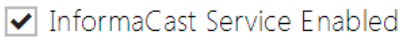
InformaCast

The **2N LTE intercoms** support the audio streaming Informacast protocol, which helps you set up an audio stream (unicast/multicast RTP/UDP encoded with G.711 U-law) between the intercom and an Informacast server or any other Informacast client.

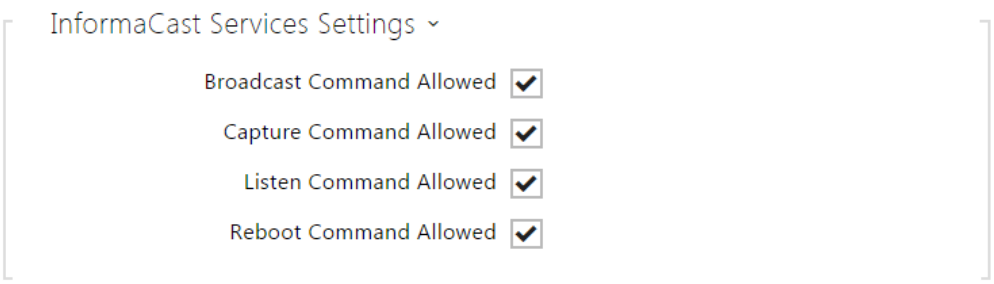
When you enable this service, the Informacast servers are found automatically in the LAN via the SLP and the intercom gets registered with them automatically. The Informacast server with which the intercom is registered can send the audio stream setting up commands to the intercom.

- **Broadcast** – the intercom receives audio from the Informacast server and plays it via an integrated speaker.
- **Capture** – the intercom records audio via an internal microphone and sends it to the Informacast server.
- **Listen** – the intercom receives audio from another Informacast client.

The intercom supports registration with up to 4 Informacast servers at the same time and setup of up to 6 parallel audio streams.



- **InformaCast service enabled** - enable the Informacast service on your intercom side.

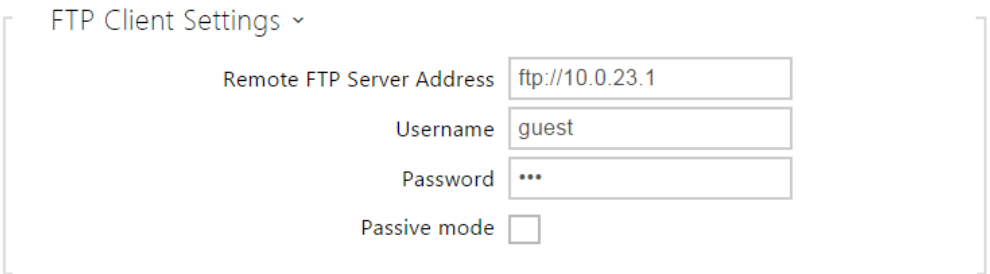


- **Broadcast enabled**– enable the Broadcast command to set up an audio stream sent from the Informacast server to the intercom.
- **Capture enabled**– enable the Capture command to set up an audio stream sent from the intercom to the Informacast server.
- **Listen enabled**– enable the Listen command to set up an audio stream sent from another Informacast client to the intercom.
- **Reboot enabled**– enable the Reboot command to allow the Informacast server to restart the intercom.

FTP

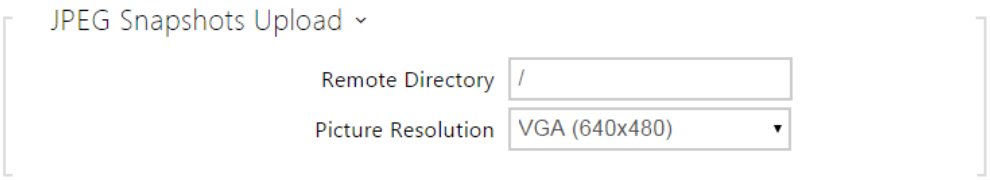
Here define access to the FTP(S) server where images from internal/external cameras can be stored in the JPEG format and selected resolution. The image filename includes the image taking date and time. Images are stored on the FTP server either automatically (periodically or at the call start) or via automation using **Action. UploadSnapshotToFTP** .

- **FTP client enabled** - enable camera image saving to the FTP server.

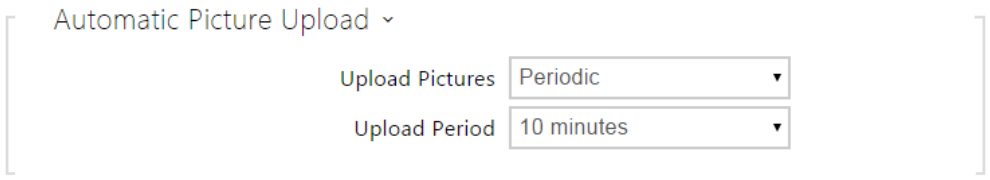


- **Remote FTP server addre ss** – set the FTP server address in the **ftp://ip_address or ftps://ip_address format**.
- **Username** – set the FTP server username. The parameter is mandatory if the FTP server requires user authentication.

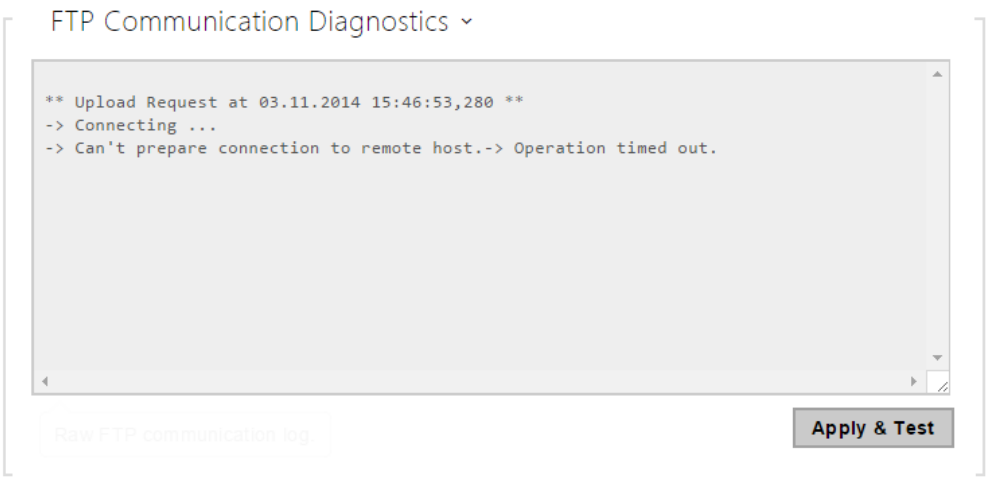
- **Password** – set a password for the above mentioned FTP server user.
- **Passive mode** – select the passive transmission mode (as web browser).



- **Remote dir ectory** – set the FTP server directory to which the camera images shall be saved.
- **Picture resolution** – set the image resolution.



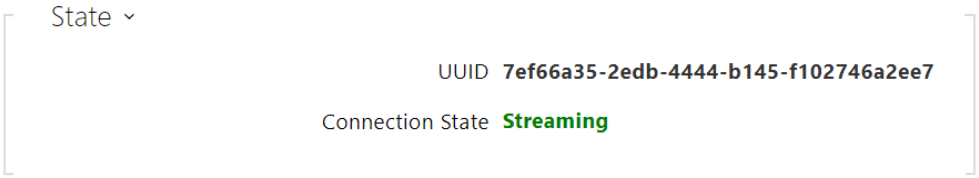
- **Upload pictures** – set automatic picture sending to the FTP server at the call start or after a preset time period. You can disable automatic sending (Automation) and send pictures via **Action.UploadSnapshotToFtp** .
- **Upload period** – set the picture sending period in steps (10 seconds to 30 minutes) when **Upload pictures** is set to **Periodic**.



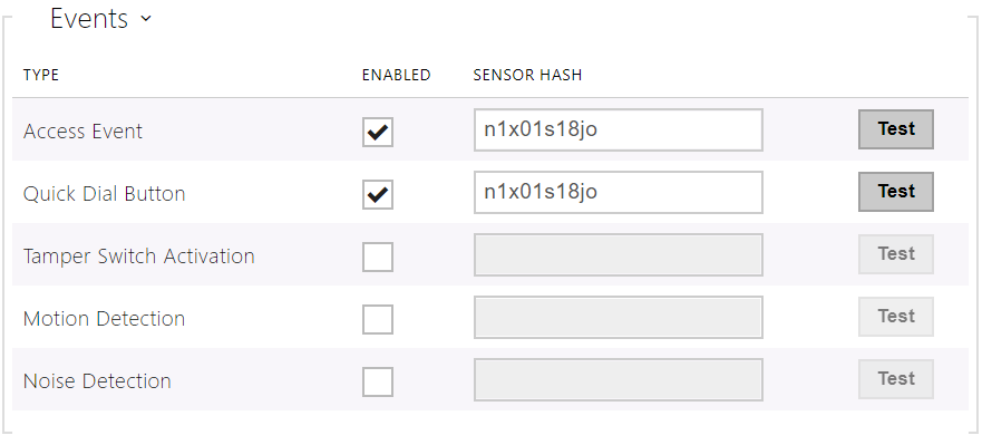
Click **Apply & Test** to save the current FTP server configuration, load the camera image and save the image to the FTP server. The window above displays the FTP server communication details during saving.

Angelcam

- **Angelcam Client Enabled** – enable the Angelcam Client function.



- **UUID** – universally unique identifier.
- **Connection State** – display the current Angelcam client connection state or error state description.



- **Type** – list of event types that activate the Angelcam function for streaming video to a cloud storage.
  - **Access Event** – the video stream to the Angelcam cloud storage will start at an attempt event (valid/invalid) via Bluetooth, fingerprint, access card or numeric code.
  - **Quick Dial Button** – the video stream to the Angelcam cloud storage will start at a speed dial press.

- **Tamper Switch Activation** – the video stream to the Angelcam cloud storage will start at a tamper switch activation.
- **Motion Detection** – the video stream to the Angelcam cloud storage will start whenever motion is detected.
- **Noise Detection** – the video stream to the Angelcam cloud storage will start whenever noise is detected.

- **Enabled** – enable/disable streaming of the selected type.
- **Sensor Hash** – enter the sensor hash. Refer to MySensors in Sensor details at the my.angelcam.com portal for the current hash value.
- **Test** – press the button to launch a function check test.

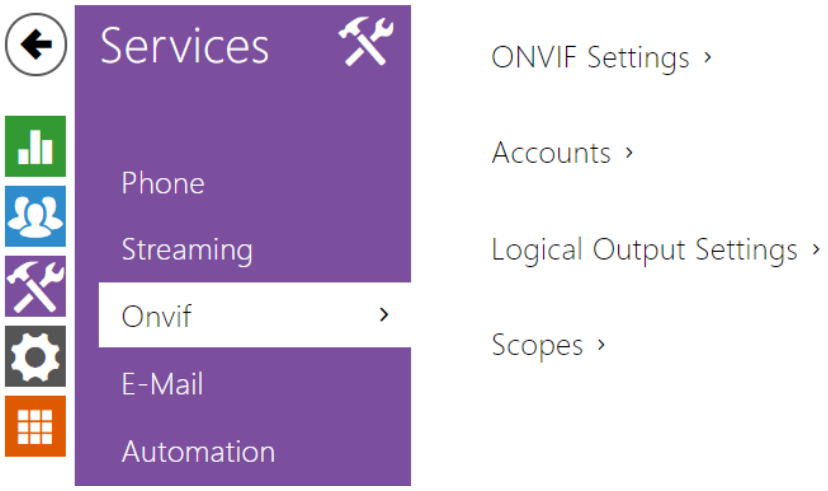
Tip

- Refer to the **Interoperability Manual** for Angelcam client setting details.

Caution

- Remember to add the camera to the Angelcam client again after the factory reset.

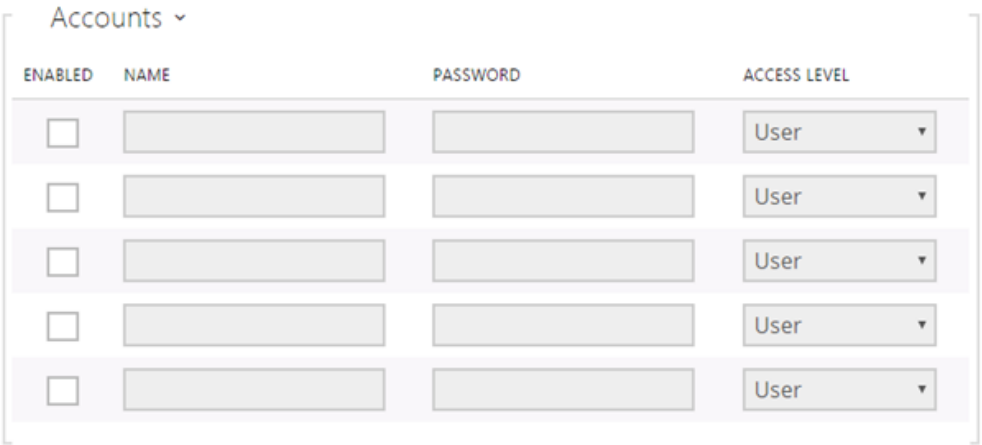
5.4.3 ONVIF



List of Parameters

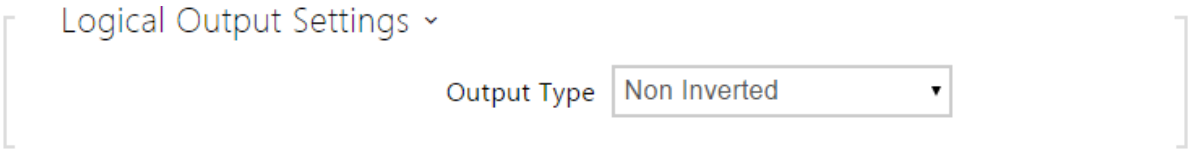
The 2N LTE intercoms are ONVIF compatible and fully implement the ONVIF Profile S.

- **Enable WS Discovery** – enable the WS-Discovery function, which allows other devices (ONVIF clients) to discover compatible LAN devices. Enable this function to use a device as an ONVIF compatible one.



Be sure to set one user account at least and the proper access level (according to ONVIF specification and used VMS) to achieve full ONVIF functionality . Without this, the basic functionality is only available.

- - **Enabled** – e nable/disable the user account.
  - **Name** – set the ONVIF access user name.
  - **Password** – set the ONVIF access password.
  - **Access level** – set the user ONVIF access level (User, Operator, Administrator).



- **Output type** – set the inverted logic input control mode via ONVIF.

Note

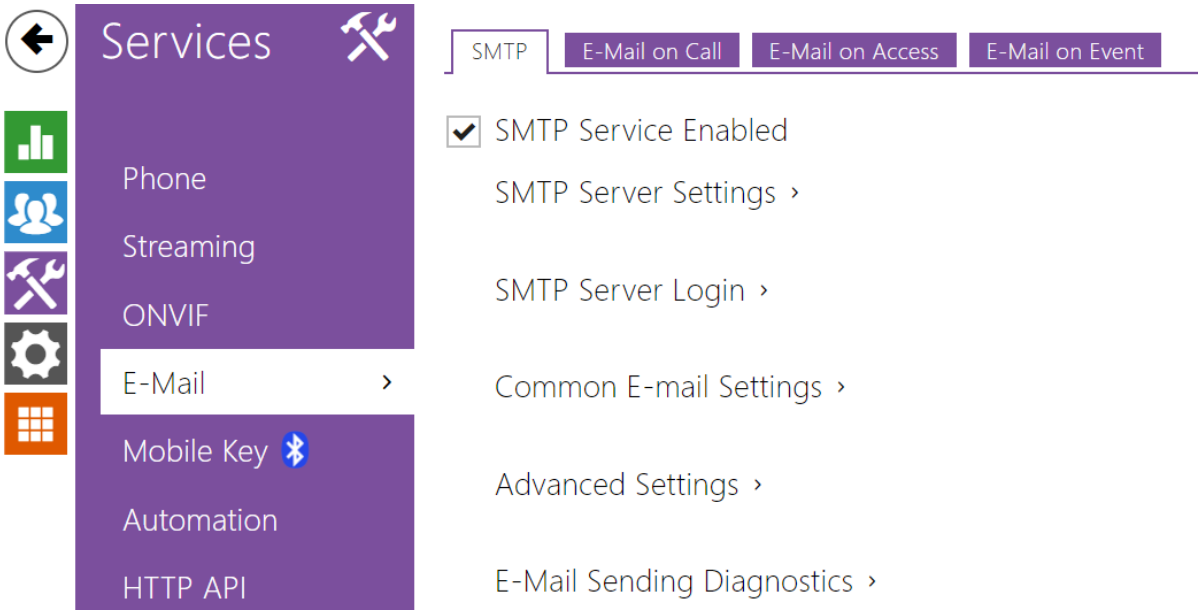
- *Check the following RTSP and JPEG functions for enable to make the ONVIF function work properly (to gain full compatibility with the third party equipment):*
  1. a. ***RTSP Server enabled*** *on the RTSP tab*
     b. ***Video stream enabled*** *on the RTSP tab*
     c. ***UDP unicast enabled*** *on the RTSP tab*
     d. ***Snapshot download enabled*** *on the JPEG tab*

Note

Preset authorisation for ONVIF

- Username: **admin**
- Password: **2n**

5.4.4 E-Mail



To inform the intercom users on all missed and/or successfully completed calls, configure the **2N IP intercom** to send an e-mail after every call to the called user. You can compile the e-mail subject and message text of your own. If your intercom is equipped with a camera, you can automatically attach one or more snapshots taken during the call or ringing.

The intercom sends e-mails to all the users whose valid e-mail addresses are included in the users list. If the **E-Mail** parameter in the user list is empty, e-mails are sent to the default e-mail address.

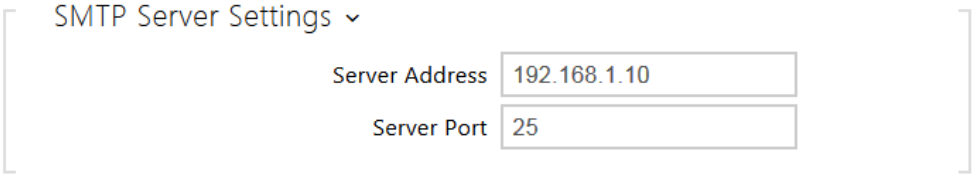
You can also send e-mails via Automation using the **Action.SendEmail** action.

Note

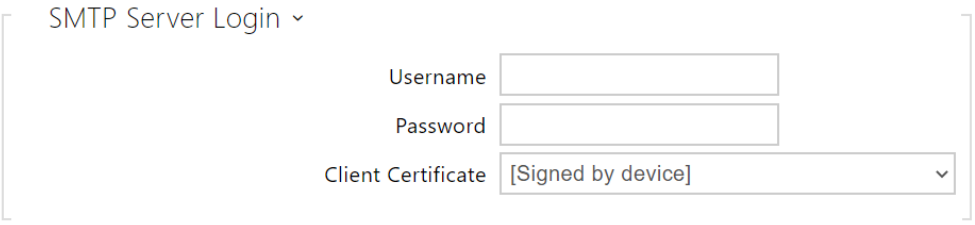
- *The E-mail function is available with the Gold or Enhanced Integration license only.*

SMTP

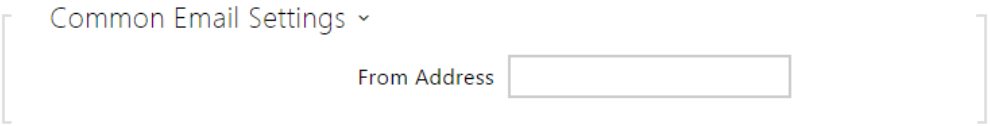
- **SMTP Service Enabled** – enable/disable sending e-mails from the intercom.



