INSTALLATION MANUAL

Connection Server

1. Preface

Connection Server - It serves as a connection between iNELS BUS system units and other devices because it allows communication between devices with different protocols. All devices can be then controlled through just one application. Besides the normal control of electronic installations, you can also control e.g. air condition, home appliances.

The connection server uses a small but powerful computer, Raspberry PI B+, 3 with really low power consumption and the Linnux operating system.

In comparison with iMM Server, multimedia is not implemented here.

Protocols	
RPC	communication with application smartphones and tablets
Elkonet	communication with central unit iNELS BUS
Miele	communication with home appliances Miele
Camcontrol	communication with IP cams
Artea	communication with the Artea air handling unit
Coolmaster	communication with gateway for air conditioning
Airpohoda	communication with the Airpohoda air handling
eLAN-RF	communication with wireless components of iNELS RF Control

Notes

⇨ Commands are given in purple (e.g.: sudo reboot)

! Warnings are given in red (e.g.: Connection server it allows you to set up only one door intercom.)

i Tips and tricks are given in green (e.g.: In the list of devices, we can add and remove devices manually)

Important application configuration commands in Linux (insert into terminal)

ifconfig	- finding IP address of station/server, similar to ipconfig in Windows
mount	- command for connection of certain device (CDROM, network drive, flash disk, etc.)
umount	- command for disconnection of certain device
man	- command man displays help e.g. man mount
sudo shutdown -h now	- command shut down device Connection server from terminal
sudo poweroff	- command shut down device Connection server from terminal
sudo reboot	- command reboot device Connection server from terminal

2. Launching the connection server

a) Once you unpack the Connection server, let the device stabilize at room temperature.

b) Insert the micro SD card with the operating system into the slot. In newer CS revisions, the SD card is already inserted.

c) Connect the cabling (do not connect the supply yet):
- Display HDMI device
- LAN cable for Ethernet port
- Keyboard to USB port

d) After connecting power supply (adapter with micro USB connector) the Connection Server will start automatically.

e) When starting the system you can watch the opening of individual services on the screen.

f) When services start up is completed, only one line, requiring the login name will appear on the screen
Login: imm
Password: imm123

! No characters are display when writing a password in terminal

g) To find the IP address after signup use the command ifconfig or extract it from the previous statement.

h) Further settings are performed via the IMM Control Centre web interface. A display device or keyboard need not be connected for the remaining time. Power supply, micro SD card with system and application and connection to network LAN is sufficient to run Connection Server.

! Never insert or remove the micro SD card for running the Server Connection

List of usable ports:

Port	Protocol	Description
8080	TCP	Connection Server - access to web-interface
8081	TCP	Connection Server - access to update server web-interface
9000	TCP	Connection Server - access to web-interface of LMS Audio zone and Audio player GUI
9001	TCP	Connection Server - access to daemon supervisor web-interface overview (daemon maintenace and logging)
8090	TCP	iMM Client - access to web-interface client part
61695	TCP	LARA - access to web-interface / remote control for third-party devices and applications
62000	TCP	LARA - access to port related to DLNA server. It is based on UPnP to stream audio content.
80	TCP	eLANRS485-232 - access to web-interface
8000	TCP	iHC applications - access to encrypted communication between applications and Connection Server / iMM server
9999	UDP	iHC applications - access to communication between applications and central unit CU3
61682	UDP	iHC applications - access to communication between applications and central unit CU2
9999	UDP	iHC applications - access to communication between applications and RFPM-2M
80	TCP	eLAN RF - access to web-interface
8001	TCP	iHC applications - access to unencrypted communication between applications and Connection Server / iMM server

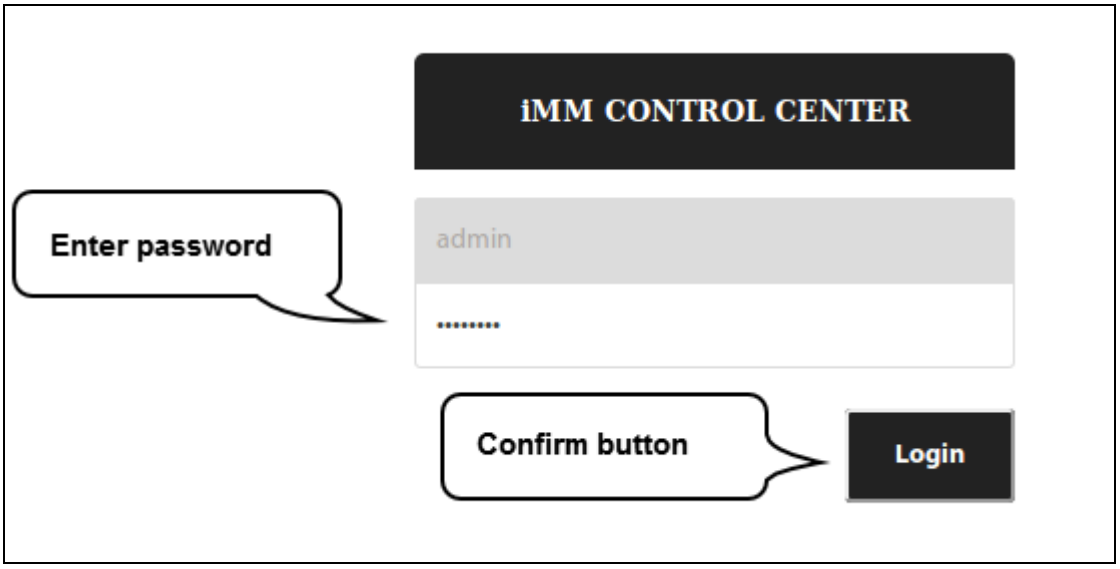
More detailed description of the port use:
https://en.wikipedia.org/wiki/List_of_TCP_and_UDP_port_numbers

Configuration in iMM Control Center - Connection Server

iMM Control Center (hereinafter "iMM CC") is a web interface for adjusting the Connection Server.

iMM CC will run when you enter the address http://IPADRESA:8080 into your web browser and login using the access data.

Login data is by default the following settings: "**admin**", password "**imm123**"



If iMM CC does not run, connect to the server using the SSH protocol with the IP address of the Connection Server and enter it into the terminal

⇨ Command: sudo /etc/init.d/imm-web admin restart.

SSH authorization

Login:	imm
Password:	imm123

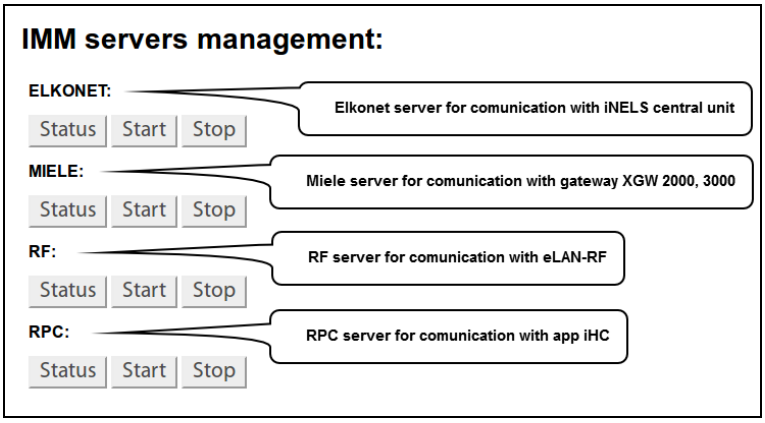
! You can change the Default password, in the terminal: passwd imm

i PuTTY is freeware that you can use to connect via SSH to the iMM CC web interface in Windows or Linux.

i Website will be automatic logout after 15 minutes of inactivity.

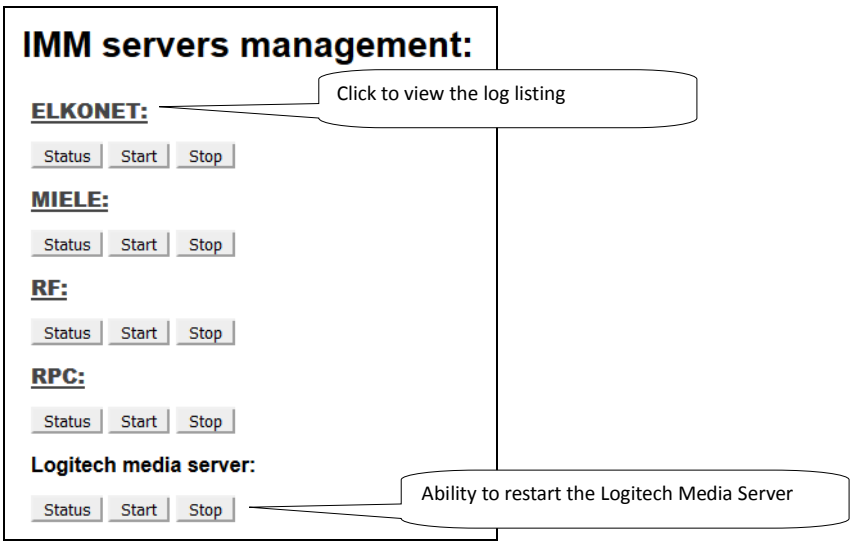
- **Bookmark Server**

In bookmark Server you can control the services, which are necessary for communication with a third party. With the software diagnostic is possible to check each service status (button „Status“), to stop running (button „Stop“), or vice versa to start running (button „Start“).



i You can control all the virtual servers via Supervisor service link http://IPADRESA:9001

Function Display log:
To display the logs of the main server protocols, click on the individual names to display their listings in the next tab of the browser..



- **Bookmark Configuration**

The configuration tab is used to setup the primary Connection Server and is necessary for proper function..
Machine ID and Licence key are pre-set in factory default.

a. Settings

IP address input formats:

If the central unit is on a different computer network behind a router (NAT) and is not available directly, it can be connected to it over a selected open port on the router, which is connected to the communications port CU (CU2 port 61682, CU3 port 9999).

Version CU	***Format***	***Example:***
CU2	[IPADDRESS]:[COMUNICATION_PORT]	10.5.15.12:8454
CU3	[IPADDRESS]:[HTTP_PORT]:[COMUNICATION_PORT]	10.5.15.12:8080:4562

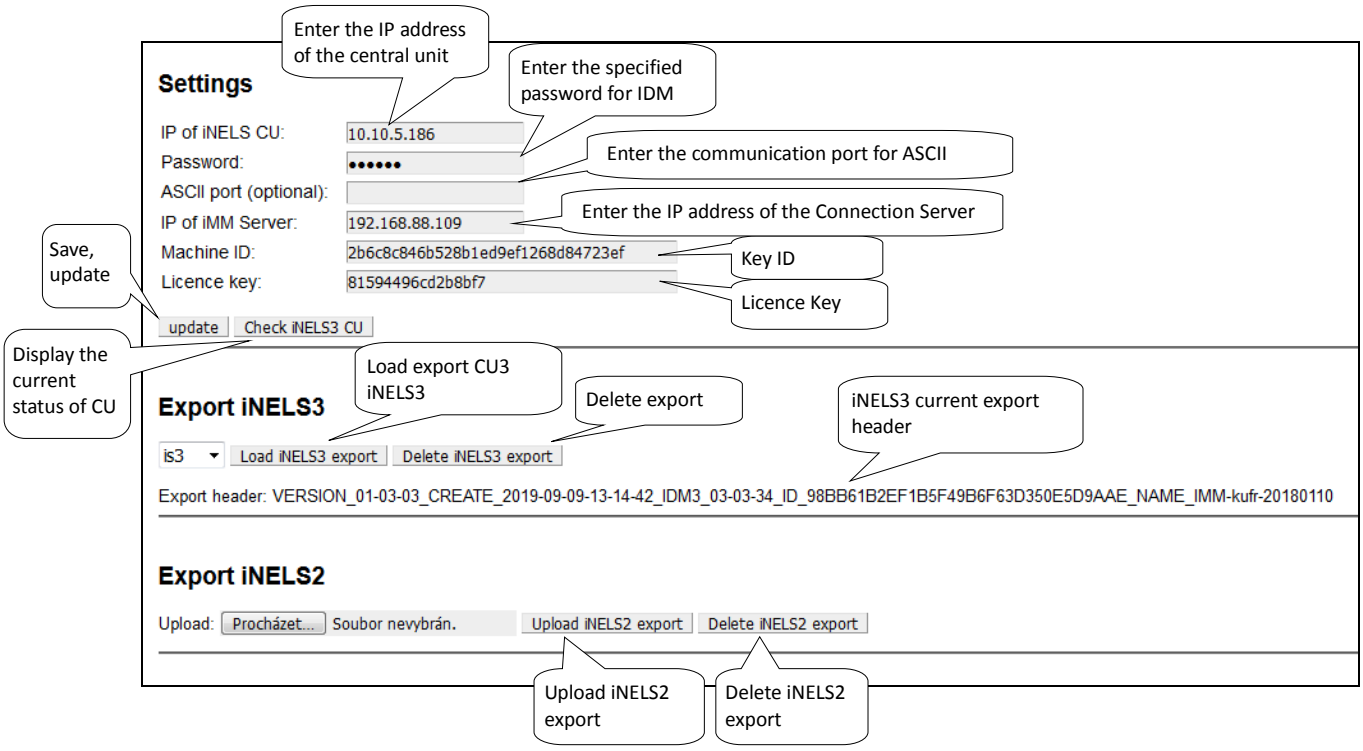
Communication port - Elkonet for iMM server, Connection server, App iHC (CU2 port 61682, CU3 port 9999).

HTTP port - is the web server on CU3 where the created export.imm file is usually stored in the location http://IPADRESA/immfiles/export.imm (port 80)

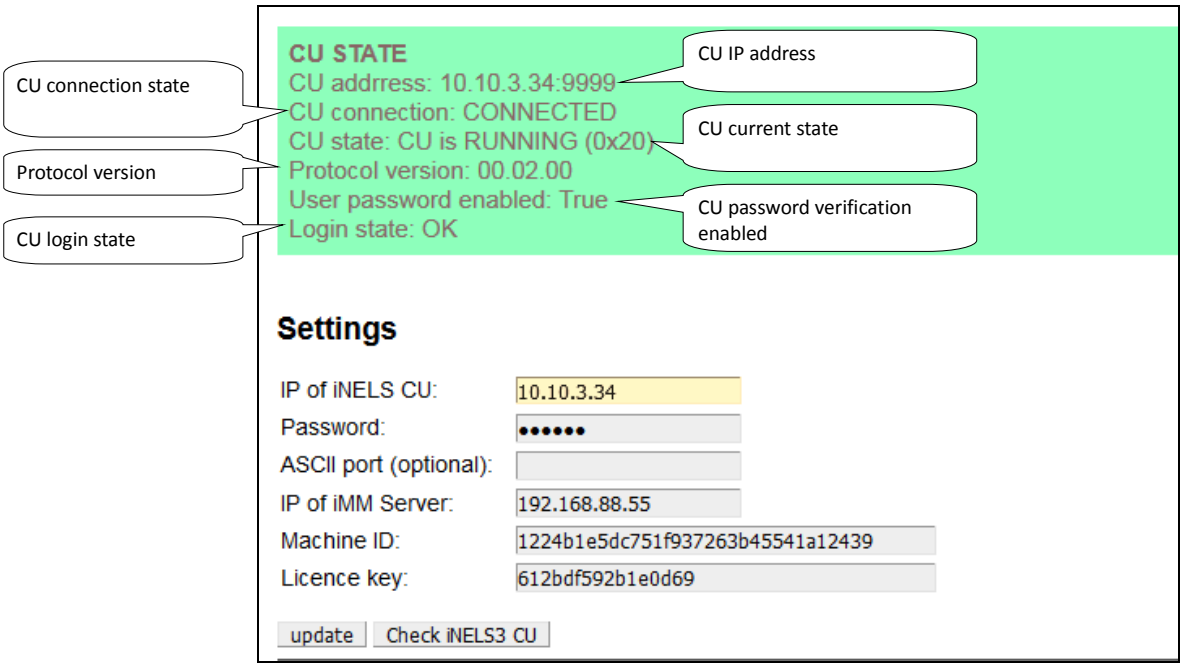
ASCII port - port for communication with CU3 with a three-way third-party protocol (Telnet), which must first be set in IDM (optional), is set, the port for ASCII communication is 1111.

Password - password to access the central controller of the program is set in the IDM (optional)

Example setup menu settings:

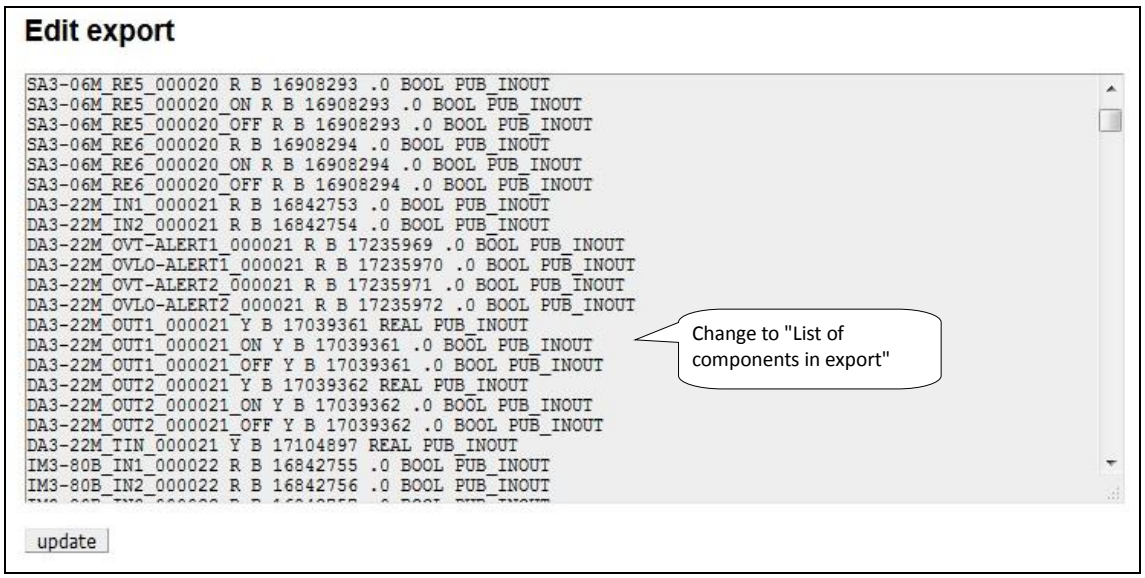


Clicking on button Check iNELS3 CU will show central unit state including password authentication state.



b. Upload or edit export.pub

This menu is used for the upload export.pub file from the IDM program to the Connection server and to manually edit elements in web browser.



