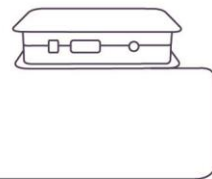


INSTALLATION MANUAL

Connection Server



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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 Linux 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:

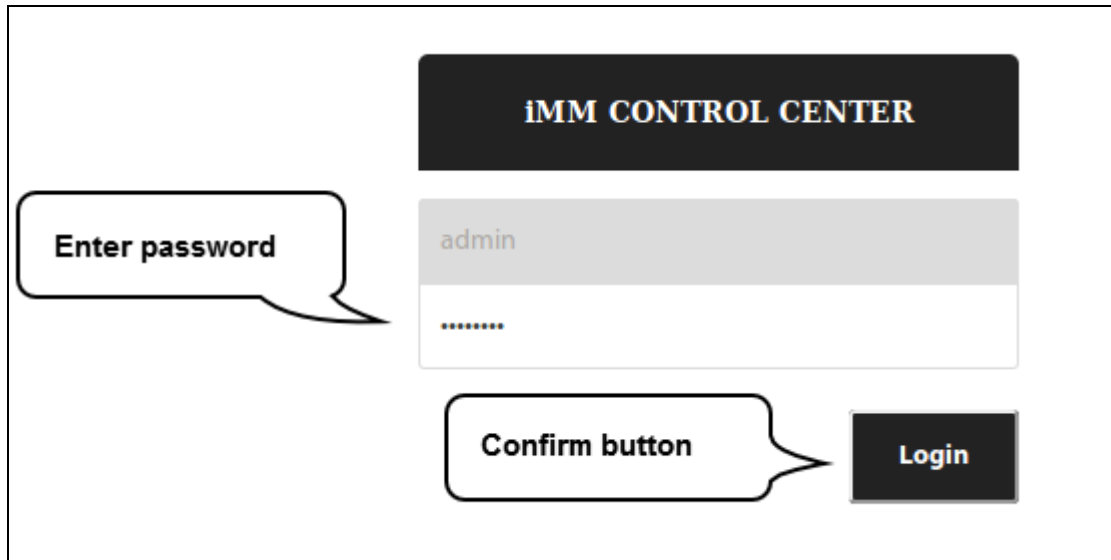
[https://en.wikipedia.org/wiki/List\\_of\\_TCP\\_and\\_UDP\\_port\\_numbers](https://en.wikipedia.org/wiki/List_of_TCP_and_UDP_port_numbers)

## 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`

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

! 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“).

**IMM servers management:**

- ELKONET:** Elkonet server for communication with iNELS central unit  
Buttons: Status Start Stop
- MIELE:** Miele server for communication with gateway XGW 2000, 3000  
Buttons: Status Start Stop
- RF:** RF server for communication with eLAN-RF  
Buttons: Status Start Stop
- RPC:** RPC server for communication with app iHC  
Buttons: Status Start Stop

*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..

**IMM servers management:**

- ELKONET:** Click to view the log listing  
Buttons: Status Start Stop
- MIELE:**  
Buttons: Status Start Stop
- RF:**  
Buttons: Status Start Stop
- RPC:**  
Buttons: Status Start Stop
- Logitech media server:** Ability to restart the Logitech Media Server  
Buttons: Status Start Stop

• **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]:[COMMUNICATION_PORT]             | 10.5.15.12:8454      |
| CU3        | [IPADDRESS]:[HTTP_PORT]:[COMMUNICATION_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:

The screenshot shows the 'Settings' and 'Export iNELS3' sections of the software interface. Callouts provide the following information:

- Settings:**
  - IP of iNELS CU:** 10.10.5.186 (Callout: Enter the IP address of the central unit)
  - Password:** [Redacted] (Callout: Enter the specified password for IDM)
  - ASCII port (optional):** [Redacted] (Callout: Enter the communication port for ASCII)
  - IP of IMM Server:** 192.168.88.109 (Callout: Enter the IP address of the Connection Server)
  - Machine ID:** 2b6c8c846b528b1ed9ef1268d84723ef (Callout: Key ID)
  - Licence key:** 81594496cd2b8bf7 (Callout: Licence Key)
  - Buttons: update, Check iNELS3 CU
- Export iNELS3:**
  - Buttons: Load export CU3 iNELS3, Delete export
  - Dropdown: is3
  - Buttons: Load iNELS3 export, Delete iNELS3 export
  - Text: iNELS3 current export header
  - Text: Export header: VERSION\_01-03-03\_CREATE\_2019-09-09-13-14-42\_IDM3\_03-03-34\_ID\_98BB61B2EF1B5F49B6F63D350E5D9AAE\_NAME\_IMM-kufr-20180110
- Export iNELS2:**
  - Buttons: Upload iNELS2 export, Delete iNELS2 export
  - Buttons: Upload iNELS2 export, Delete iNELS2 export



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

The screenshot shows a web interface for checking the iNELS3 CU state. A green box highlights the 'CU STATE' section, which contains the following information:

- CU address: 10.10.3.34:9999 (Callout: CU IP address)
- CU connection: CONNECTED (Callout: CU connection state)
- CU state: CU is RUNNING (0x20) (Callout: CU current state)
- Protocol version: 00.02.00 (Callout: Protocol version)
- User password enabled: True (Callout: CU password verification enabled)
- Login state: OK (Callout: CU login state)

Below the state section is the 'Settings' section, which includes the following fields:

- IP of iNELS CU: 10.10.3.34
- Password: [masked]
- ASCII port (optional): [empty]
- IP of IMM Server: 192.168.88.55
- Machine ID: 1224b1e5dc751f937263b45541a12439
- Licence key: 612bdf592b1e0d69

At the bottom of the settings section, there are two buttons: 'update' and 'Check iNELS3 CU'.



**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.

### Edit export

```

SA3-06M_RE5_000020 R B 16908293 .0 BOOL PUB INOUT
SA3-06M_RE5_000020_ON R B 16908293 .0 BOOL PUB INOUT
SA3-06M_RE5_000020_OFF R B 16908293 .0 BOOL PUB INOUT
SA3-06M_RE6_000020 R B 16908294 .0 BOOL PUB INOUT
SA3-06M_RE6_000020_ON R B 16908294 .0 BOOL PUB INOUT
SA3-06M_RE6_000020_OFF R B 16908294 .0 BOOL PUB INOUT
DA3-22M_IN1_000021 R B 16842753 .0 BOOL PUB INOUT
DA3-22M_IN2_000021 R B 16842754 .0 BOOL PUB INOUT
DA3-22M_OVT-ALERT1_000021 R B 17235969 .0 BOOL PUB INOUT
DA3-22M_OVT-ALERT1_000021 R B 17235970 .0 BOOL PUB INOUT
DA3-22M_OVT-ALERT2_000021 R B 17235971 .0 BOOL PUB INOUT
DA3-22M_OVLO-ALERT2_000021 R B 17235972 .0 BOOL PUB INOUT
DA3-22M_OUT1_000021 Y B 17039361 REAL PUB INOUT
DA3-22M_OUT1_000021_ON Y B 17039361 .0 BOOL PUB INOUT
DA3-22M_OUT1_000021_OFF Y B 17039361 .0 BOOL PUB INOUT
DA3-22M_OUT2_000021 Y B 17039362 REAL PUB INOUT
DA3-22M_OUT2_000021_ON Y B 17039362 .0 BOOL PUB INOUT
DA3-22M_OUT2_000021_OFF Y B 17039362 .0 BOOL PUB INOUT
DA3-22M_TIN_000021 Y B 17104897 REAL PUB INOUT
IM3-80B_IN1_000022 R B 16842755 .0 BOOL PUB INOUT
IM3-80B_IN2_000022 R B 16842756 .0 BOOL PUB INOUT

```

Change to "List of components in export"

update

! 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.