- **Server Address** – set the SMTP server address to which e-mails shall be sent.
- **Server Port** – specify the SMTP server port. Modify the value only if the SMTP server setting is substandard. The typical SMTP port value is 25.

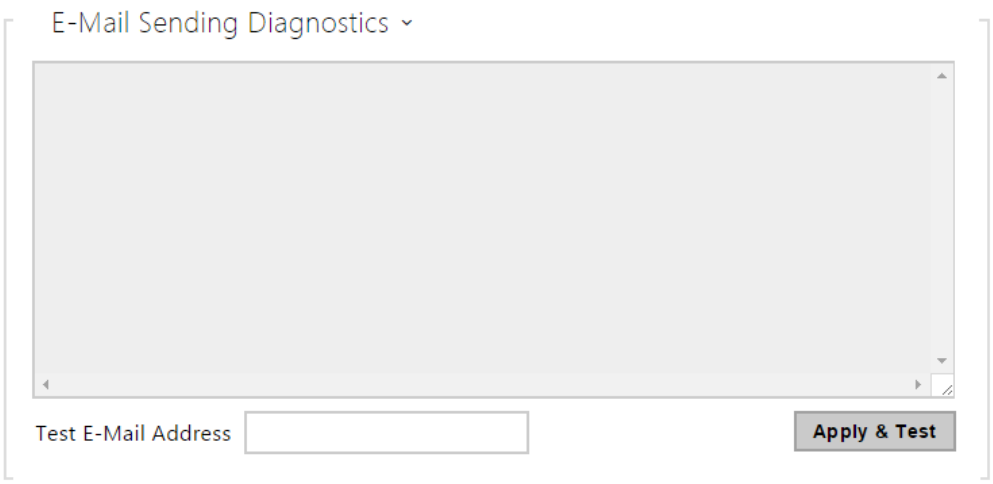


- **Username** – enter a valid username for login if the SMTP server requires authentication, or leave the field empty if not.
- **Password** – enter the SMTP server login password.
- **Client Certificate** – specify the client certificate and private key for the intercom – SMTP server communication encryption. Choose one of the three sets of user certificates and private keys (refer to the Certificates subs.) or keep the **Self Signed** setting, in which the certificate automatically generated upon the first intercom power up is used.

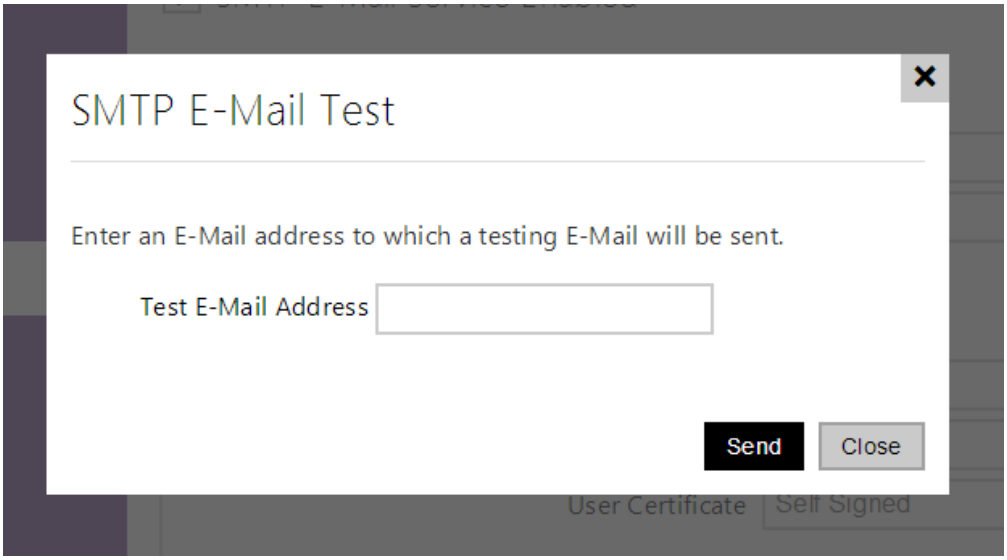


- **From Address** – set the sender address for all outgoing e-mails from the device.

- **Deliver In** – set the time limit for delivering an e-mail to an inaccessible SMTP server.

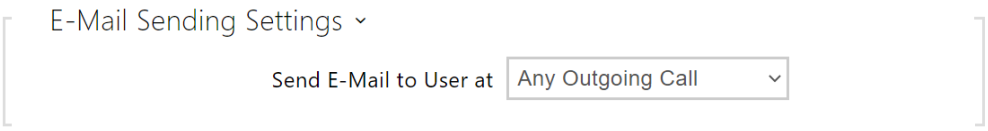


Click **Apply & Test** to send a testing e-mail to the defined address with the aim to test the functionality of the current e-mail sending setting. Enter the destination e-mail address into the Test e-mail address field and press the button. The current e-mail sending state is continuously displayed in the window for you to detect an e-mail setting problem if any on the intercom or another network element. One camera shot is always attached to the e-mail even in cameraless models where the image is sent with N/A.



E-Mail on Call

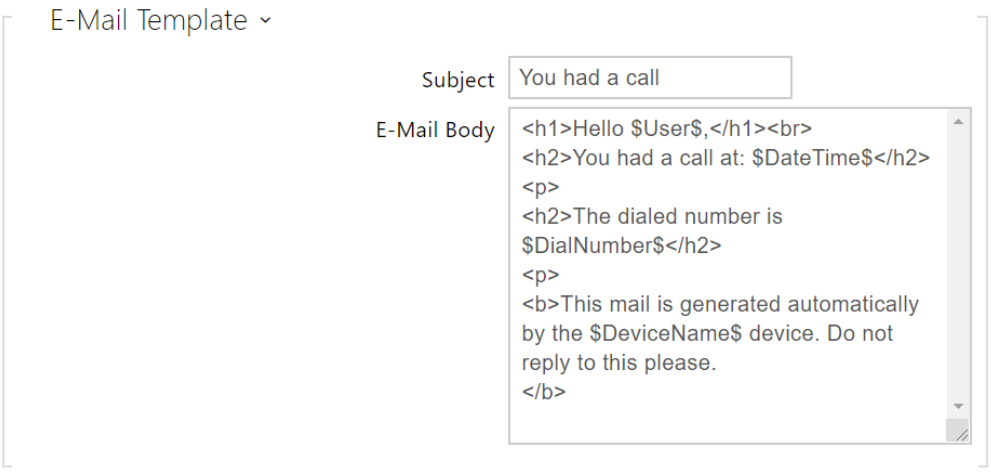
Set e-mail sending during outgoing calls on this tab.



- Send E-Mail to User at – set e-mail sending in the event of an accomplished / missed outoging call. The e-mail is sent when the connection is terminated. The following options are available:
  - Do Not Send E-mail – no e-mail messages will be sent upon outgoing calls.
  - Any Outgoing Call – an e-mail will be sent upon every outgoing call.
  - Missed Outgoing Call – an e-mail will be sent upon every missed outgoing call.

Note

- An e-mail can always be sent via Automation.



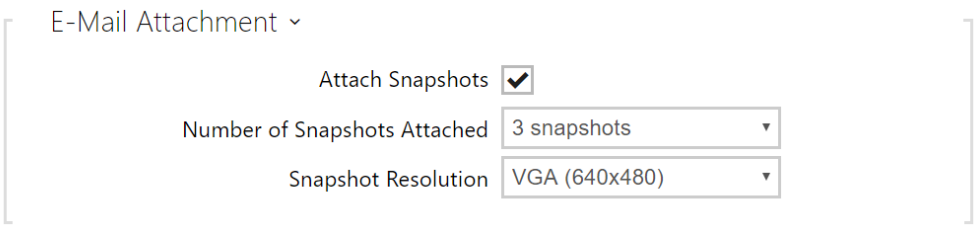
- Subject – set the e-mail subject to be sent.
- E-Mail Body – edit the text to be sent. Use the HTML formatting marks in the text. You can insert special symbols substituting the username, date and time, intercom identification or called number, which will be replaced with the actual value before sending. Refer to the table of substitute symbols below:

1. a. $User$ Called username (this placeholder is empty if the call is made to multiple users at the same time)

b. $DateTime$ Current date and time

c. $DialNumber$ Called number

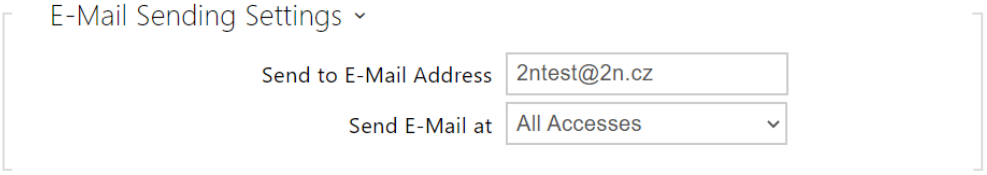
d. $DeviceName$ Intercom identification



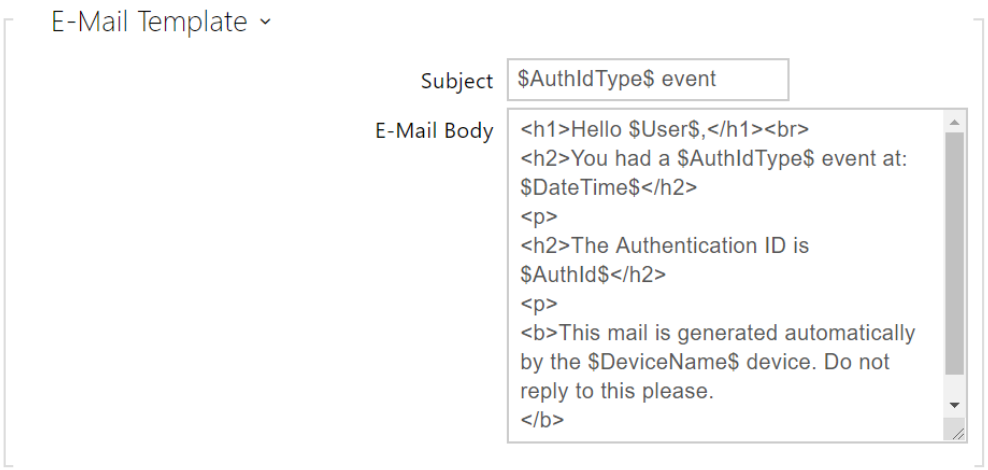
- Attach Snapshots – enable sending of an attachment including one or more camera snapshots taken during ringing or calling.
- Number of Snapshots Attached – set the count of snapshots to be attached to the e-mail message.
- Snapshot Resolution – set the snapshot resolution for the images to be sent.

E-Mail on Access

Set that an e-mail shall be sent whenever an RFID card is tapped on the card reader and/or Bluetooth/fingerprint reader identification is made.



- Send to E-mail Address – administrator e-mail address.
- Send E-Mail at – set e-mail sending. The following options are available:
  - Do Not Send E-mail – no e-mail message will be sent.
  - All Accesses – an e-mail will be sent at all (valid/invalid) access attempts.
  - Denied Accesses – an e-mail will only be sent if the access is denied.

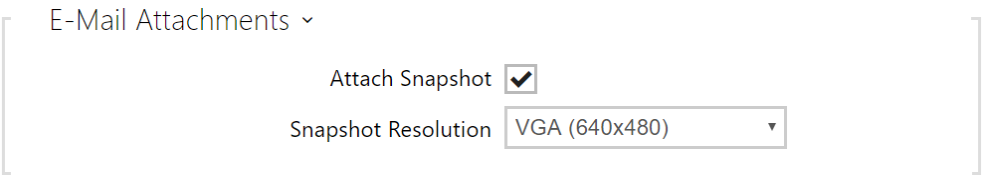


- **Subject** – set the e-mail subject to be sent.
- **E-Mail Body** – edit the text to be sent. Use the HTML formatting marks in the text. You can insert special symbols substituting the username, date & time, intercom/card identification, Bluetooth/fingerprint identifier and identifier validity for information. These symbols will be replaced with the actual value before sending. See the list of placeholders below:

1. a. $User$ Called username
   b. $DateTime$ Current date and time
   c. $AuthId$ User authentication ID
   d. $DeviceName$ Intercom identification
   e. $AuthIdType$ Authentication type – define the identifier source (Card, Bluetooth or Fingerprint)
   f. $AuthIdValid$ Identifier validity – valid for a valid identifier, Invalid for an invalid identifier

   An extended syntax can be used for the $AuthIdType$ and $AuthIdValid$ placeholders to replace the values in different languages.

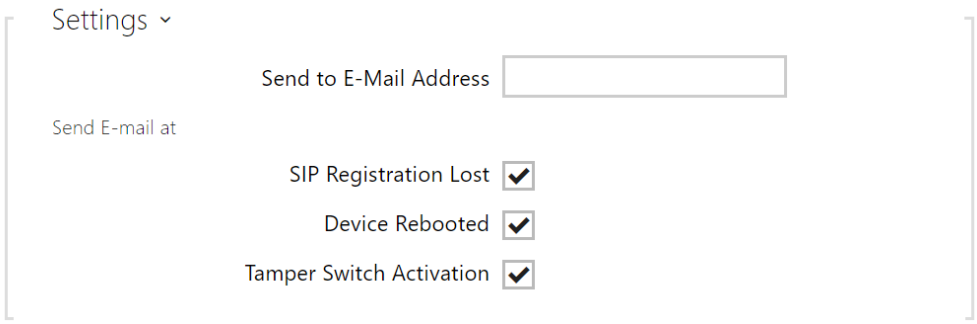
   If the placeholder value is not found in the string, the value is used directly.



- **Attach Snapshots** – enable sending of an attachment including one or more camera snapshots taken during ringing or calling.
- **Snapshot Resolution** – set the snapshot resolution for the images to be sent.

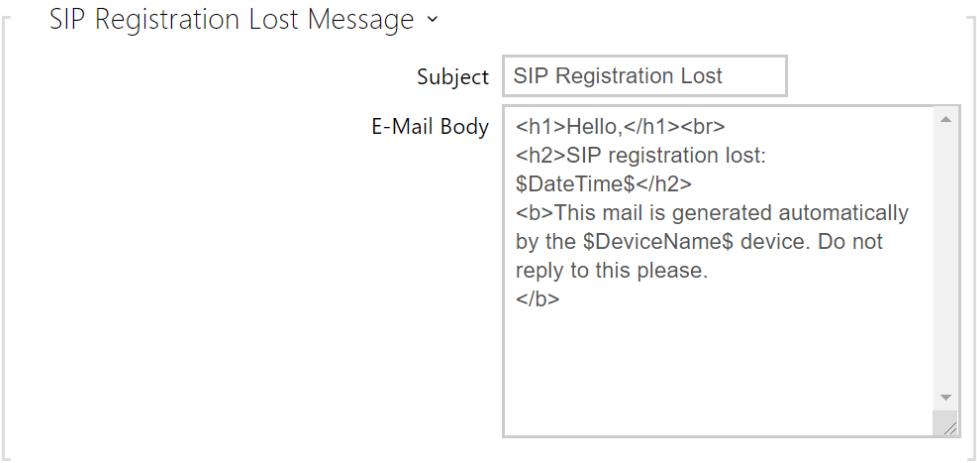
E-Mail on Event

Set that an e-mail shall be sent whenever the SIP gets lost, the device is rebooted or the tamper switch is activated on the device.



Send to E-Mail Address – set e-mail sending. The following options are available:

- SIP Registration Lost
- Device Rebooted
- Tamper Switch Activation



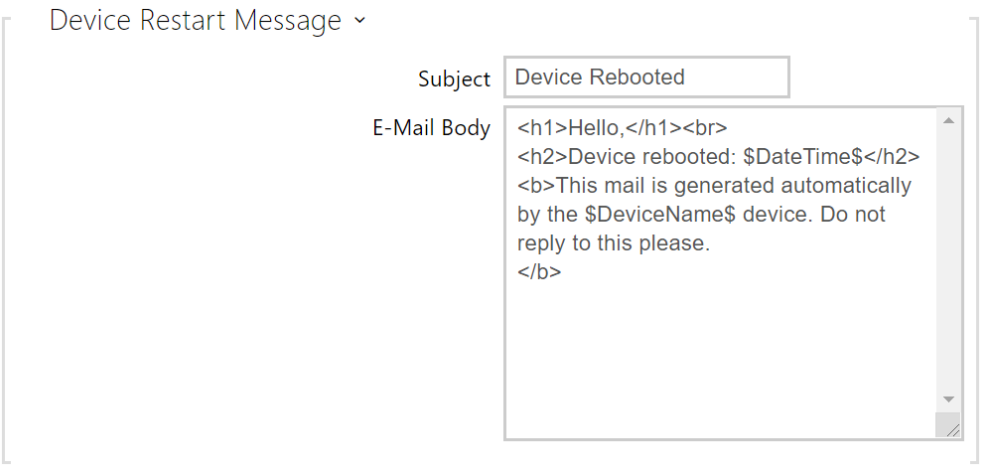
SIP Registration Lost Message – set the message to be sent to the specified e-mail address whenever the SIP registration gets lost.

- Subject – set the e-mail subject to be sent.
- E-Mail Body – edit the text to be sent. Use the HTML formatting marks in the text. You can insert special symbols substituting the username, date & time and device ID. These symbols will be replaced with the actual value before sending. See the list of placeholders below:

1. $User$ Called username

2. $DateTime$ Current date and time
3. $DeviceName$ Intercom identification

If the placeholder value is not found in the string, the value is used directly.

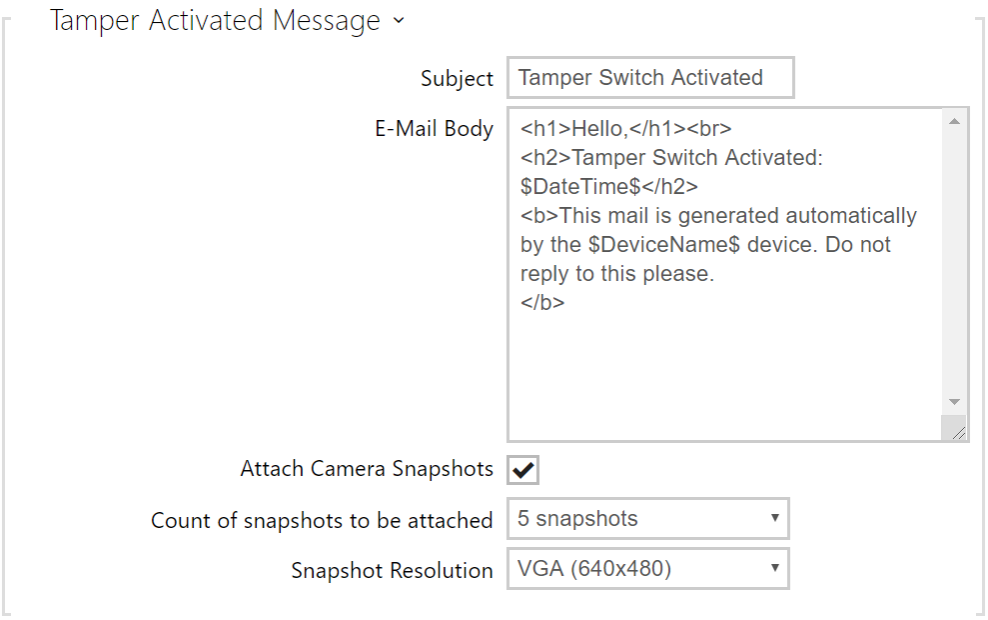


Device Restart Message – set the message to be sent to the specified e-mail address whenever the device is restarted.

- **Subject** – set the e-mail subject to be sent.
- **E-Mail Body** – edit the text to be sent. Use the HTML formatting marks in the text. You can insert special symbols substituting the username, date & time and device ID. These symbols will be replaced with the actual value before sending. See the list of placeholders below:

1. $User$ Called username
2. $DateTime$ Current date and time
3. $DeviceName$ Intercom identification

If the placeholder value is not found in the string, the value is used directly.