! Function for upload export.pub is only for iNELS2 central unit.

! The central unit iNELS3 will download export automatically when you press the Load iNELS3 export button.

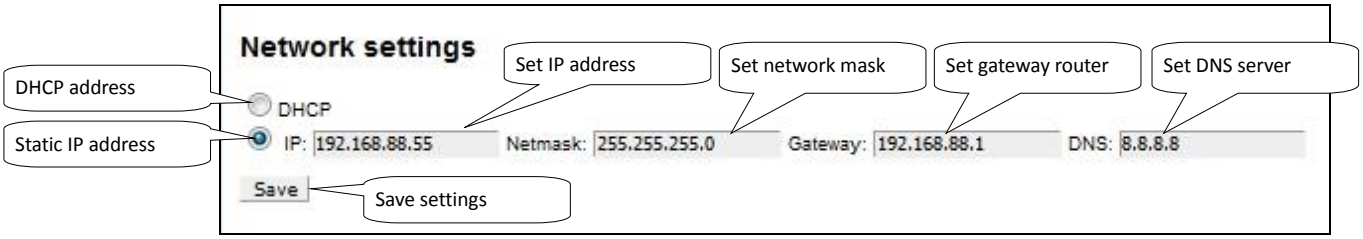
i In list we can add and remove elements manually.

- **Bookmark System**

In the System tab, you can reset the network settings, or restart or completely shut down using the "Shutdown" Connection server button.

In the **Network settings** menu, you can set the IP address of the Connection Server. The options are to assign an address from the DHCP server or manually set the static IP address.

We recommend that you set a static IP address so that it does not change if the DHCP server is reset



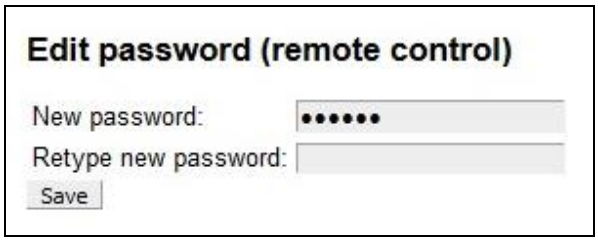
! By setting the static IP address, the DHCP server will deactivate the IP address assignment and the IP address will be set according to the user settings. Network IP address information.

i If you are using a dynamic IP address from the DHCP server set the router to always allocate the same IP addresses based on the MAC addresses.

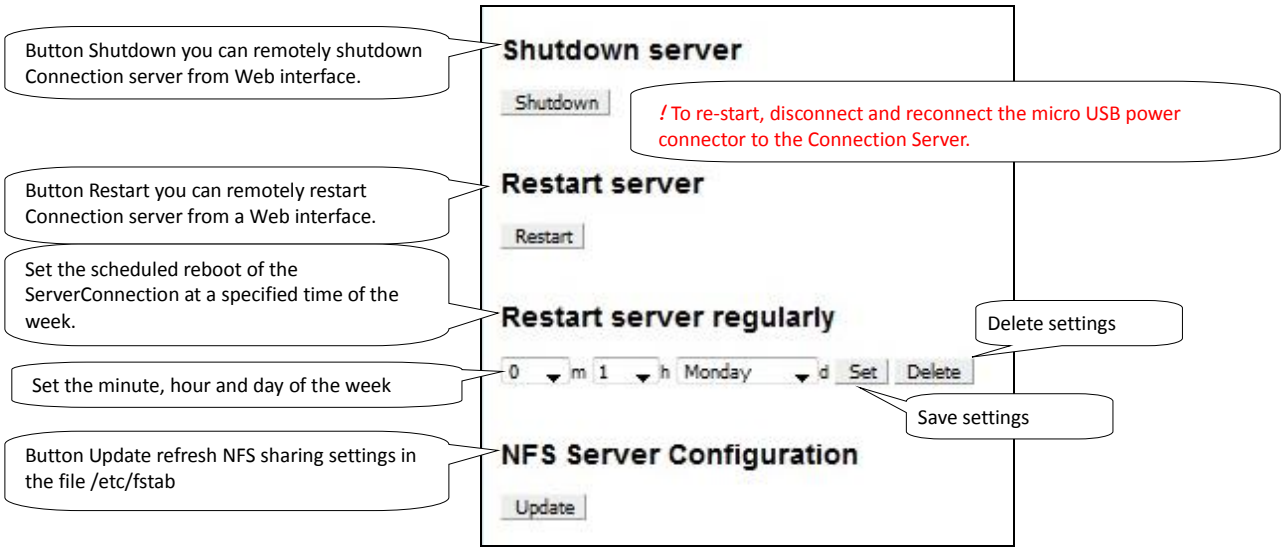
In the **Data and time settings** menu - displays the system time to check and adjust the time.

In the **Change Password** menu - change the password.

In the **Edit password** menu (remote control - setting and editing the heating plans in the application.



Other settings in the menu:



- **Bookmark Media**

The tab is only available for RPI from version 3. The **Settings** section is taken from iMM. The **NAS** section is used to enter the IP address for the **NAS**. When selecting the manual option, a user option is inserted instead of the IP address e.g.:

MANUAL_SYNOLOGY_NFS:
IP_ADDRESS/volume1/Storage /mnt/nfs nfs nouser,atime,auto,rw,dev,exec,suid 0 0

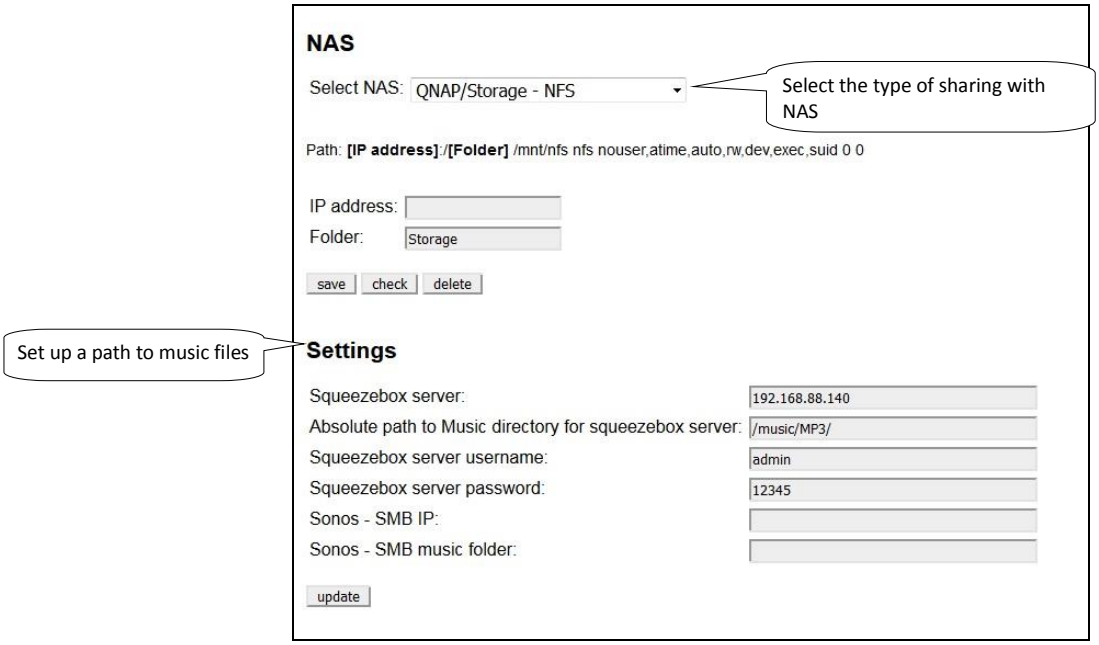
MANUAL_QNAP:
IP_ADDRESS/Storage /mnt/nfs nfs nouser,atime,auto,rw,dev,exec,suid 0 0

MANUAL_QNAP_SMBCIFS:
IP_ADDRESS/Storage /mnt/smb cifs username=,password=,nofail,x-systemd.automount,x-systemd.requires=network-online.target,x-systemd.device-timeout=1 0

MANUAL_NFS:
IP_ADDRESS/Storage /mnt/nfs add parameters

MANUAL_SMB:
IP_ADDRESS/Storage /mnt/smb add parameters

LMS is available on port 9000, as well as in iMM.



- **Bookmark HA-BUS**

Bookmark HA-BUS can be used for interconnection of iNELS3 BUS and a decentralized control system KNX/EIB, which allows control from the iHC app.
You can add more INELS3 central units in this folder.

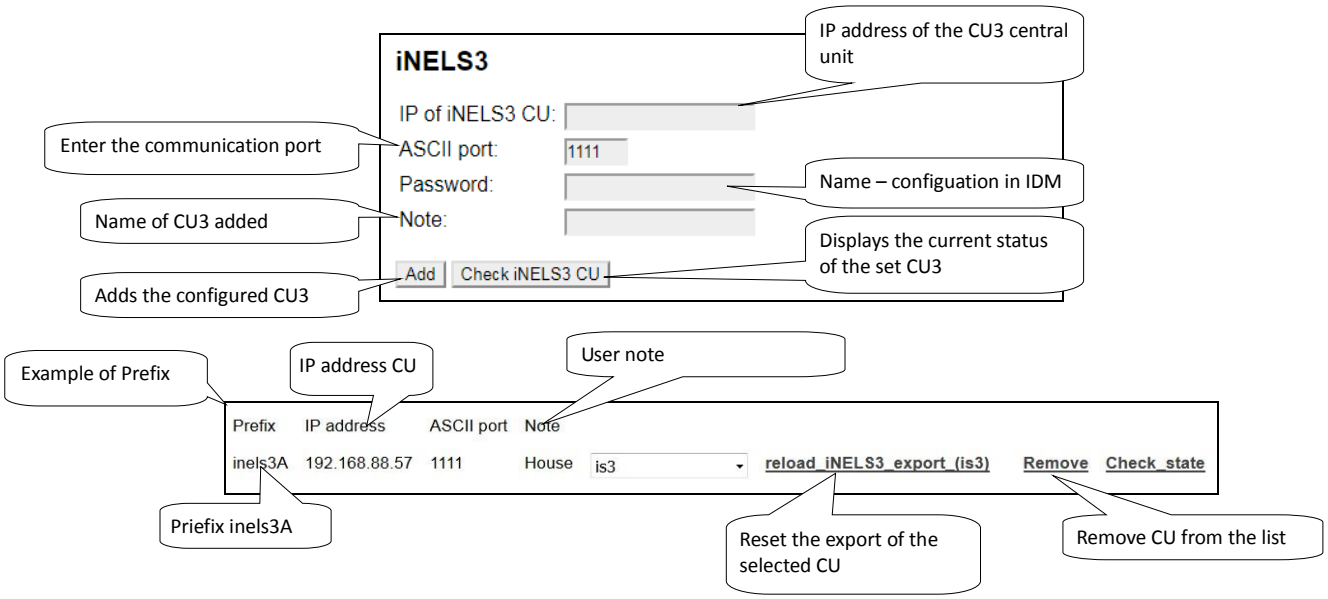
i In the last hardware revision of Raspberry Pi 3 it is possible to add up to 8 INELS3 central units

Requirements for interconnection with KNX / EIB:

- KNX Router
- Export group addresses from the program ETS3 – 5

In iNELS3, enter the IP address of the iNELS3 central unit, the password (optional) and a note; adding is completed with the Add button.

Once added, the export is downloaded automatically from the central controller and the prefix "inels3" is added. The last character of the prefix (A-H) specifies the insertion order for the resolution between the central units.

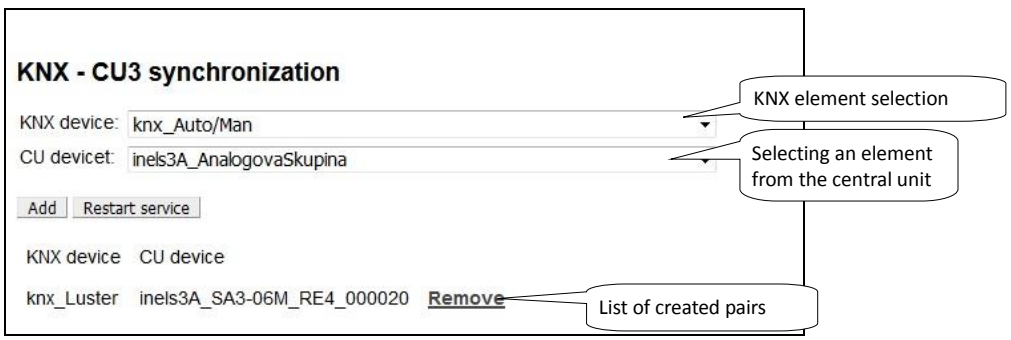


For KNX / EIB, the KNX the Gateway must also be filled in. Where you can enter the IP address of the gateway KNX router and save by using the Save button. Then, select the group address export file (see KNX export group address) and export.

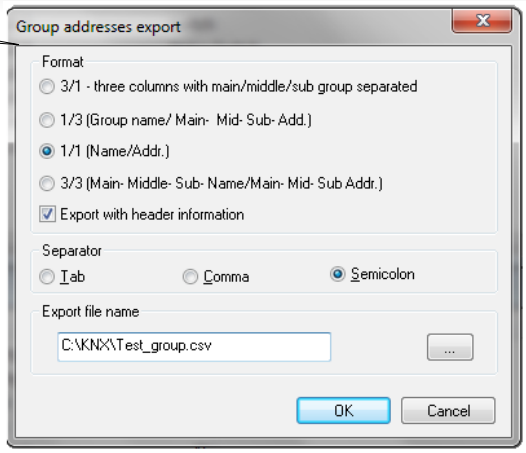
The Export group addresses are done in accordance with the ETS format: 1/1 (Name / Add.) Separate each of them by using semicolons.

Before inserting the export it need to be more adapted behind the semicolon refill data type according element values (True, False, 0-255, 0-100) see. KNX DPT link.

Is used to set pairs of KNX device and CU3 device, which will synchronize with each other.



Example export group addresses from ETS:



Example of data in a supplemented file Test_group.cvs:

"Group name";"Address"
Dimming;0/-/-
New Middle Group;0/0/-
Dim A;0/0/1;5
Dim B;0/0/2;5
Switching;1/-/-
New Middle Group;1/0/-
D;1/0/0;1
switch A;1/0/1;1
switch BCD;1/0/2;1
Shutters;2/-/-
New Middle Group;2/0/-
Shutters1;2/0/1
Shutters2;2/0/2
Sensors;3/-/-
New Middle Group;3/0/-
Temperature;3/0/0;9

A switch in example; 1/0/1; 1 has value as shown in Table 1 behind a semicolon (True, False) means that a switch.

Data type	Data	Type	Value
1	1 bit	bool	True | False
5	8 bit	num	0-255
5.001	8 bit	num	0-100
6	8 bit	num	-128 +127
232	3 byte	num	RGB [0,0,0] - [255,255,255]

On the Configurations tab, make sure the export listing contains the KNX elements. If so, in the Rooms tab, paste the KNX elements into the selected room. Put the KNX elements into the room in the same way as the iNELS3 elements, the KNX devices have a knx_ prefix.

! This manual describes the interconnection of iNELS3 and KNX systems, not the KNX element settings.

! If the central unit does not have a password set, leave the insertion field blank.

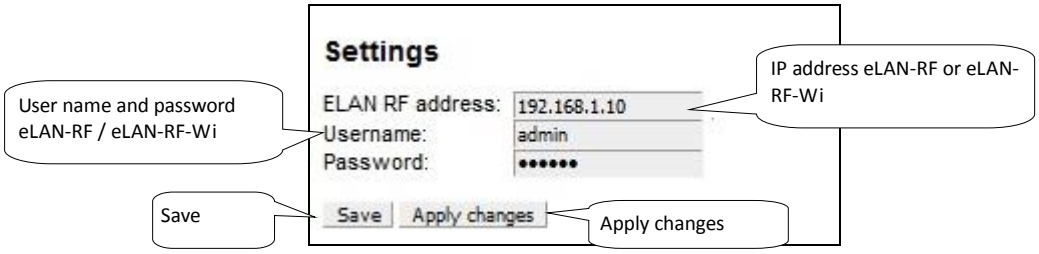
i Names of elements in the room without the prefix will be converted automatically.