/ 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.

! 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:

The screenshot shows a web interface with the following sections and callouts:

- Shutdown server**: Includes a "Shutdown" button. Callout: "Button Shutdown you can remotely shutdown Connection server from Web interface."
- Restart server**: Includes a "Restart" button. Callout: "Button Restart you can remotely restart Connection server from a Web interface."
- Restart server regularly**: Includes a "Delete settings" button. Callout: "Set the scheduled reboot of the ServerConnection at a specified time of the week."
- Scheduled Reboot Settings**: Includes dropdowns for "0" (minutes), "1" (hours), and "Monday" (day of the week), along with "Set" and "Delete" buttons. Callout: "Set the minute, hour and day of the week"
- NFS Server Configuration**: Includes an "Update" button. Callout: "Button Update refresh NFS sharing settings in the file /etc/fstab"

A red warning callout states: **! To re-start, disconnect and reconnect the micro USB power connector to the Connection Server.**

Additional callouts point to the "Set" and "Delete" buttons in the scheduled reboot section, labeled "Save settings" and "Delete settings" respectively.

• **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\_SMBCIF:**

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.

**NAS**

Select NAS:  Select the type of sharing with NAS

Path: **[IP address]** / **[Folder]** /mnt/nfs nfs nouser,atime,auto,rw,dev,exec,suid 0 0

IP address:

Folder:

---

**Settings**

Squeezebox server:

Absolute path to Music directory for squeezebox server:

Squeezebox server username:

Squeezebox server password:

Sonos - SMB IP:

Sonos - SMB music folder:

Set up a path to music files

• **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.

*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.

The screenshot shows the 'iNELS3' configuration form. Callouts include: 'IP address of the CU3 central unit' pointing to the 'IP of iNELS3 CU:' field; 'Enter the communication port' pointing to the 'ASCII port:' field (value: 1111); 'Name of CU3 added' pointing to the 'Note:' field; 'Adds the configured CU3' pointing to the 'Add' button; 'Name – configuration in IDM' pointing to the 'Password:' field; and 'Displays the current status of the set CU3' pointing to the 'Check iNELS3 CU' button.

Below the form is a table with callouts: 'Example of Prefix' points to the 'Prefix' column (value: inels3A); 'Prefix inels3A' points to the 'Prefix' cell; 'IP address CU' points to the 'IP address' column (value: 192.168.88.57); 'User note' points to the 'Note' column (value: House); 'Reset the export of the selected CU' points to the 'reload iNELS3 export (is3)' button; and 'Remove CU from the list' points to the 'Remove' button.

| Prefix  | IP address    | ASCII port | Note  |     |                            |                    |
|---------|---------------|------------|-------|-----|----------------------------|--------------------|
| inels3A | 192.168.88.57 | 1111       | House | is3 | reload iNELS3 export (is3) | Remove Check state |

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.

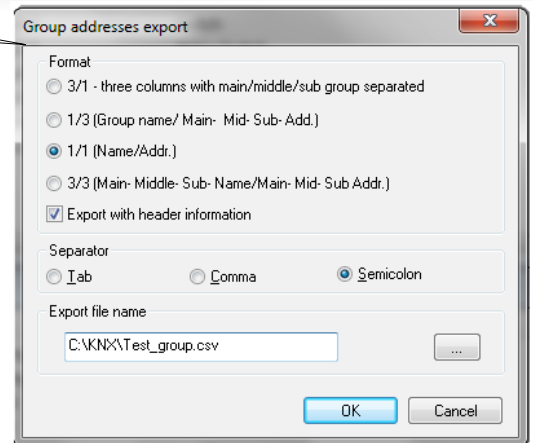
The screenshot shows the 'KNX - CU3 synchronization' form. Callouts include: 'KNX element selection' pointing to the 'KNX device:' dropdown (value: knx\_Auto/Man); 'Selecting an element from the central unit' pointing to the 'CU device:' dropdown (value: inels3A\_AnalogovaSkupina); and 'List of created pairs' pointing to the table below.

| KNX device | CU device                  |        |
|------------|----------------------------|--------|
| knx_Luster | inels3A_SA3-06M_RE4_000020 | Remove |

Example export group addresses from ETS:

Example of data in a supplemented file Test\_group.csv:

```
"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;3/0/9
```



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.

*/ 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.

| Name  | IP address    | Is squeezebox |                        |
|-------|---------------|---------------|------------------------|
| Giom  | 10.10.5.125   | no            | <a href="#">Remove</a> |
| Misol | 192.168.88.63 | no            | <a href="#">Remove</a> |

! 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](http://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 ASCII 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.

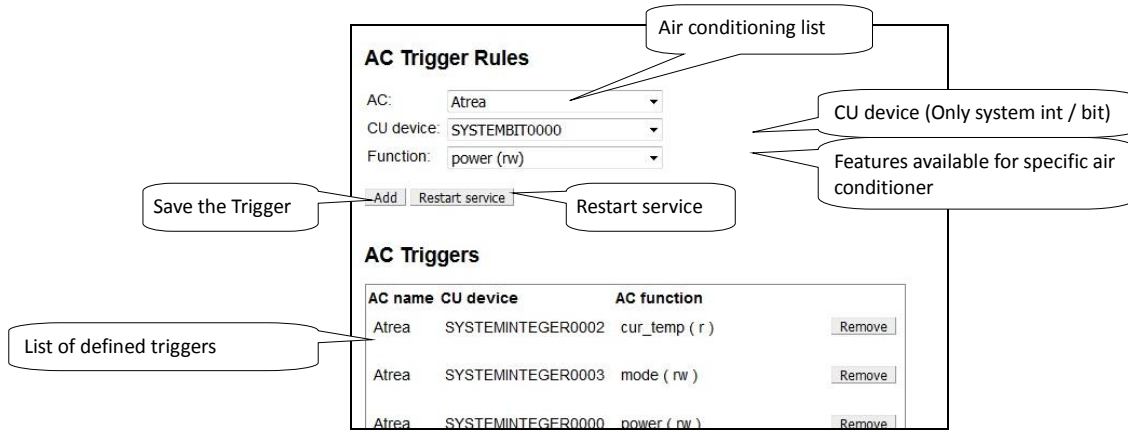
**Tracking Element Value in Script:**

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:

$$\text{temp} * 100 = 21,50 * 100 = 2150$$

**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:**

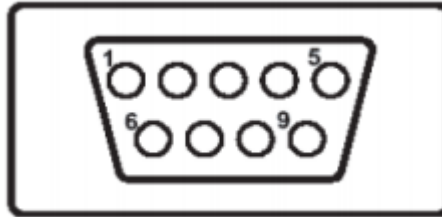
- Atrea Duplex 180 EC4 P (0-10), Duplex 180 EC4 P (0-100)
- AiRPohoda by Adam 4571
- Universal 0-10V by DAC 0-10V



**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.

**LG clim**

Name  Set name air-conditioning

Type  Select type of communication gateway Set IP address and port

Connection (ip\_address:port)  :

Group  Select group

Unit

Save settings Select number air conditioning

**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 | 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)

*/ 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.