Tamper Activated Message – set the message to be sent to the specified e-mail address whenever the tamper switch is activated.

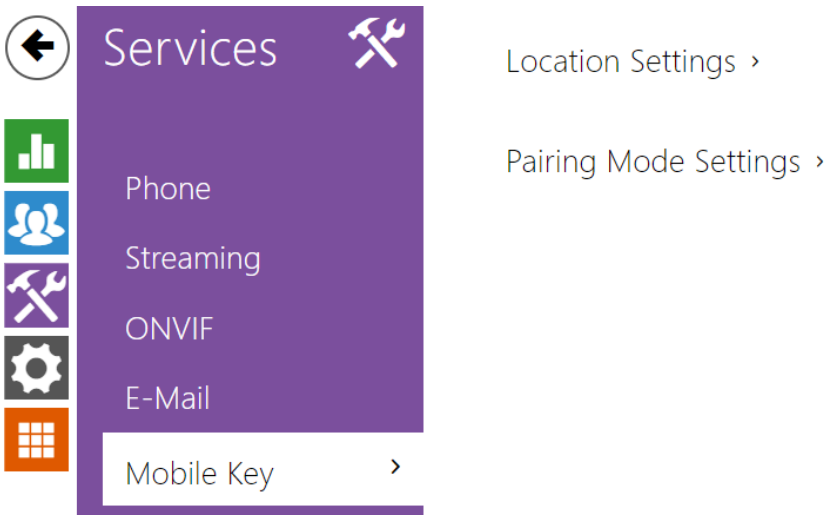
- **Subject** – set the e-mail subject to be sent.
- **E-Mail Body** – edit the text to be sent. Use the HTML formatting marks in the text. You can insert special symbols substituting the username, date & time and device ID. These symbols will be replaced with the actual value before sending. See the list of placeholders below:

1. $User$ Called username
2. $DateTime$ Current date and time
3. $DeviceName$ Intercom identification

If the placeholder value is not found in the string, the value is used directly.

- **Attach Camera Snapshots** – enable sending of an attachment including one or more camera snapshots taken during ringing or calling.
- **Count of Snapshots to Be Attached** – set the count of snapshots to be attached to the e-mail message.
- **Snapshot Resolution** – set the snapshot resolution for the images to be sent.

5.4.5 Mobile Key



The **2N LTE intercoms** equipped with the Bluetooth module allow for user authentication via the **2N® Mobile Key** application available to devices with iOS 12 and higher (iPhone 4s and higher phones) or Android 6.0 Marshmallow and higher (Bluetooth 4.0 Smart supporting phones).

User Identification (Auth ID)

The **2N® Mobile Key** application authenticates itself with a unique identifier on the intercom side: **Auth ID** (128-bit number) is generated randomly for every user and **paired** with the intercom user and its mobile device.

Note

- The generated Auth ID cannot be saved in more mobile devices than one. This means that Auth ID uniquely identifies just one mobile device or its user.

You can set and edit the Auth ID value for each user in the Mobile Key section of the intercom phone book. You can move Auth ID to another user or copy it to another intercom. By deleting the Auth ID value you can block the user's access.

Encryption Keys and Locations

The 2N® Mobile Key – intercom communication is always encrypted. 2N® Mobile Key cannot authenticate a user without knowing the encryption key. The primary encryption key is automatically generated upon the intercom first launch and can be re-generated manually any time later. Together with AuthID, the primary encryption key is transmitted to the mobile device for pairing.

You can export/import the encryption keys and location identifier to other intercoms. Intercoms with identical location names and encryption keys form so-called **locations**. In one location, a mobile device is paired just once and identifies itself with one unique Auth ID (i.e. a user AuthID can be copied from one intercom to another within a location).

Pairing

Pairing means transmission of user access data to a user personal mobile device. The user access data can only be saved into one mobile device, i.e. a user cannot have two mobile devices for authentication, for example. However, the user access data can be saved into multiple locations in one mobile device (i.e. the mobile device is used as a key for more locations at the same time).

To pair a user with a mobile device, use the user's page in the intercom phone book. Physically, you can pair a user locally using the USB Bluetooth module connected to your PC or remotely using an integrated Bluetooth module. The results of both the pairing methods are the same.

The following data is transmitted to a mobile device for pairing:

- Location identifier
- Location encryption key
- User Auth ID

Encryption Key for Pairing

An encryption key other than that used for communication after pairing is used in the pairing mode for security reasons. This key is generated automatically upon the intercom first launch and can be re-generated any time later.

Encryption Key Administration

The intercom can keep up to 4 valid encryption keys: 1 primary and up to 3 secondary ones. A mobile device can use any of the 4 keys for communication encryption. The encryption keys are fully controlled by the system administrator. It is recommended that the encryption keys should be periodically updated for security reasons, especially in the event of a mobile device loss or intercom configuration leak.

Note

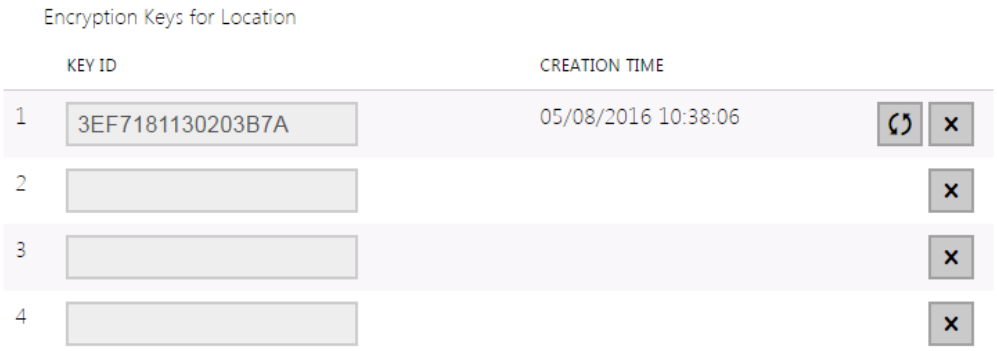
- The encryption keys are generated automatically upon the intercom first launch and saved into the intercom configuration file. We recommend you to re-generate the encryption keys manually before the first use to enhance security.

The primary key can be re-generated any time. Thus, the original primary key becomes the first secondary key, the first secondary key becomes the second secondary key and so on. Secondary keys can be deleted any time.

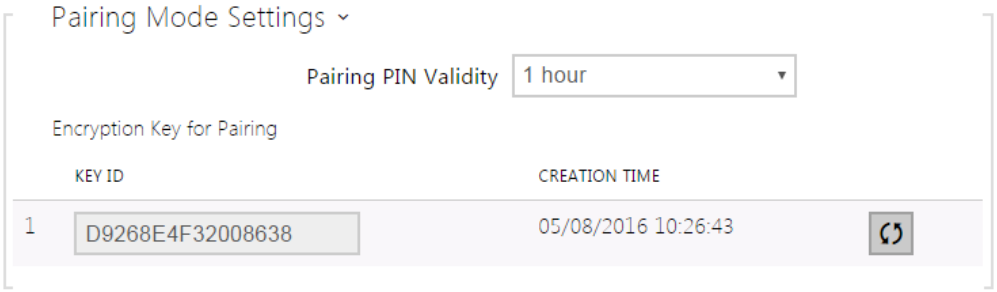
When a key is deleted, the 2N® Mobile Key users that still use this key will not be able to authenticate themselves unless they have updated the encryption keys in their mobile devices before deletion. The mobile device keys are updated at every use of the 2N® Mobile Key application.

List of Parameters

- Location ID – set a unique identifier for the location in which the selected encryption key set is valid.
- Export – push the button to export the location ID and current encryption keys into a file. Subsequently, the exported file can be imported to another device. Devices with identical location IDs and encryption keys form a so-called location.
- Import – push the button to import the location ID and current encryption keys from a file exported from another intercom. Devices with identical location IDs and encryption keys form a so-called location.



- **Restore primary key** – by generating a new primary encryption key you delete the oldest secondary key. Thus, the **2N® Mobile Key** users that still use this key will not be able to authenticate themselves unless they have updated the encryption keys in their mobile devices before deletion. The mobile device keys are updated at every use of the **2N® Mobile Key** application.
- **Delete primary key** – delete the primary key to prevent the users that still use this key from authentication.
- **Delete secondary key** – the **2N® Mobile Key** users that still use this key will not be able to authenticate themselves unless they have updated the encryption keys in their mobile devices before deletion. The mobile device keys are updated at every use of the **2N® Mobile Key** application.



- **Pairing PIN validity** – set the authorisation PIN validity for user mobile device pairing with the intercom.

Tip

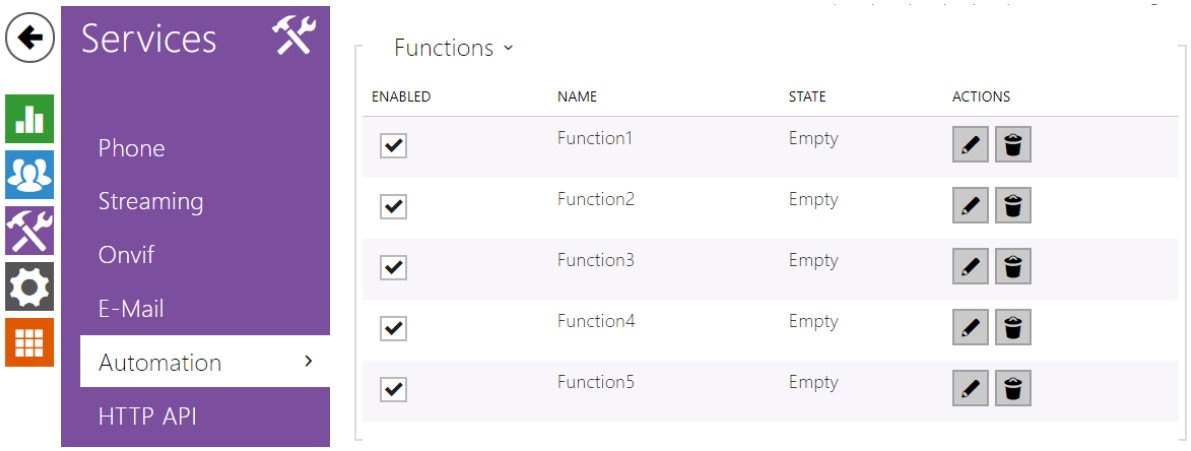
- In the case of loss of a mobile phone with access data proceed as follows:

1. Delete the Mobile Key Auth ID value for the user to block the lost phone and avoid misuse.
2. Re-generate the primary encryption key (optionally) to avoid misuse of the encryption key stored in the mobile device.

Warning

- With the upgrade to version 2.30, the bluetooth modules will also be upgraded. When downgrading to version 2.29 and lower, they may malfunction.

5.4.6 Automation



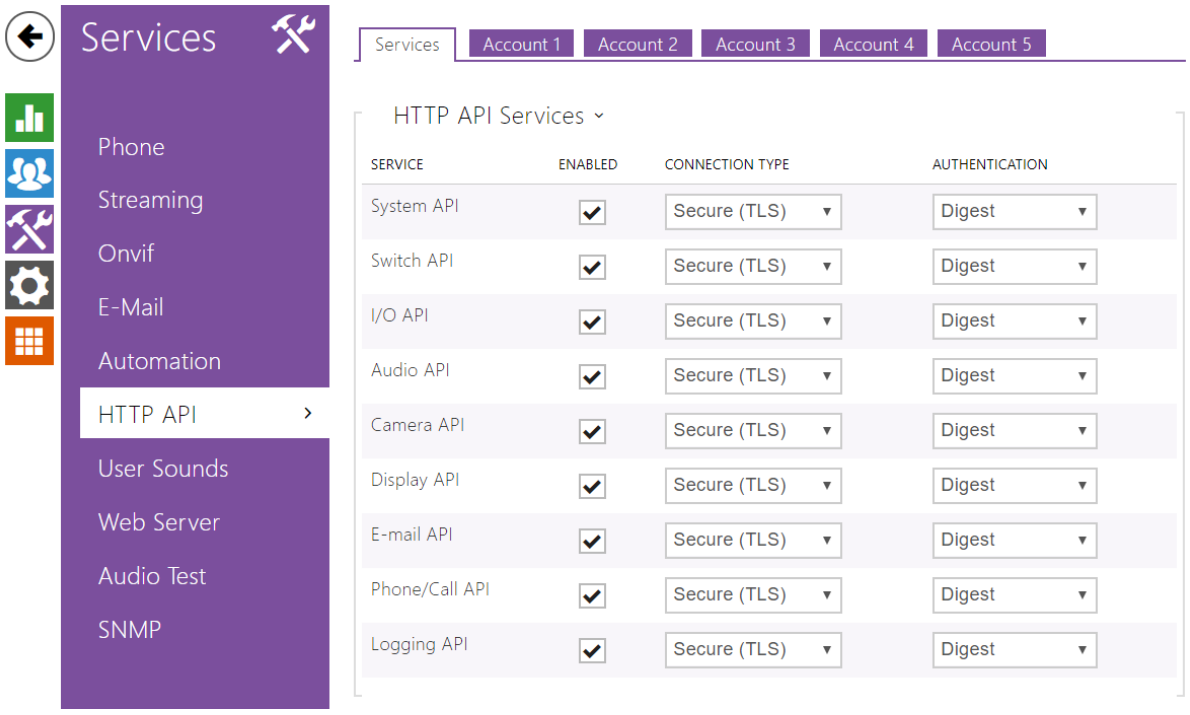
The 2N LTE intercom provides highly flexible setting options to satisfy variable user needs. There are situations in which the standard configuration settings (switch or call modes, e.g.) are insufficient and so 2N LTE intercom offers Automation, a special programmable interface for applications that require complex interconnections with third party systems.

Refer to the Automation Configuration Manual for the Automation function and configuration details.

Note

- *The Automation function is available with the Gold or Enhanced Integration licence only.*

5.4.7 HTTP API



HTTP API is an application interface designed for control of selected 2N LTE intercom functions via the HTTP. It enables 2N LTE intercoms to be integrated easily with third party products, such as home automation, security and monitoring systems, etc.

HTTP API provides the following services:

- System API – provides intercom configuration changes, status info and upgrade.
- Switch API – provides switch status control and monitoring, e.g. door lock opening, etc.
- I/O API – provides intercom logic input/output control and monitoring.
- Audio API - provides audio playback control and microphone monitoring.
- Camera API – provides camera image control and monitoring.
- Display API – provides display control and user information display.
- E-mail API – provides sending of user e-mails.
- Phone/Call API – provides incoming/outgoing call control and monitoring.
- Logging API – provides reading of event records.

Set the transport protocol (HTTP or HTTPS) and way of authentication (None, Basic or Digest) for each function. Create up to five user accounts (with own username and password) in the HTTP API configuration for detailed access control of services and functions.

Set authentication methods for the requests to be sent to the intercom for each service. If the required authentication is not executed, the request will be rejected. Requests are authenticated via a standard authentication protocol described in RFC-2617. The following three authentication methods are available:

- None – no authentication is required. In this case, this service is completely unsecure in the LAN.
- Basic – Basic authentication is required according to RFC-2617. In this case, the service is protected with a password transmitted in an open format. Thus, we recommend you to combine this option with HTTPS where possible.
- Digest – Digest authentication is required according to RFC-2617. This is the default and most secure option of the three above listed methods.

Refer to the HTTP API Configuration Manual for the HTTP API function and configuration details.

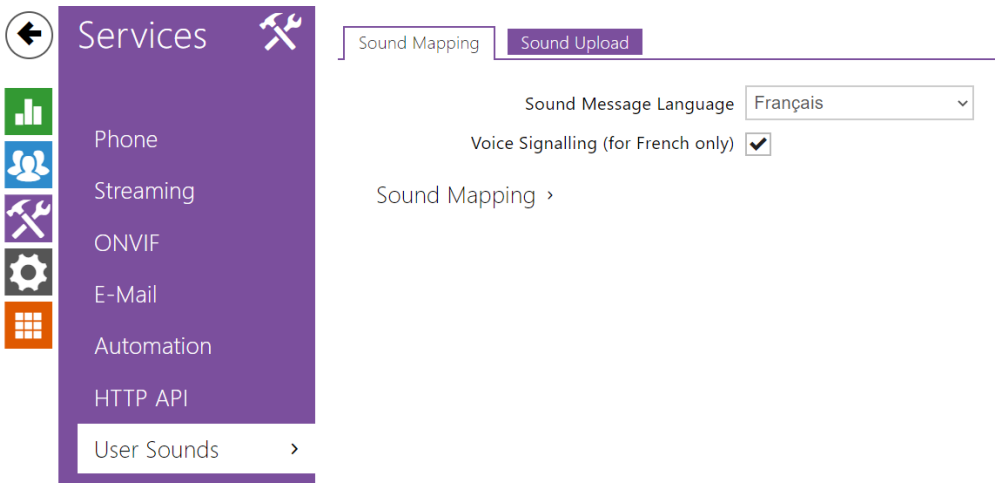
Note

- *Full HTTP API function is available with the Gold or Enhanced Integration licence only. Only Camera API is available without this licence.*

Tip

- For the Video Preview feature at Gigaset Maxwell 10 phone it's needed to set in HTTP API at the Camera API item Connection Type = Unsecure and Authetntication = None.

5.4.8 User Sounds



The **2N LTE intercoms** provide standard signalling of operational statuses by tone sequences; refer to the Signalling of Operational Statuses subsection. This function is available with the Gold or Enhanced licence only. If you find the standard sound signalling inconvenient, modify the sounds for the following statuses:

1. a. Ringing before answering call
   b. Ringback tone
   c. Call busy tone
   d. Call hang-up
   e. Invalid input
   f. Invalid user position
   g. Switch activation

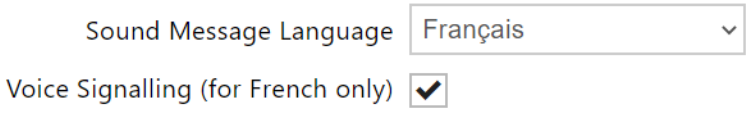
You can either completely mute the above-mentioned sounds , replace them with one of the ten predefined sounds, or simply record a s ound file of your own into the intercom. The sound file must have the WAV format and use PCM encoding with 8/16 kHz sampling frequency and 8/16-bit sample resolution, and the file size may not exceed 256 kB.

Frequency	Bits for sample	Sound length	Quality
16 kHz	16 bit	up to 8 s	1 best
16 kHz	8 bit	up to 16 s	2

Frequency	Bits for sample	Sound length	Quality
8 kHz	16 bit	up to 16 s	3 (not recommended combination)
8 kHz	8 bit	up to 32 s	4 low

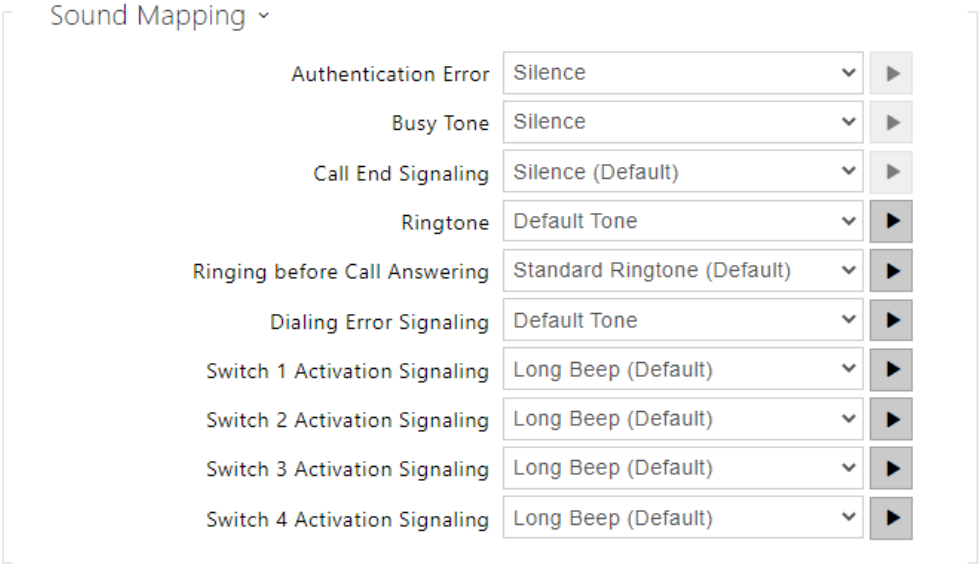
You can also play the recorded files via Automation using the **Action.PlayUserSound** and, optionally, with the aid of the intercom speaker and/or directly into the phone call.