- **Bookmark RF Configuration**

For communication between wireless RF devices and the Connection server an eLAN-RF-003 or eLAN-RF-Wi-003 smart box is required.
Enter the eLAN-RF IP address.

! RF elements are assigned to eLAN-RF via the iHC-MAIRF application or via the eLAN-RF web interface (see the iHC-MAIRF manual)

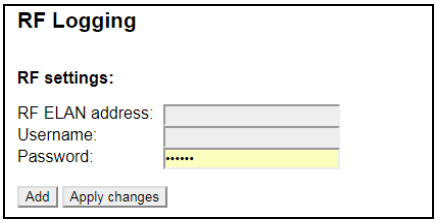
For authorization purposes on eLAN-RF, input boxes are for username and password. Click the **Apply changes** button to reset the process and apply the changes.



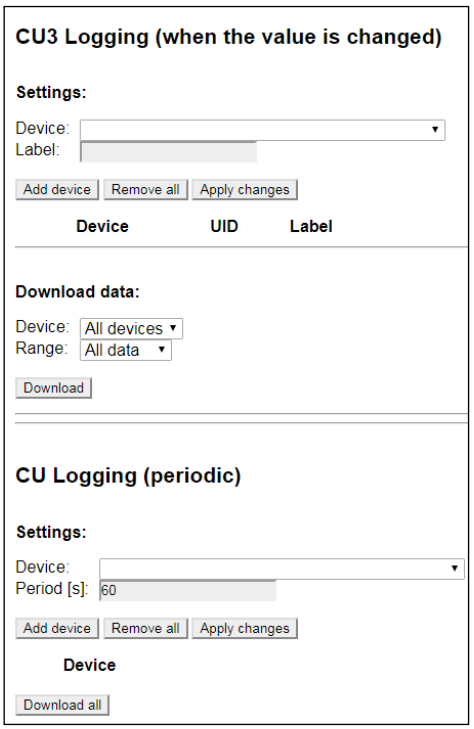
i For control of RF elements enable in the iHC-MA, iHC-TA settings.

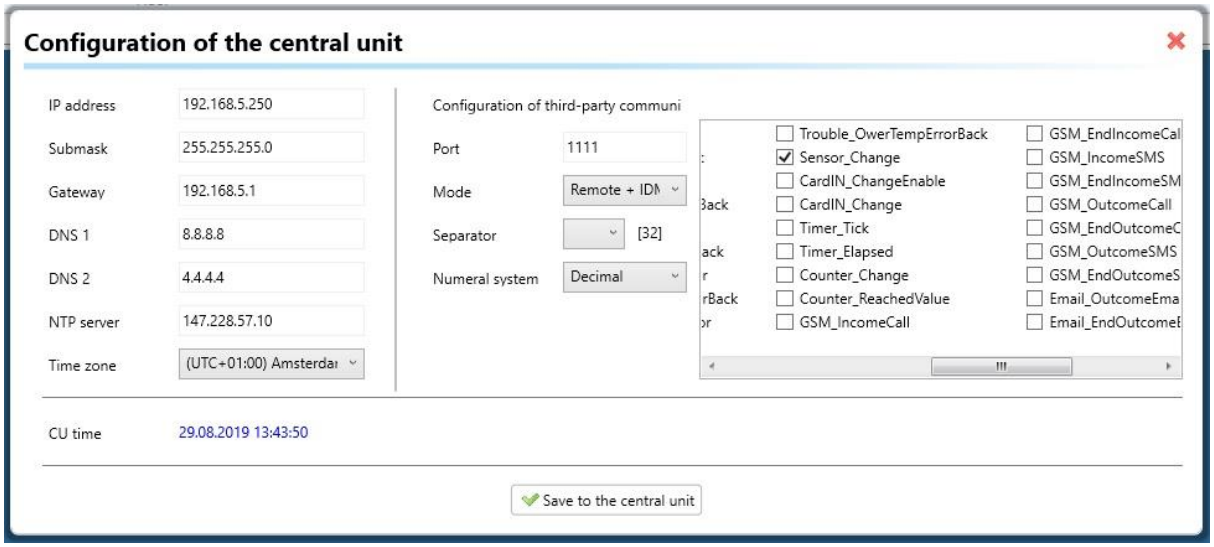
- **Bookmark Logging**

RF logging for logging changes on RF eLAN. You can add more eLAN-RF or eLAN-RF-Wi.
After adding eLAN-RF, click **Apply changes** to show changes. After loading elements from eLAN-RF, you can select an element, name it and add it to the monitored elements. **Apply** changes **again. Data from the tracked item can** be downloaded via **Download** or deleted via **Clean.**



CU3 logging for logging changes at CU3.
You can select an element, name it and add it to the elements you are watching. **Apply changes**. Data at the tracked item can be downloaded via **Download** or deleted via **Clean.** All tracked items can be removed via **Remove all.** The **Download section also serves for downloading data.** Wherein, the selected element is referenced along with the time period.



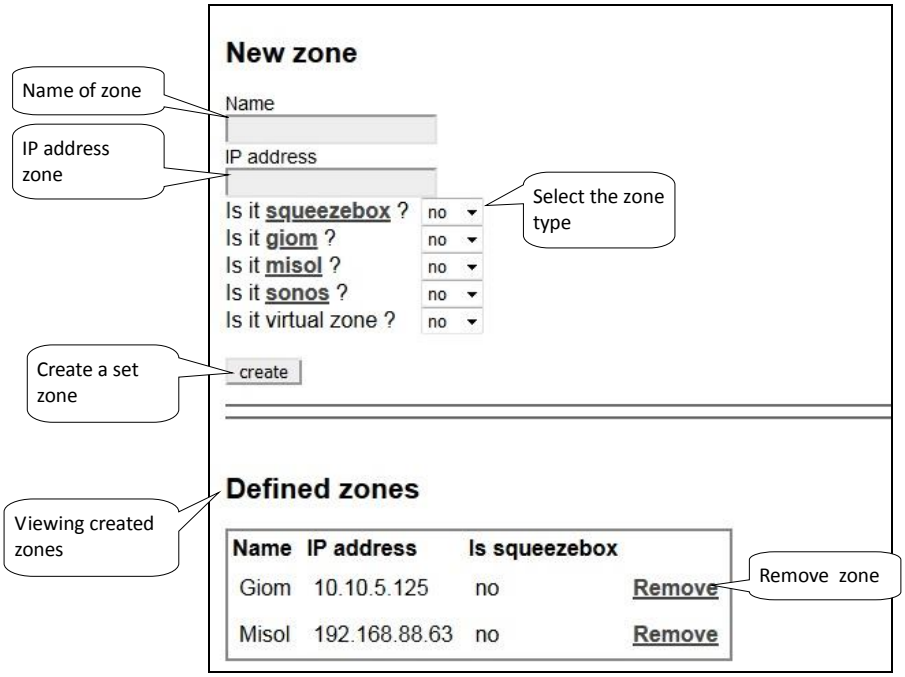


NOTE: property of any monitored device represented in CU3 configuration settings, e.g. Sensor_Change (e.g. temperature change), has to be checked in order to allow Connection Server logging feature to store required data. All units which uses selected property will provide event data regularly.

- **Bookmark Zones**

Bookmark Zones is used to configure the zones for the Connection server. With the possibility to add multiple zones.

To insert a fill zone name, IP address and choose a zone type change switch to yes.



! Connection Server only allows the insertion of GIOM 3000 weather station.

! If you set your password in the GIOM administration, be sure to check Except - status.xml

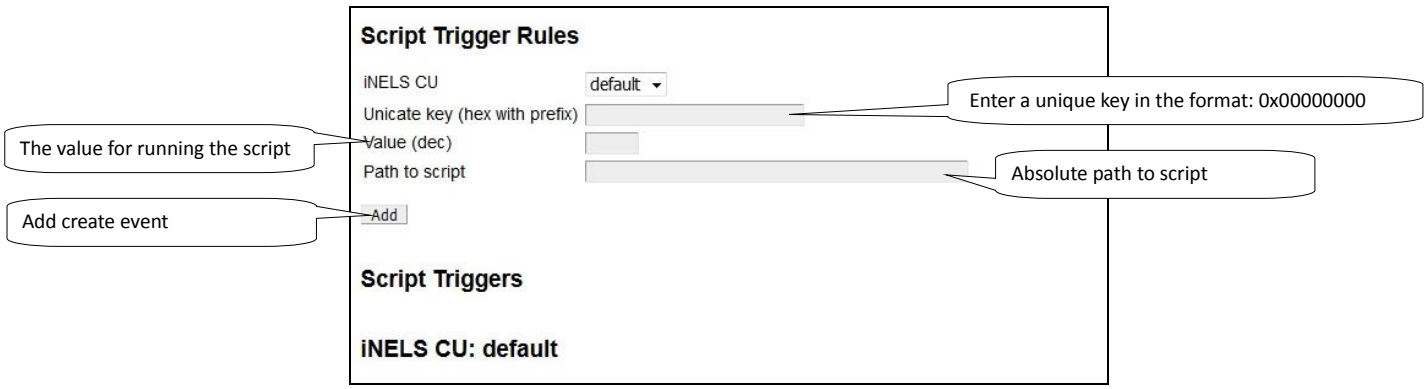
If GIOM weather station does not show up-to-date measured values (in iHC application or in web-interface of weather station: IP_ADDRESS_WEATHERSTATION/status.xml), then it is needed to upload an updated firmware file 2.0.3 which can be found in Partners section at www.inels.com/partners.

- **EventScript**

In bookmark EventScript creates events, based on which, the pre-set start script. The event is performed if the element reaches the set value of the event. You can use different kinds of elements relay, DAC. Etc.

In menu Triger Rules you can create events, based on which the script runs.

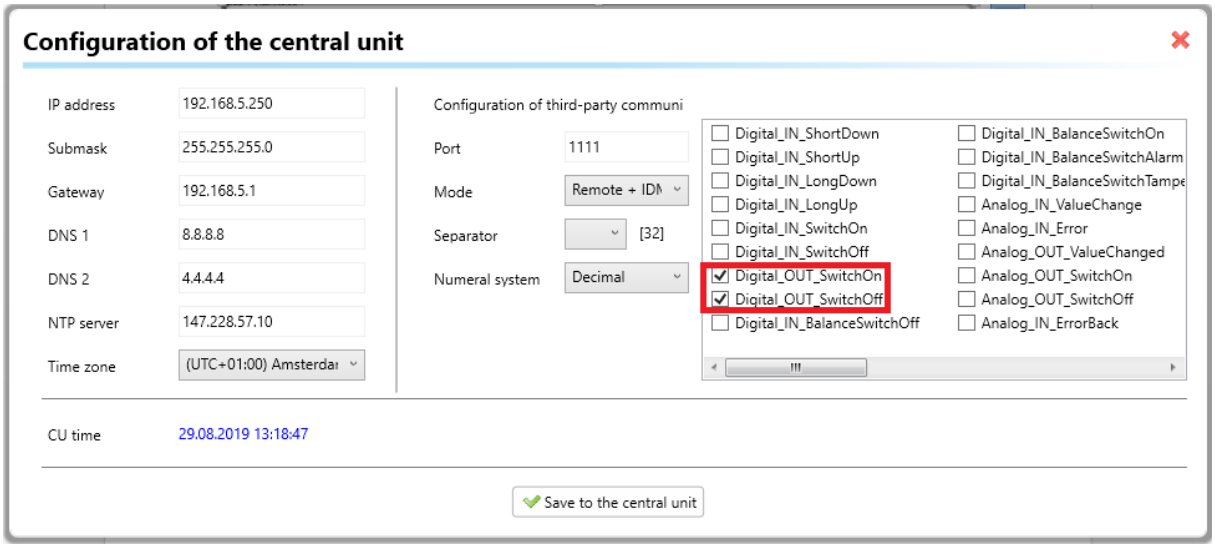
You can select a CU for which you can set a rule. If you enter the IP address of the CU, the **Configuration tab** is displayed by default. If you enter the CU addresses in the **HA Bus** tab, you will be able to select a particular CU, ie **inels3A, inels3B, inels3C**, etc.



! EventScript uses ASCII protocol, which must be turned on in IDM program, into a free port and in bookmark Configuration in iMM CC insert ASCII port for communication.

Depending on the setting ASCI protocol set value in hex or DEC example. 50 in (HEX) is 80 (DEC).

EventScript run with all device modes (HEX, HEX with prefix and DECIMAL)



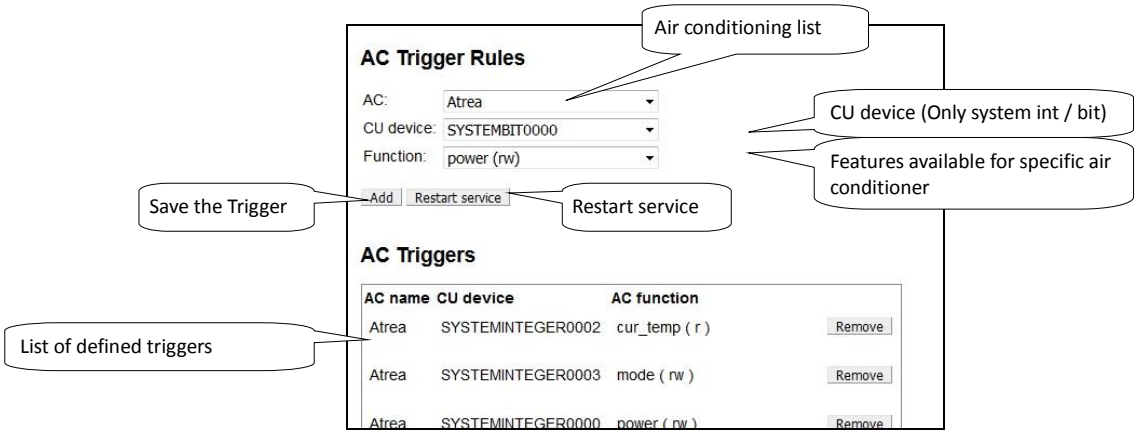
NOTE: properties in CU3 configuration settings (located in iDM), more precisely DIGITAL_OUT_SwitchOn and DIGITAL_OUT_SwitchOff (system bits belong to digital outputs), have to be checked in order to allow sending script trigger represented by changing of system bit state.

Tracking Element Value in Script:
To see the value of the element, insert "?" in the Value field, and then read it through the sys.argv [0] system with argument 0. The script will run periodically after 5 seconds, and the script will respond to the changing value of the variable.

Reading the value of the element in the script:

To read the value of the element, insert "?" in the Value field, and then read it through the system sys.argv [0] with argument 0. The script will run periodically after 10 seconds and dynamically respond to changes in the element's value based on logic in the script. This function can be used, for example, to start the heat recovery depending on the temperature of the sensor.

When setting the air conditioner trigger, the event is triggered when the element state changes from 0 to 1.



AC Trigger Rules used to pair the CU element and AC function. This way you can store AC states to CU and control AC from CU.

AC: selects the assigned unit.

CU device: select the element you want to assign to that AC function.

Function: select the air conditioning function.

Description of AC Features:

- power (rw) - 0 and 1 can be used to monitor whether AC is on, with AC enabled (outside Area - 0-100 range)
- on / off (t) - turns on / off when changing from 0 to 1
- set_temp (rw) - to monitor the desired temperature in AC with the option to set the temperature
- increase / decrease_temp (t) - change from 0 to 1 to increase / decrease the temperature by 1 ° C
- cur_temp (r) - to monitor the current temperature in AC
- mode (rw) - to monitor the current mode in AC with the option to set the mode
- control mode (rw) – to monitor the current control mode with the option to set it
- ventilation_with_timeout (w) - set the ventilation for the desired time (in minutes), after the set time elapses, the AC returns to its original state
- heating season (rw) – to monitor whether the heating season is set up

Feature Types:

- (r) - AC reading only and CU write
- (w) - only write status from CU to AC
- (rw) - bidirectional write (combination (r) and (w))
- (t) - a trigger that composes to execute specific functions (activation is performed when the CU element state changes from 0 to 1)

Note: AC write is only done when the CU element state changes.