The screenshot shows the 'Atrea' configuration form with the following fields and callouts:

- Name:** A text input field with a callout: "Enter the name of the unit".
- Type:** A dropdown menu showing "Duplex 180 EC4.D P(0-10)" with a callout: "Select unit type".
- IP address:** A text input field with a callout: "Enter the IP address of the unit".
- Temperature OUT:** A dropdown menu showing "VZT - Internal sensor" with a callout: "Outside temperature source for regulation".
- Temperature IN:** A dropdown menu showing "CP - CP-Touch" with a callout: "Internal temperature source for".
- A "save Atrea" button is located at the bottom left.

**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.

The screenshot shows the 'Universal 0-10 V' configuration form with the following fields and callouts:

- Name:** A text input field with a callout: "Set name climatization".
- Maximal temperature:** A text input field with a callout: "Set maximum temperature".
- Minimal temperature:** A text input field with a callout: "Set mminimum temperature climatization".
- Temperature control:** A dropdown menu showing "DAC3-04M\_OUT3\_01013d".
- Heating:** A dropdown menu showing "DAC3-04M\_OUT3\_01013d" with a callout: "Select control over DAC".
- Cooling:** A dropdown menu showing "DAC3-04M\_OUT3\_01013d".
- Thermometer:** A dropdown menu showing "DAC3-04M\_OUT3\_01013d" with a callout: "Select temperature sensor".
- A "save Universal" button is located at the bottom left with a callout: "Save settings".

**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.

The screenshot shows the 'Nilan Settings' web interface. It is divided into two main sections: 'Nilan Settings' and 'Nilan unit'.  
 - The 'Nilan Settings' section contains a text input field for 'Connection (ip\_address)' with the value 'eLAN-RS485/232'. Below it is a 'save Nilan settings' button.  
 - The 'Nilan unit' section contains:  
 - A 'Name' text input field.  
 - A 'Device ID' dropdown menu.  
 - An 'Actual temperature' dropdown menu with 'T1' selected.  
 - A 'reload' button.  
 - A 'save Nilan unit' button.  
 Callouts on the left side of the interface provide the following explanations:  
 - 'IP address eLAN-RS485/232' points to the 'Connection (ip\_address)' field.  
 - 'Device Name' points to the 'Name' field.  
 - 'List of created devices in eLAN-RS-485' points to the 'Device ID' dropdown.  
 - 'Selection of input on the Nilan unit to which the current temperature sensor is connected' points to the 'Actual temperature' dropdown.

**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

The screenshot shows the 'Intesis Box' web interface. It contains two text input fields and a save button.  
 - The 'Name' field contains the value 'Intesis IMM'.  
 - The 'IP address' field contains the value '192.168.1.6'.  
 - Below the fields is a 'save Intesis Box' button.  
 Callouts on the right side of the interface provide the following explanations:  
 - 'Enter the name of the' points to the 'Name' field.  
 - 'Enter the IP address of the' points to the 'IP address' field.

• **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:

Set the IP address of the converter

IP address (eLAN-RS485-232): 10.10.5.62

Type: Jablotron

Select the type of connected device to the converter

Save Delete

Area: Area 1

Select area monitoring (set by security system)

Check states: READY, ARMED\_PART, ARMED, SERVICE

Selecting a monitoring state for a given area (using the Ctrl button to select multiple statuses at a time)

Detector: Detector 1

Selection of the monitored detector

Trigger on: on

Selection of the monitored state for which the component overlay feature is to be performed in the Central Unit (CU)

Trigger type: set

Function type selection:  
set - change the state of the device  
signal - set the duration of the signal

CU devices: Add CU device Delete CU device

Save

IP address (eLAN-RS485-232): 10.10.5.62

Type: Jablotron

Save Delete

Area: Area 1

Check states: READY, ARMED\_PART, ARMED, SERVICE

Detector: Detector 1

Trigger on: on

Trigger type: signal

Signal time [s]:

Set the value of the component when the alarm function is activated

Selection of a component from the CU

Set the duration of the signal

Component set value after alarm time (alarm)

CU devices: Add CU device Delete CU device

CU device: (UID: 17039365) DA3-22M\_OUT1\_013E84 Value: Value new:

Save

• 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).

**New room**

Set name of room (Name field)

Set password for room (Protect by password checkbox)

Create Room (Add button)

File upload (Upload/Download buttons)

Download File (Download button)

Saved room (List of rooms)

Edit room (Edit button)

Set the room password (Set password button)

Rename Room (Rename button)

Remove selected room (Remove button)

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

**Add new device**

Select Type (Type dropdown)

Recommended length "Name" is 8 characters. If the length is longer then it does not display correctly.

Select the row and column (Row/Column dropdowns)

Insert name device (Name field)

Switch Icon read only yes/no (read only dropdown)

Select specific device (Attributes dropdown)

Add device (Add button)

View saved devices (Table)

Click on the line to display the editing menu (Action menu)

Remove device (REMOVE button)

Changing device views (Table)

an optional absolute path to a script that ends with .py or .sh (Attributes field)

Move Up or Down device (DOWN/REMOVE buttons)

Thermo meters

No thermo meters defined

Zones

No zones defined

Save settings (Save button)

Device: RFDA-73MRGB\_Red\_00A8AE (Device dropdown)

Cancel Confirm (Buttons)

| Row | Name  | Type | Column | Attributes                                                                 | Action      |
|-----|-------|------|--------|----------------------------------------------------------------------------|-------------|
| 1   | hall1 | lamp | 1      | device: SA3-06M_RE1_013AB9<br>read only: no                                | DOWN REMOVE |
| 6   | hall2 |      |        | absolute path /etc/imm/ShuttersUP.py<br>dev_0 SA3-06M_RE2_013AB9<br>remove | DOWN REMOVE |



*! 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 ...).*

*/ 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.

**New camera**

|                                                                               |                  |                              |                       |
|-------------------------------------------------------------------------------|------------------|------------------------------|-----------------------|
| Set name for camera                                                           | Name             | Axis P5534 2                 |                       |
|                                                                               | IP address       | 10.10.5.143                  | Set IP address camera |
| Set user name                                                                 | User             | OnvifUser                    |                       |
|                                                                               | Password         | •••••                        | Password              |
| Port for MJPG                                                                 | Service port     | 80                           |                       |
| Port for RTSP stream                                                          | MJPG port        | 845                          |                       |
|                                                                               | RTSP port        | 5684                         |                       |
|                                                                               | API              | Select API                   | Select an API         |
| Camera manufacturer                                                           | Manufacturer     | Axis Communications AB       | Camera Type           |
|                                                                               | Product Name     | AXIS M3025-VE Network Camera |                       |
|                                                                               | Firmware version | 5.40.5                       |                       |
| The FW version from which the camera manufacturer supports the onvif protocol | Date Certified   | 8/12/2013                    | Date Certified        |
| create                                                                        |                  |                              | Create camera         |

*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.