List of Parameters



- **Sound Message Language** – Select a language of spoken meassages. If there is a translation available for a mapped sound, the messagewill be played in specified language. The language defaults to English or to a language-neutral sound if there is no translation.
- **Voice Signalling (for French only)** – In order to meet the applicable legislation in French speaking regions, voice signaling in French is available for handicapped persons for the following actions: call setup, call connection and door unlocking.

Sound Mapping



- **Authentication Error** – set the sound to be played when an invalid code in entered (switch/user/profile activation).
- **Busy tone** – set the sound to be played when the called user is busy.
- **Call End signalling** – set the sound to be played upon the call end.
- **Ringtone** – set the sound to be played when the called user id ringing.
- **Ringing before Call Answering** – set the sound to be played before answering an incoming call (intercom ringtone).
- **Dialing Error Signaling** – set the sound to be played when a quick dial button is pressed but the corresponding Phonebook position is not programmed.
- **Switch 1–4 activation signalling** – set the sound to be generated when a switch is activated. Specify signalling details for each switch; refer to the **Switches** subsection.

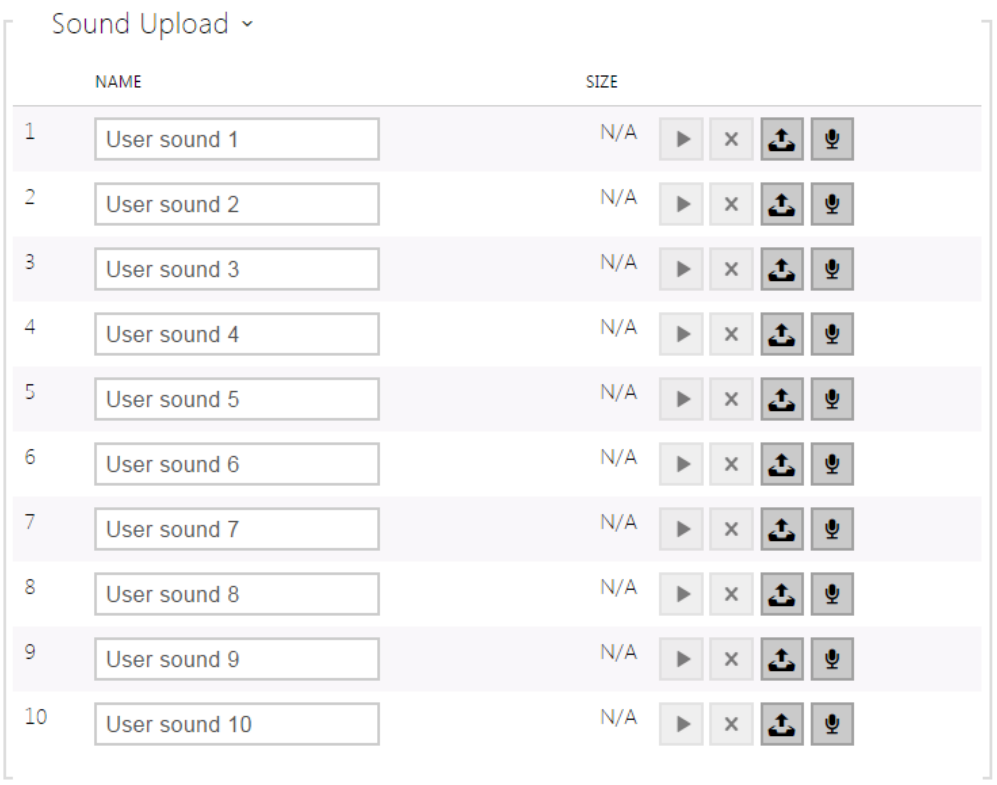
Caution

- If the assigned sound cannot be played, the sound is either set to Silence or a valid **2N® Enhanced Audio** license is unavailable. In the latter case, you cannot select the sound type and laguage. The sounds that signal activated switches are not based on any license.

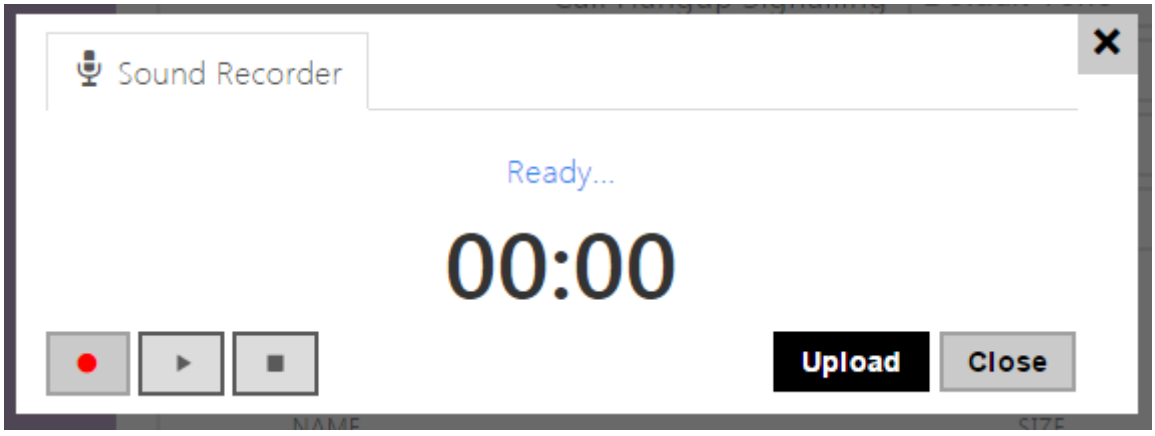
Sound Upload

You can record up to 10 user sound files into the intercom and assign names to them for convenience.

Press  to upload a sound file to the intercom. Select a file from your PC via a dialogue window and push **Upload**. Press  to remove a file. Press  to replay the sound file (locally on your PC).

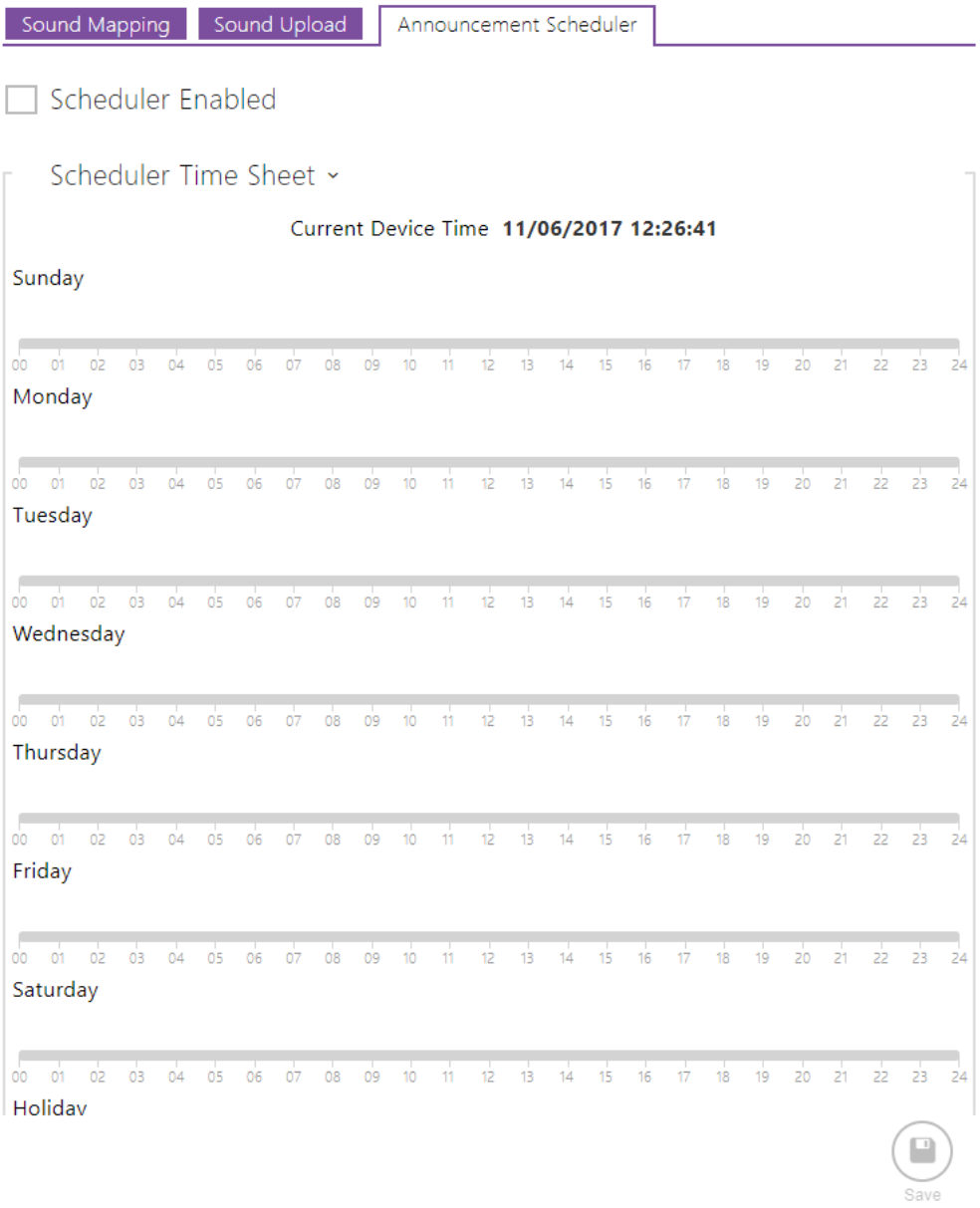


You can record a sound file using your PC microphone. Press ● to start the record and press ■ to stop the record. Press ▶ to play the sound record. Click **Upload** to save the sound into the intercom.



Announcement Scheduler

The Announcement Scheduler helps you play user sounds periodically at a preset time. You can set days in a week on which the sound shall be played. Click the required day time axis point to add sound playing. While adding, set the exact time, select the user sound and adjust the sound volume. The **Announcement Scheduler** tab is only available to the **2N SIP Audio** products.



- **Scheduler enabled** – activate playing of preset user sounds as scheduled.

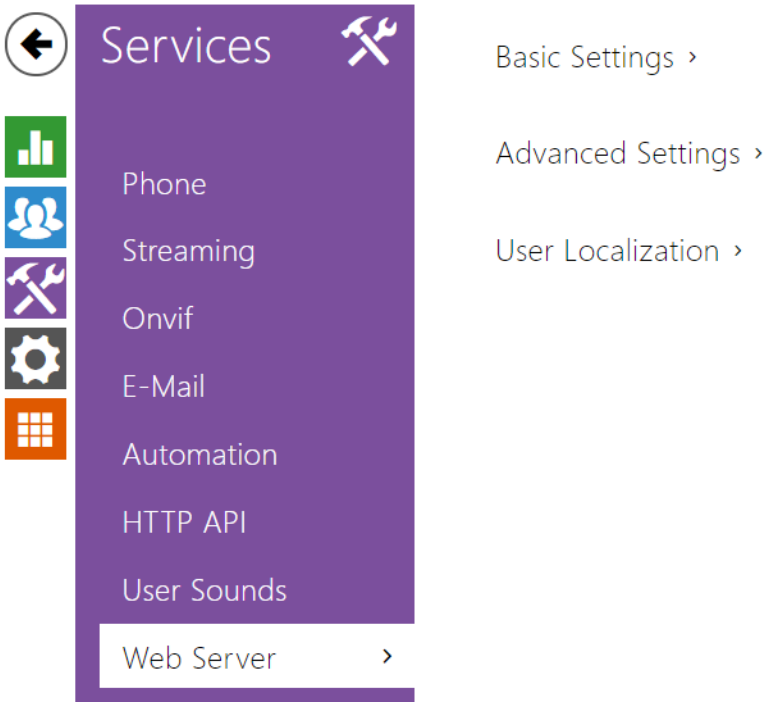
Tip

- Refer to **https://wiki.2n.cz/hip/inte/latest/en/10-media-applications/audacity** for user sound creating details.

Note

- The sound recording function is unavailable in the browsers that do not support the WebRTC standard (Internet Explorer, e.g.).

5.4.9 Web Server



You can configure your **2N LTE intercom** using a standard browser which accesses the integrated web server. Use the secured HTTPS protocol for communication between the browser and intercom. Having accessed the intercom, enter the login name and password. The default login name and password are **admin** and **2n** respectively. We recommend you to change the default password as soon as possible.

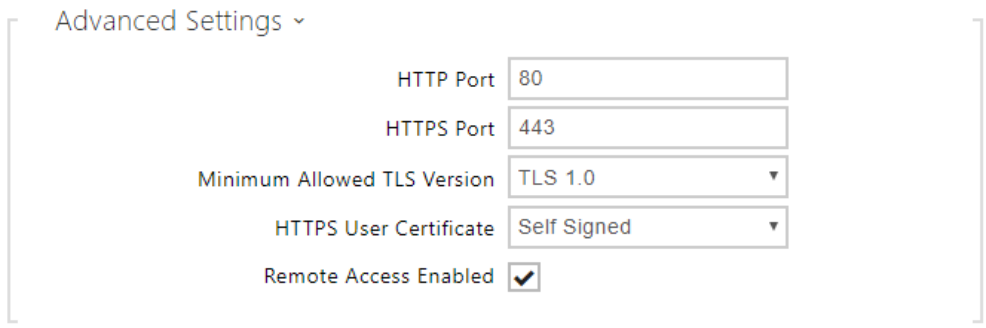
The **Web Server** function is used by the following intercom functions too:

1. a. JPEG snapshot/MJPEG video download; refer to Streaming.
   b. ONVIF protocol for video streaming, refer to Streaming.
   c. HTTP commands for switch control, refer to Switches.
   d. Event.HttpTrigger in Automation, refer to the respective manual.

The unsecured HTTP protocol can be used for these special communication cases.

List of Parameters

- **Device name** – set the device name to be displayed in the right upper corner of the web interface, login window and other applications if available (2N® Network Scanner, etc).
- **Web interface language** – set the default language for administration web server login. Use the upper toolbar buttons to change the language temporarily.
- **Password** – set the intercom access password. Press to change the password. The 8-character password must include one lower-case letter, one upper-case letter and one digit at least.



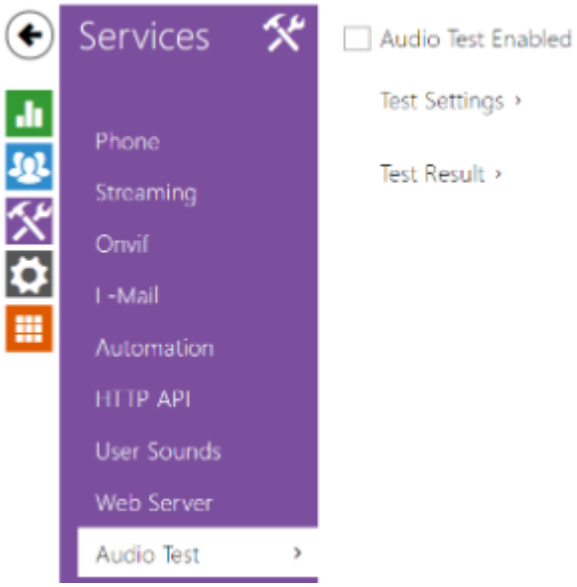
- **HTTP port** – set the web server port for HTTP communication. The port setting will not be applied until the intercom gets restarted.
- **HTTPS port** – set the web server port for HTTPS communication. The port setting will not be applied until the intercom gets restarted.
- **Minimum Allowed TLS Version** – define the lowest TLS version to be connected to the devices.
- **HTTPS user certificate** – specify the user certificate and private key for the intercom HTTP server – user web browser communication encryption. Choose one of the three sets of user certificates and private keys (refer to the Certificates subsection) or keep the **SelfSigned** setting, in which the certificate automatically generated upon the first intercom power up is used.
- **Remote access enabled** – enable remote access to the intercom web server from off-LAN IP addresses.

- **Original language** – download the original file containing all the user interface texts in English. The file format is XML; see below.
- **User language** – record, load and remove, if necessary, a user file containing your own user interface text translations.

```
<?xml version="1.0" encoding="UTF-8"?>
<strings language="English" languageshort="EN">
  <!-- Global enums-->
  <s id="enum/error/1">Invalid value!</s>
  <s id="enum/bool_yesno/0">NO</s>
  <s id="enum/bool_yesno/1">YES</s>
  <s id="enum/bool_user_state/0">ACTIVE</s>
  <s id="enum/bool_user_state/1">INACTIVE</s>
  <s id="enum/bool_profile_state/0">ACTIVE</s>
  <s id="enum/bool_profile_state/1">INACTIVE</s>
  ..
  ..
  ..
</strings>
```

While translating, modify the value of **<s>** elements only. Do not modify the **id** values. The language name specified by the **language** attribute of the **<strings>** element will be available in the selections of the Web interface language parameter. The abbreviation of the language name specified by the **languageshort** attribute of the **<strings>** element will be included in the language list in the right-hand upper corner of the window and will be used for a quick language switching.

5.4.10 Audio Test

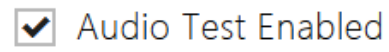


The 2N LTE intercoms allow you to perform periodical tests of the integrated speaker and microphone. For the test purpose, the integrated speaker generates one or more short beeps. The integrated microphone receives the generated tone and the test is successful if the tone is detected correctly. The test takes approximately 4 seconds. If the test fails (which may be due to an extreme surrounding noise level, e.g.), a new test is carried out in 10 minutes. The result of the last test can be displayed in the intercom confirmation interface or processed by the Automation.

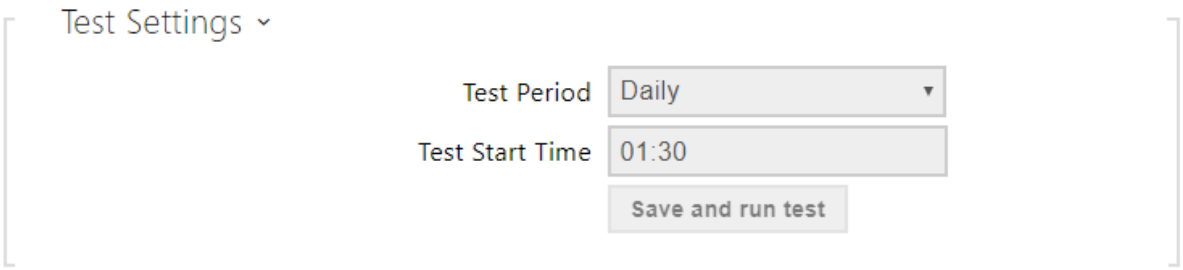
Note

- *The audio test is available with the Gold or Enhanced Audio licence only.*
- *If a call is active when the audio test starts, the audio test will be put off until the call is terminated. The audio test will be performed the moment the call is terminated.*

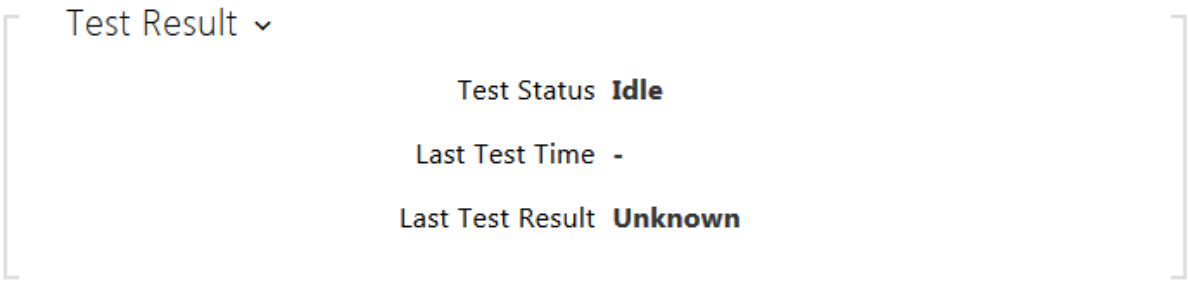
List of Parameters



- Audio test enabled – enable automatic execution of the audio test.