Control and read AC status via CU

Working with **mode / fan speed / control_mode** works with tables below that match the numeric value and **mode / fan speed/ control_mode.**

Mode:

Value	Mode
0	unsupported
1	unknown
2	off
3	auto
4	heating
5	cooling
6	ventilation
7	dry
8	periodic_ventilation
9	periodic
10	night_precooling
11	balancing
12	overpressure
13	service

Supported Modes for Individual AC:

AC	Mode
LG	auto, heating, cooling, ventilation, dry
CoolMaster	auto, heating, cooling, ventilation, dry
Atrea	off, auto, ventilation, periodic_ventilation, periodic, night_precooling, balancing, overpressure
Intesis	auto, heating, cooling, ventilation, dry
Nilan	off, auto, heating, cooling, service
AirPohoda	unsupported
Universal	off, heating, cooling
Daikin	auto, heating, cooling, ventilation, dry
Mitsubishi	auto, heating, cooling, ventilation, dry
Cairox	unsupported

Fan speed:

Value	Fan speed
0	unsupported
1	unknown
2	off
3	auto
4	level_1
5	level_2
6	level_3
7	level_4
8	level_5
9	level_6
10	level_7
11	level_8
12	level_9

Supported speeds for each AC:

AC	Fan speed
LG	auto, level_1, level_2, level_3
CoolMaster	auto, level_1, level_2, level_3, level_4
Atrea	unsupported
Intesis	auto, level_1, level_2, level_3, level_4, level_5, level_6, level_7, level_8, level_9
Nilan	off, level_1, level_2, level_3, level_4
AirPohoda	unsupported
Universal	unsupported
Daikin	level_1, level_2, level_3
Mitsubishi	auto, level_1, level_2, level_3, level_4
Cairox	auto, level_1, level_2, level_3

Set / Cur temp:

For temperatures, a multiple is used to maintain accuracy 100:

temp * 100 = 21,50 * 100 = 2150

Control mode:

Value	Control mode
0	unsupported
1	unknown
2	manual
3	auto
4	temporary

Supported control modes for each AC:

AC	Control mode
LG	unsupported
CoolMaster	unsupported
Atrea	manual, auto, temporary
Intesis	unsupported
Nilan	unsupported
AirPohoda	unsupported
Universal	unsupported
Daikin	unsupported
Mitsubishi	unsupported
Cairox	unsupported

Direction:

Value	Direction
0	unsupported
1	unknown
2	auto
3	swing
4	position_1
5	position_2
6	position_3
7	position_4
8	position_5
9	position_6
10	position_7
11	position_8
12	position_9

Supported slat directions for each AC:

AC	Direction
LG	unsupported
CoolMaster	unsupported
Atrea	unsupported
Intesis	unsupported
Nilan	unsupported
AirPohoda	unsupported
Universal	unsupported
Daikin	swing, position_1, position_2, position_3, position_4, position_5
Mitsubishi	auto, swing, position_1, position_2, position_3, position_4, position_5
Cairox	unsupported

- **Bookmark A/C**

Used to define the air-conditioning or heat recovery by third parties and their control through the iHC application.

Supported are:
LG Clims
Coolmaster, CoolMasterNet
Air Pohoda
Atrea
Universal 0-10V

LG Clims via PI-485 eLAN-RS485/232 or Advantech Adam 4571

CoolMaster series 1000D, 2000S, 3000T, 4000M, 6000L, 7000F, 8000HM, 9000M, CoolMasterNet over Advantech Adam 4571

CoolMasterNet

Daikin	(DK)	Mitsubishi Electric	(ME)
Fujitsu	(FJ)	Mitsubishi Heavy	(MH)
Gree	(GR)	Panasonic	(PN)
Hitachi	(HT)	Samsung	(SM)
Intensity	(MD)	Sanyo	(SA)
Kentatsu	(KT)	Toshiba	(TO)
LG	(LG)	Trane	(TR)
Midea	(MD)	Compatibility: indoor, outdoor units.	

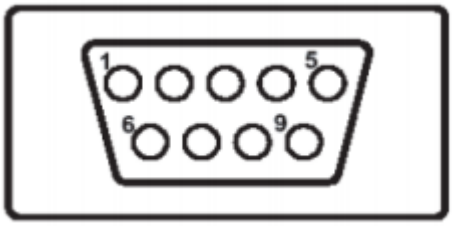
Others:

- Atrea Duplex 180 EC4 P (0-10), Duplex 180 EC4 P (0-100)
- AiRPohoda by Adam 4571
- Universal 0-10V by DAC 0-10V

ADAM-4570_4571

RS-232 Pin order

Pin. No.	Description
Pin 1	DCD
Pin 2	Rx
Pin 3	Tx
Pin 4	DTR
Pin 5	GND
Pin 6	DSR
Pin 7	RTS
Pin 8	CTS
Pin 9	RI



RJ-48 Pin order - RS-422

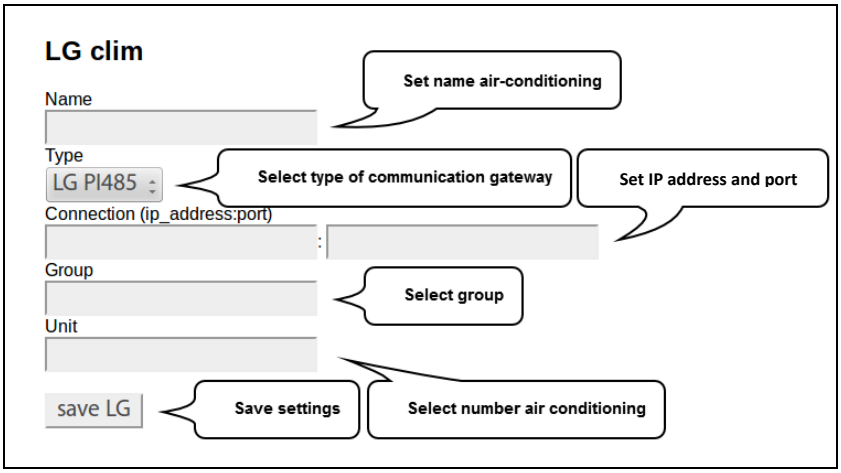
Pin. No.	Description
1	Tx -
4	Tx +
5	GND
7	Rx +
9	Rx -

RJ-48 Pin order - RS-485

Pin. No.	Description
1	Data -
4	Data +
5	GND

a. LG Climate control

It is used to define air conditioning and control it through the iHC application. Supported communication card for LG air conditioner is PI485. The air conditioner must be connected via an eLAN-RS485/232 or Advantech Adam 4571.



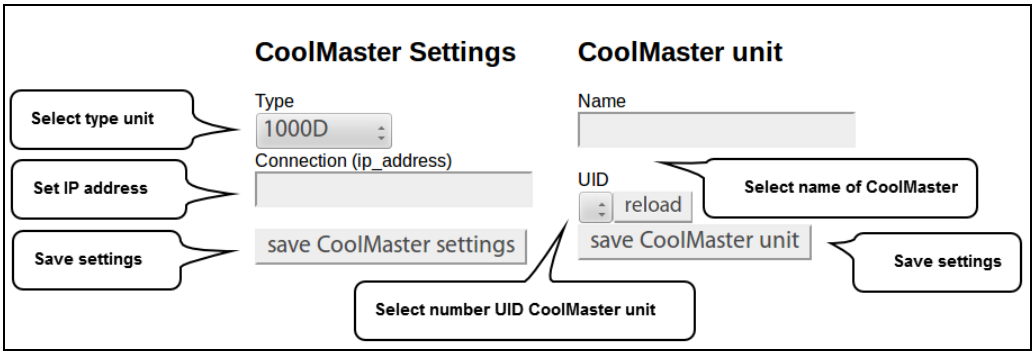
b. CoolMaster

Is used to define air conditioning via the Coolmaster universal control unit and control it through the iHC application.

First step:
First, set the Coolmaster control unit according to the manufacturers manual. (Usually via DIP switches inside the unit) Setup converter LAN-serial485 (Recommended converter: Adam 4571) according to the Coolmaster manual and connect the converter to the CoolMaster control unit.
Test communication:
If the air conditioner control unit is properly connected to the Coolmaster the display alternatively displays the temperature and mode.

Second step:
Moving on to set the air conditioner in the web interface http://localhost:8080/clims and fill name and IP address of the convertor and press the Save button, the settings wait for UID to load the air conditioning in system. Now you can select the number of units and save the CoolMaster unit.

! If unsuccessful use the reload button and check the air conditioning loaded UID communication converter with the Coolmaster according to the manual



For older Coolmasters version is necessary to set convertor to appropriate port:

Coolmastr type:	1000D, 2000S, 3000T, 4000M, 6000L, 7000F, 8000I(HM), 9000M		
Convertor:	Adam 4571 nebo Gnome 485	Port:	10001
	CoolMasterNet (default setup) Port:		10102

Perform the function check via utility ncat command format: ncat IPADRESA PORT

Example ncat in terminal:

	Command	Significance
Command	ncat 10.10.10.111 10102	Connection to Cooler Master / Convertor
Answer	>	Returns the character command line
Command	stat2	List states Air conditions
Answer	000 OFF 25C 27,80C High Heat OK 0	Return state Air condition

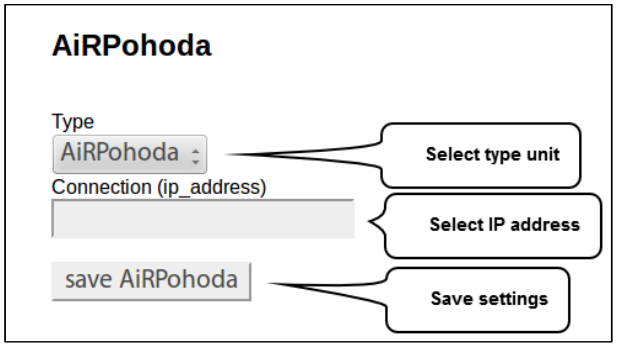
For windows you can use SPU (Serial port utility)

i Commands and pin setup for cable connection of air conditioning can be found in the reference manual for example: CoolMasterNet

! Maximal number of simultaneous connections for CoolMasterNet is 4, only 2 for the Adam 4571 convertor.

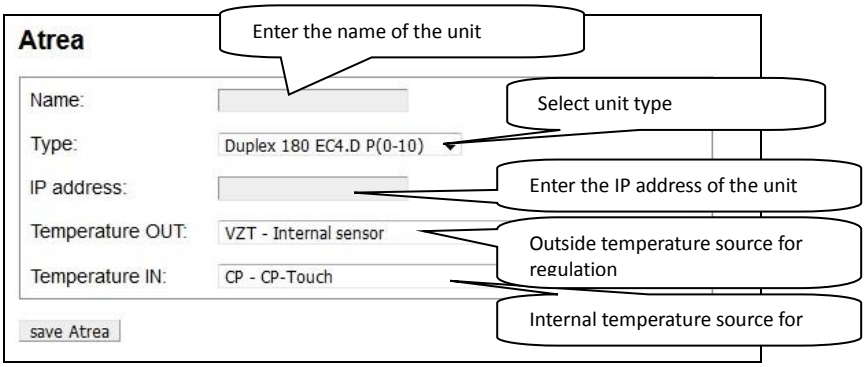
c. Air Pohoda

Used to define air recovery, called Air pohoda and control through the iHC application.
The recuperation must be connected via an eLAN-RS485/232 or Advantech Adam 4571.



d. Atrea

Used to define air recovery called Atrea and control through the iHC application.
New **Duplex EC RD5**. Additionally, you can enter more Atrea units and enter the unit name.



Indoor Temperature Sources:

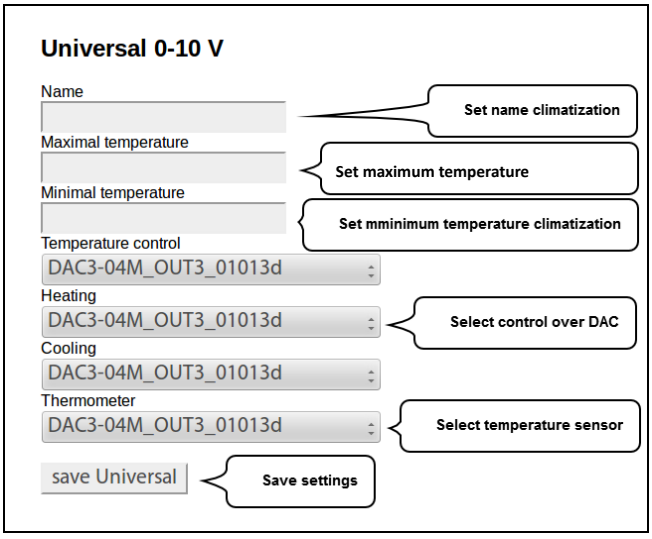
CP - The indoor air temperature is measured by a sensor built into the CP-Touch controller
The T-ETA - indoor air temperature is measured by a sensor built into the unit on the exhaust air outlet
TRKn - indoor air temperature is measured by sensor connected to RD5-K module (optional unit with RD5 control unit)
CU - indoor air temperature is supplied by the superior system (central unit)

Outdoor Temperature Sources:

HVAC - Internal sensor - The outdoor air temperature is measured by the unit's internal sensor
CU - outdoor air temperature is measured by superior system (central unit)

e. Universal 0-10V

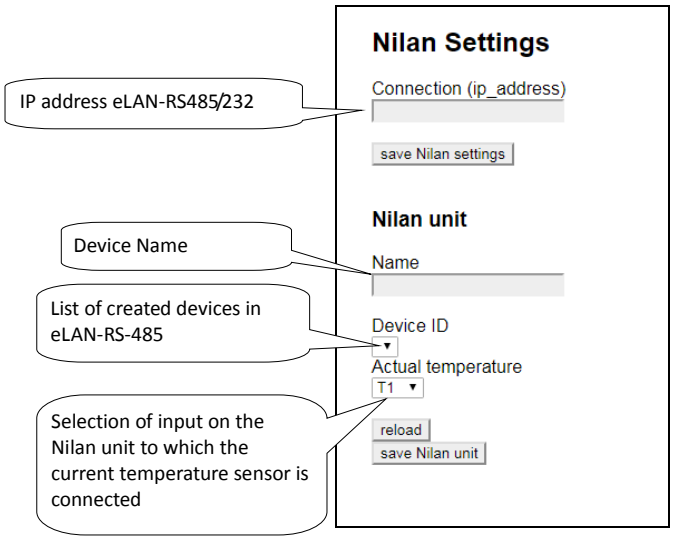
Used to define universal air conditioning using DAC 0-10 V and control through the iHC application.



f. Nilan settings

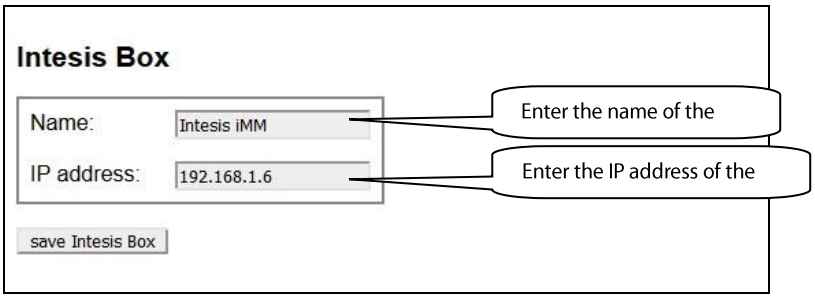
Used to add Nilan ventilation units connected to the eLAN-RS485/232 via the RS485 interface

Connection server communicates with eLAN-RS485/232 using Ethernet.



g. Intesis Box

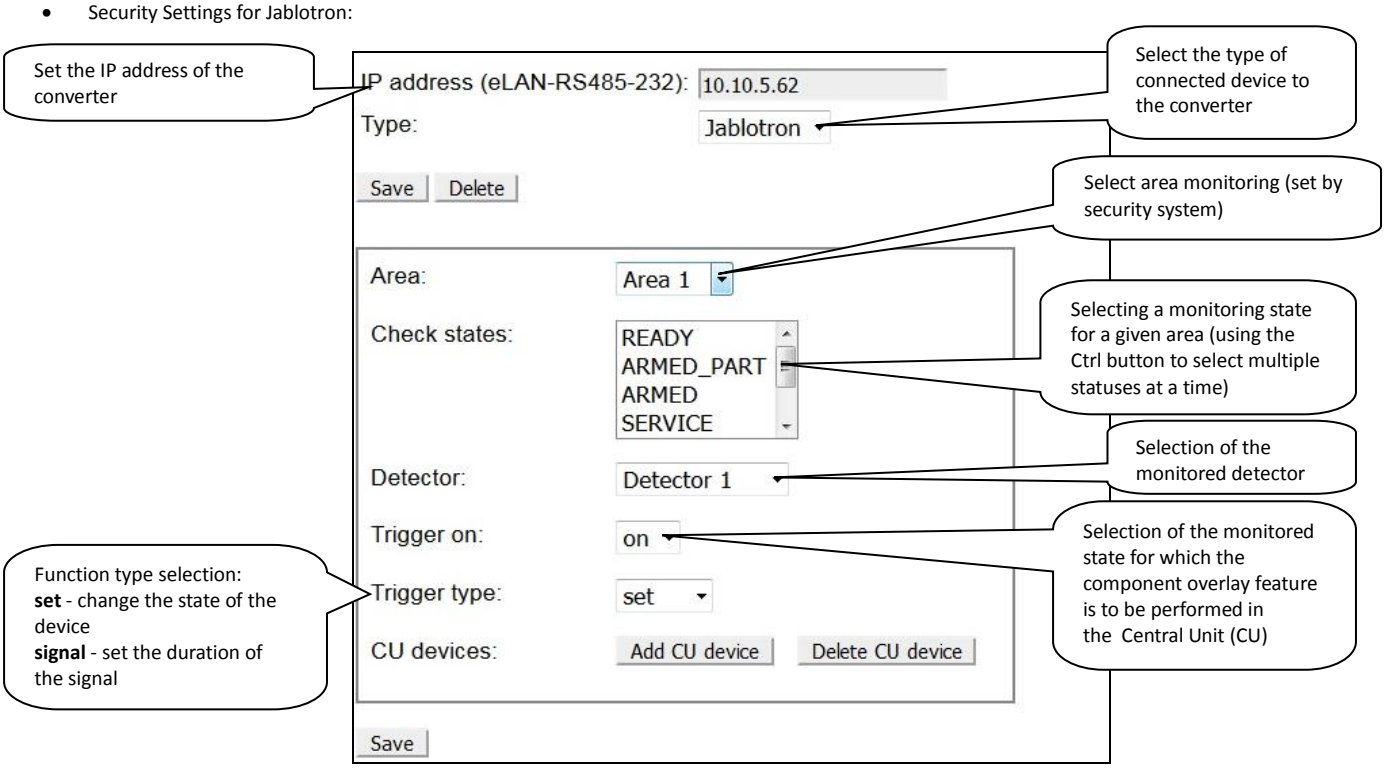
It is used to control air conditioners supported by the Intesis box.
Name - Intesis unit name.
IP address – field for entering the IP address of the unit