Select stream profile for RTSP

manual ▾ load Reloads the profiles from the camera

Stream: rtsp://192.168.1.10:554/

---

Select stream profile for MJPG

manual ▾ load Reloads the profiles from the camera

Stream: http://192.168.1.10:80/video

save

- **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)

The image shows a configuration menu for Miele. It contains the following fields and buttons:

- Miele** (Section Header)
- IP:** [Empty text input field]
- E-mail:** [Empty text input field]
- Relay:** [Dropdown menu with value SA3-06M\_RE3\_000020]
- HDO:** [Dropdown menu with value SA3-06M\_RE1\_000020]
- update** (Button)

Callouts (speech bubbles) point to the following elements:

- IP address device Miele gateway XGW 2000, XGW 3000** (points to the IP field)
- E-mail for notice** (points to the E-mail field)
- Relay for restart GW** (points to the Relay dropdown)
- Element Smart grid signal** (points to the HDO dropdown)
- Update settings** (points to the update button)

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

! 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.

The screenshot shows a form titled "New intercom account" with the following fields: "Contact name:", "Account:", "Secret:", "Stream:", and an "Add" button. Callouts point to these fields with the following labels: "New contact name" (pointing to Contact name), "SIP name" (pointing to Account), "SIP password" (pointing to Secret), "Streaming video URL of the" (pointing to Stream), and "Add a new contact" (pointing to the Add button).

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).

The screenshot shows a form titled "New intercom account (for a door phone)" with the following fields: "Contact name:", "Account:", "Secret:", "Stream:", "Door lock URL:", "Device type:" (a dropdown menu), "Username:", "Password:", "Lock code:", and an "Add" button. Callouts point to "Door lock URL:" with the label "Enter a URL to unlock the lock" and to "Device type:" with the label "Choice of sound type".

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**.

The screenshot shows a form titled "New intercom group" with the following fields: "Group name:", "Accounts:", and an "Add" button.

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.

The screenshot shows the "Asterisk settings" section with a "Ring timeout [s]: 30" field and a "save" button. Below it is the "Upload or download intercoms backup" section with "Upload:" and "Download:" buttons, and a file selection button "Procházet... Soubor novýbrán.". At the bottom is the "Update asterisk settings" section with an "Apply settings" button.

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

**Update asterisk settings**

[Apply settings](#)

---

**Intercom accounts**

| Contact name | Account   | Secret | Stream                           | Door phone     |                                                                                |
|--------------|-----------|--------|----------------------------------|----------------|--------------------------------------------------------------------------------|
| Intercom2    | Intercom2 | asdf   |                                  | Dahua-VTO2000A | <a href="#">Edit</a> <a href="#">Remove</a> <a href="#">Get 2n config file</a> |
| Intercom     | Intercom  | asdf   | rtsp://admin.admin@192.168.88.55 | Dahua-VTO2000A | <a href="#">Edit</a> <a href="#">Remove</a> <a href="#">Get 2n config file</a> |
| LARA         | LARA      | asdf   |                                  |                | <a href="#">Edit</a> <a href="#">Remove</a> <a href="#">Get 2n config file</a> |
| Mobil        | Mobil     | asdf   |                                  |                | <a href="#">Edit</a> <a href="#">Remove</a> <a href="#">Get 2n config file</a> |
| LARA2        | LARA2     | asdf   |                                  |                | <a href="#">Edit</a> <a href="#">Remove</a> <a href="#">Get 2n config file</a> |

Active / Unactive

**Intercom groups**

| Group name | Accounts     |                        |
|------------|--------------|------------------------|
| Office     | LARA, LARA2, | <a href="#">Remove</a> |

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

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

*/ 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.*

*/ 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.

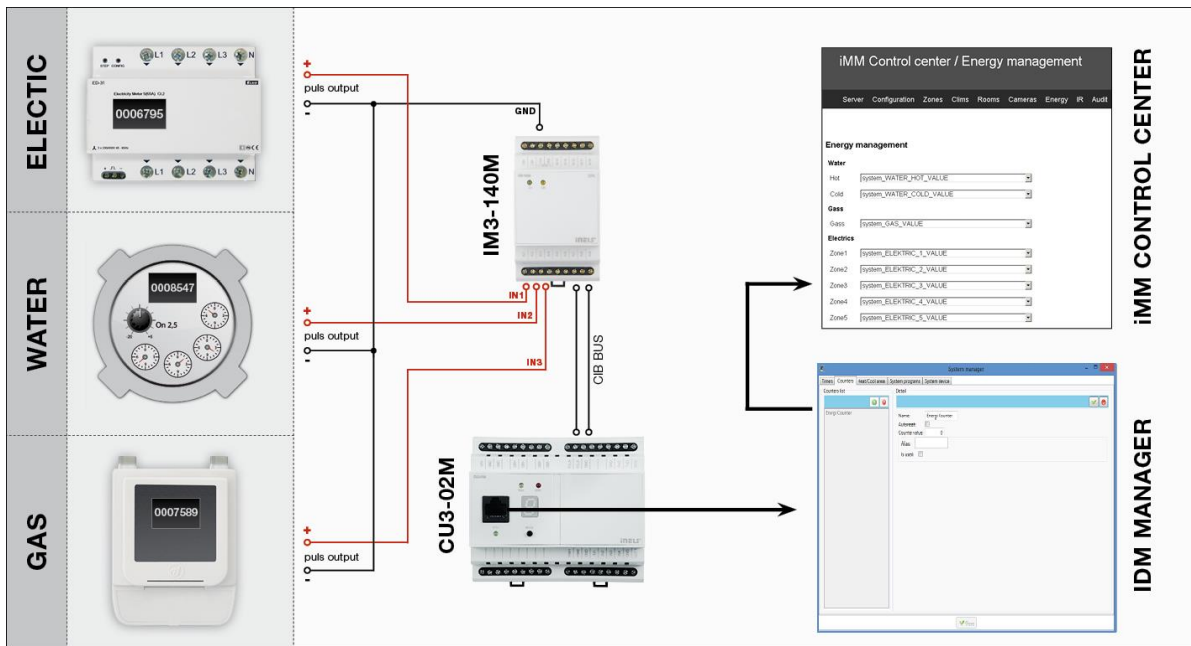
The data is stored on the Connection Server even when the power is off or on.