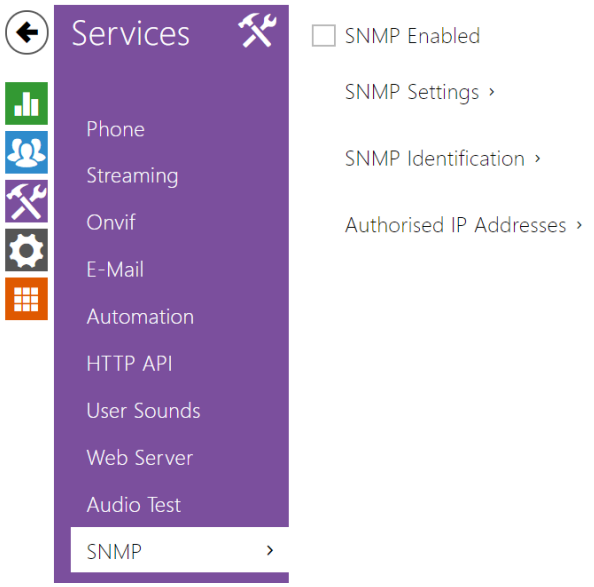


- Test period – set the test period: daily or weekly.
- Test start time – set the test starting time in the HH:MM format. We recommend you to set a time at which a low intercom traffic is expected.
- Save and run – push the button to start and save the test immediately regardless of the current settings.



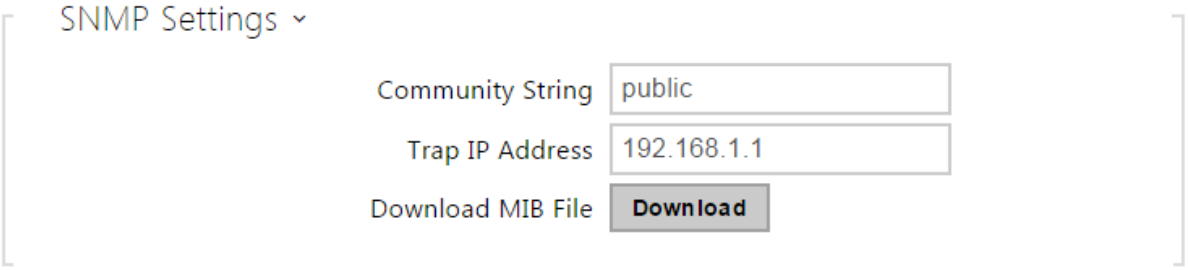
- Test status – this parameter displays the current test status.
- Last test time – this parameter displays the time of the last-performed test.
- Last test result – this parameter displays the result of the last-performed test.

5.4.11 SNMP



The **2N LTE intercoms** integrate a remote intercom supervision functionality via the SNMP. The integrated SNMP agent becomes available when the **Enhanced Integration** licence key is added. The intercoms support the SNMP version 2c.

List of Parameters

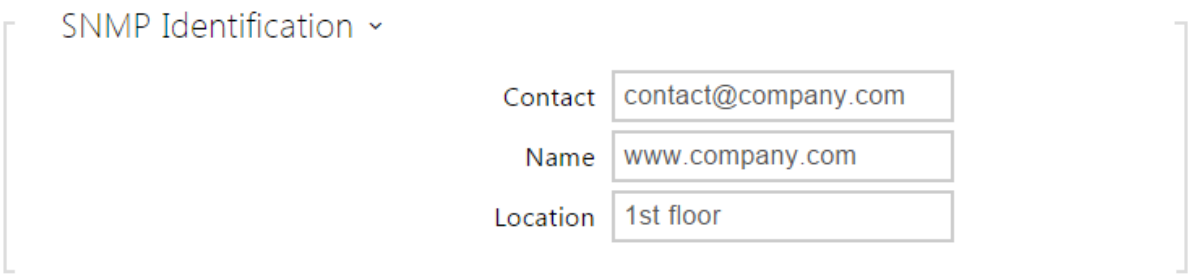


- **Community string** – text string representing the access key to the MIB table objects.
- **Trap IP address** – IP address to which the SNMP traps are to be sent.

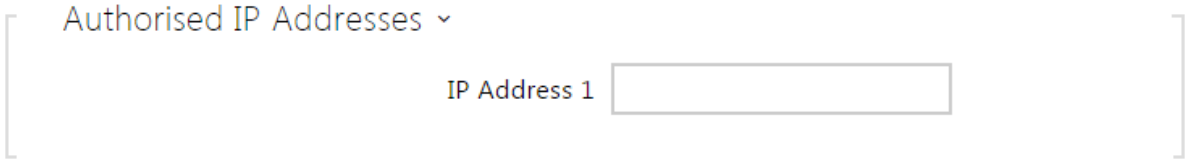
Note

- Traps are not supported at the present version. **2N LTE intercom** operates with request - response messages.

- **Download MIB file** – download the current MIB definition from a device.



- **Contact** – enter the device manager contact (name, e-mail, etc.).
- **Name** – enter the device name.
- **Location** – enter the device location (1st floor, e.g.).



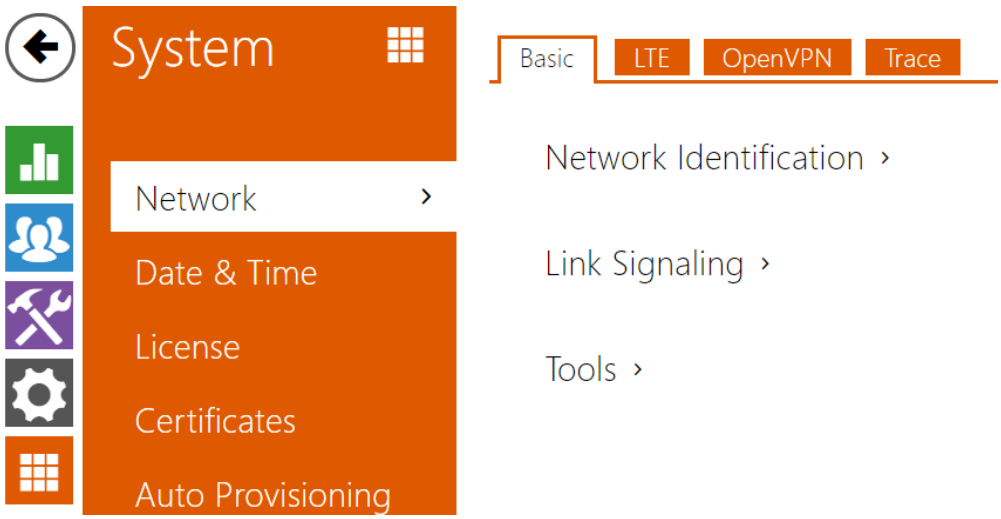
- **IP address**– enter up to 4 valid IP addresses for SNMP agent access to block access from other addresses. If the field is empty, the device may be accessed from any IP address.

5.5 System

Here is what you can find in this section:

- 5.5.1 Network
- 5.5.2 Date and Time
- 5.5.3 Licence
- 5.5.4 Certificates
- 5.5.5 Auto Provisioning
- 5.5.6 Syslog
- 5.5.7 Maintenance

5.5.1 Network



The **2N LTE intercom** gets connected to the LTE network via a SIM card. The access data (APN, access name and password) are configured automatically. To change the LTE access data configuration, use SMS (refer to the Installation manual) or the LTE tab of the web configuration interface (see below).

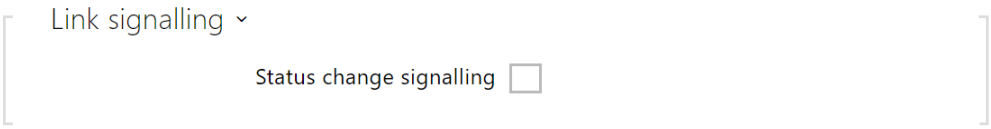
The **Trace** tab helps you launch capture of incoming and outgoing packets on the intercom network interface. The file with captured packets can be downloaded for Wireshark processing, e.g. (**www.wireshark.org**).

List of Parameters

Network

Basic

- **Hostname** – set the **2N LTE intercom** network identification.
- **Vendor Class Identifier** – set the vendor class identifier as a string of characters for DHCP Option 60.

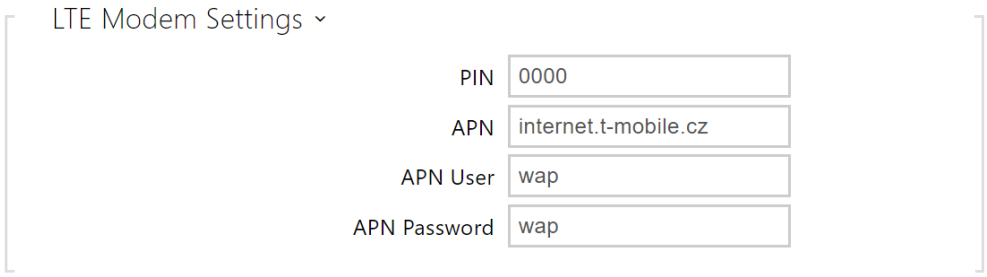


- **Link signalling** – Enable signalling of subsequent network connection state changes. If this signalling is disabled, only the first change until the connected state is signalled acoustically. Unselect this only if acoustic signalling were a problem.

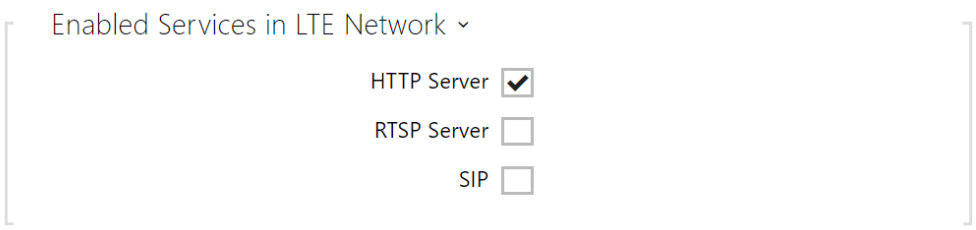
- **Verify the network address accessibility** – verify the network address accessibility via the Ping command in standard operating systems. Press Ping to display a dialogue, enter the IP address/domain name and click Ping to send test data to this address. If the selected IP address/domain name is invalid, a warning is displayed and Ping remains inactive until the given IP address becomes valid.

The function progress and result are also displayed in the dialogue. Failed means either inaccessibility of the given IP address within 10 seconds or inability to translate the domain name into an address. If a valid response is received, the IP address from which the response came and the response waiting time in milliseconds are displayed. Repress Ping to send another query to the same address.

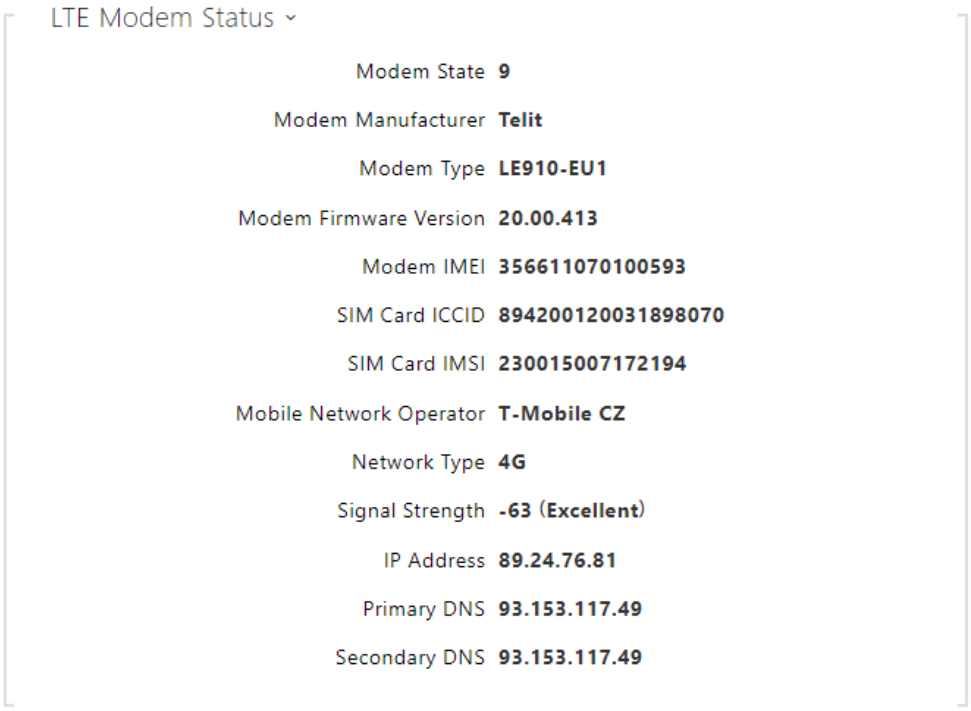
LTE



- **PIN** – enter the PIN if your SIM card requests so. First enter the code here and then enable the PIN request on the SIM card.
- **APN** – enter the provider's APN.
- **APN user** – enter the user name if the APN requires authentication.
- **APN password** – enter the password if the APN requires authentication.



- **HTTP Server** – enable the web server availability in the public Internet.
- **RTSP Server** – enable the RTSP server availability in the public Internet.
- **SIP** – enable the SIP TCP server availability in the public Internet.



- **Modem State** – value 9 – connected to the data network.
- **Modem Manufacturer** – LTE modem manufacturer.
- **Modem Type** – LTE modem type.
- **Modem Firmware Version** – LTE modem firmware version.
- **Modem IMEI** – LTE modem IMEI.
- **SIM Card ICCID** – SIM card ICCID.
- **SIM Card IMSI** – SIM card IMSI.
- **Mobile Provider** – mobile provider's name.
- **Network Type** – network technology (value 4 – LTE/4G).
- **Signal Strength** – signal strength in dBm.

- **Excellent** >= -80
- **Good** >= -90
- **Fair** >= -100
- **Weak** < -100

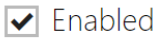
- **IP Address** – IP address assigned by the provider's mobile network (typically non-public and unavailable from the public Internet).
- **Primary DNS** – primary DNS address for translation of domain names to IP addresses.
- **Secondary DNS** – secondary DNS address if the primary DNS is unavailable.

Caution

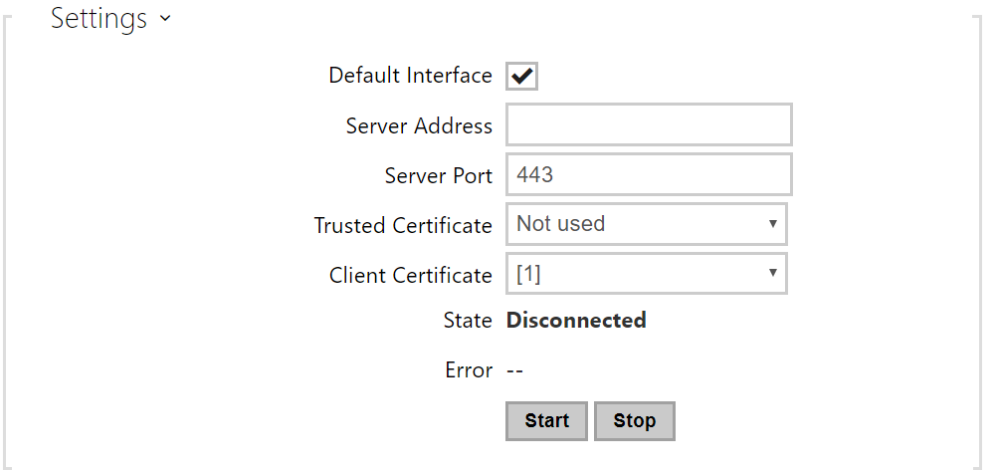
- **LTE® Verso** supports T-Mobile and AT&T for the US.

OpenVPN

Use OpenVPN to connect the device to another network.

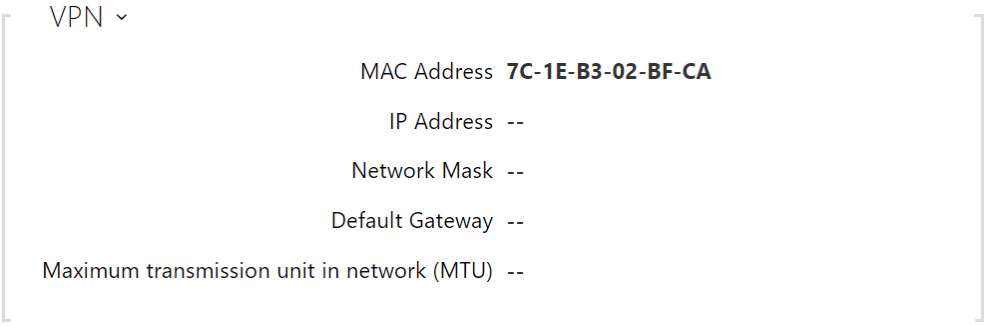


- **Enabled** – enables the virtual private network (VPN).



- **Default Interface** – if enabled, it directs all outgoing network traffic to the VPN interface outside the LAN mask.
- **Server Address** – OpenVPN Server Address
- **Server Port** – OpenVPN Server Port.

- **Trusted Certificate** – specify a set of certificates issued by certification authorities to verify the OpenVPN server public certificate validity. Choose one of three certificate sets, see the Certificates subsection. If no certificate issued by a certification authority is specified, the OpenVPN server public certificate is not validated.
- **Client Certificate** – specify a set of client certificates to verify the client's identity by the OpenVPN server. Choose one of three certificate sets, see the Certificates subsection. If no client certificate is specified, the OpenVPN client identity is not validated.
- **Stat e** – display the OpenVPN connection state: Connected/Disconnected.
- **Error** – display the OpenVPN connection error type if any.
- **Start** – connect the device to OpenVPN.
- **Stop** – disconnect the device from OpenVPN.

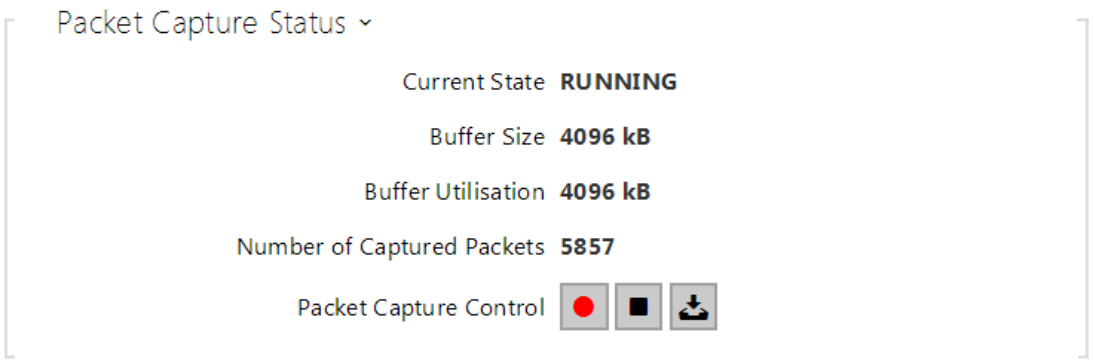


- **VPN** – display the basic information on VPN.