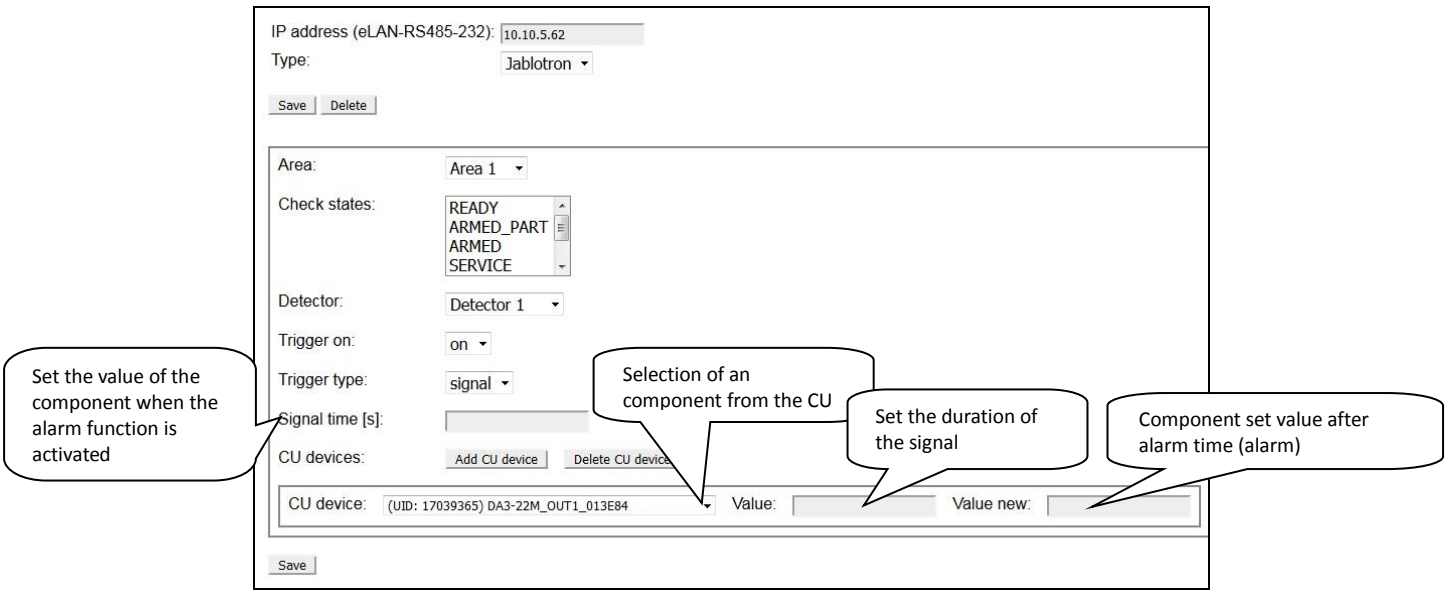


- **Bookmark ESS**

It is used to connect security systems (Jablotron, Paradox) with the eLAN-RS485/232 to iNELS.
It is possible to establish individual functions of the devices connected to the CU Central Unit when an alarm signal is sent from the individual detectors.

- Security Settings for Jablotron:





- Paradox Security Settings: It varies only with the number of areas and detectors (Area) and other states in the given area (Check states).

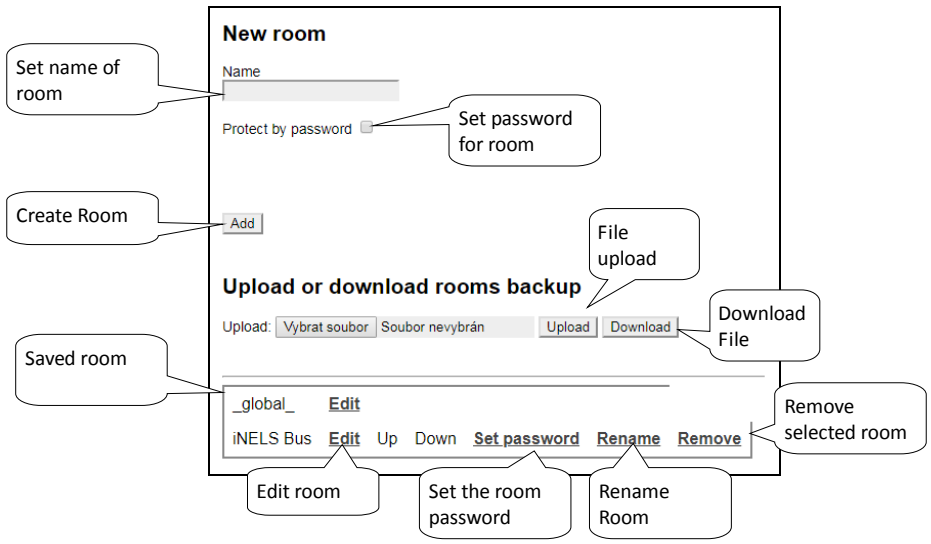
- **Bookmark Rooms**

Bookmark Rooms is used to configuration of the rooms.cfg, for loading the iHC application (more information in the iHC manual).
Rooms are actually "virtual rooms" (groups), which have the option to group the icons and zones for one or more screens.

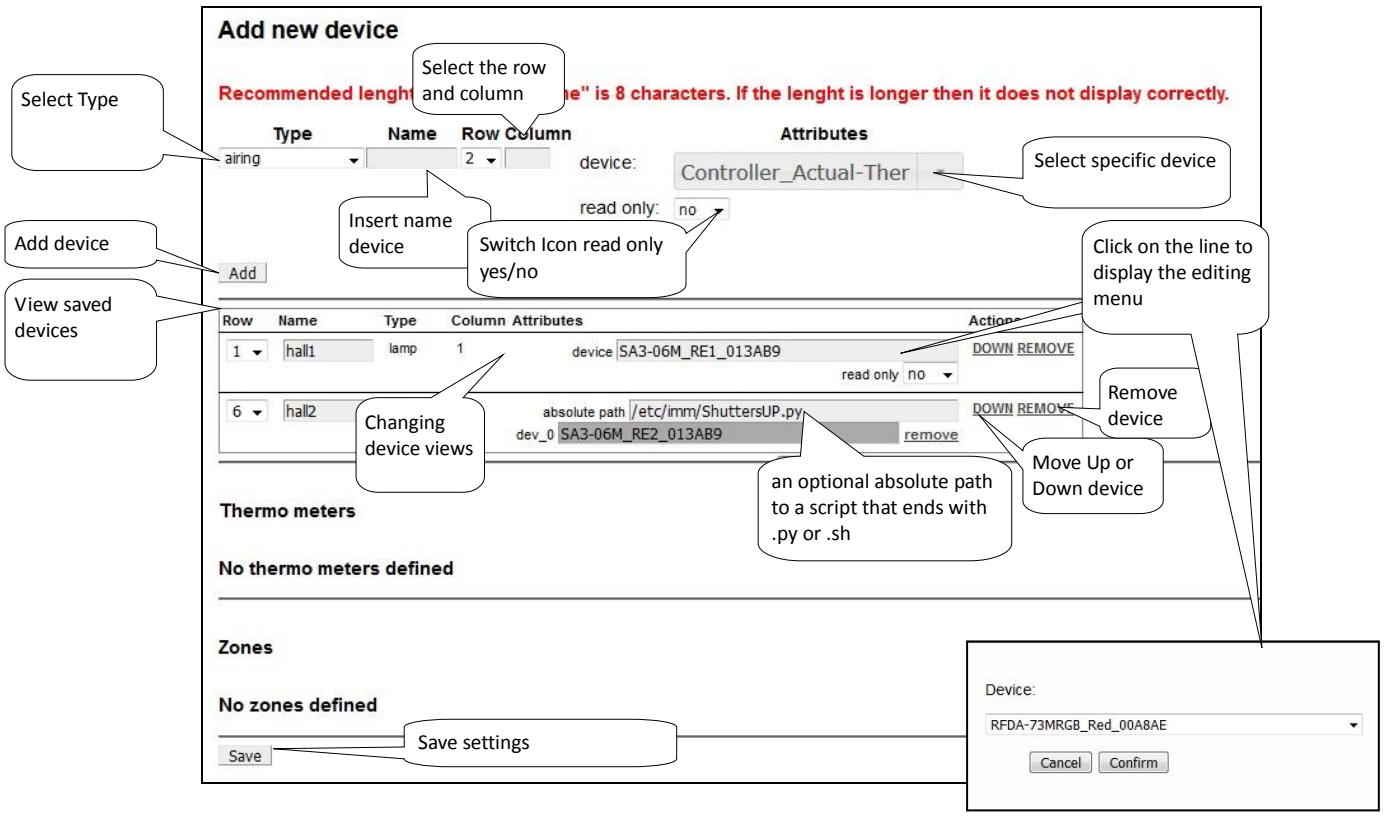
First enter the room name, save it with the **Add button**.

! Only A-Z, a-z, 0-9, -_, can be used for the room name.

Using the **upload** and **download** buttons, you can download or record the rooms.cfg (bookmark of the already created rooms).



Using the Edit command, the menu adds the desired devices (scenes, zones ...) to the room.



! Device type - the selected icon filters the elements (for example, the Lamp type filters the elements on the dimmers, the scene displays the field for writing the absolute path ...).

i By switching the Read only function to "yes", the icon will display only the status of the non-controllable element.

Adding a device:

Type Device Type, Name, Row / Column. In the Attributes field, select the device you want from the menu.

Add a scene:

Select a scene in the type. Enter the name, Row / Column. You can use the programmed script to control the scenes, which can trigger various functions defined in it. You must keep an absolute path starting with "/" and ending with the "Python" script that you type in the Attributes field. Multiple elements can be added to the scene.

- **Bookmark Cameras**

Bookmark Cameras is used for defining IP cameras, which you want monitor and control by the iHC application.
The HTTP and RTSP ports are only filled in if you have IP cameras configured to access the external network by redirecting ports to the router or using the ONVIF protocol.
- If you connect the camera remotely over the HTTP port, you get to its web interface and you can fully control the camera.
- If via RTSP, then you only get to the camera stream. For more information on setting these ports, see the manual of the selected camera.

If you do not enter the HTTP and RTSP ports they remain with the defaults of HTTP port 80, RTSP port 554.

Supported cameras: iNELS cam
AXIS protocol VAPIX2 cameras with firmware version number 4.0.X.X and VAPIX3 with firmware version 5.0.X.X
Camera with ONVIF protocol profile S certification ONVIF link
Cameras supporting RTSP stream

In the **New camera** menu, add IP cameras to the Connection server.

Example integration of cam Axis supported ONVIF: connect the camera according to camera manual and create a user for the ONVIF protocol which might be different according to manufacturer. Set the video stream profile: MJPG to MJPEG/JPEG and the second RTSP stream to MPEG4/H264.

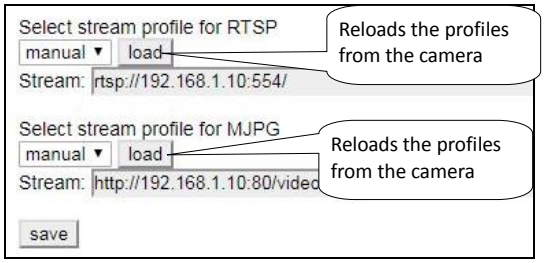
i The service port is the ONVIF port usually set on port 80. If the camera is behind NAT it is necessary to redirect to the router and this port otherwise the camera cannot be configured

Ports by default:
Axis - ONVIF HTTP port: iHC: 80 RTSP port - iMM: 554 Application support: iHC-MA, TA, Mi, Ti
Other ONVIF cameras HTTP port: iHC: 554 RTSP port - iMM: 554 Mobile stream support via RTSP: only in app. iHC-MA, TA!

In the Select **stream menu**, select the **pre-set streams** on the camera that is assigned to the iHC mobile app.

The **List of cameras** menu displays saved cameras on the Connection Server and allows you to edit or delete the selected camera from the web interface.

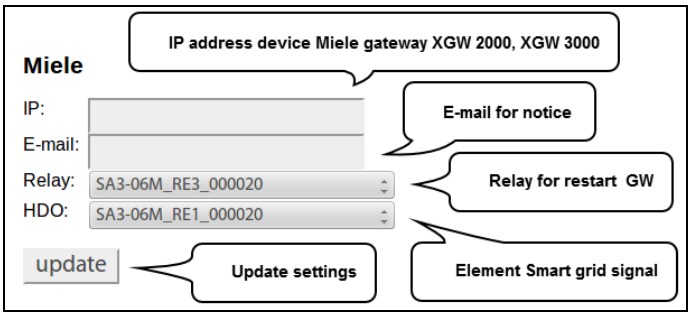
If you are creating an ONVIF camera, the next step will offer the stream to select, possibly editing it, or enter it manually. The manual selection will also be offered if the streams are not successfully downloaded from the camera.



- **Bookmark Miele**

In the menu Miele set the IP address of the Miele gateway device that serves to control remotely appliances over powerline, or ZigBee protocol.

Supported gateways: XGW 2000, XGW 3000 (Firmware 1.1,1.2)



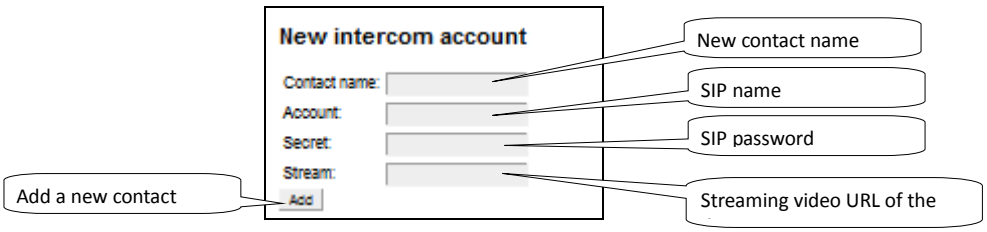
! Set IP address MieleGateWay which is stored in the file /etc/imm/miele

i The GW restart relay is used to switch off / on if the gateway loses the network connection and sends the notification to the user's email.

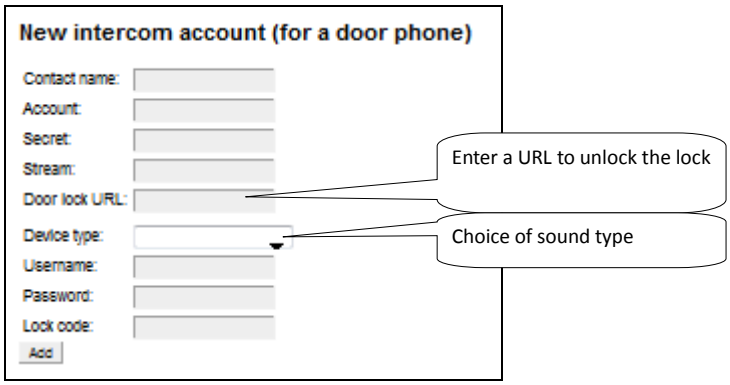
- **Bookmark Intercoms**

In the Intercoms tab, you can specify settings for door intercoms and VoIP accounts for iHC applications.

To create an account for LARA or Mobile, use the **New intercom** account section.

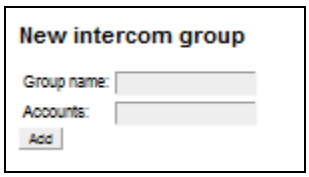


To create a door phone account, use the **New intercom** account (for a door phone) section.
Choice of three types of door intercoms (2N, IP-Bold, Dahua).

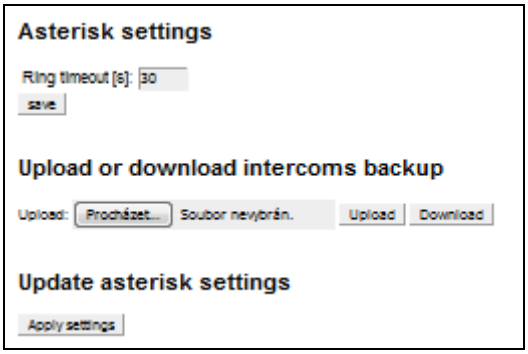


For the correct function of calls using iHC applications, it is necessary to assign the highest priority to the PCMU codec in the intercom - 2N (Services / Telephone / Audio / Codecs).