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**

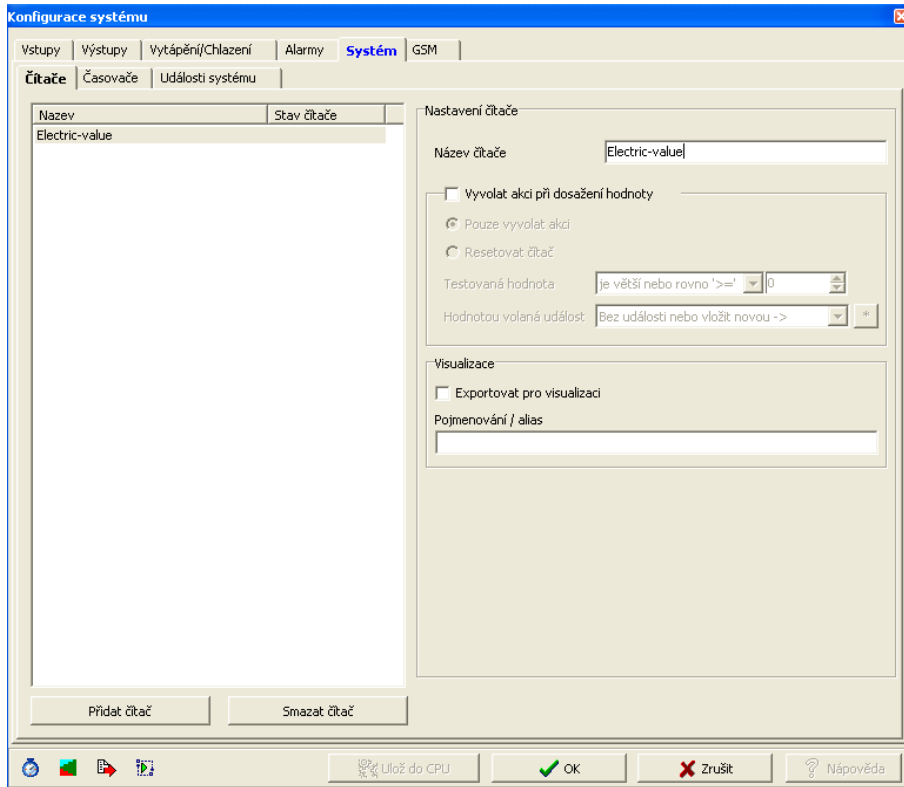
The connection of a particular meter is executed via the binary input unit. The polarity of the supported meter, i.e. + and - is distinguished. If necessary, observe the polarity and connect the "-" terminal to the GND terminal and the "+" terminal to the IN terminal.



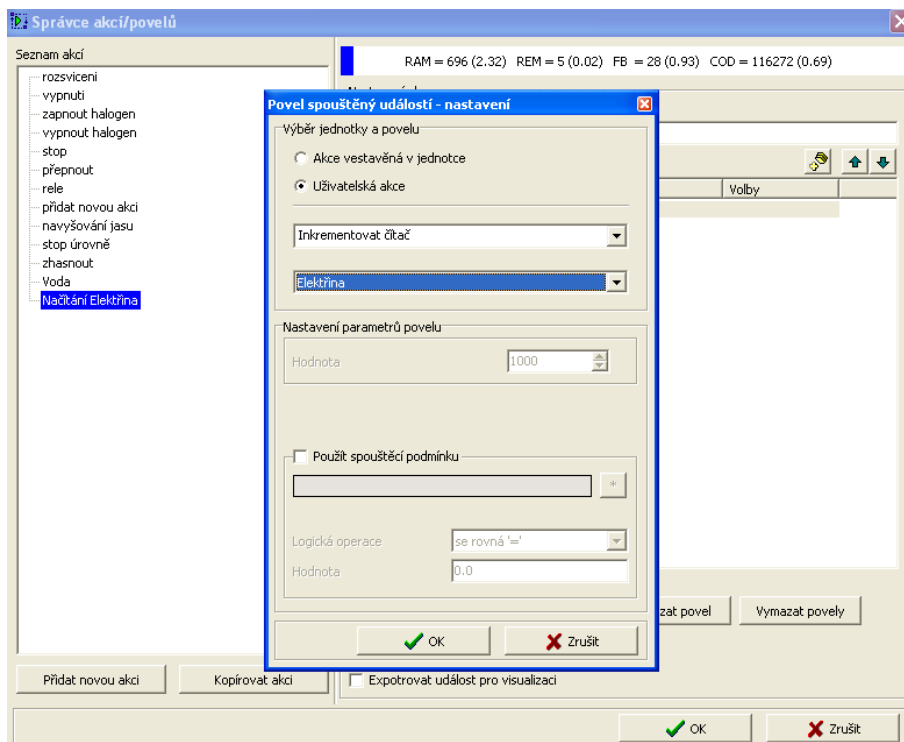
Settings in IDM2:

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:

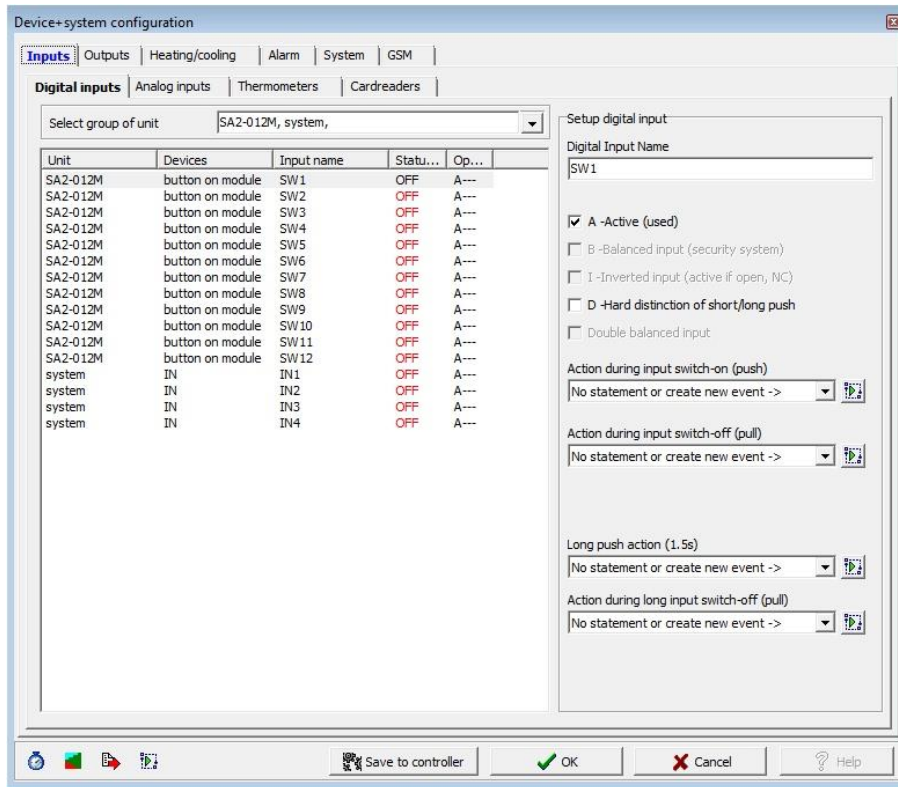


Create increment counter action:

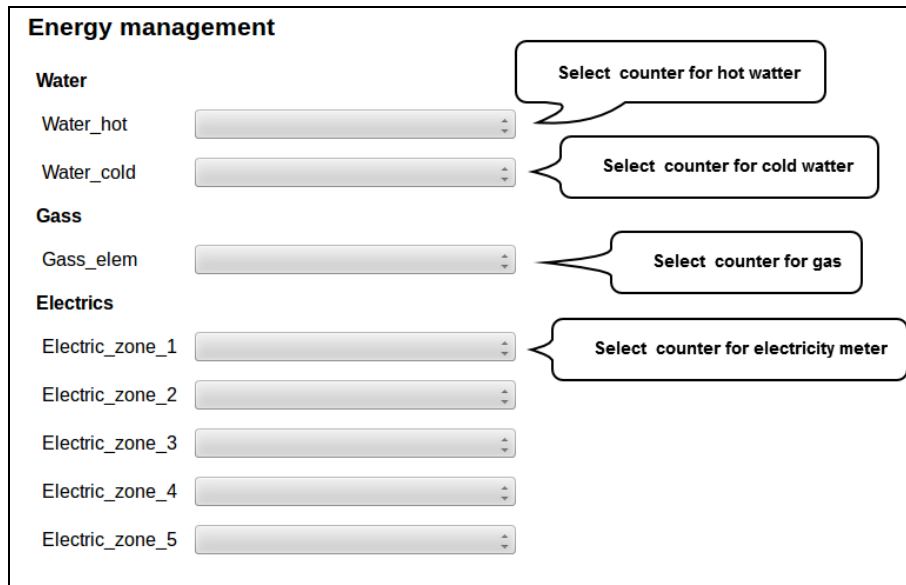




Action assignment to binary input where output from measuring instrument is connected



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.