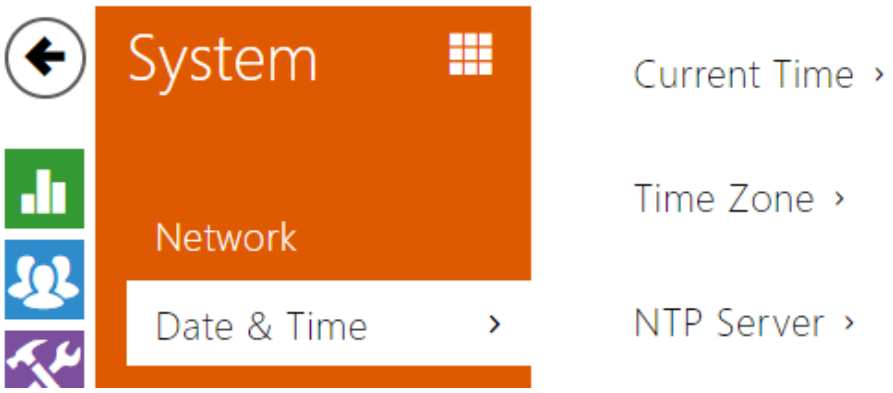
- Refer to the **FAQ** section for details on the OpenVPN server and client settings.

Trace

In the **Trace** tab, you can launch capturing of incoming and outgoing packets on the intercom network interface. The captured packets are stored in a 4 MB buffer. When the buffer fills up, the oldest packets are overwritten automatically. We recommend you to lower the video stream transmission rate below 512 kbps while capturing. Press ● to start, ■ to stop and to download the packet capture file.


Packet Capture Status
Current State RUNNING
Buffer Size 4096 kB
Buffer Utilisation 4096 kB
Number of Captured Packets 5857
Packet Capture Control

5.5.2 Date and Time



If you control validity of phone numbers, lock activation codes and similar by time profiles, make sure that the intercom internal date and time are set correctly.

Most **2N LTE intercom** models are equipped with a back-up real-time clock to withstand up to several days' long power outages. If not equipped with this function, the intercom loses the real time data upon power outage (or restart). Therefore, if the intercom is powered up after a rather long period of time (after new intercom installation, e.g.), time is set to the default value and has to be reset. You can synchronise the intercom time with your PC anytime by pressing the **Synchronise** button.

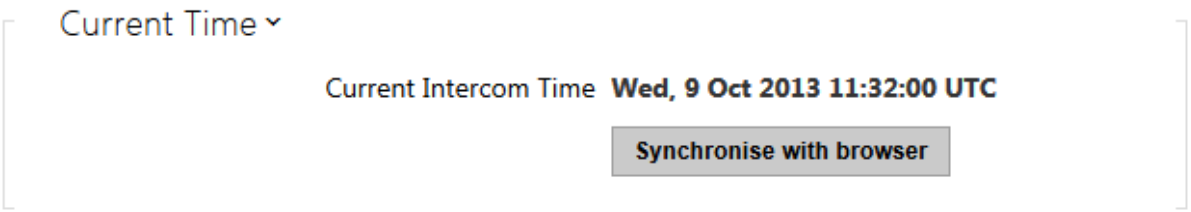
Synchronise the intercom internal time with any available SNTP server if your intercom is not equipped with a real-time clock.

Note

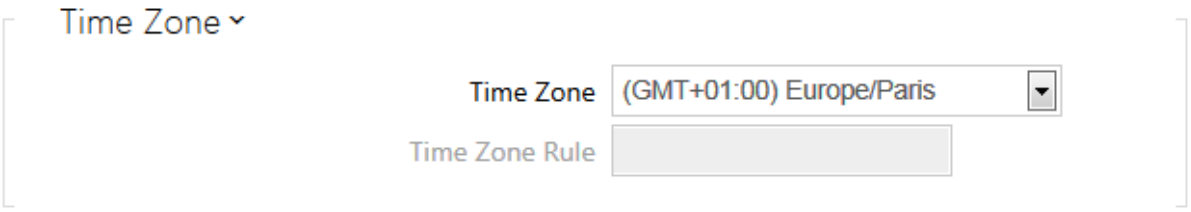
- *The intercom does not need the current date and time values for its basic function. However, be sure to set these values when you apply time profiles and display time of listed events (Syslog, used cards, logs downloaded by **HTTP API**, etc.).*

Practically, the intercom real-time circuit accuracy is approximately ±0,005 %, which may mean a deviation of ±2 minutes per month. Therefore, we recommend you to synchronise time with the NTP server to achieve the highest accuracy and reliability. The intercom sends a query to the NTP server periodically to update its time value.

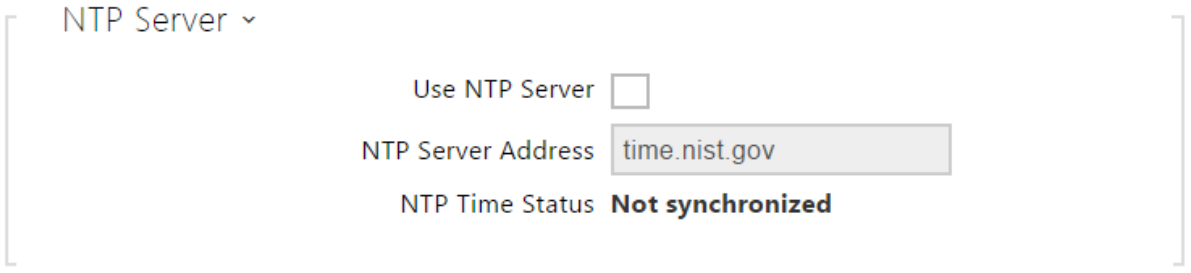
List of Parameters



Synchronise – push the button to synchronise the intercom time value with your PC time value.

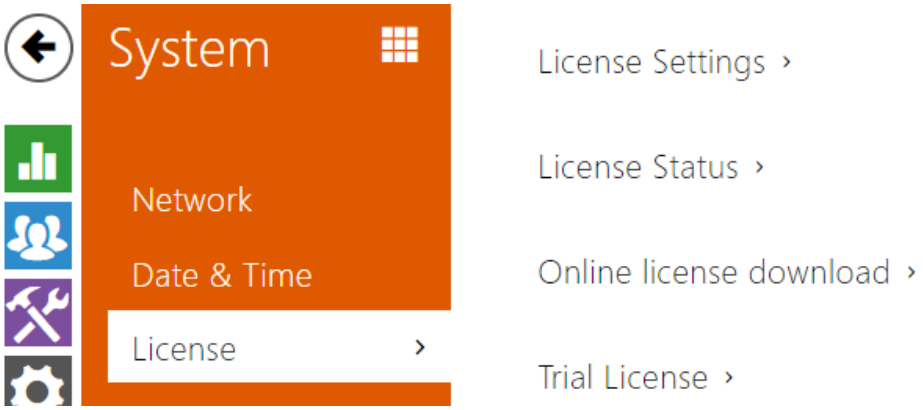


- **Time zone** – set the time zone for the installation site to define time shifts and winter/summer time transitions.
- **Time zone rule** – if the intercom is installed on a site that it not included in the **Time zone** parameter, set the time zone rule manually. The rule is applied only if the Time zone parameter is set to **Manual** (specify time shifts and winter /summer time transitions manually).



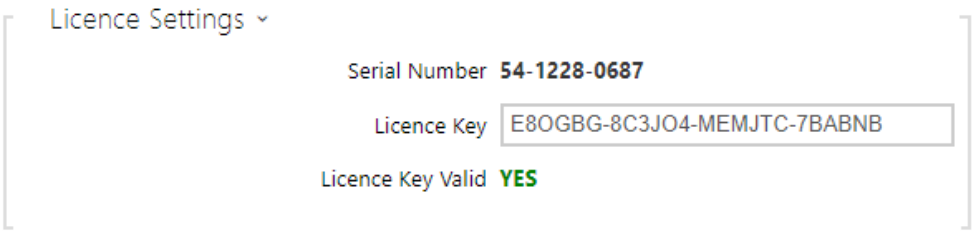
- **Use NTP server** – enable the NTP server use for intercom time synchronisation.
- **NTP server address** – set the IP address/domain name of the NTP server used for your intercom time synchronisation.
- **NTP time status** – display the state of the last local time synchronisation attempt via the NTP server (Not Synchronised, Synchronised, Error).

5.5.3 Licence

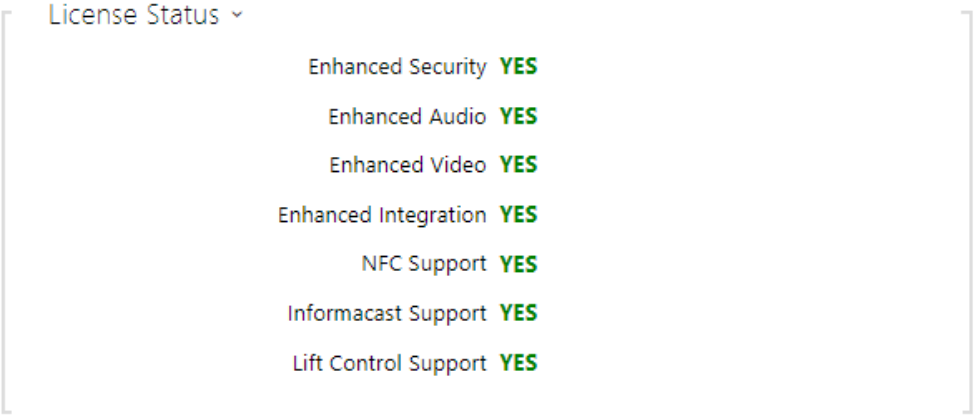


Some 2N LTE intercom functions are available with a valid licence key only. Refer to the Model Differences and Function Licensing subsection for the list of intercom licensing options.

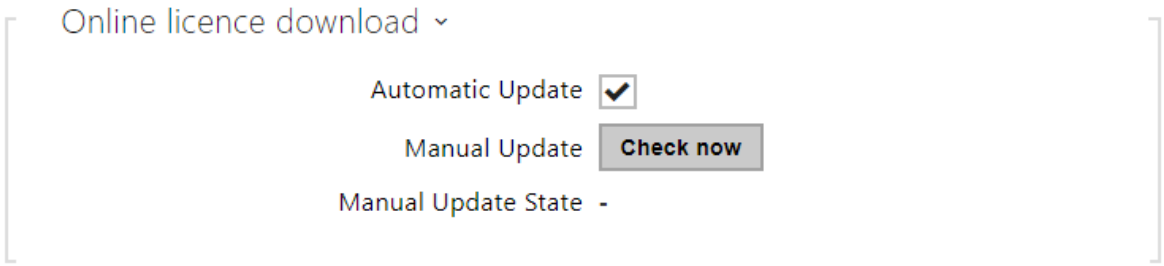
List of Parameters



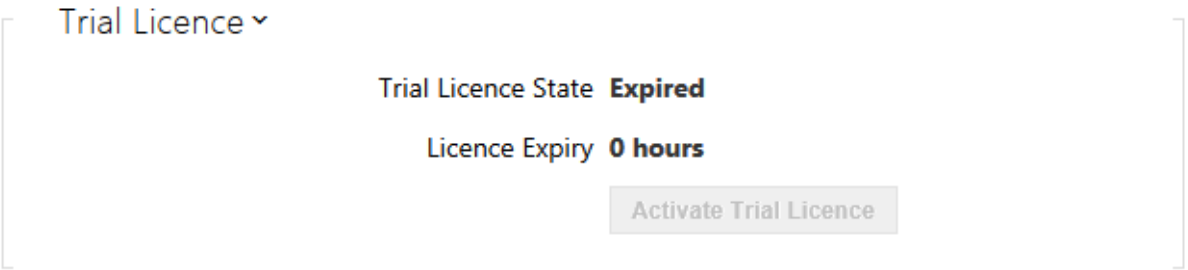
- Serial Number – display the serial number of the device for which the licence is valid.
- Licence Key – enter the valid licence key.
- Licence Key Valid – check whether the used licence key is valid.



- **Enhanced security** – check whether the functions activated by the Enhanced Security licence are available.
- **Enhanced audio** – check whether the functions activated by the Enhanced Audio licence are available.
- **Enhanced video** – check whether the functions activated by the Enhanced Video licence are available.
- **Enhanced integration** – check whether the functions activated by the Enhanced Integration licence are available.
- **NFC support**– check whether the NFC user identification support is available.
- **InformaCast support** – check whether the InformaCast support is available.
- **Lift Control Support** – check whether the functions activated by the Lift Module license are available.



- **Automatic update** – enable automatic licence key update from the 2N Licence server.
- **Manual update** – manual licence availability check request.
- **Manual update state** – running, updated, unspecified., failed: license is not available.

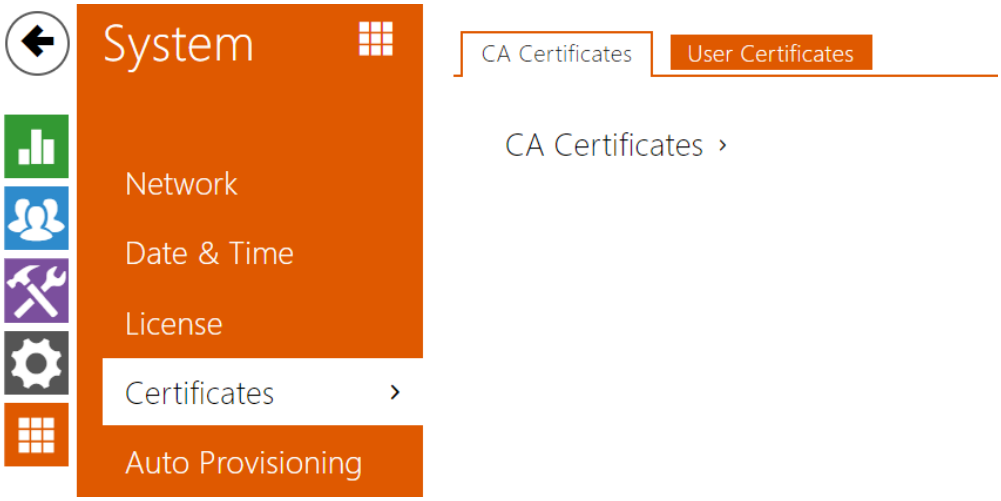


- **Trial licence state** – check the trial licence state (non-activated, activated, expired).
- **Licence expiry** – check the remaining time of the trial licence validity. 1 hour is deducted automatically from the licence remaining time upon every restart and factory reset; otherwise this time is not affected in any way.

Caution

- The SW reset does not delete the license key and result in the device restart. If disabled before the SW reset, the automatic license update is enabled automatically and a query is sent to the license server. If the automatic license update is enabled, the query to the license server is sent as planned.
- The HW reset deletes the license key and the subsequent device restart in a randomly short time generates a query to the license server.
  - Request interval – randomly 1-100 minutes after the start and then in 8 hours in trial license devices or in 8 hours for 7 days after the restart in time-unlimited license devices.

5.5.4 Certificates



Some **2N LTE intercom** network services use the Transaction Layer Security (TLS) protocol for communication with other LAN devices to prevent third parties from monitoring and/or modifying the communication contents. Unilateral or bilateral authentication based on certificates and private keys is needed for establishing connections via TLS.

The following intercom services use the TLS protocol:

1. a. Web server (HTTPS)
   b. E-mail (SMTP)
   c. 802.1x (EAP-TLS)
   d. SIP

Sets of CA certificates can be uploaded to the **2N LTE intercoms** , which are used for identity verification of the device that the intercom is communicating with, and also of User certificates and private keys for communication encryption

Each certificate-requiring service can be assigned one of the three certificate sets available; refer to the **Web Server**, **E-Mail** and **Streaming** subsections. The certificates can be shared by the services.

- The **2N LTE intercom** accepts the DER (ASN1) and PEM certificate formats.
- **2N LTE intercom** supports the AES, DES and 3DES encryption.
- **2N LTE intercom** supports the following algorithms:
  - RSA up to 2048bit user certificate keys; internally up to 4096bit keys (during connection – temporary and equivalence certificates)
  - Elliptic Curves

Caution

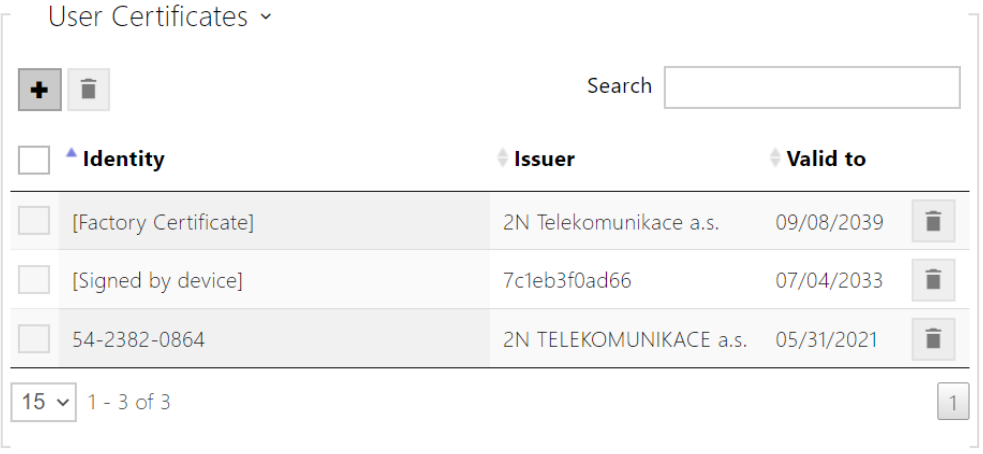
- The CA certificates must use the X.509 v3 format.

Upon the first power up, the intercom automatically generates the **Self Signed certificate and private key** for the **Web Server** and **E-Mail** without forcing you to load a certificate and private key of your own.

Note

- *If you use the Self Signed certificate for encryption of the intercom web server – browser communication, the communication is secure, but the browser will warn you that it is unable to verify the intercom certificate validity.*

The current overview of CA and User certificate uploads is shown in the following two folders:



Press

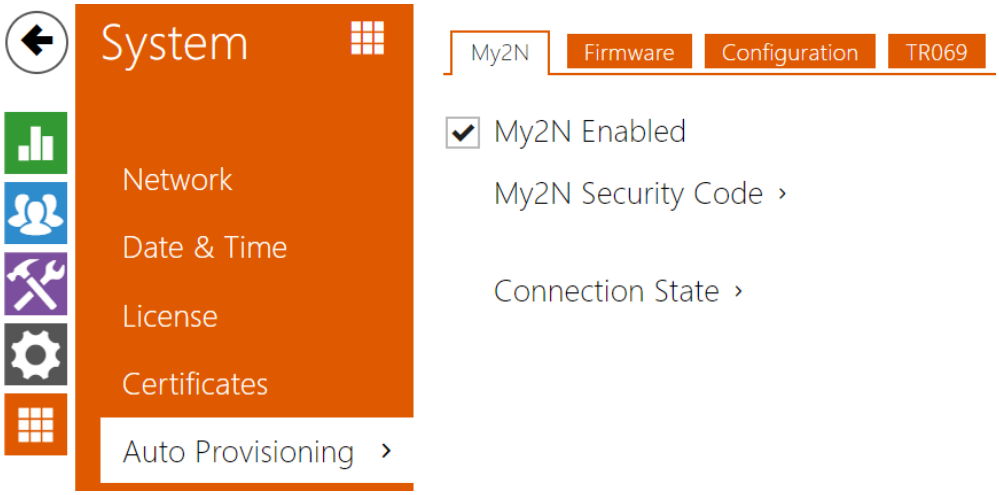
to load a certificate saved on your PC. Select the certificate (or private key) file in the dialogue window and push **Load**. Press

to remove a certificate from the intercom.

Caution

- It is possible that certificate with private RSA key longer than 2048 bits will be rejected and following message will be displayed: **Private key file or private key password was not accepted by device !**
- For certificates based on elliptic curves use the secp256r1 (aka prime256v1 aka NIST P-256) and secp384r1 (aka NIST P-384) curves only.