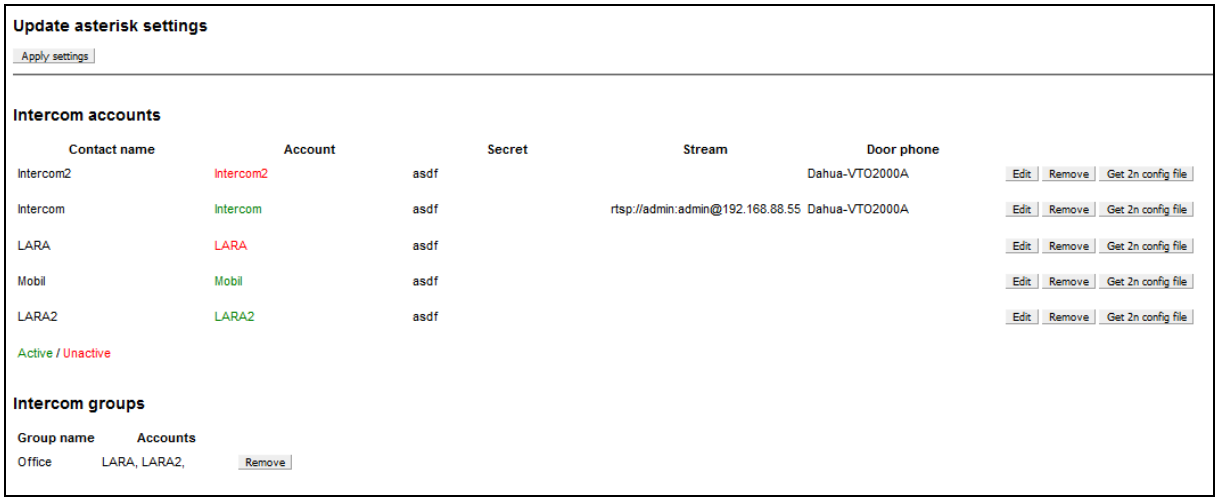
When making a door-to-door contact, it is not limited to one door, more can be entered.
New ability to create groups. Create individual contacts, add them to the group. Make a group call name, the call will be applied to all the contacts in the group, who will receive the first call, who will communicate. Contacts are grouped into the group via the **New intercom group**, where all contacts are inserted and separated by commas: **LARA1, LARA2, LARA3.**



You can set the maximum ringtone length in the **Asterisk settings** section.
Apply settings button activates newly created VoIP accounts and restarts the PBX Asterisk.



In the list of created contacts, which contact is registered on the SIP server is colour-coded.



! The connection server allows you to set up a single door intercom via DTMF on the web interface.

i Stream for cam add in format rtsp://IPADRESA.

i Manual link for video intercom the iHC application can be added in the contact intercom field with the IP address in this format: http://IPADRESA/enu/camera640x480.jpg.

! The connection server allows only one door intercom to be opened on the web interface.

i In the case of multiple 2N IP intercoms, all must be set to open as well (User name, Password, Lock code).

- **Bookmark Energy**

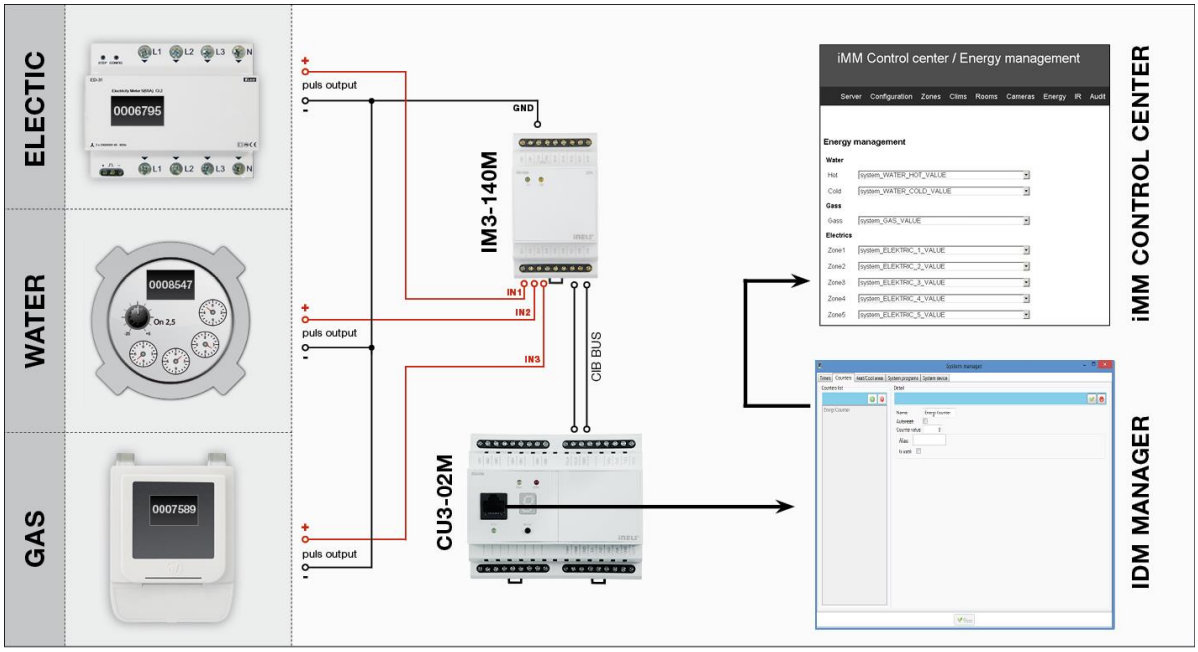
The Energy module allows recording of consumed energy for a day, week, month and year. Consumed energy is displayed in the iHC application not only in a given quantity but also in financial value in the form of a table or graph.

The data is stored on the Connection Server even when the power is off or on.

Energy is recounted based on the amount of impulses that the outputs from meters provide (gas-meters, electrometers, water-meters). Impulses are further processed in an optional input unit of system iNELS (IM2-140M, IM2-20/40/80B) in form of a counter. This value is by means of export.pub transferred to Connection Server where variable is in iMM CC on bookmark Energy assigned to Water/Gas/Electric.
The actual setup conversion of pulses per unit of measure, currency selection and adjustment of the currency / unit is done in the web interface in the Connection Server.

Connection of electric meter, gas meter or water meter

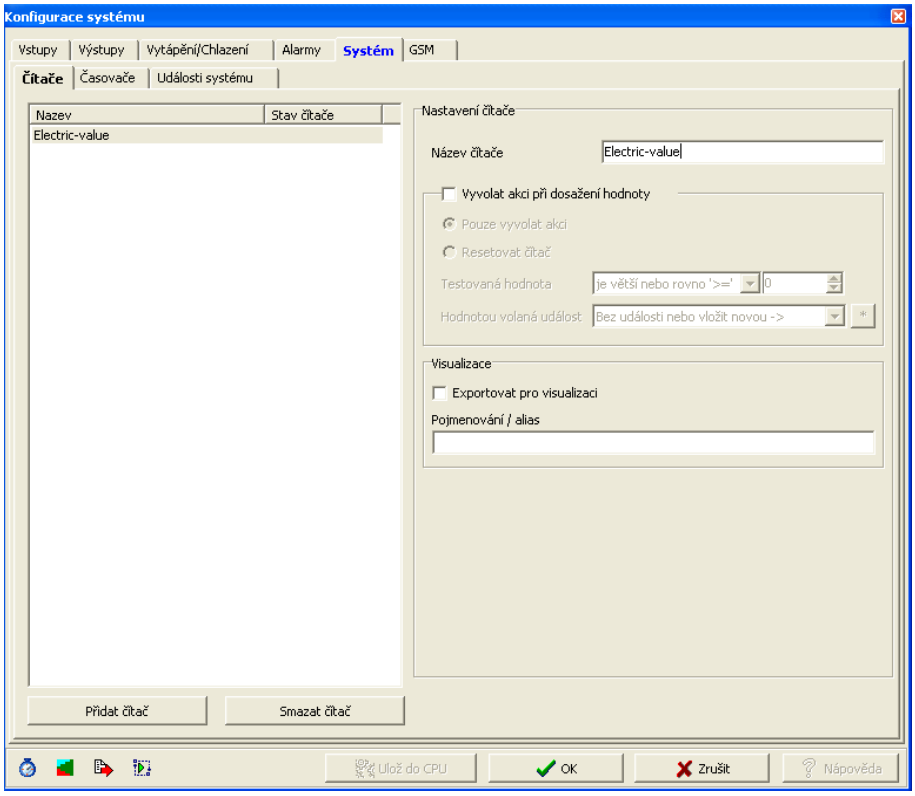
The connection of a particular meter is executed via the binary input unit. The polarity of the supported meter, i.e. + and - is distinguished. If necessary, observe the polarity and connect the "-" terminal to the GND terminal and the "+" terminal to the IN terminal.



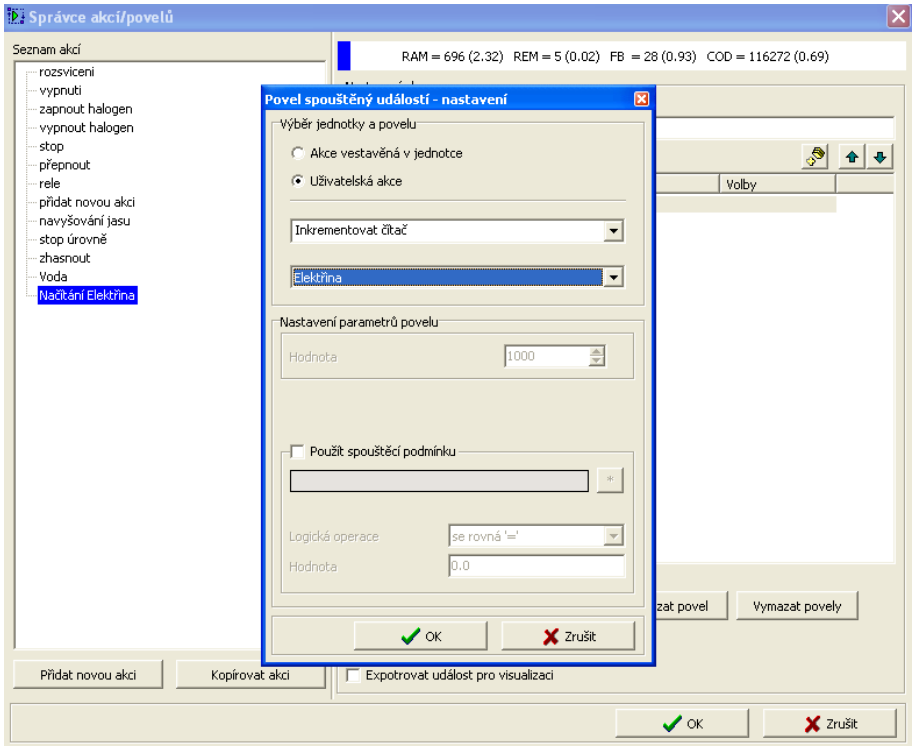
Settings in IDM2:

1. Click on the System Configuration button (icon of hammer and screwdriver – F11)
2. Select bookmark System -> counters
3. Add counter that you name by energy you want to measure
4. Create a new action that you name e.g. upload electricity
5. Add a command in the action which will be user action -> commands for counters -> increment counter
6. Select counter that corresponds with given action (e.g. for upload electricity you put counter electricity)
7. Add the action created as described above in system configuration to relevant binary input in action line when the input closes
8. Once the file export-pub is created and uploaded to iMM server, in bookmark Energy you can assign in the counter value line (electricity_VALUE). It must be VALUE in the line.

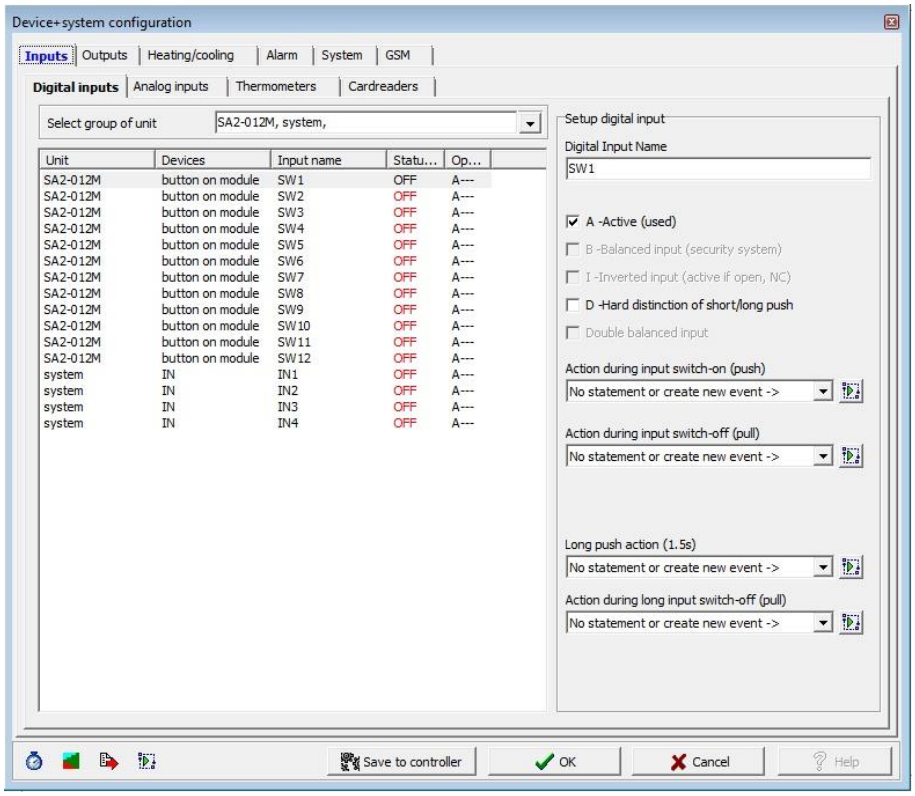
Creation of counter in iDM2:



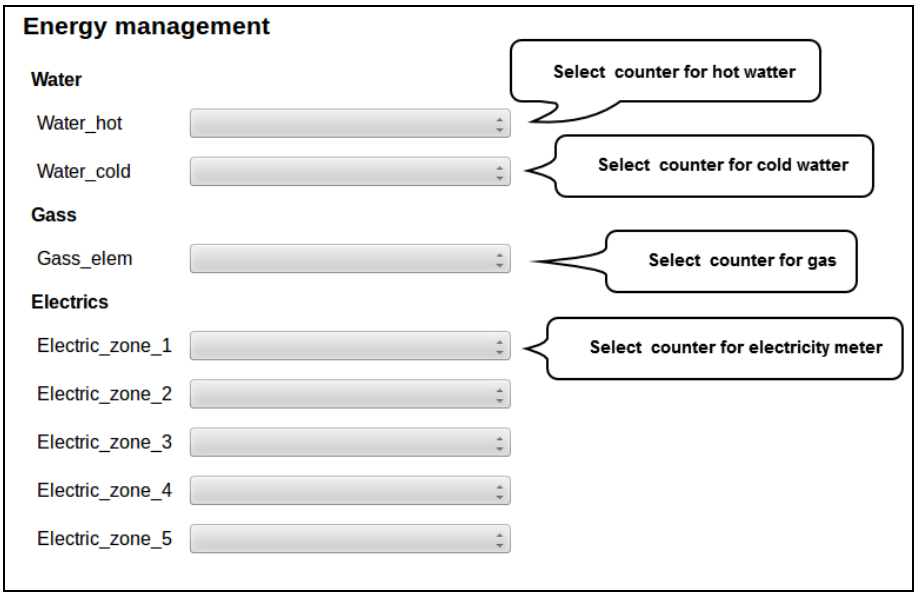
Create increment counter action:



Action assignment to binary input where output from measuring instrument is connected



Assign a counter value to the iMM Control Center

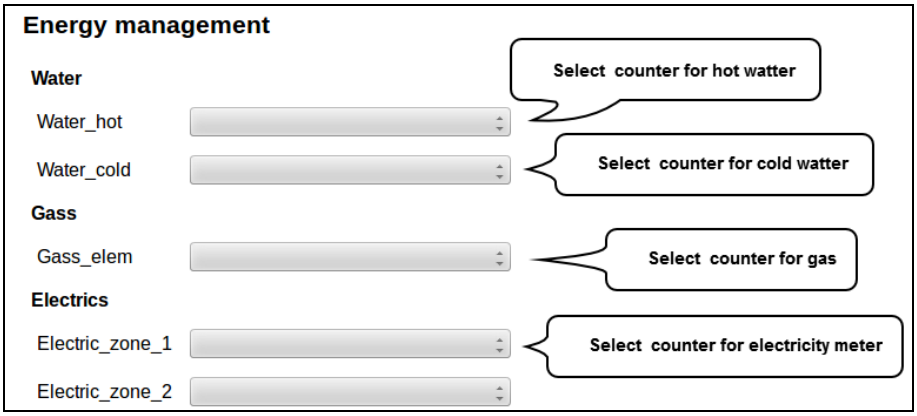


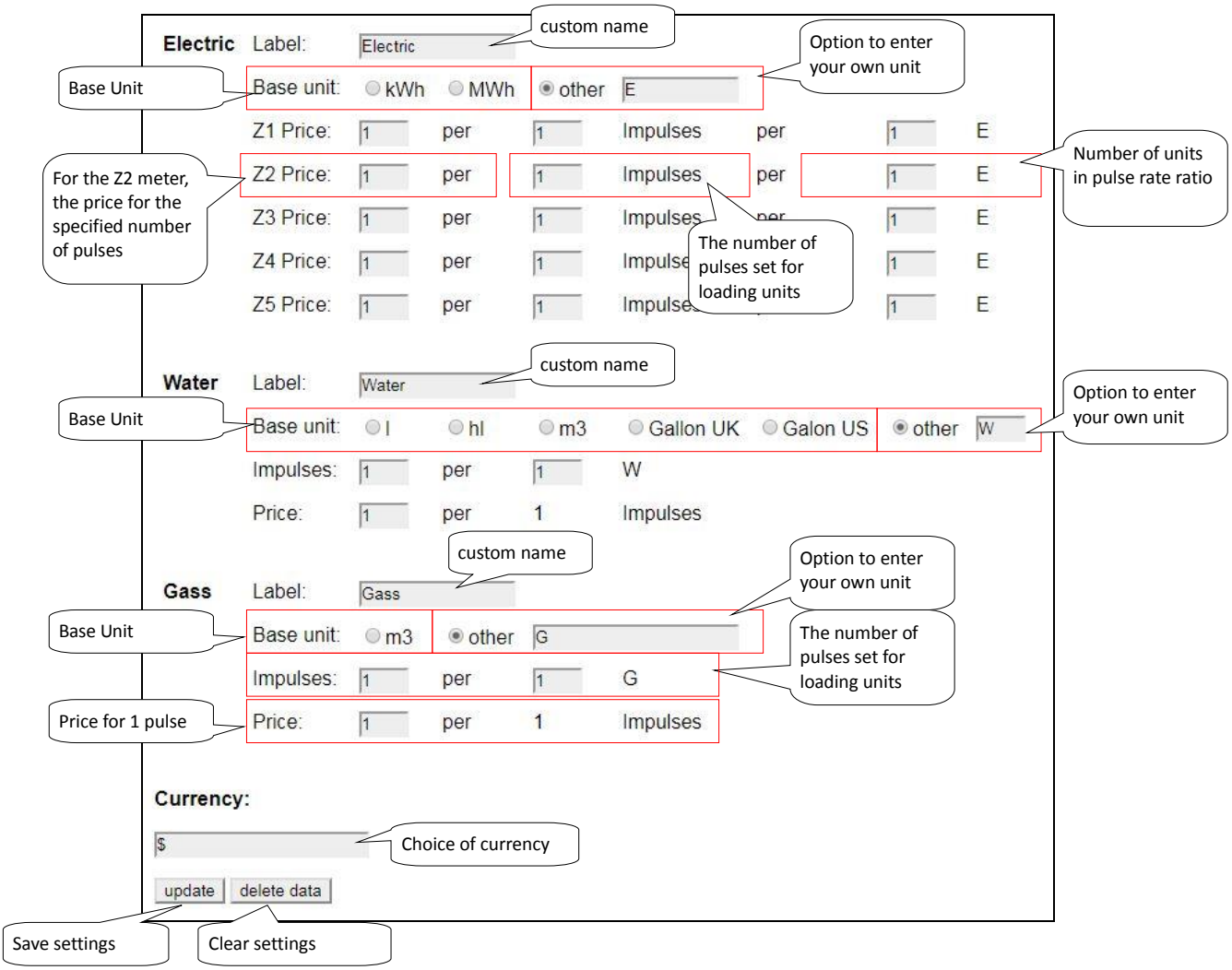
Example:
1 kWh = 100,- Kč = 100 pulse
Base Unit – kWh
Impulses – 100 per 1 kWh
Price – 1 per 1 impulse