**Energy management**

**Water**

Water\_hot

Water\_cold

**Gass**

Gass\_elem

**Electrics**

Electric\_zone\_1

Electric\_zone\_2

**Electric** Label:  custom name

Base Unit:  kWh  MWh  other  Option to enter your own unit

|           |                                |     |                                |          |     |                                |   |
|-----------|--------------------------------|-----|--------------------------------|----------|-----|--------------------------------|---|
| Z1 Price: | <input type="text" value="1"/> | per | <input type="text" value="1"/> | Impulses | per | <input type="text" value="1"/> | E |
| Z2 Price: | <input type="text" value="1"/> | per | <input type="text" value="1"/> | Impulses | per | <input type="text" value="1"/> | E |
| Z3 Price: | <input type="text" value="1"/> | per | <input type="text" value="1"/> | Impulses | per | <input type="text" value="1"/> | E |
| Z4 Price: | <input type="text" value="1"/> | per | <input type="text" value="1"/> | Impulses | per | <input type="text" value="1"/> | E |
| Z5 Price: | <input type="text" value="1"/> | per | <input type="text" value="1"/> | Impulses | per | <input type="text" value="1"/> | E |

**Water** Label:  custom name

Base Unit:  l  hl  m3  Gallon UK  Galon US  other  Option to enter your own unit

Impulses:  per  W

Price:  per 1 Impulses

**Gass** Label:  custom name

Base Unit:  m3  other  Option to enter your own unit

Impulses:  per  G The number of pulses set for loading units

Price for 1 pulse:  per 1 Impulses

**Currency:**

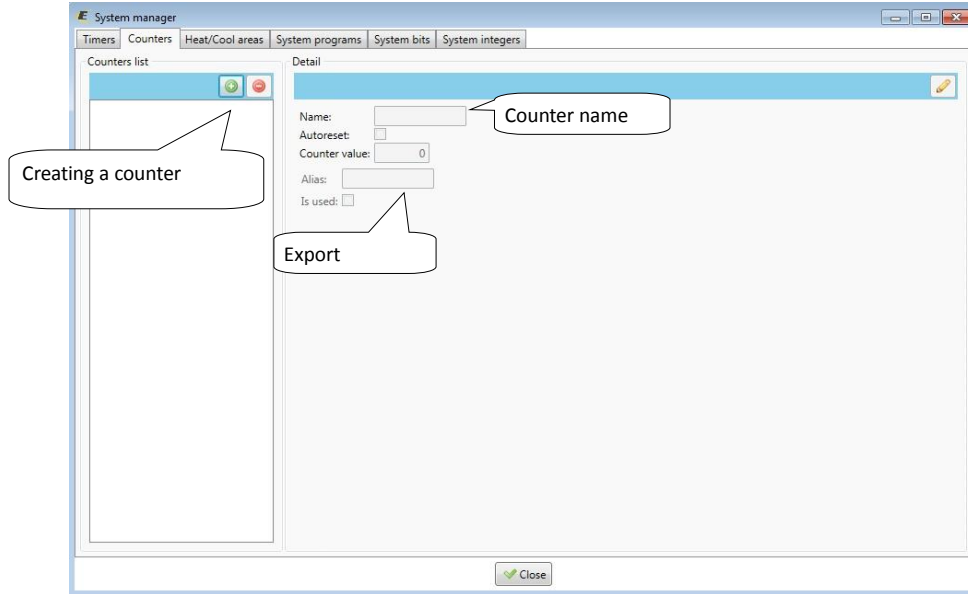
Choice of currency

To create a counter, see the Energy tab

**b) Creating counters (counters) in IDM3**

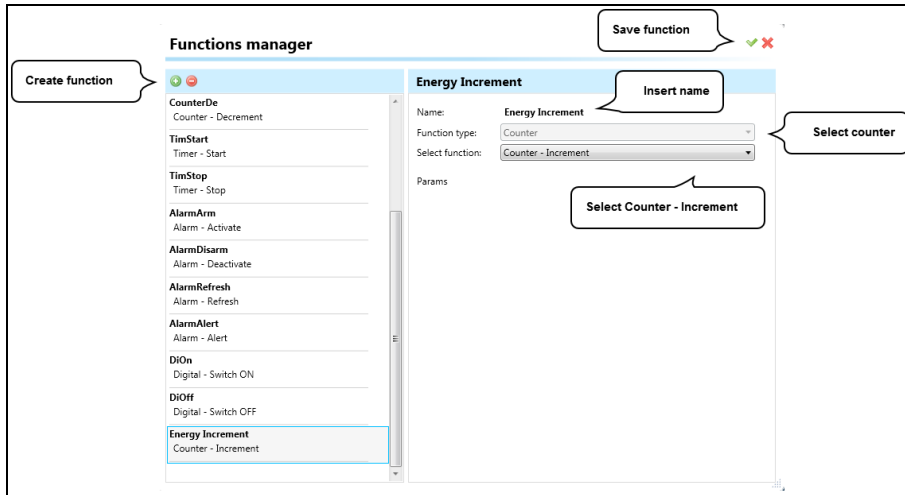
Creating a counter in IDM3

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**.