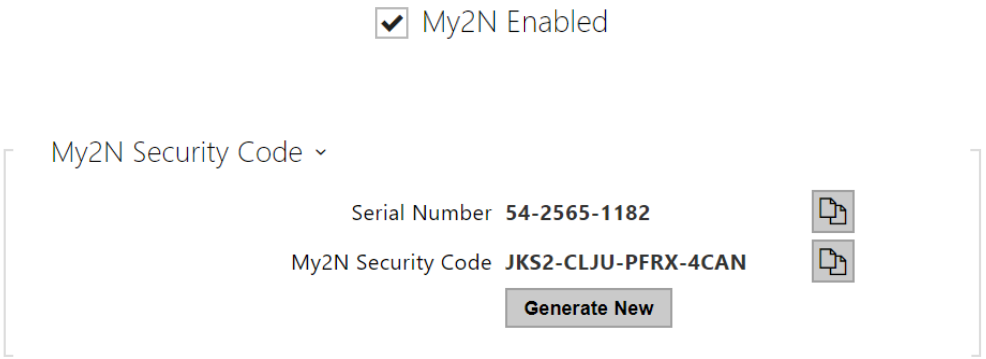
5.5.5 Auto Provisioning



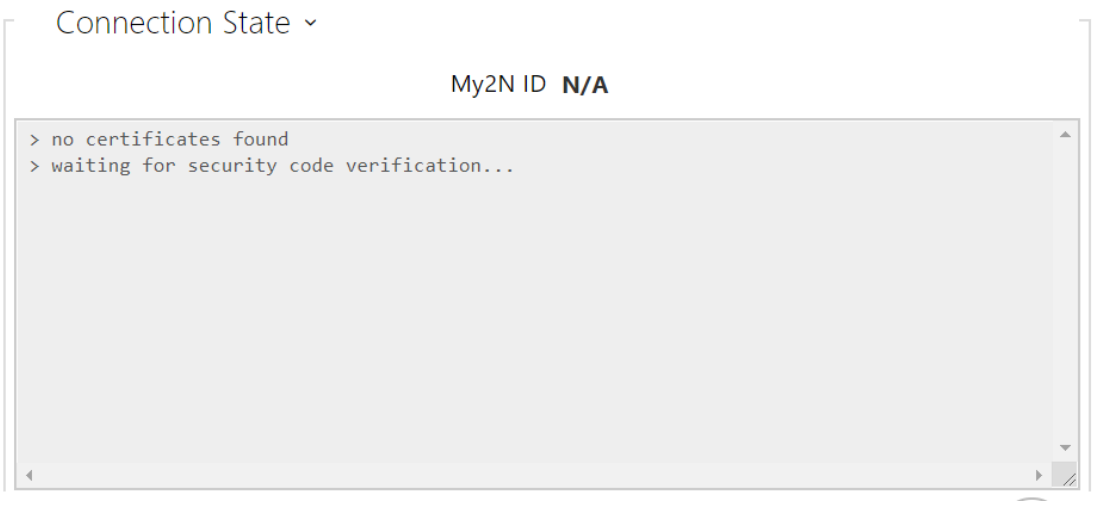
The 2N LTE intercoms help you update firmware and configuration manually, or automatically from a storage on a TFTP/HTTP server selected by you according to predefined rules.

You can configure the TFTP and HTTP server address manually. The 2N LTE intercoms support automatic identification of the local DHCP server address (Option 66).

My2N



- Serial Number – display the serial number of the device to which the valid My2N code applies.
- My2N Security Code – display the full application activating code.
- GENERATE NEW – the active My2N Security Code will be invalidated and a new one will be generated.



It displays information on the state of the device connection to My2N.

- My2N ID – unique identifier of the company created via the My2N portal.

Firmware

Use the Firmware tab to set automatic firmware download from a server defined by you. The intercom compares the server file with its current firmware file periodically and, if the server file is later, automatically updates firmware and gets restarted (approx. 30 s). Hence, we recommend you to update when the intercom traffic is very low (at night, e.g.).

2N LTE intercom expects the following files:

1. hipMODEL-firmware.bin – intercom firmware
2. hipMODEL-common.xml – common configuration for all intercoms of one model
3. hipMODEL-MACADDR.xml – specific configuration for one intercom

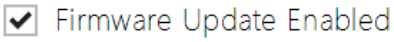
MACADDR is the MAC address of the intercom in the 00-00-00-00-00-00 format. Find the MAC address on the intercom production plate or in the Intercom Status tab via the web interface.

Example:

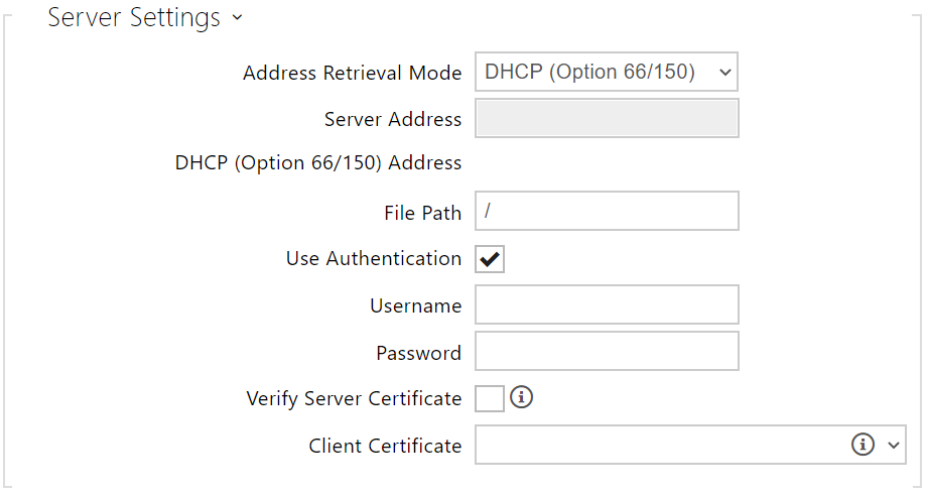
2N® LTE Verso with MAC address 00-87-12-AA-00-11 downloads the following files from the TFTP server:

- hipve-firmware.bin
- hipve-common.xml
- hipve-00-87-12-aa-00-11.xml

List of Parameters



- **Firmware update enabled** – enable automatic firmware/configuration updating from the TFTP/HTTP server.

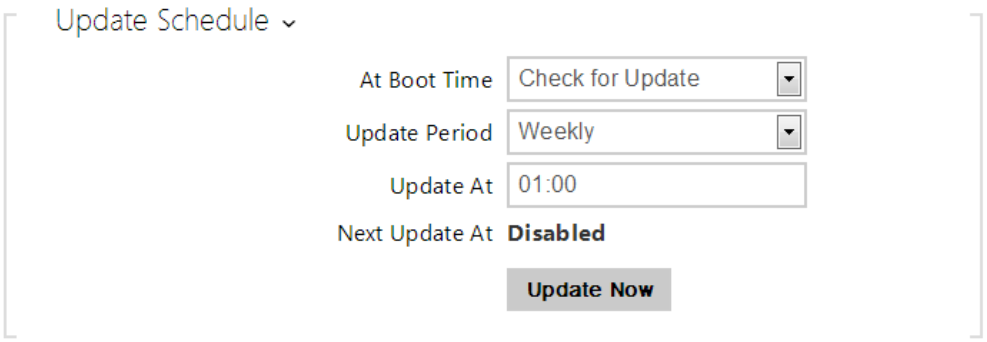


- **Address retrieval mode** – select whether the TFTP/HTTP server address shall be entered manually or a value retrieved automatically from the DHCP server using Option 66 shall be used.
- **Server address** – enter the TFTP (**tftp://ip_address**), HTTP (**http://ip_address**) or HTTPS (**https://ip_address**) server address manually.
- **DHCP (Option 66/150) address** – check the server address retrieved via the DHCP Option 66 or 150.
- **File path** – set the firmware/configuration filename directory or prefix on the server. The intercom expects the XhipY_firmware.bin, XhipY-common.xml and XhipY-MACADDR.xml files, where X is the prefix specified herein and Y specifies the intercom model.
- **Use authenticatio n** – enable authentication for HTTP server access.
- **Username** – enter the user name for server authentication.

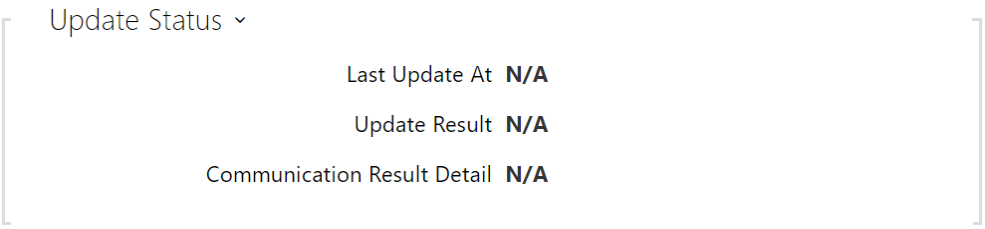
- **Password** – enter the password for server authentication.
- **Verify Server Certificate** – set the set of CA certificates for validation of the ACS public certificate.
- **Client Certificate** – specify the client certificate and private key to validate the intercom right to communicate with the ACS.

Info

- The intercom contains the Factory Cert, a signed certificate used for British Telecom integration, for example.



- **At boot time** – enable check and, if possible, update execution upon every intercom start.
- **Update period** – set the update period. Set an automatic update to take place hourly/daily/weekly/monthly, or set the period manually.
- **Update at** – set the update time in the HH:MM format for periodical updating at a low-traffic time. The parameter is not applied if the update period is set to a value shorter than 1 day.
- **Next update at** – set the next update time.



- **Last Update At** – last update time.
- **Update Result** – last update result. The following options are available: DHCP option 66 failed, Firmware is up to date, Server connection failed, Running..., File not found.

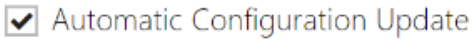
- **Communication Result Detail** – server communication error code or TFTP/HTTP status code.

Result	Description
Invalid server address	The server address is invalid.

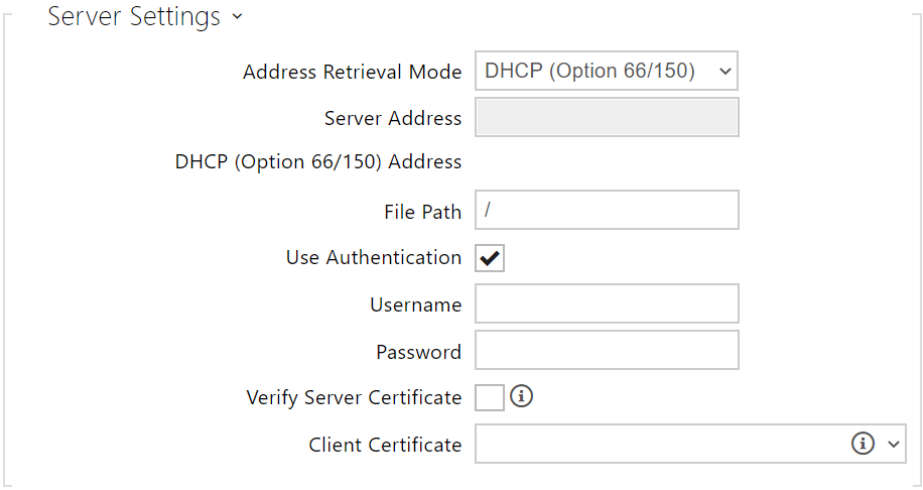
Result	Description
Unsupported protocol	The protocol is not supported. HTTP(s) and TFTP are supported only.
Invalid file path	The provisioning file location is invalid.
DHCP option 66 failed	The server address loading via DHCP Option 66 or 150 has failed.
Invalid domain name	The server domain name is invalid due to wrong configuration or unavailability of the DNS server.
Server not found	The requested HTTP/TFTP server fails to reply.
Authentication failed	The HTTP credentials are invalid.
File not found	The file has not been found on the server.
Request waiting in queue...	The provisioning request is queuing...
In progress...	Update is in progress.
File is invalid	The file to be downloaded is corrupted or of a wrong type.
Firmware is up to date	The firmware update attempt reveals that the latest firmware version has been loaded.
Update Succeeded	The configuration/firmware update has been successful. With firmware update, the device will be restarted in a few seconds.
Internal error	An unspecified error occurred during file download.

Configuration

Use the **Configuration** tab to set automatic configuration download from the server defined by you. The intercom periodically downloads a file from the server and gets reconfigured without getting restarted.



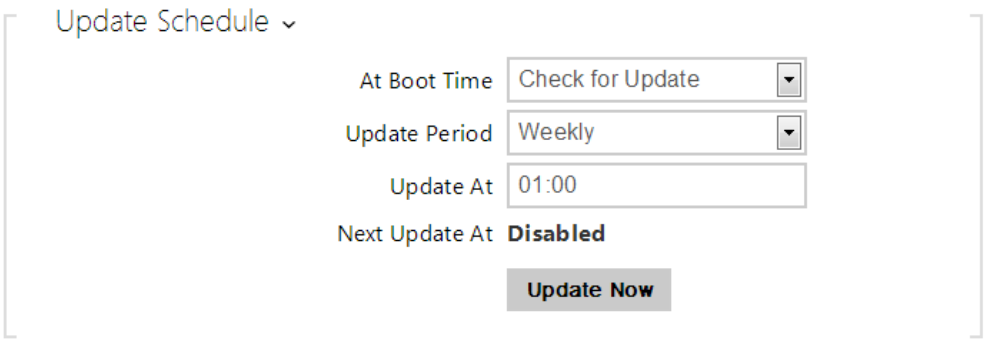
- **Firmware update enabled** – enable automatic firmware/configuration updating from the TFTP/HTTP server.



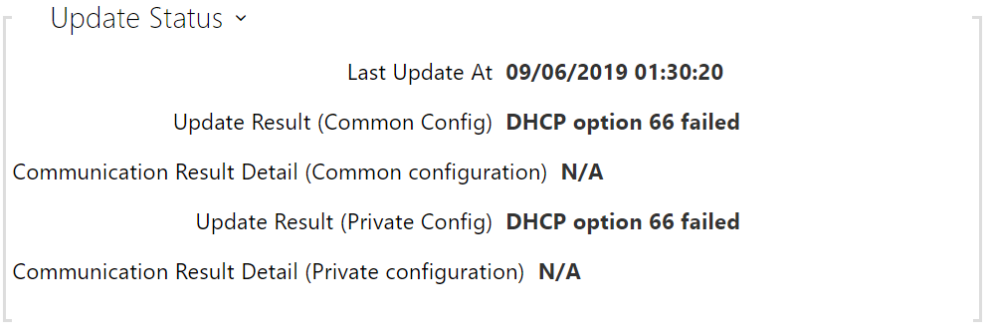
- **Address Retrieval Mode** – select whether the TFTP/HTTP server address shall be entered manually or a value retrieved automatically from the DHCP server using Option 66 shall be used.
- **Server Address** – enter the TFTP (**tftp://ip_address**), HTTP (**http://ip_address**) or HTTPS (**https://ip_address**) server address manually.
- **DHCP (Option 66/150) Address** – check the server address retrieved via the DHCP Option 66 or 150.
- **File Path** – set the firmware/configuration filename directory or prefix on the server. The intercom expects the XhipY_firmware.bin, XhipY-common.xml and XhipY-MACADDR.xml files, where X is the prefix specified herein and Y specifies the intercom model.
- **Use Authenticatio n** – enable authentication for HTTP server access.
- **Username** – enter the user name for server authentication.
- **Password** – enter the password for server authentication.
- **Verify Server Certificate** – set the set of CA certificates for validation of the ACS public certificate.
- **Client Certificate** – specify the client certificate and private key to validate the intercom right to communicate with the ACS.

Info

- The intercom contains the Factory Cert, a signed certificate used for British Telecom integration, for example.



- **At Boot Time** – enable check and, if possible, update execution upon every intercom start.
- **Update Period** – set the update period. Set an automatic update to take place hourly/daily/weekly/monthly, or set the period manually.
- **Update At** – set the update time in the HH:MM format for periodical updating at a low-traffic time. The parameter is not applied if the update period is set to a value shorter than 1 day.
- **Next Update At** – set the next update time.



- **Last Update At** – last update time .
- **Update Result (Common Config)** – last update result. The following options are available: DHCP option 66 failed, Firmware is up to date, Server connection failed, Running..., File not found.
- **Communication Result Detail (Common Config)** – server communication error code or TFTP/HTTP status code.

- **Update Result (Private Config)** – private configuration follows the common configuration update. The device with private configuration is identified by its MAC address. The following options are available: DHCP option 66 failed, Firmware is up to date, Server connection failed, Running..., File not found.
- **Communication Result Detail (Private Config)** – server communication error code or TFTP/HTTP status code.

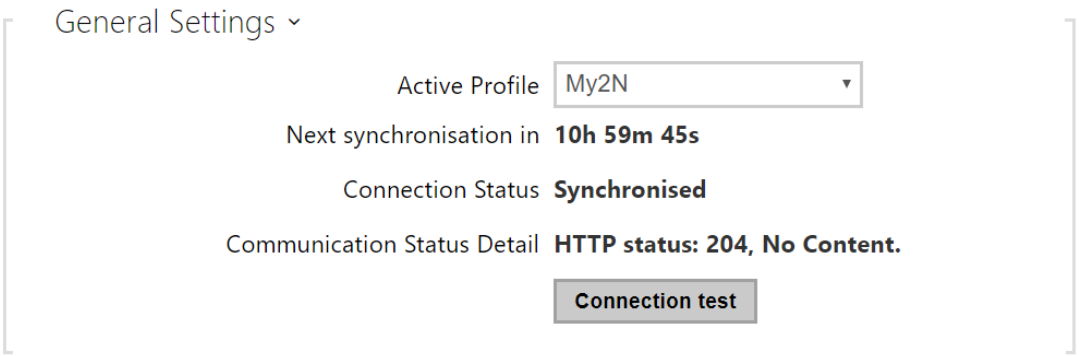
My2N / TR069

Use this tab to enable and configure remote intercom management via the TR-069 protocol. TR-069 helps you reliably configure intercom parameters, update and back up configuration and/or upgrade device firmware.

The TR-069 protocol is utilised by the My2N cloud service. Make sure that TR-069 is enabled and Active profile set to My2N to make your intercom log in to My2N periodically for configuration.

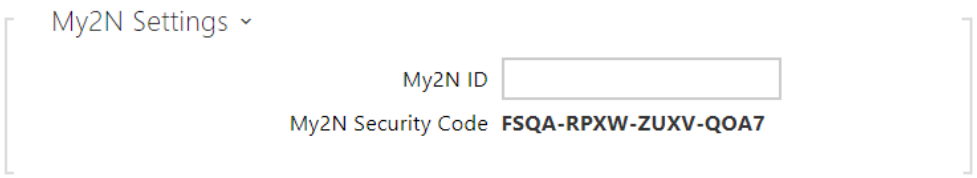
This function helps you connect the intercom to your ACS (Auto Configuration Server). In this case, the connection to My2N will be disabled in the intercom.

- **My2N / TR069 Enabled** – enable connection to My2N or another ACS server.