To create a counter in IDM3, see Create counter IDM3

a) Energy management

In the Energy Management menu, select binary inputs for WATER, GAS, and ELECTRICITY and allocate units and impulses to them.

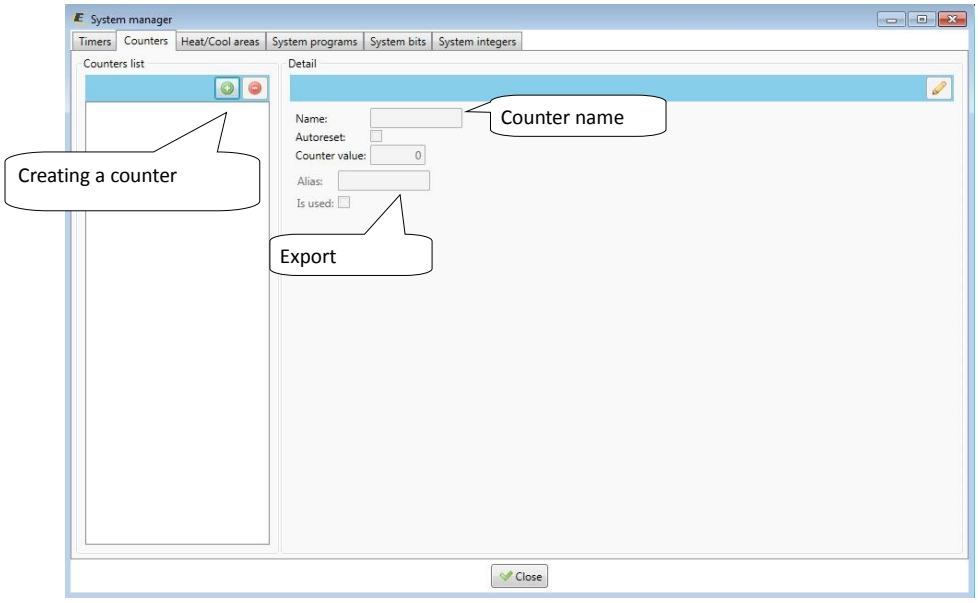




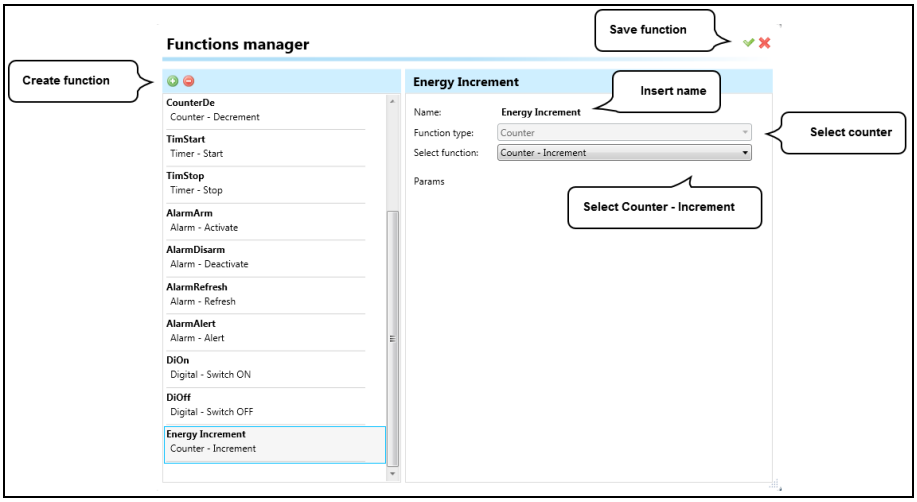
To create a counter, see the Energy tab

b) Creating counters (counters) in IDM3

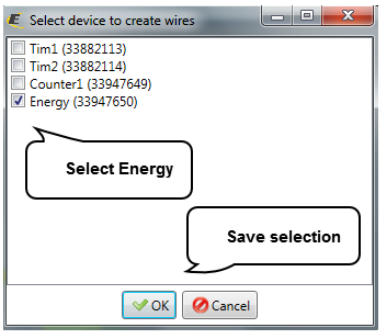
Creating a counter in IDM3
Managers tab, select the System Manager and go to the tab Counters where you create a counter name. Click the + icon to fill in the name and "tick" the item **Apply to export.**



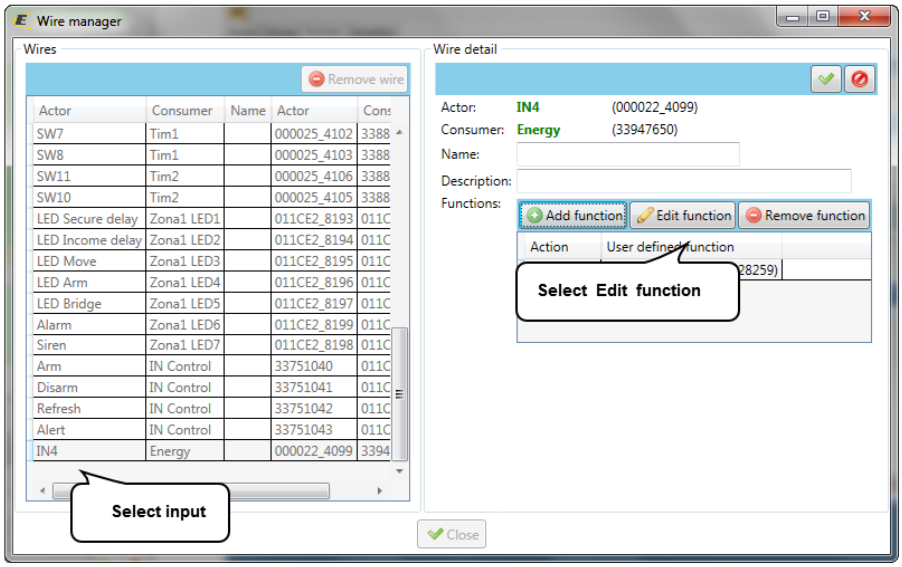
Creating functions for counter
In the **Wires** tab, select the **Function Manager** option. Here you create a function named Energy Increment (the function type is **Counter**).

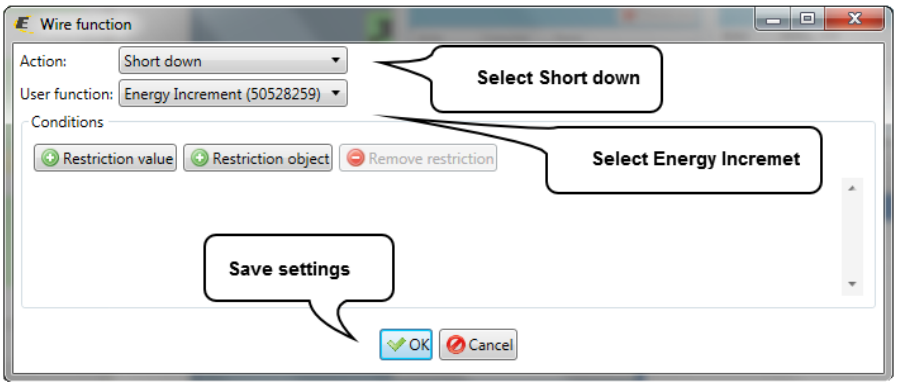


Move the switch and central units to the desktop and double click on switch icon edit and select IN Digital input M3-80B.
In the Function tab, select ADD connections, make the connection by pulling the wire from the switch icon on the icon and select Central Unit Energy.



In the tab, Function select Wire Manager, select the input (IN) Energy through button the Edit function to adjust to Action: Short down User function: Energy Increment.

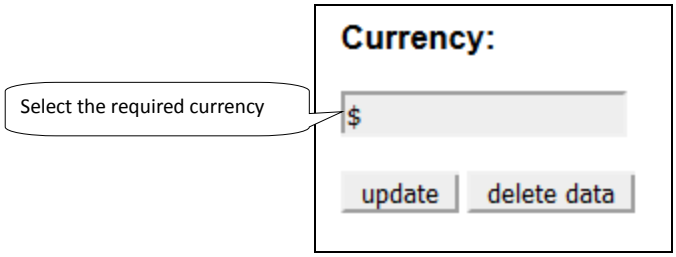




Add the created counter to iMMCC Energy management

c) Currency

Currency setting option. There is also the option to erase all measured data via the **delete data** button at the bottom of the page.



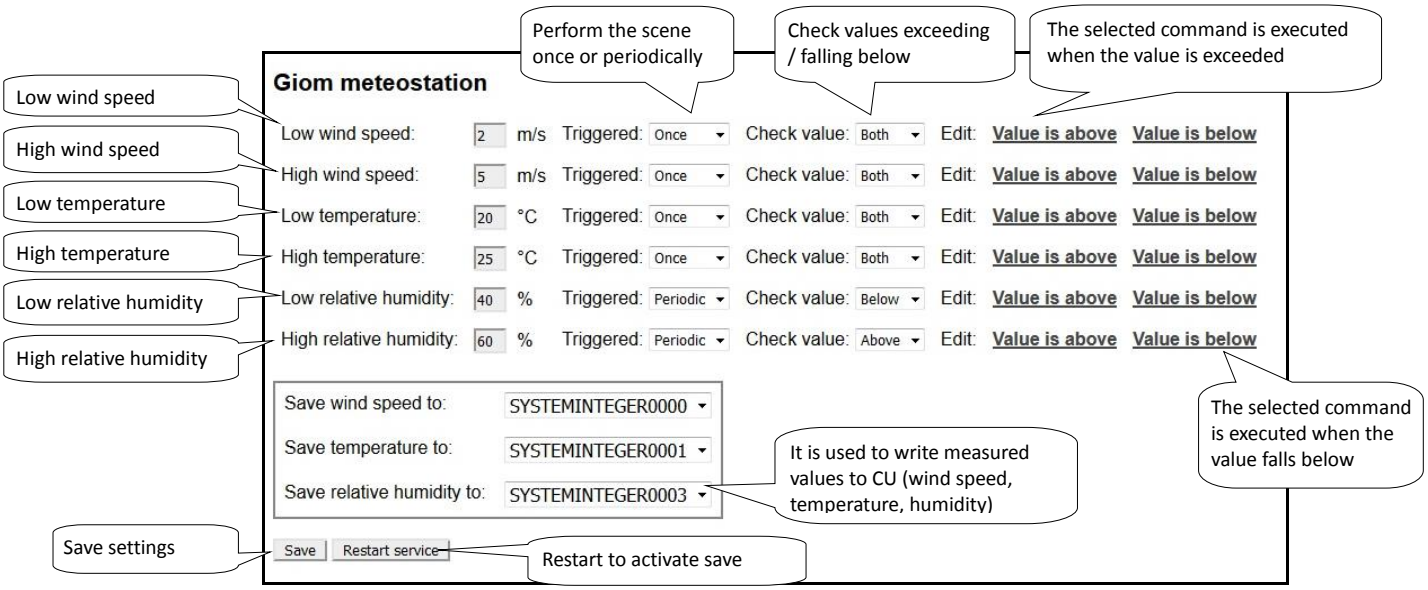
- **Bookmark Weather**

In the Weather tab, you can create scenes or set the data to be copied to the central unit according to the weather station data.

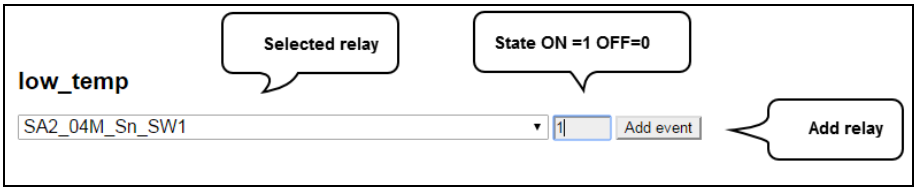
Giom meteostation

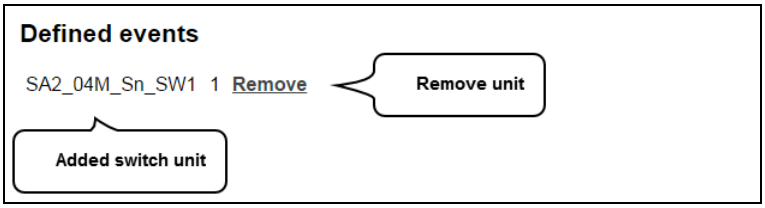
You can choose whether the scene is called once or periodically (**Triggered**), and whether you want to check if exceeds or falls below the value (**Check value**).

Depending on the values set on the web interface, the scene is performed when the value is greater than or less than the scene setting value



You can edit the scene in the Edit menu. In the selected scene, you can add or remove relay units.





Connect Giom station as a zone:

IMM connection with the server is defined in iMMControl Center in the "Zones" where it is necessary to state "Is it Giom?" switch from "no" to„yes".

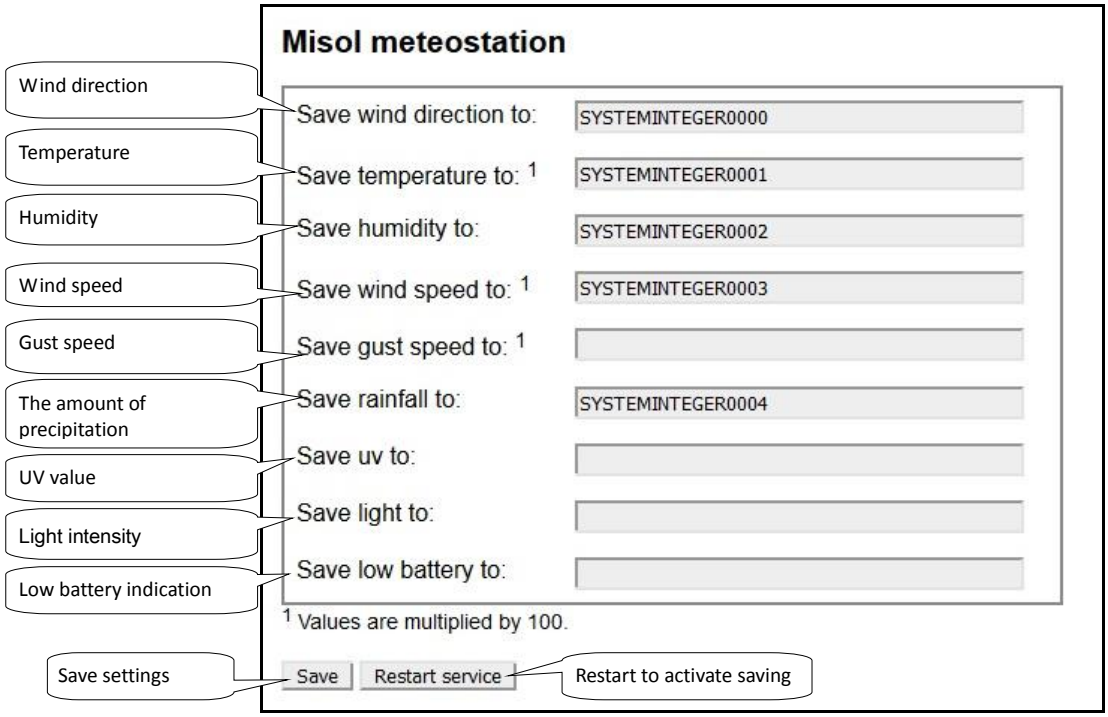
Settings are made via the web interface. The first time finding of the IP address of the weather station is possible with the software "Mlocator", which can be downloaded from the manufacturer's website.