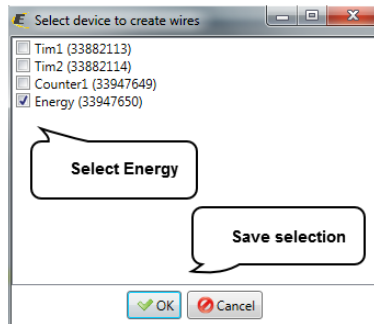
Creating functions for counter

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

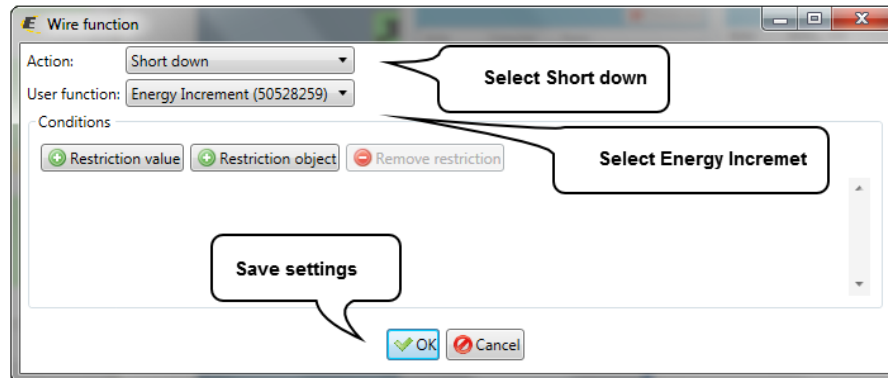
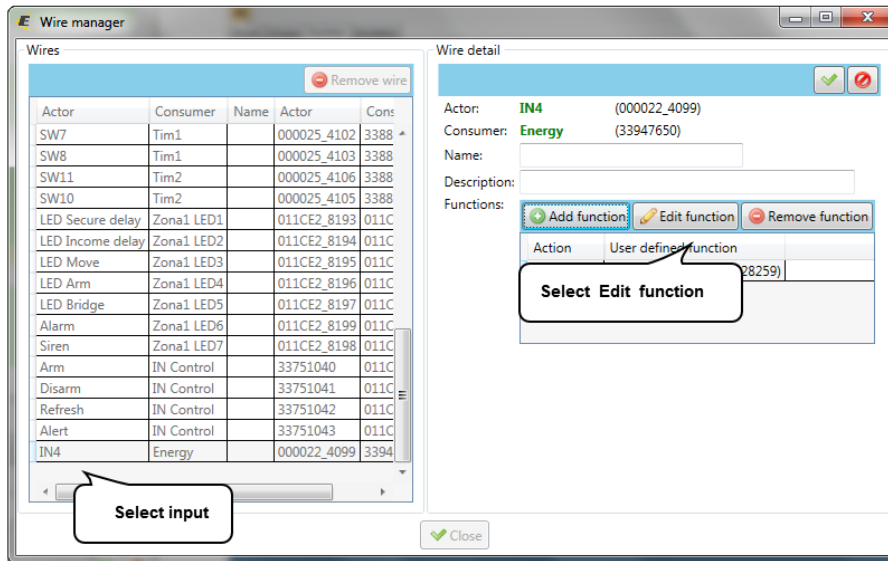


Move the switch and central units to the desktop and double click on switch icon edit and select IN Digital input M3-80B.

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.



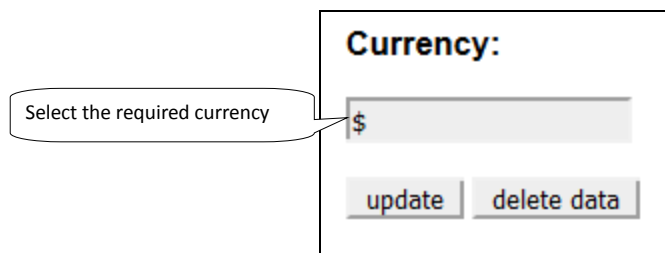
In the tab, Function select Wire Manager, select the input (IN) Energy through button the Edit function to adjust to Action: Short down User function: Energy Increment.



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

The screenshot shows the 'Giom meteostation' configuration page. It includes settings for wind speed, temperature, and relative humidity. Each setting has a numerical input, a unit, a 'Triggered' dropdown (Once or Periodic), a 'Check value' dropdown (Both, Above, Below), and two 'Edit' options: 'Value is above' and 'Value is below'. Below these are dropdowns for saving data to system integers (SYSTEMINTEGER0000, SYSTEMINTEGER0001, SYSTEMINTEGER0003) and 'Save' and 'Restart service' buttons. Callouts explain: 'Perform the scene once or periodically' points to the Triggered dropdown; 'Check values exceeding / falling below' points to the Check value dropdown; 'The selected command is executed when the value is exceeded' points to the 'Value is above' edit option; 'The selected command is executed when the value falls below' points to the 'Value is below' edit option; 'It is used to write measured values to CU (wind speed, temperature, humidity)' points to the save integer dropdowns; and 'Restart to activate save' points to the Restart service button.

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

The screenshot shows the 'low\_temp' scene configuration. It features a dropdown menu with 'SA2\_04M\_Sn\_SW1' selected, a '1' in a small box, and an 'Add event' button. A callout 'Selected relay' points to the dropdown, and another 'State ON =1 OFF=0' points to the '1' box. An 'Add relay' button is also visible.

The screenshot shows the 'Defined events' section. It lists 'SA2\_04M\_Sn\_SW1 1' with a 'Remove' link. A callout 'Remove unit' points to the 'Remove' link. Below the list is a button labeled 'Added switch unit'.

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.**

**/ 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.

**Misol meteostation**

|                             |                                   |                   |
|-----------------------------|-----------------------------------|-------------------|
| Wind direction              | Save wind direction to:           | SYSTEMINTEGER0000 |
| Temperature                 | Save temperature to: <sup>1</sup> | SYSTEMINTEGER0001 |
| Humidity                    | Save humidity to:                 | SYSTEMINTEGER0002 |
| Wind speed                  | Save wind speed to: <sup>1</sup>  | SYSTEMINTEGER0003 |
| Gust speed                  | Save gust speed to: <sup>1</sup>  |                   |
| The amount of precipitation | Save rainfall to:                 | SYSTEMINTEGER0004 |
| UV value                    | Save uv to:                       |                   |
| Light intensity             | Save light to:                    |                   |
| Low battery indication      | Save low battery to:              |                   |

<sup>1</sup> Values are multiplied by 100.

Save settings → Save Restart service → Restart to activate saving

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.

*/ 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.

**Add Aseko device:**

Facility Name

Name: Aseko

IP address: 192.168.88.100  
ELAN-RS-485 converter IP address (with Aseko device already configured)

Device type: SYSTEMINTEGER000

Automat: SYSTEMINTEGER001

pH<sup>1</sup>: SYSTEMINTEGER002

Cl<sup>1</sup>: SYSTEMINTEGER003

Rx<sup>1</sup>:

Temperature: <sup>1</sup>: SYSTEMINTEGER004  
Selection of the system integer from the CU where the value is to be written

Desired pH (NEW): <sup>1</sup>:

Desired Cl/Rx (NEW): <sup>1</sup>:

Desired temperature (NEW): <sup>1</sup>:

Desired clarifying agent (NEW): <sup>1</sup>:

Relay states (NEW):

Error 1 (NEW):

Error 2 (NEW):

Error (OLD):

Surface (OLD): <sup>1</sup>:

<sup>1</sup> Values are multiplied by 100.

Add: Store Aseko devices

**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:

**Aseko devices:**

| Name    | IP address    |      |
|---------|---------------|------|
| aseko 1 | 192.168.88.63 | Edit |

Possibility to edit or delete devices



- **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.

### Logged events

```
127.0.0.1:49528 - - [02/Jan/2015 13:50:04] "HTTP/1.1 GET /style.css" - 200 OK
127.0.0.1:49528 - - [02/Jan/2015 13:50:04] "HTTP/1.1 GET /favicon.ico" - 200 OK
127.0.0.1:49528 - - [02/Jan/2015 13:50:07] "HTTP/1.1 GET /favicon.ico" - 200 OK
127.0.0.1:49528 - - [02/Jan/2015 13:50:08] "HTTP/1.1 GET /manual" - 200 OK
127.0.0.1:49528 - - [02/Jan/2015 13:50:08] "HTTP/1.1 GET /style.css" - 200 OK
127.0.0.1:49528 - - [02/Jan/2015 13:50:08] "HTTP/1.1 GET /favicon.ico" - 200 OK
127.0.0.1:49528 - - [02/Jan/2015 13:50:09] "HTTP/1.1 GET /favicon.ico" - 200 OK
127.0.0.1:49528 - - [02/Jan/2015 13:50:10] "HTTP/1.1 GET /dsettings" - 200 OK
127.0.0.1:49528 - - [02/Jan/2015 13:50:10] "HTTP/1.1 GET /style.css" - 200 OK
127.0.0.1:49528 - - [02/Jan/2015 13:50:10] "HTTP/1.1 GET /favicon.ico" - 200 OK
```