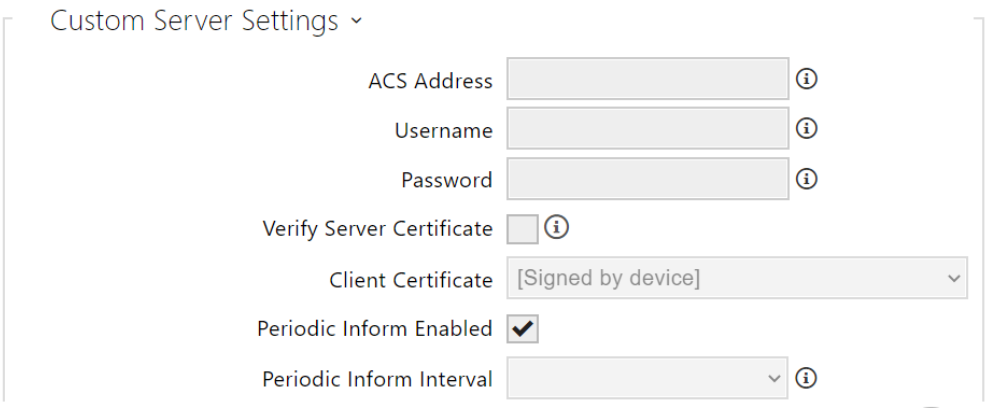


- **Active profile** – select one of the pre-defined profiles (ACS), or choose a setting of your own and configure the ACS connection manually.
- **Next synchronisation in** – display the time period in which the intercom shall contact a remote ACS.
- **Connection status** – display the current ACS connection state or error state description if necessary.
- **Communication Status Detail** – server communication error code or HTTP status code.

- **Connection test** – test the TR069 connection according to the set profile, see the Active profile. The test result is displayed in the Connection status.

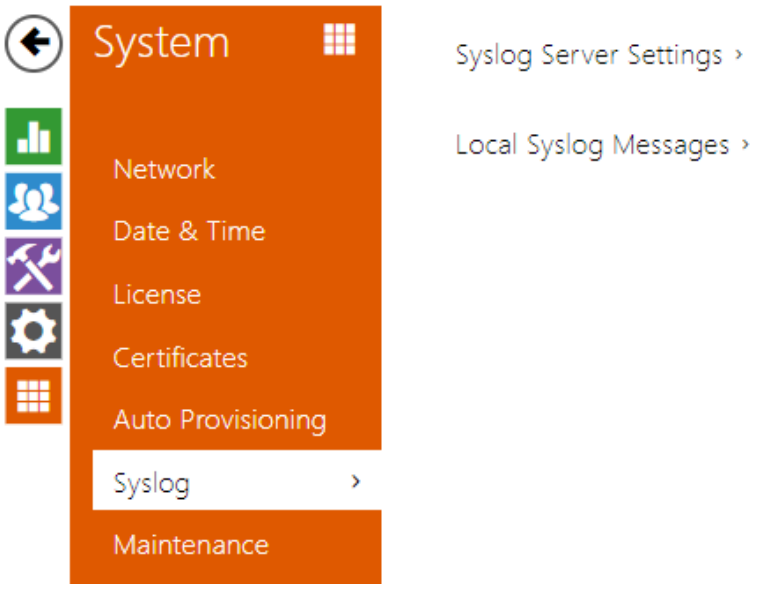


- **My2N ID** – unique identifier of the company created via the My2N portal.
- **My2N Security Code** – display the full application activating code.



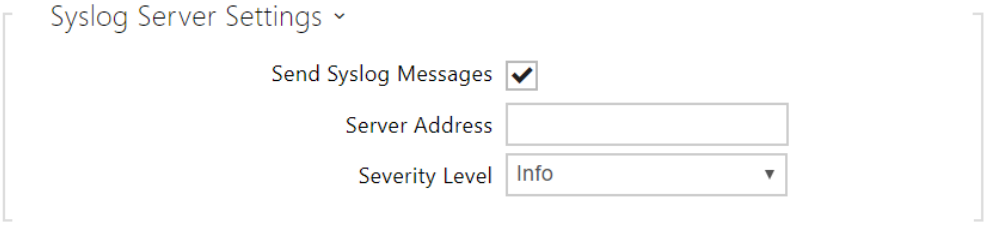
- **ACS Address** – s et the ACS address in the following format: ipaddress[: port], 192.168.1.1:7547, for example.
- **Username** – s et the user name for intercom authentication while connecting to the ACS server.
- **Password** – s et the user password for intercom authentication while connecting to the ACS server.
- **Verify Server Certificate** – set the set of CA certificates for validation of the ACS public certificate. Choose one of three sets, see the Certificates subsection. If none is selected, the ACS public certificate is not validated.
- **Client Certificate** – s pecify the user certificate and private key to validate the intercom right to communicate with the ACS. Choose one of three sets, refer to the Certificates subsection.
- **Periodic inform enabled** – enable periodical logging of the intercom to the ACS.
- **Periodic inform interv al** – s et the interval of periodical logging of the intercom to the ACS if enabled by the **Periodic inform enabled** parameter.

5.5.6 Syslog

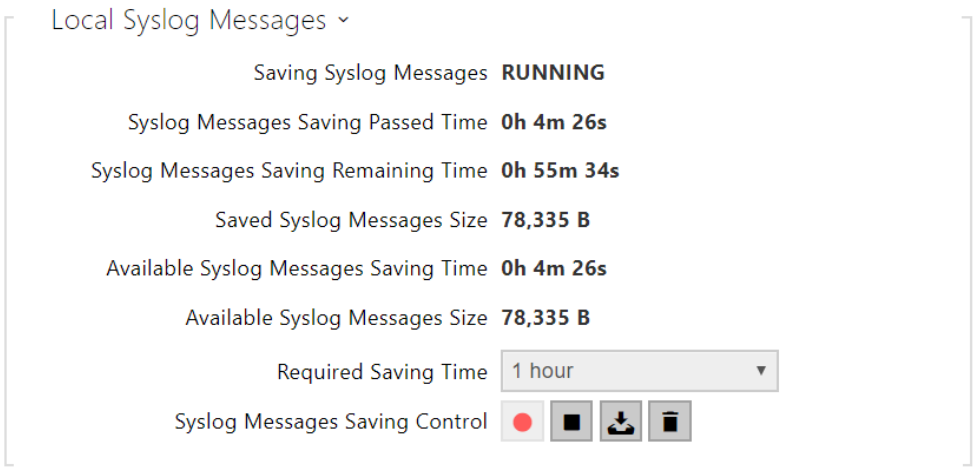


The **2N LTE intercoms** allow you to send system messages to the Syslog server including relevant information on the device states and processes for recording, analysis and audit. It is unncecessary to configure this service for common intercom operation.

List of Parameters

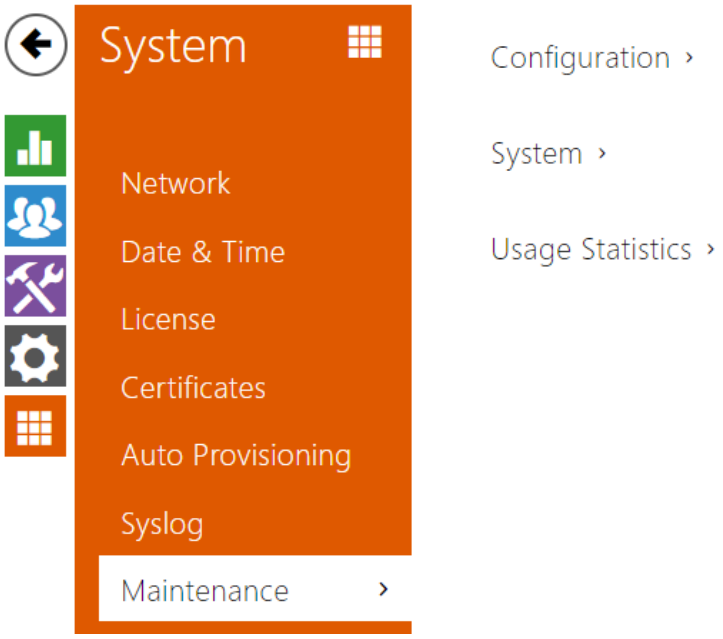


- **Send Syslog Messages** – enable sending of system messages to the Syslog server. Make sure that the server address is set correctly.
- **Server Address** – set the IP/MAC address of the server on which the Syslog application is running.
- **Severity Level** – set the severity level of the messages to be sent. Debug 1–3 level setting is only recommended to facilitate troubleshooting for the Technical Support department.

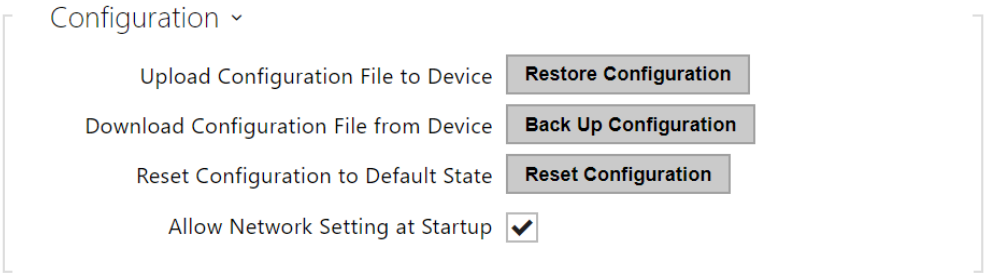


General overview of local syslog messages.

5.5.7 Maintenance



Use this menu to maintain your intercom configuration and firmware. You can back up and reset all parameters, update firmware and/or reset default settings here.



- **Restore configuration** – reset configuration from the preceding backup. Press the button to display a dialogue window for you to select and upload the configuration file to the intercom. You can also choose before uploading whether the directory, network parameters or SIP exchange connection settings from the configuration file shall be applied.
- **Backup configuration** – back up the complete current configuration of your intercom. Press the button to download the configuration file to your PC.

Caution

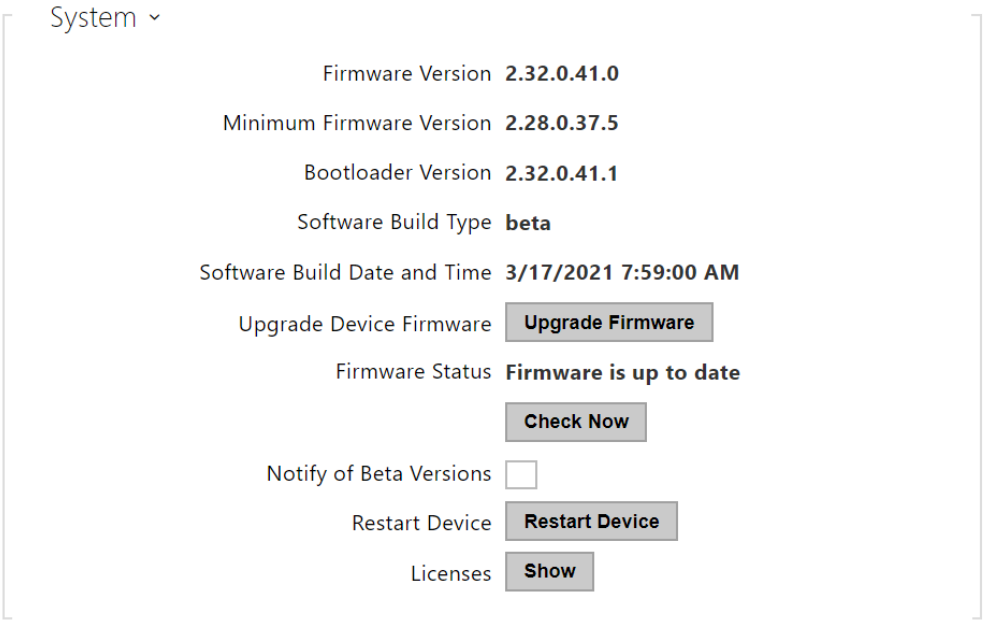
- *Treat the file cautiously as the intercom configuration may include delicate information such as user phone numbers and access codes.*

- **Reset configuration** – reset default values for all of the intercom parameters except for the network settings. Use the respective jumper or push **Reset** to reset all the intercom parameters; refer to the Installation Manual of your intercom.

Caution

- *The default state reset deletes the licence key if any. Hence, we recommend you to copy it to another storage for later use.*

- **Allow Network Setting at Startup** – enable restoration of the default network settings by pressing a sequence of the quick dial buttons after the intercom restart as described in the **Device Configuration** subsection in the Installation Manual of the respective model.

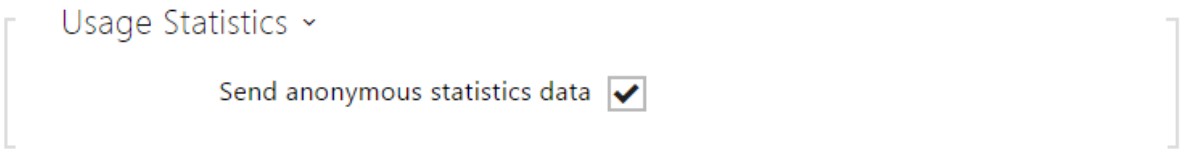


- **Upgrade firmware** – upgrade your intercom firmware. Press the button to display a dialogue window for you to select and upload the firmware file to the intercom. The intercom will automatically get restarted and new FW will then be available. The whole upgrading process takes less than one minute. Refer to **www.2n.cz**. for the latest FW version for your intercom. FW upgrade does not affect configuration as the intercom checks the FW file to prevent upload of a wrong or corrupted file.
- **Check firmware online** – check online whether a new firmware version is available. If so, download the new FW version and an automatic device upgrade will follow.
- **Restart device** – restart the intercom. The process takes about 30 s. When the intercom has obtained the IP address upon restart, the login window will get displayed automatically.

Caution

- The intercom configuration change writing takes 3–15 s depending on the intercom configuration size. Do not restart the intercom during this process.

- Licence – click Display to display a dialogue window including a list of used licences and third party software as well as a EULA link.



- Send anonymous statistics data – enable sending of anonymous statistic data on device usage to the manufacturer. These data do not include any sensitive information such as passwords, access codes or phone numbers. This information helps 2N TELEKOMUNIKACE a.s. improve the software quality, reliability and performance. Your participation is voluntary and you can cancel this sending any time.

5.6 Used Ports

Service	Port	Protocol	Direction	Configurable	Configuration
802.1x	–	–	In/Out	No	–
DHCP	68	UDP	In/Out	No	–
DNS	53	TCP /UDP	In/Out	No	–
Echo (device discovery)*	8002	UDP	In/Out	No	–
FTP	21	TCP	Out	No	–
2N® IP Eye	8003	UDP	Out	No	–
HTTP	80	TCP	In/Out	Yes	Web server
HTTPS	443	TCP	In/Out	Yes	Web server
Multicast audio	22222	UDP	In/Out	Yes	Streaming
Multicast audio for 2N® Mobile video	8006	UDP	Out	No	
Multicast video for 2N® Mobile video	8008	UDP	Out	No	
NTP klient	123	UDP	In/Out	No	–
ONVIF	80, 443, 3702	TCP /UDP	In/Out	No	–
RTP ports	4900+	UDP	In/Out	Yes	Phone
RTSP server	554	UDP	In/Out	No	–

Service	Port	Protocol	Direction	Configurable	Configuration
SingleWire Commands	80	TCP	In/Out	No	–
SingleWire Communication	8081	TCP	Out	No	–
SingleWire Discovery	427	UDP	In/Out	No	–
SingleWire Media	20000+	UDP	In	No	–
SIP	5060, 5062	TCP /UDP	In/Out	Yes	Phone
SIPS	5061	TCP	In/Out	Yes	Phone
SMTP	25	TCP	Out	Yes	E-Mail
Syslog	514	UDP	Out	No	–
TFTP	69	UDP	Out	No	–

Echo – a proprietary protocol for the intercom discovery in the network. Used in applications: 2N® Network Scanner, 2N® IP Eye, 2N® Access Commander.

6. Supplementary Information

Here is what you can find in this section:

- 6.1 Troubleshooting
- 6.2 Directives, Laws and Regulations
- 6.3 General Instructions and Cautions

6.1 Troubleshooting

For the most frequently asked questions refer to **faq.2n.cz**.

6.2 Directives, Laws and Regulations

2N® IP Intercom conforms to the following directives and regulations:

- 2014/35/EU for electrical equipment designed for use within certain voltage limits
- 2014/30/EU for electromagnetic compatibility
- 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment
- 2012/19/EU on waste electrical and electronic equipment

Industry Canada

This Class B digital apparatus complies with Canadian ICES-003/NMB-003.

FCC

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules.

NOTE: These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Caution

Warning

In order to ensure the full functioning and guaranteed outputs we strongly recommend a verification of the timeliness of version of product or facility already during the installation process. The customer takes into consideration that the product or facility can achieve the guaranteed outputs and be fully operational pursuant to the producer's instructions only by using the most recent version of product or facility, which has been tested for full interoperability and has not been determined by the producer as incompatible with certain versions of other products, only in conformity with the producer's instructions, guidelines, manual or recommendation and only in conjunction with suitable products and facilities of the other producers. The most recent versions are available on the website https://www.2n.cz/cs_CZ/, or specific facilities, depending on their technical capacity, allow updating in the configuration interface. Should the customer use any other version of product or facility than the most recent one, or the version that has been determined by the producer as incompatible with certain versions of other producers' products of facilities, or the product or facility in a way incompatible with the producer's instructions, guidelines, manual or recommendation or in conjunction with unsuitable products or facilities of the other producers, he or she is aware of all potential limitations of functionality of such a product or facility and all relating consequences. Should the customer use any other than the most recent version of the product or facility, or the version that has been that has been determined by the producer as incompatible with certain versions of other producers' products of facilities, or the product or facility in a way incompatible with the producer's instructions, guidelines, manual or recommendation or in conjunction with unsuitable products or facilities of the other producers, he or she agrees that the company 2N TELEKOMUNIKACE a. s. is not liable neither for any limitation of such a product's functionality, nor for any damage, loss or injury relating to such a potential limitation of functionality.

6.3 General Instructions and Cautions

Please read this User Manual carefully before using the product. Follow all instructions and recommendations included herein.

Any use of the product that is in contradiction with the instructions provided herein may result in malfunction, damage or destruction of the product.

The manufacturer shall not be liable and responsible for any damage incurred as a result of a use of the product other than that included herein, namely undue application and disobedience of the recommendations and warnings in contradiction herewith.

Any use or connection of the product other than those included herein shall be considered undue and the manufacturer shall not be liable for any consequences arisen as a result of such misconduct.

Moreover, the manufacturer shall not be liable for any damage or destruction of the product incurred as a result of misplacement, incompetent installation and/or undue operation and use of the product in contradiction herewith.

The manufacturer assumes no responsibility for any malfunction, damage or destruction of the product caused by incompetent replacement of parts or due to the use of reproduction parts or components.

The manufacturer shall not be liable and responsible for any loss or damage incurred as a result of a natural disaster or any other unfavourable natural condition.

The manufacturer shall not be held liable for any damage of the product arising during the shipping thereof.

The manufacturer shall not make any warrant with regard to data loss or damage.

The manufacturer shall not be liable and responsible for any direct or indirect damage incurred as a result of a use of the product in contradiction herewith or a failure of the product due to a use in contradiction herewith.

All applicable legal regulations concerning the product installation and use as well as provisions of technical standards on electric installations have to be obeyed. The manufacturer shall not be liable and responsible for damage or destruction of the product or damage incurred by the consumer in case the product is used and handled contrary to the said regulations and provisions.

The consumer shall, at its own expense, obtain software protection of the product. The manufacturer shall not be held liable and responsible for any damage incurred as a result of the use of deficient or substandard security software.

The consumer shall, without delay, change the access password for the product after installation. The manufacturer shall not be held liable or responsible for any damage incurred by the consumer in connection with the use of the original password.

The manufacturer also assumes no responsibility for additional costs incurred by the consumer as a result of making calls using a line with an increased tariff.

Electric Waste and Used Battery Pack Handling

Do not place used electric devices and battery packs into municipal waste containers. An undue disposal thereof might impair the environment!

Deliver your expired electric appliances and battery packs removed from them to dedicated dumpsites or containers or give them back to the dealer or manufacturer for environmental-friendly disposal. The dealer or manufacturer shall take the product back free of charge and without requiring another purchase. Make sure that the devices to be disposed of are complete.

Do not throw battery packs into fire. Battery packs may not be taken into parts or short-circuited either.

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