! For proper function you must first set up Giom as a zone. If you set your password in the GIOM administration, be sure to check Except - status.xml.

i Information from weather station can be displayed in the iHC applications or iMM application by pressing the left button on the clock icon at the top right of the application.

Misol meteostation

Possibility to configure data from the weather station with components from the central unit.



Connect Misol station as a zone:

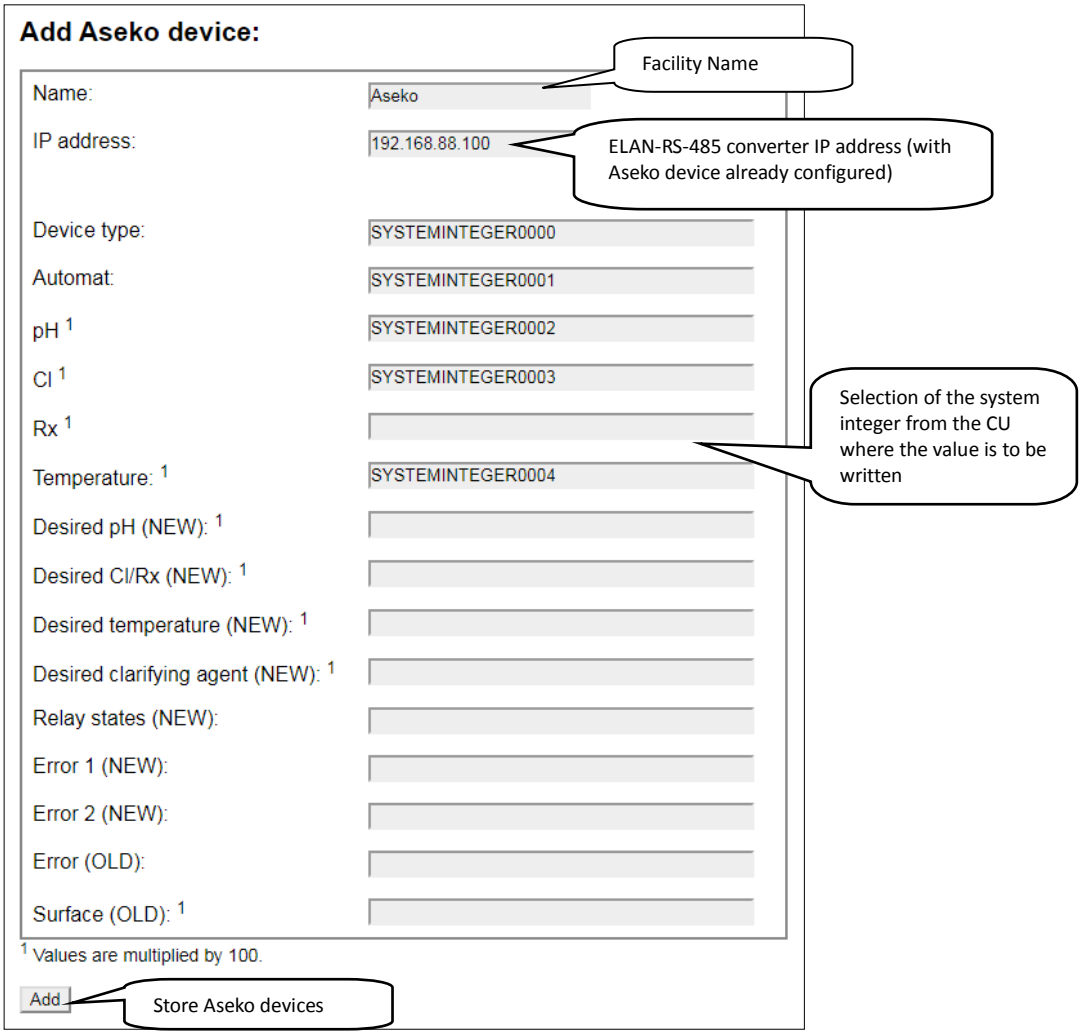
IMM connection with the server is defined in iMMControl Center in the "Zones" where it is necessary to state "Is it Misol?" switch from "no" to„yes“.

Enter the IP address of the eLAN-RS-485/232 converter (with the already configured Misol meteostation device) as the IP address of the weather station.

i Information from weather station can be displayed in the iHC applications or iMM application by pressing the left button on the clock icon at the top right of the application.

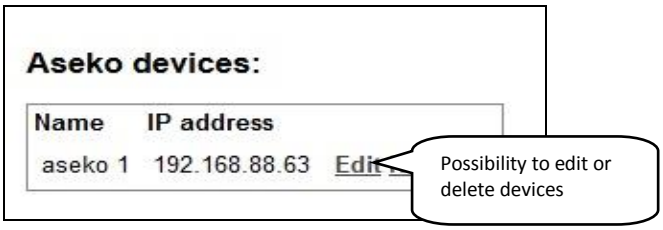
- **Bookmark Aseko**

Add Aseko pool technology. It is used for monitoring the values and operation of the device.
Both older and newer versions of Aseko are supported.



Comment:
An asterisk next to the name means that the value is multiplied by 100 (e.g.: if the pH is 700 then the real value is 7).
OLD: value only for older Aseko devices
NEW: value is only for older Aseko devices
For more information on the stored values see. eLAN-RS-485/232 manual.

Aseko devices already added:



- **Bookmark Manual**

In bookmark Download you can download the current version manual in PDF format.

- **Bookmark Default settings**

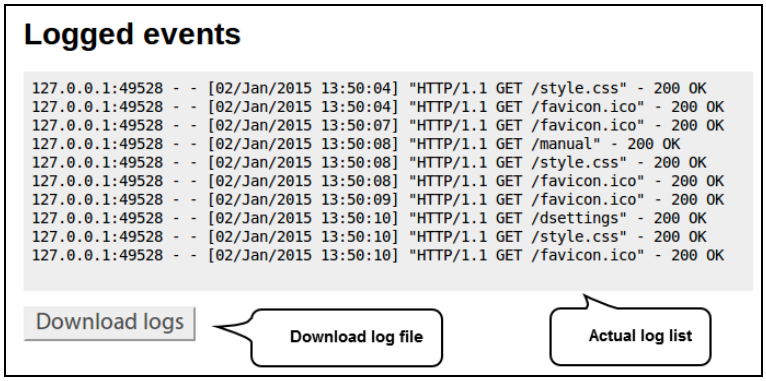
Bookmark Default settings is used for reset settings to default state.

Reset all server settings to default - factory settings (all user settings are deleted).

Reset all devices dependencies to default - deletes only user settings and their dependence on other iMM server features.

- **Bookmark Audit**

Bookmark Audit is used to show and download LOG file option events for diagnostic developer purposes.

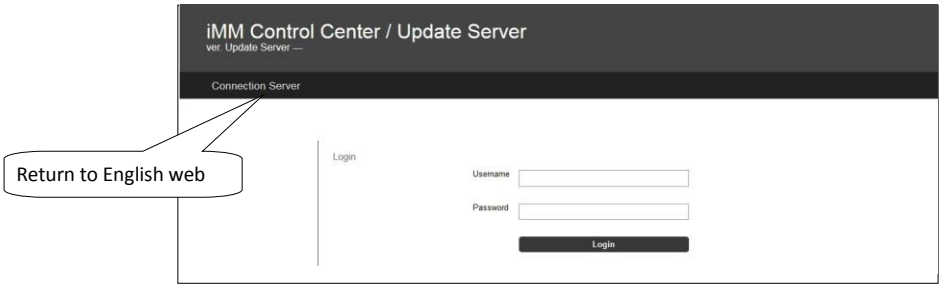


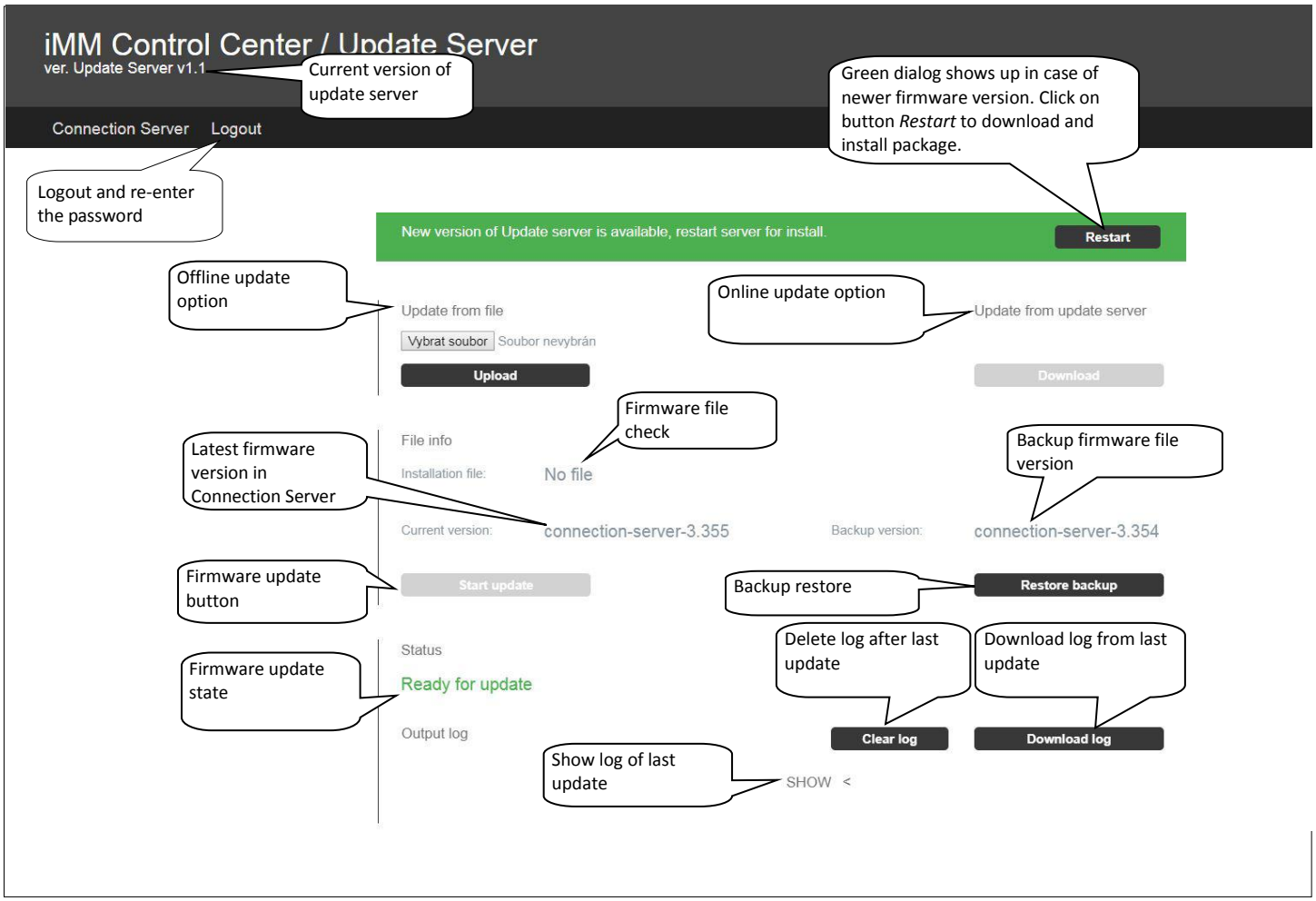
- **Bookmark Logout**

Logout from the web interface.

3. Connection Server update server

To update Connection Server firmware, log into web interface (IP_ADDRESS_CONNECTION_SERVER:8080) and move to tab System. Locate part called Update Server and click on button *Update*. It will be forwarded to update server page where user has to fill login credentials again (default one: imm / imm123).





Update form file
Update file can be downloaded from following webpage: https://www.elkoep.com/connection-server-inels
Choose file from local disk to be uploaded to Connection Server. Clicking on button *Upload* will transfer to Connection Server.

Update from update server
Clicking on button *Download* will download package from public server.

File info
Line **Instalation file** will show name of uploaded package in case of successful file upload.
Clicking on button *Start update* will initiate update procedure.
Each run of update procedure will create a backup of original version to be able to revert changes in case of any unexpected error. Backup restore procedure can be initiated by clicking on button *Restore backup*.

Status
This part shows update progress.
Clicking on button *Download log* shows update progress.
Message *Ready for update* will be shown after update procedure finishes.

NOTE:
If update process led also to update server change, then green message with *Restart* button shows up. Click on this button in order to finish update procedure of update server.

4. Appendix

Control 4
Link Control 4 with iNELS wiring using the Connection Server

Requirements for linking Control 4: iNELS3 central unit
Controller HC-250, HC-350, HC-800, EA-3
Composer software (2.7.2, 2.8.1, 2.8.2 and higher)
iMM Server or Connection Server 3.219 or higher

Setting up in the licensed Composer program first step is to store iNELS drivers:
iNELS3_Master_Driver.c4i - The main link driver between and Connection Server to C4
iNELS3_Switch.c4i - Switching units SA3
iNELS3_Dimmer.c4i - Dimmers DA3, DAC3
iNELS3_PIR.c4i - PIR sensing disturbance monitoring on IM3 input
iNELS3_RGB.c4i - RGB control using RFDA-73M / RGB
iNELS3_Therm.c4i - Temperature sensor
iNELS3_Thermostat.c4i - Thermostat built in iDM (heating, cooling)
iNELS3_Blinds.c4i - Unauthorized driver in preparation for JA3 / 20B / DC, SA3

Copy these files to C: \ Users \ user \ Documents \ Control4 \ Drivers and run Composer for.

We will connect to the IP address of the C4 (Director), and then insert it into the project

iNELS3_Master_Driver, to which we set the IP address of the Connection Server.

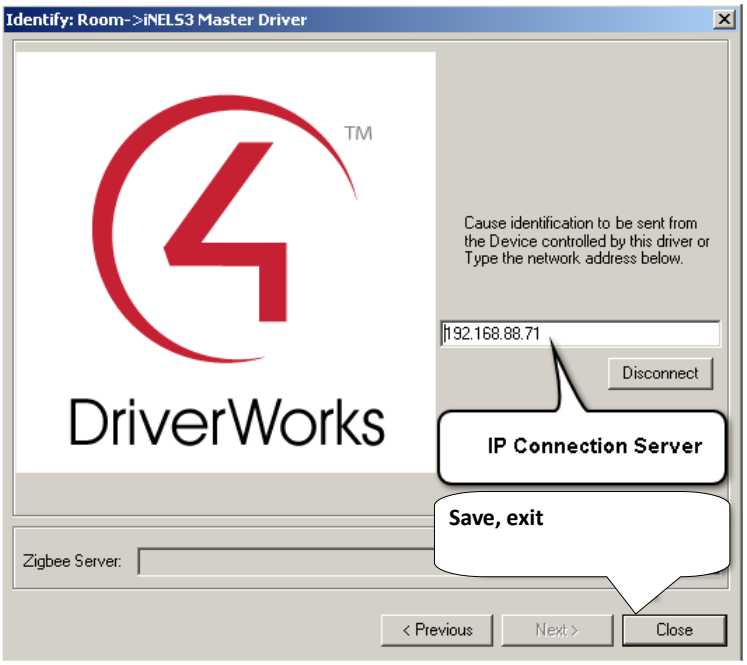
Adding the iNELS3 Driver to the project

Procedure: Switch to the System design menu and continue to the Items window where you search for "iNELS" on the Search tab and then double-click the selected driver into the project.

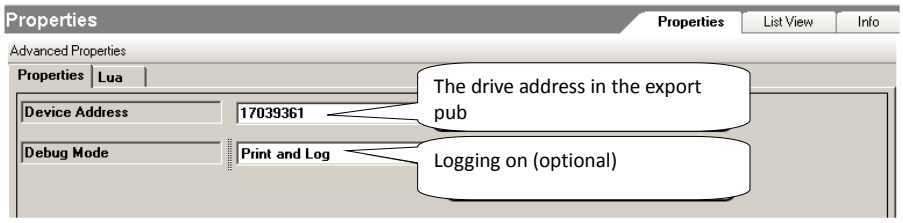
! First add the iNELS3 Master Driver before inserting the other iNELS3 drivers

Inserting an IP address into the Master Driver

Procedure: Go to the Connections menu where you select iNELS3 Master Driver and continue to the Network tab to open the iNELS 3 Master Driver and enter the IP address.



Example of inserting the dimmer into the iNELS3_Dimmer controller



First, select the drive from the listing in iMMCC on the Configuration tab afterwards

DA3-22M_OUT1_000021 Y B 17039361 REAL PUB_INOUT

We will add iNELS3_Dimmer to the name and insert the address of the Device Address: 17039361.

Debug mode is an optional parameter, if we set Print and Log, we can validate it in the Lua Status tab.

! After completing the settings in Composer, restart the C4 directory.

- Note: The thermostat can modify the modes (attenuation, minimum, normal, comfort) based only on the next time stamp. The direct temperature setting function in the application is not yet supported.