[Download logs](#) [Download log file](#) [Actual log list](#)

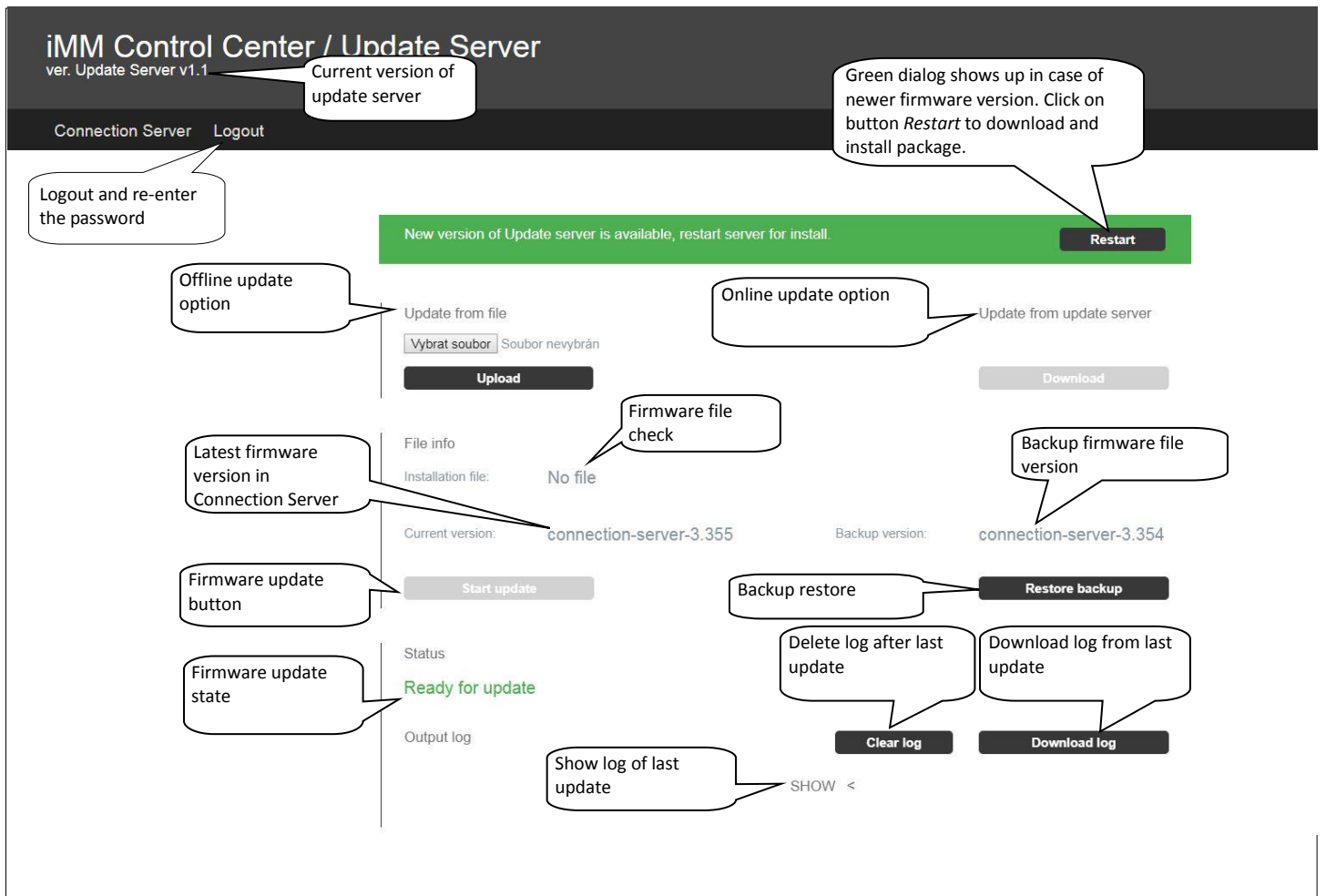
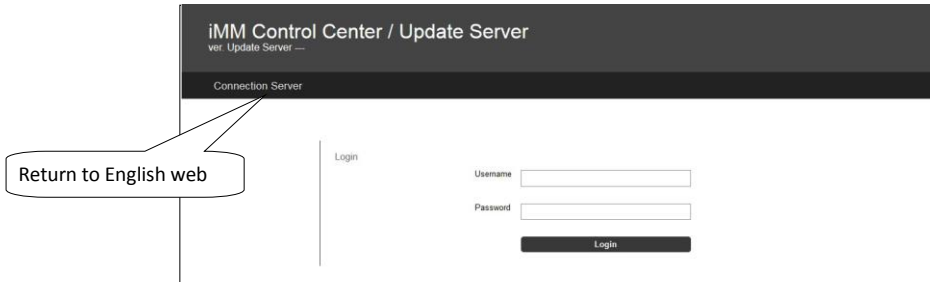
- **Bookmark Logout**

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 **Installation 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.

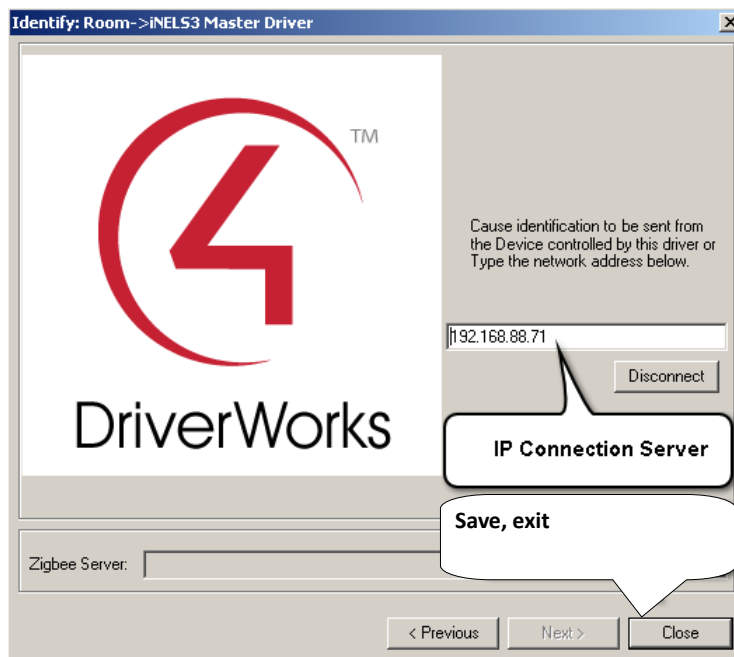
Adding the iNELS3 Driver to the project

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.

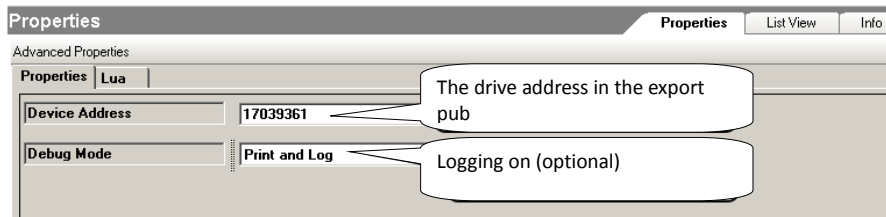
**! First add the iNELS3 Master Driver before inserting the other iNELS3 drivers**

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.